

Surgical & Cosmetic Dermatology

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Giant keratoacanthoma in a patient with acquired immunodeficiency syndrome treated with Mohs micrographic surgery



“Drumhead” graft technique to repair deep surgical defects in the nasal tip and ala regions



Reconstruction options for the closure of nasal surgical defects



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Thermal spring waters: From balneotherapy to genomics

Águas termais: da balneoterapia à genômica

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ABSTRACT

This review article reports the scientific data available on La Roche-Posay thermal water and clarifies its mechanisms of action, indications, and clinical benefits. Clinical studies and genomic evaluation of the skin microbiome have shown that La Roche-Posay thermal water improves the skin microbiome's diversity and reduces the severity of skin lesions in inflammatory dermatoses, such as atopic dermatitis and psoriasis. Therefore, it justifies the use of selenium-rich water in topical formulations to prevent or treat skin diseases and as an adjunct to increase dermatological patients' quality of life.

Keywords: Balneology; Cosmetics; Mineral Waters; Selenium; Skin; Thermal Water

RESUMO

O presente artigo de revisão relata os dados científicos disponíveis sobre a água termal *La Roche-Posay* e esclarece seus mecanismos de ação, suas indicações e seus benefícios clínicos. Além disso, estudos clínicos e avaliação genômica do microbioma da pele demonstraram que esta água termal melhora a diversidade do microbioma da pele e reduz a gravidade das lesões cutâneas em dermatoses inflamatórias, tais como dermatite atópica e psoríase. Justifica-se, portanto, o uso de água rica em selênio em formulações tópicas na prevenção ou tratamento de doenças de pele e como coadjuvante para aumentar a qualidade de vida dos pacientes dermatológicos.

Palavras-chave: Águas Minerais; Águas Termais; Balneologia; Cosméticos; Pele; Selênio

INTRODUCTION

In ancient times, when therapeutic options were more limited than today, hot springs (or thermal waters) to treat different physiological conditions were very popular.¹ The beginning of the European balneotherapy development occurred in the Greek hydromineral sources. The Greek physician Hippocrates (460 - around 375 BC) began to use hydrotherapies and balneotherapies to treat specific clinical conditions. As an analytical researcher, he highlighted the differences between the therapeutic indications from the various micro-sources minerals, theorizing that the different healing properties were related to different mineral contents.² Greek civilization extended to areas conquered by the Romans, who preserved the balneotherapy culture, developing new techniques and building public spas.

Since the 3rd century BC, doctors have attributed therapeutic value to mineral sources. Thermalism had central impor-

Review

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tance in the life of Romans. It was affected by the disintegration of the Roman Empire and the consequent fall of the Greco-Roman culture, but it left a strong influence on European civilization.²

Historically, mineral waters are also important as therapeutic agents within the pharmacy. The world's first pharmacopœias, such as *Genevensis* in 1780, *Borussica* in 1799, *Galica* in 1818, *Helvetica* in 1933, among others, prescribed natural mineral water as an effective bioactive agent in external and internal applications to treat diseases.^{2,3}

In the 19th century, interest in balneotherapy or thermalism grew in North America and Europe. Even nowadays, countless health resorts with specific thermal waters carry on this tradition.⁴ In the last three decades, despite limited literature with clinical evidence, there has been a resurgence of interest in balneotherapy, with support from the medical community to alternative or complementary therapies.⁵

In Brazil, thermalism and crenotherapy, that is, the set of therapeutic practices that uses mineral waters with medicinal properties, in a preventive or curative way, once again received attention from the Ministry of Health after approval of the National Policy on Integrative and Complementary Practices (*Política Nacional de Práticas Integrativas e Complementares - PNPIC*) in 2006 to users of the Public Healthcare (*Sistema Único de Saúde - SUS*).^{6,7}

Hot springs or mineral water sources with therapeutic properties⁸ have been mentioned for benefiting from rheumatic and musculoskeletal disorders to a variety of diseases in Dermatology, Pulmonology, Hematology, and Gastroenterology.^{9,10} Regardless of having started empirically, the hot springs therapeutic use has an important investment in research currently to understand its mechanism of action and clinical benefits offered to patients.¹¹ Although it is still difficult to attribute the measured effects to specific parameters, there is evidence that the different mineral and microbiological compositions of thermal waters and their consequent physical, chemical, and biological properties impact the physiology of skin cells.^{1,12,13}

HOT SPRINGS AND DERMATOLOGY

Mineral waters, both thermal and non-thermal, are aqueous solutions containing minerals and trace elements formed under specific geological conditions that present a physical-chemical dynamism. They naturally appear in sources or springs and are free of pathogenic microorganisms, thus having therapeutic potential.^{14,15}

For centuries, mineral water has been known to treat inflammatory dermatological diseases, mainly psoriasis and atopic dermatitis.^{1,16} The observed clinical efficacy may be related to the penetration of some water-soluble minerals into human skin. Minerals such as selenium, magnesium, sulfur, calcium, and zinc are directly related to the skin structure.⁹

Thus, parameters such as purity, pH, soluble minerals content, and the presence of trace elements should be contemplated in the selection of waters for dermatological therapy. The variety of thermal springs, different from each other in their

hydrogeological origin, chemical composition, and physical properties, should also be considered.¹⁵

Although there are no waters with the same chemical composition, they can be grouped based on the dissolved mineral salts content, quantified by the total mineralization present in mineral waters (dry residue determined at 180 °C). They are classified as oligomineral water (mineralization less than 200 mg/L); medium mineral waters (mineralization between 200 mg/L and 1000 mg/L); and mineral waters (mineralization above 1000 mg/L).¹⁷ Depending on the nature of the geological material traversed by groundwater, they can also be classified by the predominant mineral element in their compositions.¹⁸ Internationally, thermal springs are, in general, classified into five main categories: bicarbonate, sulfate, sulfide, chloride, and weakly mineralized trace elements.¹¹

The mineral content of thermal waters interferes with its sensory properties and the comfort provided to the skin. The magnitude of softness and the skin's smoothness and comfort are higher when the thermal waters have lower concentrations of mineral salts (<1000 mg/L).¹⁹ These properties are essential for patients with chronic dermatoses frequently associated with skin dryness and itching.¹¹ In general, thermal waters have no adverse events and rarely induce inflammatory reactions. Therefore, they can be used safely in all skin conditions characterized by extreme sensitivity and cosmetic intolerance.¹⁷ Thus, there is a real interest in thermal waters for dermatological and cosmetic purposes, amplified by other possible attributes, particularly the anti-inflammatory, antipruritic, and antioxidant properties of these mineral waters.^{11,17,20}

Especially in recent decades, the French industry commercialized thermal waters as cosmeceuticals or dermocosmetics,²⁰ requiring efforts to scientifically prove their effects, where the use of cell cultures has been helpful.^{1,21} The regulation of immunological parameters through supplemented means was observed in mast cells,²² Langerhans cells,²¹ and CD4+ T lymphocytes.^{23,24} A recent study used keratinocyte cultures (HaCaT) to determine the effects of four types of hypotonic mineral waters. The study assessed two French thermal water and two drinking mineral water, comparing them to control. The research investigated the DNA proliferation regarding cytotoxicity, interleukin-6 (IL-6) expression, and reactive oxygen species (ROS) formation after stimulation with ultraviolet B (UVB). The results indicated that both thermal waters significantly reduced basic parameters, such as proliferation and cytotoxicity, and decreased the IL-6 levels in the medium after UVB irradiation to levels similar to those observed with betamethasone 17-valerate, a reference anti-inflammatory (positive control). Also, there was a significant reduction in ROS levels regarding the control non-irradiated with UVB.

This effect was attributed to the trace elements contained in mineral waters. Paradoxically, both drinking mineral waters also had some effect on the mentioned parameters, but to a lesser extent.¹

The French thermal waters used by Zoller *et al.* (2015) are commercially available in pharmacies in Brazil²⁰ and have a

mineral content <1000 mg/L. The anti-oxidant activities observed were attributed to the high selenium content and/or the zinc in the composition of the thermal waters.¹ Thus, the results of this article highlight the importance of trace elements, such as selenium and zinc, and provide scientific justification for the application of thermal waters in treating chronic inflammatory skin diseases.¹

Thermal Waters as Cosmeceuticals

The scientific data currently available on thermal waters provide a better understanding of these waters' biological mechanism of action concerning their composition, physico-chemical properties, and clinical benefits. It justifies the interest in using them as an active ingredient or "cosmeceutical" in topical formulations that seek to increase the quality of life and adherence to dermatological treatments.¹¹ A critical focus in developing cosmeceuticals/ dermocosmetics is to maintain the balance of the skin's microbiota. In general, thermal waters can modify the composition and activity of the skin microbiome due to their physical and chemical properties. It has already been demonstrated that they have their own set of thermophilic microorganisms.¹³

Formulations properly developed with thermal waters can increase the activity of microorganisms beneficial to the skin, prevent cutaneous dysbiosis, restore the skin's barrier function, and have an anti-irritating, anti-inflammatory, and antioxidant action. These formulas containing thermal water as an ingredient are essential for skin conditions that present barrier dysfunction, such as dryness, sensitivity, skin reactivity; exposure to aggressive cosmetic or hygiene routines; after aesthetic procedures; during or after the use of corticosteroids.^{11,16,17,42} However, it is noteworthy that there are different thermal water compositions, which should be considered when choosing this ingredient and assessing the formulations.^{11,17,20}

La Roche-Posay Thermal Spring Water

Mineral composition and biological properties

The concentration of minerals and non-pathogenic microorganisms in La Roche-Posay thermal spring water (LRP-TSW) may explain its therapeutic benefits in inflammatory skin diseases, improving skin conditions in atopic dermatitis, psoriasis, and skin dryness.¹⁰

LRP-TSW has a unique mineral composition, characterized by an exceptional balance of minerals and trace elements. It is classified as medium mineral water (mineralization: 595 mg/L), presenting a neutral pH and providing comfort to the skin.¹¹

It contains adequate mineral levels with dermatological effects, such as bicarbonate and calcium, which are essential for skin renewal; silicate, which helps to reduce skin irritation, mainly improving the skin softness and flexibility; and a set of trace minerals naturally rich in selenium, in addition to copper and zinc, which are cofactors of the enzyme superoxide dismutase (Cu-Zn-SOD), an important antioxidant defense of skin cells.^{11,32} Selenium, an essential element for human cells'

normal and protective metabolism, maintains cell integrity and neutralizes free radicals and organic peroxides. The protective effect of this mineral relates to its presence in the active center of the enzymes glutathione peroxidase (GSH-Px) and thioredoxin reductase (TRX-Rs), which protect DNA and other cellular components from oxidative damage.^{11,32,33} It occurs because the selenium in GSH-Px can control the intracellular levels of hydrogen peroxide, affecting the reactive oxygen species formation, which can serve as lipid peroxidation initiators. This selenium role is closely related to superoxide dismutases, which control the intracellular levels of the superoxide anion, being an important antioxidant defense.⁴⁹ Selenium also plays a prominent role in regulating excessive immune responses and chronic inflammation. Its deficiency is known to impact negatively the processes of activation, differentiation, and proliferation of immune system cells, also related to the increase in oxidative stress.⁵⁰ In addition, the effect of selenium against photoaging due to its antioxidant properties has been demonstrated.²⁰

Fibroblast culture studies have shown that the addition of selenium or LRP-TSW to the medium can induce a protective effect on fibroblasts exposed to UVA, as there was an increase in their survival percentage by a multiplication factor of 1.6 and 1.8, respectively. Concomitantly with the increased survival of these cells, there was a decrease in UVA-induced lipid peroxidation, both in the presence of selenium (-46%) and selenium-rich thermal water (LRP-TSW) (-42%), probably due to the activity of GSH-Px.^{32,34,35} Furthermore, keratinocytes cultured in a medium containing LRP-TSW have better resistance to increased UVB doses, demonstrated by protection against cytotoxic effects using the neutral red incorporation method. Also, UVB rays can induce inflammatory reactions that release mediators that can be monitored both *in vitro* and *in vivo*, including interleukin-1 α (IL-1 α). A study demonstrated that keratinocytes in the presence of LRP-TSW after UVB irradiation significantly reduced the release of this inflammatory mediator.^{34,35} Selenium-rich thermal water (LRP-TSW) also had a protective effect against chemically induced irritant contact dermatitis. Sodium lauryl sulfate, a known irritant, induced an inflammatory reaction that was decreased by 46% in subjects previously treated with a gel formulated with LRP-TSW compared to only 15% reduction seen in individuals who used demineralized water gel.^{34,35}

The effect of selenium on lipid peroxidation has also been studied in human skin fibroblast cultures. Immediately after exposure to ultraviolet A radiation (365 nm, 18J/cm²), a decrease in lipoperoxides in the cell culture supernatant was observed by quantifying substances reactive to thiobarbituric acid - an indicator of lipid peroxidation. Antioxidant defenses, including the level of total glutathione (GSH) and activities of superoxide dismutase (SOD), glutathione peroxidase (GSH-Px), and catalase, were simultaneously verified before and after irradiation. The results demonstrated that the sensitivity of human fibroblasts to UVA-induced lipid peroxidation depends on a balance between the activities of SOD and catalase.³⁶ A reduction factor of 1.8 and 1.7 times, respectively, was observed in cells cultured in a medium supplemented with selenium or LRP-TSW compared

to a control medium containing demineralized water. In parallel, selenium-GSH-Px activity and cell viability were significantly increased.^{36,37}

In vitro studies have proven the LRP-TSW immunomodulatory and anti-inflammatory properties by assessing Langerhans cells' migratory and stimulating capacities in the human epidermis. The migration of Langerhans cells sensitized by trinitrobenzene sulfonic acid (TNBS) was inhibited in a culture medium reconstituted with LRP-TSW compared to a medium containing demineralized water. LRP-TSW also reduced the expression of human leukocyte antigen (HLA-DR) molecules by 25%. HLA-DR is a monocyte and macrophage receptor of the histocompatibility complex class II (MHC II). Reduced expression of HLA-DR means less production of pro-inflammatory cytokines. Other costimulatory molecules expressed on the surface of the Langerhans cell also had their expression reduced, such as B7-2 (CD86; 35%) and ICAM-1 (25%), compared to the control medium, increasing the anti-inflammatory activity.^{11,21,38} Also, the modulating effects were evaluated in media containing selenium salts, strontium, or LRP-TSW, using models of skin reconstructed after healthy skin biopsies and skin with atopic dermatitis (inflammatory model). There was a lower production of inflammatory cutaneous cytokines (IL-1a, IL-6, and tumor necrosis factor- α [TNF- α]) in the reconstructed skins than the control medium in all evaluated media. LRP-TSW, rich in selenium and strontium, induced a moderate inhibitory effect on the production of inflammatory cytokines, particularly IL-6.^{38,39}

A randomized, double-blind study analyzed the protective effect of LRP-TSW against skin lesions induced by UVB. The research investigated ten individuals with skin phototypes II and III, comparing a cream containing LRP-TSW to another containing demineralized water. The creams were assessed regarding their ability to protect the skin against the formation of erythema induced by UVB (colorimetric evaluation) and sunburn cells (biopsy). Neither the LRP-TSW nor the control cream provided significant protection against erythema. However, there was a substantial reduction in the number of sunburn cells in the epidermis in the areas pretreated with the cream containing selenium-rich thermal water compared to the cream containing demineralized water.⁴⁰

Microbial composition and biological properties

From a microscopic perspective, the skin is a complex environment inhabited by trillions of different microorganisms comprising the skin microbiome.^{25,26} The intense diversity and composition of the microbial communities vary according to the skin region and between individuals.¹⁰ The skin microbiota comprises about 80% gram-positive and 20% gram-negative bacteria, with bacterial diversity driven mainly by gram-negative bacteria and abundance by gram-positive bacteria.¹⁰ Interesting findings suggest that the skin microbiome may influence infections, inflammatory diseases and skin immunity.^{13,27} It may also protect the skin from pathogenic bacteria in different ways, including bacteriocins production, adhesion, and bacterial nu-

trients competition, toxins degradation, increased antibody production, and modulation of cytokine production.²⁷ Numerous inflammatory skin diseases are associated with loss of diversity in the skin's microbiota. Rosacea, acne, sensitive skin, and seborrheic dermatitis can be mentioned in addition to psoriasis and atopic dermatitis.^{10,42}

When evaluating the microbial composition of the LRP-TSW through metagenomics, a global bacterial picture containing low concentrations of bacteria was observed. There was a high bacterial diversity and a greater proportion of gram-negative than gram-positive bacteria. The dominant phyla were Proteobacteria and Bacteroidetes, both of gram-negative bacteria.¹⁰

The lysis of a gram-negative, non-pathogenic, aerobic bacterium of the phylum Proteobacteria - *Vitreoscilla filiformis* - has been used as an ingredient in the formulation of cosmetic preparations.^{10,28} A continuous technological process has been developed to produce a *V. filiformis* biomass (VFB) that has been shown to improve skin defense mechanisms. This bacterium contains lipopolysaccharide (LPS) that, once isolated, reproduces BVF activity. This biomass is well recognized by Toll-like receptors-2 (TLR2), inducing defensin expression and stimulating the protein kinase C zeta (PKCz) pathway and the mitochondrial antioxidant defense system. It leads to a homeostatic defense reaction and provides a protective biological shield, reinforcing skin resistance.^{28,29}

When adding LRP-TSW to the *V. filiformis* culture medium, the obtained biomass (LRP-VFB) activated mitochondrial superoxide dismutase and showed an even better ability to stimulate innate skin defense biomarkers.²⁹

The use of cosmeceuticals developed with the lysis of *V. filiformis* promotes a significant improvement for patients with inflammatory skin diseases.^{30,31,41}

As LRP-TSW contains live bacteria that affect the skin microbiota, the thermal spring water (balneotherapy) acts as a probiotic. There are many questions about the applicability of a probiotic, since for these microorganisms to remain alive, they need to resist manipulation, temperature, storage, and transport.^{11,42}

While a probiotic is a product containing live microorganisms, a prebiotic product contains an ingredient that selectively stimulates or inhibits the growth or activity of skin commensal bacteria.⁴² Filtered LRP-TSW, which does not contain live bacteria, can be considered a prebiotic used in dermocosmetics. The prebiotic LRP-TSW has shown to be beneficial in individuals with healthy but dry skin. Corneometry assessed the effect of LRP-TSW used in a commercially available spray (two sprays per application, twice a day, for 14 days, on the inner part of the forearm) in 70 healthy individuals with dry skin. Thirty minutes after the last application, the microbiota in the treated region and a nearby untreated area was evaluated. The treatment resulted in a significant increase in gram-negative bacteria and a decrease in gram-positive bacteria on the skin surface of treated areas versus nearby untreated areas, increasing bacterial diversity and the resilience of treated regions.^{10,42} In a similar protocol, the topical application of a moisturizer containing high concen-

trations of LRP-TSW demonstrated a significantly high level of bacteria of the genus *Xanthomonas* that can be correlated with the increased skin hydration levels.¹⁰

Clinical studies have indicated that balneotherapy using LRP-TSW (probiotic) stimulates gram-negative bacteria on the skin surface, particularly from the Xanthomonadaceae family. Their main genus is *Xanthomonas*, improving the microbial diversity of the skin. The increase in bacteria of the genus *Xanthomonas* was associated with a decrease in the severity of inflammatory skin conditions and a reduction of bacteria of the genus *Staphylococcus*.⁴³ Without using an antibiotic, LRP-TSW can modify the microbiota in human skin.^{10,31,44}

Therapeutic properties

Many therapeutic uses of LRP-TSW have been described in chronic inflammatory diseases, such as atopic dermatitis^{10,15} and psoriasis.^{10,43,45} However, it can also be helpful in skin healing⁴⁶ and other dermatoses, such as rosacea and ichthyosis.⁴⁷

Healing

The LRP-TSW spray effectively treats scars after pediatric plastic surgery, demonstrating that it can reduce the inflammatory aspect of scars, easing the itching, facilitating the removal of the crusts, providing a careful cleaning after non-traumatic surgery. Finally, it helps prevent infection, common in these cases, due to excessive washing to remove debris.⁴⁶

Atopic dermatitis

The effect of LRP-TSW on the microbiome of 31 patients with atopic dermatitis was evaluated after 21 days of balneotherapy. Microbial samples were collected from affected skin and non-affected adjacent skin.

At the beginning of the study, bacterial diversity was lower in the injured skin of atopic dermatitis compared to the adjacent clinically healthy skin. After balneotherapy, the diversity index increased in the injured areas and became similar to that observed in clinically healthy skin. In addition, balneotherapy resulted in a reduction of Firmicutes organisms, mainly of the *Staphylococcus* genus, and an increase in the quantity of the bacteria of the genus *Xanthomonas*. The increase in bacterial diversity after balneotherapy was correlated with significant growth of gram-negative bacteria and a significant reduction in gram-positive bacteria on the skin. Balneotherapy provides lasting results, with clinical and quality of life improvements sustained for an average of six months.¹⁰

Cosmeceuticals containing LRP-TSW also improve the diversity of the skin microbiome in patients with atopic dermatitis. A monocentric study assessed 49 patients with moderate atopic dermatitis after three months of application, twice a day, of an emollient containing high concentrations of LRP-TSW. The research showed that comparisons between the affected area and the adjacent unaffected skin in the same patient with atopic dermatitis provide good information about the bacterial communities involved in skin dysbiosis. The skin affected by atopic dermatitis hosts less diverse microbial communities than

the unaffected skin. Also, the lesion microbiota was dominated by *Staphylococcus* species when compared to the microbiota of the adjacent uninjured skin. The clinical picture improved in 72% of patients with a concomitant increase in bacterial diversity and decreased *Staphylococcus* in the affected skin.⁴⁴

Another comparative, double-blind, randomized study analyzed 60 patients with moderate atopic dermatitis. The individuals were randomly divided into two groups (A and B) and received the products for application twice a day, for 28 days: emollient A in lipophilic cream containing 20% shea butter, 4% niacinamide, LRP-TSW, mannose, and *V. filiformis* biomass grown in a medium containing LRP-TSW (LRP-VFB); or emollient B, a commercial product for atopic dermatitis containing triglycerides, glycerin, shea butter, and ceramide. Samples were collected in affected and adjacent non-affected areas before and after treatment to assess the bacterial community. The evaluated results associated the microbiota and the score to evaluate the severity of atopic dermatitis, called Scoring Atopic Dermatitis (SCORAD) of patients. After 28 days, the mean SCORAD of patients treated with emollient A was lower than those treated with emollient B, meaning remission or improvement of the condition. It is worth mentioning that the SCORAD associated with patients in crises was lower in the emollient A group (46%) versus the emollient B group (79%). A significant increase in the genus *Xanthomonas* bacteria was observed in the group treated with emollient A compared to emollient B.

On the other hand, the *Staphylococcus* genus bacteria increased between Days 1 and 28 in the emollient B group. However, in the emollient A group, it was not observed. This study demonstrated that a specific emollient containing LRP-VFB, which proved to be prebiotic, can normalize the skin microbiota and significantly reduce the severity of atopic dermatitis and acute manifestations, compared to the other emollient.³¹

Psoriasis

A clinical study subjected 92 individuals with moderate to severe plaque psoriasis to balneotherapy with LRP-TSW every day for three weeks. The subjects also ingested one liter per day of selenium-rich LRP-TSW. The evaluation parameters included clinical evaluation using the Psoriasis Area and Severity Index (PASI) and plasma levels of selenium. After three weeks, the PASI was reduced by 47±4%. In 8% of the individuals, the lesions disappeared completely, while in 48%, the lesions improved by more than 50%. At the end of balneotherapy, a significant increase in mean plasma selenium levels was observed, correlated with a reduction in PASI.⁴⁵

Another study evaluated the skin microbiome in 27 patients with moderate to severe psoriasis before and after three weeks of balneotherapy with LRP-TSW. The research compared samples collected in an affected skin area and an unaffected adjacent region. The clinical evaluation showed a 61% reduction in PASI after balneotherapy (initial PASI: 21±10; PASI after balneotherapy: 8±5). Deficient bacterial biodiversity was noted in patients with psoriasis, and bacterial communities were similar in affected and non-affected adjacent areas. The average taxonomic

composition of skin bacterial communities associated with the unaffected and affected skin of psoriatic patients after balneotherapy showed a significant increase in bacteria of the genus *Xanthomonas*, known to be keratolytic and associated with the clinical improvement. To a lesser extent, there was an increase in the genus *Corynebacterium* bacteria, associated with a decrease in the genus *Staphylococcus* bacteria.⁴³

In 2012, 199 patients with severe plaque psoriasis (74.4%) or guttate psoriasis (12.1%) were treated with LRP-TSW (balneotherapy).

After treatment, the mean PASI scores were reduced by 57%; 96% of the patients showed some improvement in PASI value; and 78% showed improvement in the Dermatology Life Quality Index (DLQI). Those who had previously undergone balneotherapy with LRP-TSW previously reported a continuous improvement in quality of life for 7 ± 3 months and sustained remission of psoriasis for an average of 6 ± 3 months after treatment with LRP-TSW.¹⁰

FINAL CONSIDERATIONS

Thermal water has been used for many years in balneotherapy and also as aerosol or in topical formulations, presenting satisfactory results in Dermatology.

La Roche-Posay thermal spring water has demonstrated, in *in vitro* and *in vivo* studies, a protective action against the harmful effects of reactive oxygen species induced, for example, by ultraviolet light, in the short and long term. In addition to the antioxidant and immunomodulatory effects, it also proved its anti-inflammatory and anti-irritant potential, suggesting that its regular use can increase the quality of life of dermatological patients.

The unique mineral composition of LRP-TSW, containing bicarbonate, silicate and, mainly, high selenium concentrations (53 µg/L), is related to a large part of its benefits. More recently, because it contains live bacteria that affect the skin microbiota, it was considered to act as a probiotic when used at the source. Its microbial composition naturally presents a low concentration of bacteria (not pathogenic), with a high diversity and a higher proportion of gram-negative than gram-positive bacteria. The main phylum found in LRP-TSW was Proteobacteria.

The results justify the use of La Roche-Posay thermal spring water as a therapeutic option in inflammatory skin conditions, with barrier dysfunction and susceptibility to sensitivity and irritations, through available dermocosmetic forms, either in the pure form as an aerosol, either as an active ingredient in topical dermatological formulations, as emollients and sunscreens. ●

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Superficial basal cell carcinoma: clinical, epidemiological, dermoscopic, and anatomopathological correlation

Carcinoma basocelular superficial: correlação clínico-epidemiológica, dermatoscópica e anatomopatológica

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ABSTRACT

Introduction: Basal cell carcinoma is the most common non-melanoma malignancy in humans. Its superficial variant has specificities that can represent a diagnostic and therapeutic challenge.

Objective: To describe the epidemiological profile of patients with superficial basal cell carcinoma (SBCC) treated at a reference service and to correlate, statistically, clinical, dermoscopic, and anatomopathological characteristics.

Methods: Observational, analytical, cross-sectional study conducted by collecting data from patients with suspected SBCC between November 2019 and October 2020.

Results: In total, we confirmed 25 lesions as SBCC. They were more frequent in women, in the head and neck, and with a diameter of less than 1 cm. We also observed, in clinical characteristics, a predominance of individuals over 60 years old and with phototypes II and III. The anatomopathological examination observed some pigmentation in the lesions evaluated and a predominance of intra-epidermal keratinocytes in lesions with maple leaf-like areas in dermoscopy.

Conclusions: SBCC can present clinically as a pigmented lesion, affecting more the head and neck regions. Lighter skin phototypes are more likely to have SBCC with pigmented dermoscopic structures. Intra-epidermal keratinocytes possibly correlate with the formation of maple leaf structures.

Keywords: Basal cell carcinoma; Dermoscopy; Epidemiology; Skin Neoplasms; Pathology

RESUMO

Introdução: o carcinoma basocelular é a neoplasia maligna não melanoma mais frequente no ser humano. Sua variante superficial apresenta especificidades que podem representar um desafio diagnóstico e terapêutico.

Objetivo: descrever o perfil epidemiológico dos pacientes com carcinoma basocelular superficial (CBCS) atendidos em um serviço de referência e correlacionar estatisticamente características clínicas, dermatoscópicas e anatomopatológicas.

Métodos: estudo observacional, analítico e transversal realizado por meio de coleta de dados dos pacientes com suspeita de CBCS entre novembro de 2019 e outubro de 2020.

Resultados: no total, 25 lesões foram confirmadas como CBCS, sendo mais frequentes nas mulheres, na localização da cabeça e do pescoço e com diâmetro menor que 1cm. Foi visto, ainda, nas características clínicas, um predomínio nos maiores de 60 anos e nos fototipos II e III. No exame anatomopatológico, foi observado algum tipo de pigmentação nas lesões avaliadas, e houve uma predominância de queratinócitos intraepidérmicos naquelas que apresentavam folhas de bordo na dermatoscopia.

Conclusões: o CBCS pode apresentar-se clinicamente como lesão pigmentada e acometer mais cabeça e pescoço. Os fototipos mais altos provavelmente têm maior chance de apresentar CBCS com estruturas dermatoscópicas pigmentadas. Os queratinócitos intraepidérmicos possivelmente correlacionam-se à formação de estruturas em folhas de bordo.

Palavras-chave: Carcinoma Basocelular; Dermoscopia; Epidemiologia; Neoplasias Cutâneas; Patologia

Original article

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INTRODUCTION AND OBJECTIVE

Basal cell carcinoma (BCC) is a malignant skin neoplasm derived from the cells of the basal layer of the epidermis and perianexial structures.¹ It is part of the group of non-melanoma skin cancer that represents the most common tumors in humans.^{1,2} Basal cell carcinoma represents 80% of this group, and the superficial variant comprises 10% to 30% of cases of basal cell carcinoma.⁶ North American studies reveal an increase in basal cell carcinoma incidence of up to 50% in men.⁴ This finding corresponds to a world trend.⁴

Superficial basal cell carcinoma presents clinically as a circumscribed and erythematous plaque, with a thin border and hypochromic/ atrophic center.⁶ It tends to affect more commonly the trunk, legs, and shoulders.^{6,2} It is suggested that the origin of BCC is related to exposure to intermittent ultraviolet (UV) radiation in childhood and adolescence.³

The main risk factors for developing BCC are: male gender, advanced age, exposure to ultraviolet rays, previous history of other skin cancers, phototherapy, radiotherapy, and Fitzpatrick skin phototype I and II.^{1,2}

Dermoscopy is an essential tool that helps in differentiating between superficial and non-superficial BCC. This examination also contributes to therapeutic decisions and patient follow-up.⁵

In the anatomopathological study, BCC presents as an epithelial malignancy composed of nests of basaloid cells.⁹ These nests in the SBCC are distributed in several lesion foci in close contact but without invasion of the dermis.⁹ Due to the difficulty in delimiting the lesion and consequent possibility of incomplete excision, the superficial variant presents the highest risk for local recurrence.^{7,9}

A study on the epidemiological profile of dermatological consultations in Brazil shows that non-melanoma skin cancer corresponds to the third reason for seeking dermatological care.⁸ In the age group above 60 years, BCC represents the first major cause for consultation with the dermatologist (19.3%).⁸ The authors also observed that the chance of diagnosing non-melanoma skin cancer is higher in public (SUS) than in the private sector.⁸

National cancer statistics register BCC as non-melanoma skin cancer. This group encompasses all types of BCC and SCC (squamous cell carcinoma). For this reason, the actual frequency of SBCC in the country is uncertain. Pereira *et al.* (2015) evaluated the regional skin cancer data between 1988 and 2009 in individuals under 40 years old.²¹ The non-melanoma cancer statistics were individualized between BCC and SCC. It allowed observing an incidence of 1,614 cases of BCC in that period and a predominance in women.

Despite the extensive scientific literature on basal cell carcinoma, specific studies on the superficial variant are scarce. This research aims to describe the epidemiological profile of superficial basal cell carcinoma in reference service and to correlate clinical, dermoscopic, and anatomopathological variables statistically. Studies like this are essential to disseminate and draw the attention of the dermatologist on the subject. Also, it can

contribute to the development of prevention strategies, early diagnosis, and better therapeutic results, surgical or not.

MATERIALS AND METHODS

It was an observational, analytical, and cross-sectional study. The inclusion criteria were patients with suspected superficial BCC who presented at the referral service from November 2019 to October 2020. These patients underwent incisional biopsy or excision with margin, and the material was sent to the Pathological Anatomy Service of the hospital. We collected data on sex, age, skin color according to Fitzpatrick scale, previous profession, involvement site, lesion size, dermoscopy pattern, melanic pigment presence in the anatomopathological examination from each patient. All lesions were photographed with a digital camera and DermLite DL200 Hybrid[®] dermatoscope. Two examiners experienced in dermoscopy analyzed the images and filled out a 12-items checklist with structures that could be present in each lesion. The checklist was revised, and the final table was considered as the sum of the structures found by the two examiners.

Lesions not confirmed as SBCC by anatomopathology or those not possible to access were excluded from the study.

The statistical analysis to correlate the different variables was performed using Fisher's exact test, assuming a significance level of $p < 0.05$ by the statistical software R. The Ethics Committee approved the study under the CAD number 29726520.4.0000.5078, and all patients signed the informed consent term.

RESULTS

We collected a total of 34 suspicious lesions from 18 patients. Eight were excluded because they were not confirmed as SBCC after the pathology; four were confirmed as actinic keratosis, one as nodular BCC, one as basosquamous carcinoma, one as sclerodermiform BCC, and one as chronic dermatitis. One was excluded from statistical calculations because the sample was lost. Chart 1 describes the frequency of dermoscopic structures in lesions not confirmed as superficial BCC, with fine telangiectasias being the most common structure.

Sex and age

In the final sample, 25 lesions in 14 different patients were confirmed as SBCC. Of these, 19 lesions were in women (76%) and six in men (24%) (Chart 2). The proportion of women to men was 1.8:1. The most frequent age group was over 60 years old (64%), followed by between 45 and 59 years old (36%) (Chart 3). Among women over 60 years old, 85.7% of the lesions were multiple, and 14.5% were single.

Lesion site

Among women, 11 injuries (57.8%) were located on the head and neck and eight on the trunk (42.2%). Among men, two lesions were on the head and neck (33.3%) and four on the trunk (66.7%). None of the sexes presented lesions in the upper

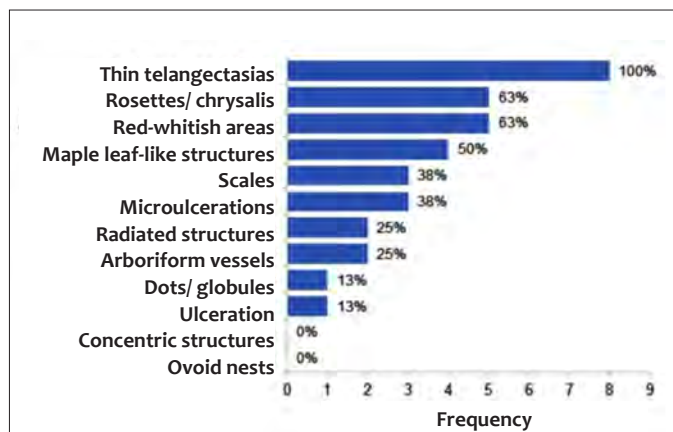


Chart 1: Distribution of dermoscopic structures in lesions not confirmed as SBCC

or lower limbs or genital region (Chart 4). Two lesions were located in a non-exposed area (8%) and 23 in a photoexposed area (92%).

Lesion size

Among women, 13 lesions were <1 cm (68.5%) and six were ≥1 cm (31.5%). Among men, three lesions were <1 cm (50%) and three were ≥1 cm (50%) (Chart 5).

Skin phototype according to the Fitzpatrick scale

Of the 14 patients who composed the study, eight were skin phototype II (57.1%), four were skin phototype III (28.5%), and two were skin phototype IV (14.4%). No patients were skin phototype I,V, or VI (Chart 6).

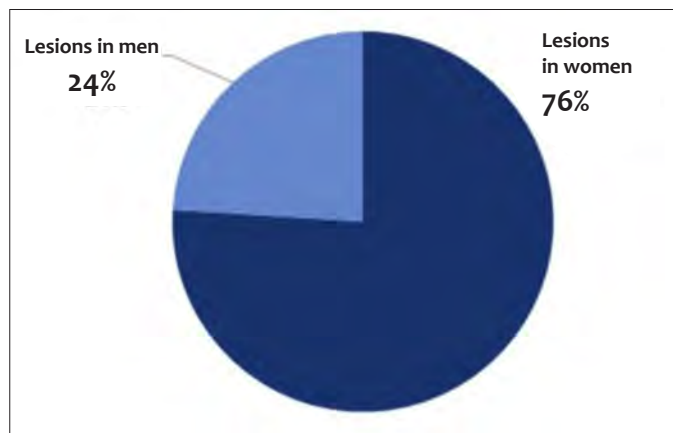


CHART 2: Distribution of lesions by sex

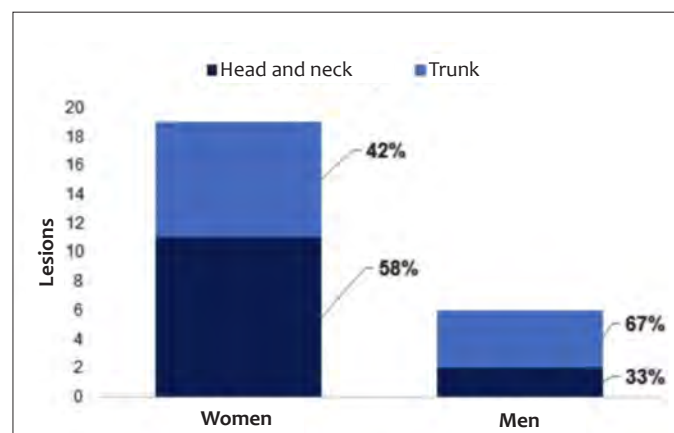


CHART 4: Distribution of lesions by location and sex

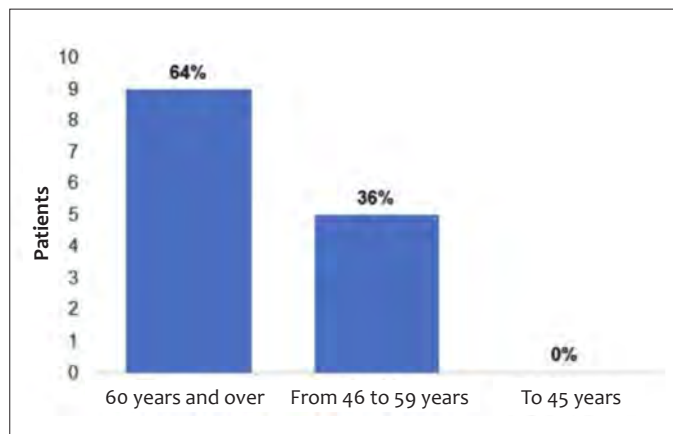


CHART 3: Distribution of patients by age group

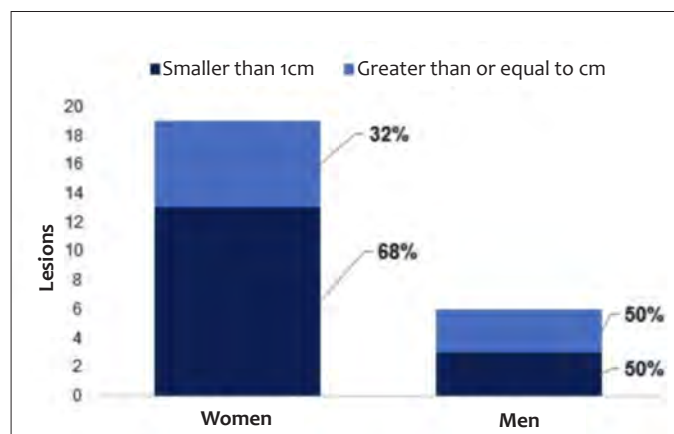


CHART 5: Distribution of lesions by size and sex

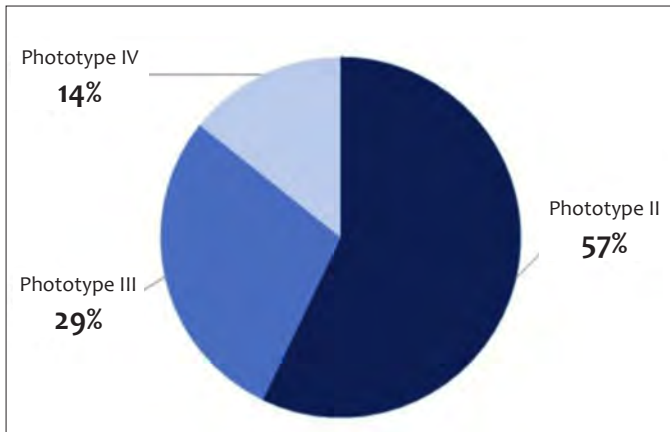


CHART 6: Distribution of patients by skin phototype

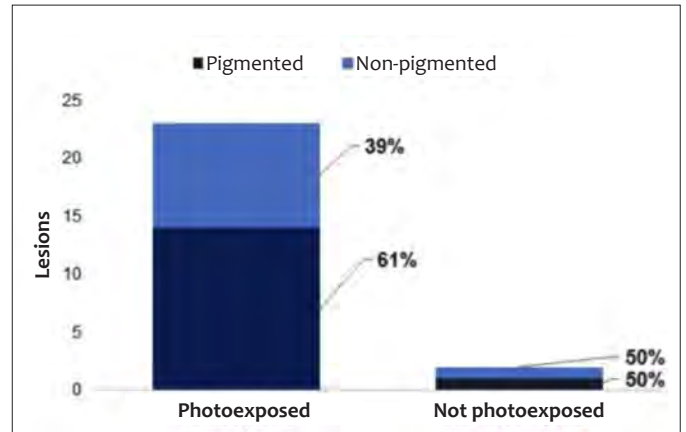


CHART 7: Distribution of lesions by photoexposure and pigmentation to the clinic

Previous profession

Of the total number of patients, seven were rural workers (50%); one, a street vendor (7%); one declared having other professions (7%); and five did not report (36%).

Pigmented lesions on clinical presentation

By clinical evaluation, 15 lesions were pigmented (60%) and 10, non-pigmented (40%). Chart 7 shows the distribution of these lesions by photoexposed area.

Dermoscopic structures

When considering all lesions confirmed as SBCC, the five prevalent patterns in dermoscopy were red-whitish areas without structures (92%), maple leaf-like areas (68%), fine telangiectasias (64%), dots/globules (48%), and concentric structures (44%). Graph 8 shows the frequency distribution of structures in lesions confirmed as SBCC.

Presence of melanin pigment in anatomopathology

Of the 25 confirmed lesions, 17 presented some type of melanin pigment in anatomopathology (intraepidermal keratinocytes with pigment, intradermal or intraepidermal macrophages with pigment - melanophages); five did not present (20%); and in three had no data (12%).

DISCUSSION

In the present sample, SBCC lesions were more frequent in women, with a predominance of 76% in this group. These results are consistent with those found in the literature.^{10,11,12} The average age of women was 64.6 years (50-78 years) and for men 66.2 (51-82 years), with no statistically significant difference between them (p=0.40). The literature shows that women tend to be diagnosed younger than men.^{11,10,19,12,13} Such difference may be justified by the greater concern of women with aesthetic and health issues.¹⁰

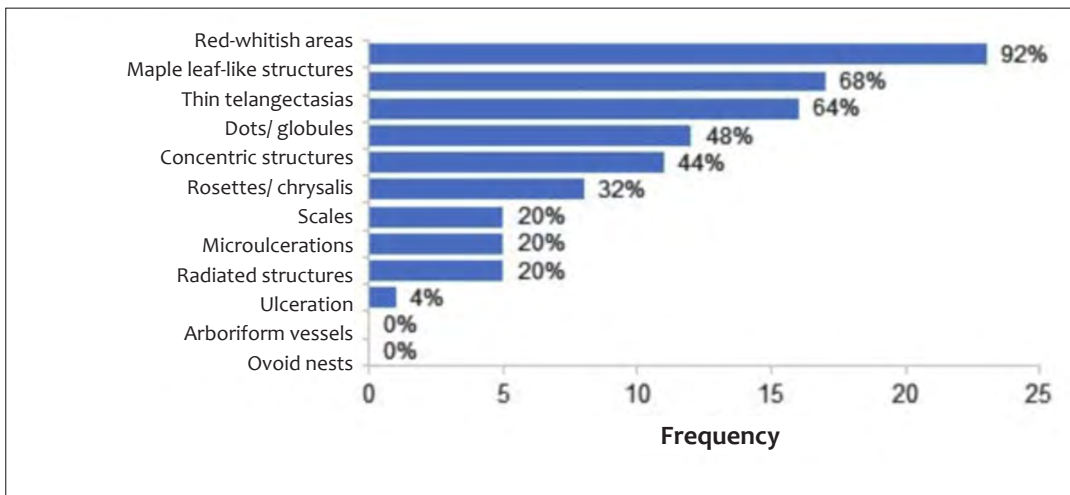


CHART 8: Distribution of dermoscopic structures in lesions confirmed as SBCC

In the present sample, 64% of the patients were over 60 years old. As shown in the literature, the incidence in the elderly is higher due to ultraviolet radiation, which induces somatic mutations leading to aberrant activation of the Hedgehog pathway and the PTCH1 gene over the years in a cumulative manner.²⁰ Thus, the transformation of keratinocytes occurs when the function of multiple oncogenes is affected, leading to dysregulation of the cell cycle.²⁰

In this survey, 31.6% of women had lesions smaller than 1 cm while, among men, this rate was 50%. The statistical analysis between sex and lesions ≥ 1 cm showed no statistical association between these variables ($p=0.63$). It was observed that in women over 60 years old, multiple lesions were predominant. It confirms the importance of seeking physical examination for multiple injuries in women of this age group.

Regarding location, 52% of the lesions were in the head and neck and 48% in the trunk. No injuries on the limbs or genitals were observed. When analyzing the location by sex, women presented a predominance of lesions in the head and neck: 57.9% against 42.1% on the trunk in men. These data differ from existing studies that demonstrate a higher prevalence of SBCC in the trunk.^{11,19,2,12} The predominance of the head and neck can influence the decision of the therapeutic modality chosen to treat these cases. This location is considered noble, and the impact of an unsightly scar can be significant for the patient. The literature shows that SBCC has the highest recurrence rate and requires greater safety margins in conventional surgery for complete excision. It is because this variant has multiple interconnected tumor nests.^{14,9,15}

It was also observed that, in the photoexposed area, 39% of the lesions were non-pigmented. Although they are not the majority, it is crucial to note that many SBCC lesions can be neglected because they do not have pigment and are more similar to other types of lesions, such as eczema and actinic keratosis. On the other hand, this study demonstrated 60% of pigmented lesions in the clinical presentation, which differs from the classic description of SBCC as a well-defined erythematous plaque.⁶

This study showed structures consistent with what the scientific literature describes for superficial basal cell carcinoma

concerning dermoscopic elements. Wosniak-Rito *et al.* demonstrated that the presence of maple leaf-like structures associated with fine telangiectasias and the absence of arboriform vessels, ovoid nests, and ulceration have a sensitivity of 81.8% and specificity of 81.9% for the diagnosis of SBCC.⁵ In this study, the anatomopathological study did not confirm the lesions with arboriform vessels and one with ulceration as SBCC, corroborating the data from the current literature. The prevalent dermoscopic elements in this research sample were, in decreasing order: red-whitish areas without structures, maple leaf-like structure, fine telangiectasias, dots/globules, and concentric structures. These data were in line with what was proposed by Wosniak-Rito *et al.* Aguilar *et al.* showed a possible correlation of dots and globules with good response to treatment with imiquimod.¹⁶

In the statistical analysis between photoexposed area lesions and pigmented dermoscopic structures (maple leaf-like, radiated, and concentric structures, dots and globules),⁵ there was no statistically significant difference between any of the variables. Therefore, this study didn't observe any correlation between photoexposure and pigmented dermoscopic structures. It is assumed that this finding derives from the small sample size due to the difficulties imposed by the Covid-19 pandemic that affected the volume of visits to outpatient clinics since March 2020.

There was a statistically significant correlation between maple leaf-like structures and skin phototype III and IV ($p<0.05$) as shown in Table 1. The presence of pigmented structures at dermoscopy is likely a property determined by the patient's intrinsic characteristics, such as high skin phototype, and not due to external factors, such as photoexposure. These data are consistent with the higher incidence of pigmented BCC in non-white individuals.^{17,2} More studies are needed, however, to establish this correlation. There was no statistically significant correlation for any of the variables in the statistical analysis between the different pigmented dermoscopic structures and the type of melanin pigment present in the anatomopathology.

However, between maple leaf-like structures and intraepidermal keratinocytes with pigment, $p=0.057$ (Table 2) was obtained, close to the significance level of $p<0.05$. Yelámos *et al.*

TABLE 1: Distribution of lesions regarding phototype and pigmented dermoscopic structures

		Maple leaf-like structures		Total N.	P-valor	OR [IC 95%]
		Yes	No			
		N.	N.			
Phototype	III e IV	8	0	8	P = 0,026	OR não definida
	II	9	8	17		
Phototype	II e IV	12	8	20	P = 0.14	OR = 0 IC [0.00 – 2,18]
	III	5	0	5		
Phototype	II e III	14	8	22	P = 0.53	OR = 0 IC [0.00 – 5,21]
	IV	3	0	3		

TABLE 2: Distribution of lesions regarding pigmented intraepidermal keratinocytes and pigmented dermoscopic structures

		Intraepidermal keratinocytes		Total N.	<i>P</i> -valor	OR [IC 95%]
		Yes	No			
		N.	N.			
Maple leaf-like structures	Yes	7	10	17	<i>P</i> = 0,026	OR não definida
	No	0	8	8		
Radiated structures	Yes	2	3	5	<i>P</i> = 0,60	OR = 1,94 IC [0.13 – 22,90]
	No	5	13	20		
Concentric structures	Yes	3	8	11	<i>P</i> = 1,00	OR = 0,94 IC [0.10 – 7,50]
	No	4	10	14		
Dots / globules	Yes	5	7	12	<i>P</i> = 0,20	OR = 3,71 IC [0.45 – 49,36]
	No	2	11	13		

demonstrated that dermoscopic structures are related to tumor nests of basaloid cells at the dermal-epidermal junction.¹⁸ Nevertheless, more robust studies with a larger sample can establish a connection between other anatomopathological patterns and dermoscopy, as this study suggests.

CONCLUSION

Although considered a less aggressive variant, Superficial basal cell carcinoma has an increasing incidence and associat-

ed morbidity. This study showed a prevalence of this type of lesion in women and the head and neck. It can influence the choice of appropriate therapy for better clinical and aesthetic responses for patients. In this research, the presence of maple leaf-like structures was related to skin phototypes III and IV. These dermoscopic structures may be correlated with the presence of intraepidermal keratinocytes with pigment. Moreover, this study can be a basis for further prospective research to detail the specific characteristics of superficial basal cell carcinoma. ●


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Pigmented basal cell carcinoma in upper eyelid: a case report

Dermatoscopia do carcinoma basocelular pigmentado na pálpebra superior: relato de caso

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ABSTRACT

Basal cell carcinoma (BCC) is more common in the lower eyelid region when it affects the periorbital region. It occurs predominantly in men between 50–70 years and has a high recurrence rate. Although it rarely metastasizes, orbital invasion can occur. This study aims to present a case of pigmented BCC of unusual location. The location of BCC in the upper eyelid region is rare, and dermoscopy is essential to distinguish it from its primary differential diagnoses.

Keywords: Basal cell carcinoma; Dermoscopy; Eyelid Neoplasms

RESUMO

O carcinoma basocelular (CBC), quando acomete a região periorbicular, localiza-se mais comumente em região palpebral inferior. Ocorre predominantemente nos homens, entre 50-70 anos, apresenta alta taxa de recidiva, pode ocorrer invasão orbitária e raramente metastatiza-se. O objetivo deste trabalho é apresentar um caso de CBC pigmentado de localização incomum. A localização do CBC em região de pálpebra superior é rara, e a dermatoscopia é fundamental para identificá-lo e diferenciá-lo em relação a seus principais diagnósticos diferenciais.

Palavras-chave: Carcinoma Basocelular; Dermoscopia; Neoplasias Palpebrais

INTRODUCTION

Basal cell carcinoma (BCC) is a common malignant skin tumor, usually related to intense sun exposure. It accounts for about 90% of malignant eyelid tumors,^{1,2,3} being more common in the lower lid (over 50%). This tumor occurs predominantly in men, between 60–80 years.⁴ It presents slow growth, high recurrence rate (between 5% and 15%).⁴ Also, BCC rarely metastasizes, and orbital invasion can occur in approximately 2%. This study aims to present a case of pigmented BCC in an unusual location.

CASE REPORT

A 77-year-old man with Fitzpatrick skin phototype IV presented a blackened nodular lesion on the left upper eyelid. The lesion was approximately 4 mm (Figures 1 A and B) for six months and had slow and asymptomatic growth. Dermoscopy showed a big bluish ovoid nest, maple-leaf-like structures, and white-shiny area (Figures 2 A and B). Excision was performed, and the histopathology was compatible with nodular-pigmented basal cell carcinoma with numerous melanophages (Figure 3).

DISCUSSION

The presence of BCC in the upper eyelid region is rare. The pigmented variant is more common in higher phototypes because it has a large concentration of melanin.⁵

It is important to emphasize that dermoscopy is a helpful tool in identifying pigmented BCC and highly pigmented lesions that often confuse the diagnosis, such as melanoma and melanocytic nevus. The proposed treatments are similar to the BCC located in other areas, such as surgical excision, imiquimod, radiotherapy, and vismodegib.⁴

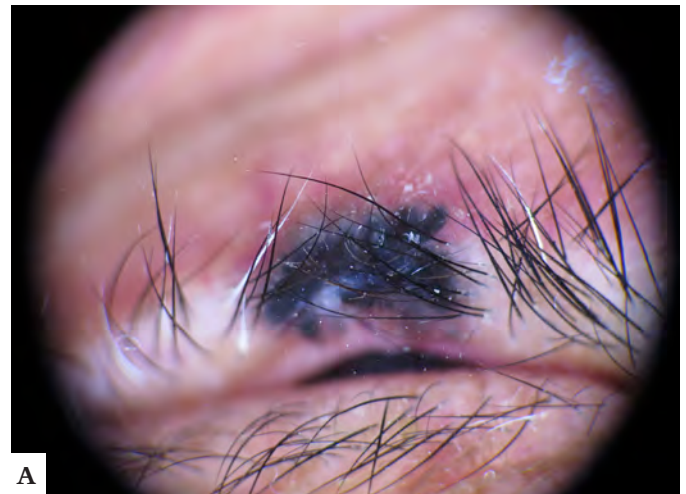


A

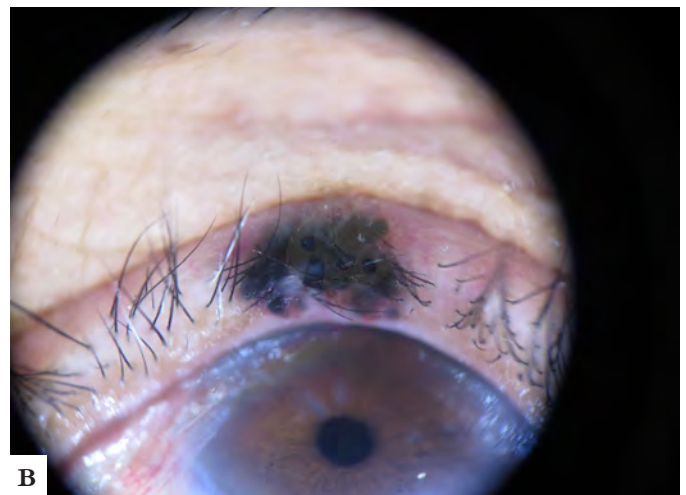


B

Figures 1 and 2: CLINICAL: blackened papular lesion in the upper left eyelid, approximately 4mm in its largest diameter



A



B

FIGURES 3 AND 4: DERMATOSCOPY: large bluish ovoid nest, gloved finger structures and bright white area

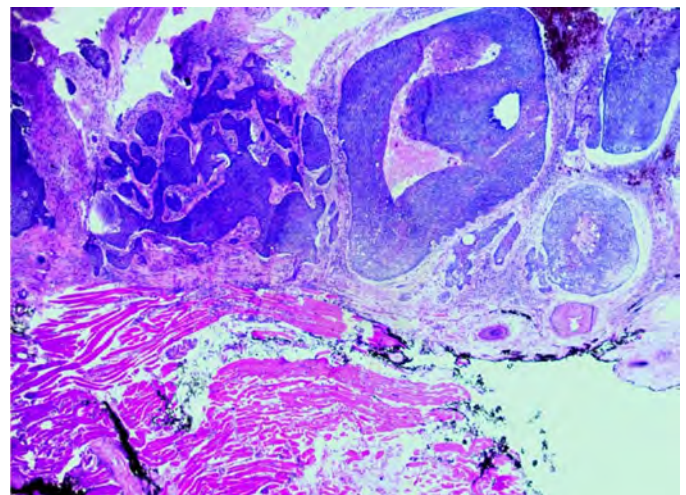


FIGURE 5: HISTOPATHOLOGICAL - compatible with nodular-pigmented basal cell carcinoma with numerous melanophages

CONCLUSION

It is worth mentioning that as dermatologists, we must always examine the entire patient, including assessing the most difficult areas to access. Dermoscopy in pigmented BCCs may present bluish ovoid nests, maple-leaf-like structures, and white-shiny areas. ●

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Dermoscopy of aneurysmal dermatofibroma: report of two cases

Dermatoscopia do dermatofibroma aneurismático: relato de dois casos

DOI: <https://www.dx.doi.org/10.5935/scd1984-8773.20201243608>

ABSTRACT

Aneurysmal dermatofibroma (DF) is a rare benign tumor originating in the dermis, considered a variant of dermatofibroma. It is more prevalent in women over 30 years of age, in the lower limbs. Its etiology is unknown and histopathological examination confirms the diagnosis. This study reports two cases of aneurysmal DF in young patients, both men, presenting similar lesions: single hyperchromic nodule, with approximately 1.5 cm and progressive growth. This report aims to demonstrate an uncommon variant of dermatofibroma and to highlight the possible differential diagnosis with other tumors through dermoscopic examination.

Keywords: Dermoscopy; Histiocytoma, Benign Fibrous; Dermatology

RESUMO

O dermatofibroma (DF) aneurismático é um tumor benigno raro, de origem na derme, considerado uma variante de dermatofibroma. É prevalente nos membros inferiores de mulheres acima de 30 anos. Sua etiologia é desconhecida, e o exame histopatológico confirma o diagnóstico. Este trabalho apresenta dois casos de DF aneurismático, em pacientes jovens, do sexo masculino, e com lesões semelhantes: nódulo hiperocrômico único, de aproximadamente 1,5cm e crescimento progressivo. O objetivo deste relato é demonstrar uma variante pouco frequente de dermatofibroma e ressaltar o possível diagnóstico diferencial com outros tumores por meio do exame dermatoscópico.

Palavras-chave: Dermosopia; Histiocitoma Fibroso Benigno; Dermatologia

BACKGROUND

Aneurysmal dermatofibroma (DF) is a benign tumor that originates in the dermis and represents less than 2% of dermatofibromas.¹⁻⁵ Its etiology is unknown, and it is more prevalent in women over 30 years old. Histopathology provides a definitive diagnosis.

DF is generally more extensive than the classic DF and has an erythematous-brown or violet color. It can be painful if the lesion grows rapidly. Dermoscopy can identify any of the patterns already known to classical DF. However, the features that will suggest an aneurysmal (DF) are the linear white patterns, vascular structures, and delicate pigmented network on the periphery.

Diagnostic imaging

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CASE REPORT

Case 1: A healthy, 25-year-old man presented with a hyperchromic, violaceous nodule, measuring an inch and a half, painful and with progressive growth. The nodule appeared for three years and had a positive dimple sign. Dermoscopy identified a delicate peripheral pigmented network, central wine-red, and bright-white areas (Figures 1 A and B).

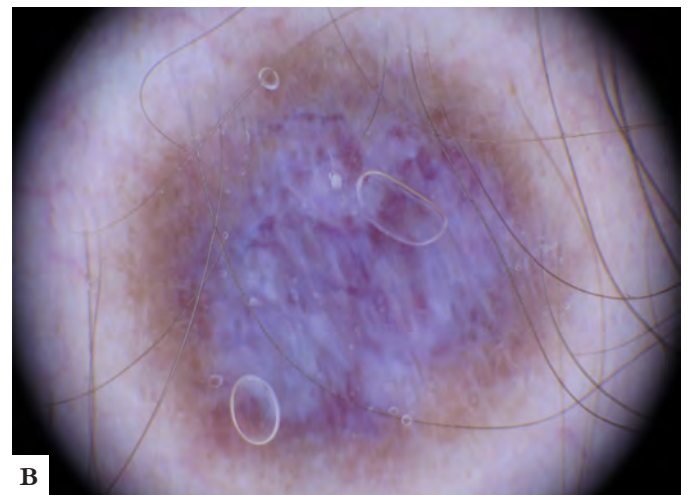
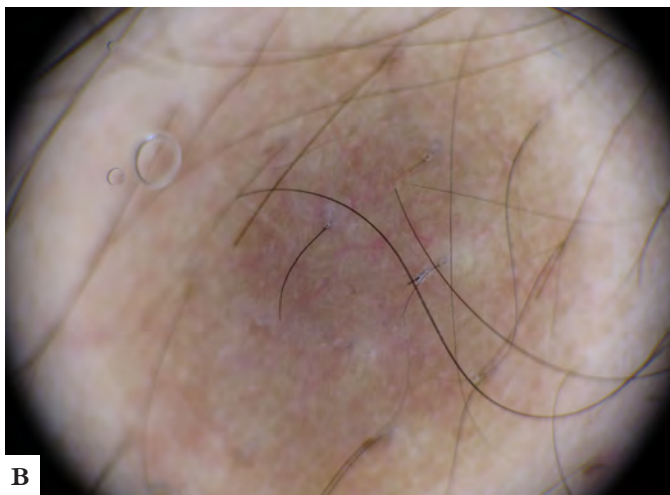
Case 2: A healthy man of similar age, complaining of an arm injury, with progressive increase and starting two years ago. On examination, he presented a pigmented nodular lesion, measuring 1cm in the right forearm. Dermoscopy showed a delicate peripheral pigment network, central erythematous brownish amorphous area, and pinkish branching vessels (Figures 2 A and B).

Histopathology of both cases showed acanthotic epidermis and hypercellularity in the center of the lesion, occupying the entire dermis up to the subcutaneous. It was forming a fibro-histiocytic neoplasm with the presence of giant cells containing

brownish pigmentation suggestive of hemosiderin. The exam also showed gaps without vascular endothelium containing red blood cells in its interior. We observed incarceration of preexisting collagen fibers by newly formed collagen on the periphery of the lesion (Figures 3 A and B).

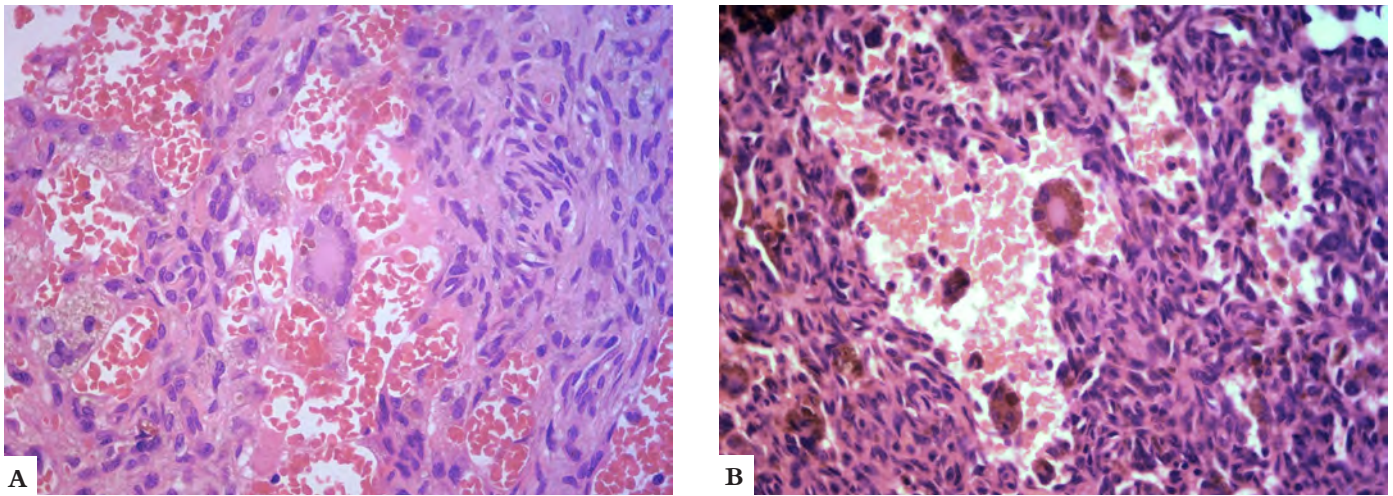
DISCUSSION AND CONCLUSION

The variants of the DFs are cellular, epithelioid, hemangiopericytoma, atrophic, fibrocollagenous, pseudosarcomatous, and aneurysmal.^{4,5} Aneurysmal DF is a benign tumor that originates in the dermis and represents less than 2% of DFs.¹⁻⁵



FIGURES 1: A and B - CASE 1: 1 cm brownish nodule. dermatoscopy: delicate peripheral pigmented network, brownish erythematous central amorphous area and branched pink vessels

FIGURES 2: A and B - Caso 2: nódulo acastanhado de 1,5 cm. dermatoscopia: delicada rede de pigmentos periféricos, área central vinho tinto e áreas brancas brilhantes



Figures 3: A and B - fibrohistiocytoid neoplasia, with giant cells containing brownish pigmentation suggestive of hemosiderin, fissures without vascular endothelium, containing red blood cells inside

Its etiology is unknown, although some authors suggest that local trauma triggers the onset. It is more prevalent in women over 30 and has a recurrence rate of 19% when excised.

Histopathology is essential for the definitive diagnosis and may show neof ormation composed of spindle-starred cells that preclude new fibrillar collagen, acanthosis, elongation of epidermal cones, multinucleated cells, and gaps containing red blood cells.⁶ Immunohistochemistry can help differentiate the most doubtful cases: aneurysmal DF is negative for S100, HMD45, and CD34.

Clinically, aneurysmal DF is generally larger than classic dermatofibroma, has an erythematous-brown or violet color, and can be painful when the lesion grows rapidly.⁸ As a differ-

ential clinical diagnosis, Kaposi's sarcoma, vascular tumors, and melanoma can be highlighted.⁷ Dermoscopy can identify white linear patterns, vascular structures, and a delicate pigmented network on the periphery. Thus, this subtype can have any of the features already known to classical DFs, such as pigmented network, white area, vascular structures, homogeneous region, white network, globule-like structures, and irregular crypts. However, what suggests aneurysmal DF is the central erythematous-wine color.⁸⁻¹⁰ Therefore, we can conclude that dermoscopy is a helping tool for the dermatologist to differentiate aneurysmal dermatofibroma from its possible differential diagnoses, especially with malignant tumors. ●

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Intralesional cryosurgery in benign vascular lesions: a good option for cherry angioma and hamartomas over port-wine stain

Criocirurgia intralesional em lesões vasculares benignas: boa opção para angioma rubi e hamartomas sobre mancha vinho do Porto

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ABSTRACT

Cryosurgery is a technique widely known and used among dermatologists. Intralesional application is already used to treat keloids and has the advantage of restricting the zone of action of low temperatures of liquid nitrogen. The use of contact cryosurgery in vascular lesions is well reported in the literature, but there are no intralesional technique publications on these types of lesions. Here, we report two cases, one of port-wine stain hamartomas in a 61-year-old patient and another of a cherry angioma in a 70-year-old patient, safely and satisfactorily treated with intralesional cryosurgery.

Keywords: Cryosurgery; Cryotherapy; Hamartoma; Hemangioma; Vascular malformations

RESUMO

A criocirurgia é uma técnica de vasto conhecimento e uso entre dermatologistas. A aplicação intralesional já é utilizada no tratamento de queloides e tem como vantagem restringir a zona de ação das baixas temperaturas do nitrogênio líquido. O uso da criocirurgia de contato em lesões vasculares é relatado, mas não há publicações sobre a técnica intralesional nesses tipos de lesões. Aqui, relatamos dois casos: 1- Hamartomas sobre mancha vinho do Porto em um paciente de 61 anos; e 2 - Angioma rubi em um paciente de 70 anos, ambos tratados de forma satisfatória e segura com criocirurgia intralesional.

Palavras-chave: Criocirurgia; Crioterapia; Hamartoma; Hemangioma; Mancha Vinho do Porto

INTRODUCTION

Vascular lesions are a reason for dermatological consultation for bleeding prevention or aesthetic motives. They can be congenital or acquired and are classified into tumors and malformations.^{1,2}

The port-wine stain (PWS) is a congenital vascular lesion presented as solid stains and unilateral plaques, with segmental distribution and demarcation in the midline. They can also present as small stains in any body region, varying in size, shape, and different shades of pink, red, and violet. In some cases, epithelial or mesenchymal hamartomas may develop over PWS.^{1,2}

Cherry angioma is a benign vascular lesion, acquired and extremely common, presenting as asymptomatic red papules, from 1 mm to 15 mm, usually on the trunk, arms, and head. They have slow growth and may be associated with advanc-

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ing age, diabetes, high temperatures, exposure to chemicals, liver transplantation, graft-versus-host disease, pregnancy, and climacteric.^{3,4}

We can mention pulsed dye laser, Nd-YAG laser, electro-surgery, surgical excision, and open probe or contact cryosurgery among vascular lesions treatments.^{2,5} There are no published reports of cutaneous vascular lesions treatment with intralesional cryosurgery.

Cryosurgery is a treatment modality that uses low temperatures of liquid nitrogen to achieve tissue effects. It causes cell membrane rupture because of the intracellular ice crystals formation, endothelial cell junctions damage, and blood stasis, producing microthrombi, vascular injury, and, finally, tissue necrosis.^{6,7} Its use in an intralesional form has been applied to hypertrophic scars and keloids.⁶⁻⁹ When liquid nitrogen passes through the needle, a lethal zone is created around the device inserted in the dermis. It differentiates intralesional cryotherapy from contact cryotherapy, which forms a lethal zone located mainly on the epidermis.⁷

This report aims to suggest intralesional cryosurgery as a therapeutic option for vascular lesions with a tumor component, reporting the method and the evolution of two cases: a hamartoma on a PWS and a cherry angioma.

METHODS

We used a similar technique in both cases. The lesions were subjected to antisepsis with 0.5% chlorhexidine digluconate alcohol solution and infiltrative local anesthesia with lidocaine 2% and epinephrine 1:200,000. Then, with an 18G (40x1.2mm) gauge disposable needle, the lesion was transfixed, and the cryosurgery device was coupled. To prevent the spray jet from causing damage to the patient or applying doctor, a shield, for example, a gauze, can be placed a few centimeters from the needle's piercing orifice. The freezing time was 30 to 60 seconds. Complete thawing was conducted, and the needle was removed. At this stage, compression for 5 to 10 minutes can easily control the bleeding.

The first patient was a 61-year-old man, smoker, who presented PWS in his right arm and forearm since birth. Approximately five years ago, asymptomatic tumors and erythematous-purple nodules of up to 1.3 cm appeared on the stain, causing discomfort with the friction of the clothes on the lesions. We selected three lesions for treatment with intralesional cryosurgery and submitted each one separately to a continuous freeze cycle of 30 seconds, awaiting the complete thawing of the lesion to remove the needle (60 to 70 seconds). An occlusive dressing, maintained for 24 hours, completed the procedure.

The second patient was a 70-year-old man, ex-smoker for 22 years, with controlled hypertension, who presented an erythematous-violaceous nodule of 1 cm in the right temporal region for four years. The lesion had slow growth and was asymptomatic but had a history of repeated trauma when combing the hair. After antisepsis and anesthesia, the lesion was transfixed, and then the cryosurgery device was attached. A continuous freeze cycle of 60 seconds was performed, and complete thawing of the lesion was awaited to remove the needle (190 seconds). After thawing, there was local bleeding, contained with compression for 5 minutes. An occlusive dressing, maintained for 24 hours, completed the procedure.

RESULTS

In the first patient, the lesions evolved with necrosis (Figure 1) and detachment approximately ten days after the procedure. The sites showed no pain or secondary infection. There was slight and minor residual hypochromia after complete healing (Figures 2A, B, C, and D).

In the second case, the lesion evolved with the formation of a slight crust after ten days and total healing in 20 days, with only a small residual hypochromic stain remaining on the site.



FIGURE 1: Necrosis of the lesion in the right forearm of the first patient, observed seven days after application of intralesional cryosurgery

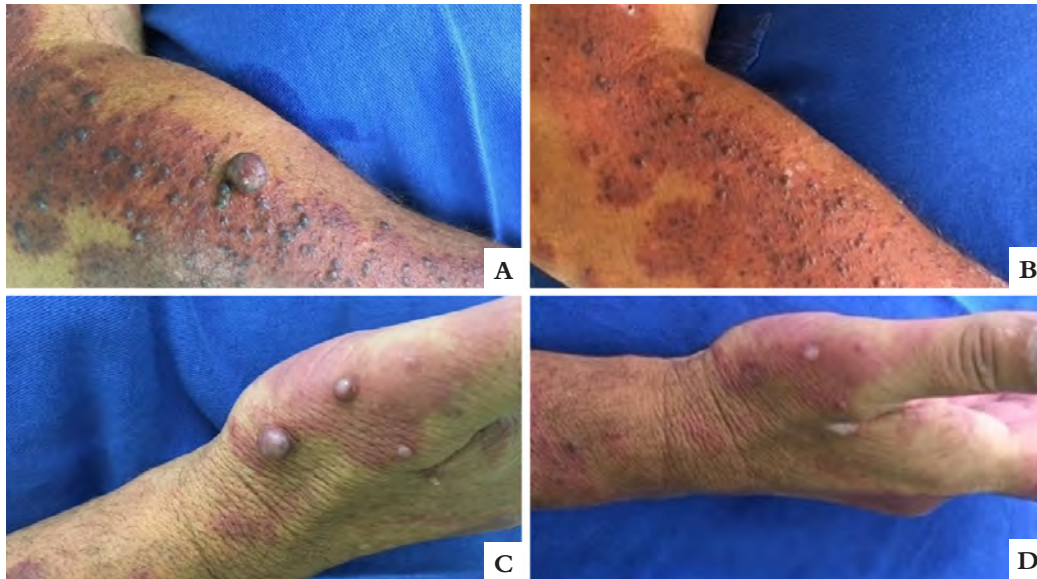


Figure 2: A - Lesion in the right forearm before application.
 B - Lesion in the right forearm 30 days after application.
 C - Lesion in the right hand before application.
 D - Lesion in the right hand 30 days after application

DISCUSSION

Cryosurgery is a simple, safe, inexpensive procedure that produces aesthetically acceptable results. It can be used to treat several benign, pre-malignant lesions and well-defined malignant tumors.⁵ Cold intolerance, Raynaud's disease or phenomenon, cold urticaria, cryoglobulinemia, pyoderma gangrenosum, autoimmune disorders, and active infections at the site are absolute contraindications for cryotherapy.⁵

Vascular lesions are susceptible to destruction by cryosurgery. The low temperature promotes vasoconstriction and stasis. From -15°C to -40°C , it can cause endothelial damage. With thawing, microthrombi formation, edema, erythema, and tissue necrosis occur. The mechanism of cell necrosis occurs by direct damage, through lower temperatures observed in the center of the lesion, and by indirect damage, through damage to blood vessels.⁵

The intralesional form of cryosurgery has already been described for keloid therapy, squamous cell carcinoma, and basal cell carcinoma.⁶⁻¹⁰ With this method, freezing is initiated at the core of the lesion and spreads to its surface. It contrasts with the contact or spray cryosurgery mechanism, which freezes the lesion from the skin surface. In the first weeks after treatment, there may be edema, mild to moderate local pain, blistering, and superficial necrosis.⁹

The advantage of this procedure is its speed, the possibility of conducting it under local anesthesia, excellent cost/benefit, easy care for the surgical wound, quick learning by the doctor, and great tolerability by the patient.^{7,10} Another advantage is the smaller scar area and less hypopigmentation generated with the intralesional method than contact cryotherapy.^{7,9,10}

As a disadvantage, the technique prevents histological confirmation in doubtful cases or those requiring verification of the surgical margin.⁹

CONCLUSION

In this report, we successfully applied intralesional cryosurgery to treat two types of vascular lesions: hamartomas on PWS and cherry angioma. After the procedures, there was edema and a halo of erythema in the first 48 hours, evolving with necrosis and darkening in the next seven to ten days. The detachment of the lesions occurred around the tenth day, with total healing between 20 and 30 days. Hypo or achromia and mild atrophy at the site were perceived sequelae.

The intralesional cryosurgery technique for vascular lesions treatment, such as those reported here, in addition to being simple, fast, and inexpensive, has good resolution, low risk, few scar sequelae, and aesthetically satisfactory results. ●


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Proposal of a new surgical technique to repair gauge earlobe defect

Nova proposta cirúrgica para reparação de lóbulo de orelha após o uso de alargador

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ABSTRACT

Earlobes deformities caused by adornments and ornaments are prevalent. The use of plugs and piercings in this topography generates a large partial cleft in the earlobes, which causes aesthetic and social damage when abandoning its use. The literature has already proposed several surgical techniques to correct defects in the earlobes. This case report describes a new, simple, and fast surgical approach, which had satisfactory aesthetic results in significant partial cleft cases: the adapted "L-plasty" technique.

Keywords: Acquired Ear Deformities; External Ear; Otolgic Surgical Procedures; Ambulatory Surgical Procedures

RESUMO

As deformidades nos lóbulos das orelhas causadas por adornos e ornamentos são muito comuns. O uso de alargadores e piercings nessa topografia gera uma fenda parcial de grandes dimensões, além do alongamento, o que causa prejuízo estético e social quando no abandono de seu uso. Várias técnicas cirúrgicas já foram propostas para a correção de defeitos nos lóbulos das orelhas. Nesse relato de caso, foi descrita uma nova abordagem cirúrgica, simples, rápida e com resultado estético satisfatório nos casos de fenda parcial de grandes dimensões: a técnica em "L" adaptada

Palavras-chave: Deformidades Adquiridas da Orelha; Orelha Externa; Procedimentos Cirúrgicos Otológicos; Procedimentos Cirúrgicos Ambulatoriais

INTRODUCTION

Deformities acquired in the ear lobe through the use of piercings, extenders, trauma, surgery, or aging are much more frequent than congenital ones, observed in 1:1500 births.¹ The acquired defects can be divided into partial or total cleft, when the lobe separates into two or three ends. The total cleft corrections are divided into two large groups: with or without preserving the earring orifice when a new orifice can be made after six months of healing.²

There are several techniques for reducing and correcting the earlobe, but most of them result in a scar on the anterior or inferior portion of the lobes.¹ Historically, different techniques have been proposed for auricular lobuloplasty. Miller first introduced simple wedge excision to reduce the earlobe in 1925.³

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In 1954, McLaren suggested a slight scarring of the gap edges and simple suturing of the margins. In 1961, Boo-chai⁴ proposed the excision of part of the cleft edges and suture below the original orifice. Pardue, in 1973, developed the technique of resection of the cleft edges, leaving a piece of skin on the upper portion of one side to constitute the orifice of the lobe. Despite trying to maintain the orifice, these two techniques favor the formation of a gap in the lower margin of the lobe.⁵

In 1975, Hamilton and La Rossa described a technique similar to Pardue's, associated with a Z-plasty in an attempt to minimize the formation of the notch. Argamasso, in 1978, reported a similar technique that left intact skin close to the original orifice and, in each half of the lobe, created two triangular details to suture them later.^{5,6} Harak, in 1982, proposed excision of tissue on the anterior surface of one of the edges, followed by excision of the same amount of tissue on the posterior surface of the other edge. This technique also does not preserve the lobe orifice.⁵ Kalimuthu et al. proposed the "V" flap technique, in which a "V" incision was made at the end of the lobe, followed by de-epidermization at the medial edge, and another "V" incision at the end of the lateral edge to fit after the suture.⁷ Fatah,⁸ in 1985, and Fearon & Cuadros,⁹ in 1990, presented the "L" flap technique, which again does not preserve the lobe orifice.⁵ At first, techniques that do not preserve the surroundings seem safer.²

This report proposes a new surgical technique that is simple to perform: the adapted "L-plasty" technique to correct lobes with significant defects, such as those caused by gauge ear-piercing use.

A 38-year-old man with no previous comorbidities reported using an ear reamer for about ten years. He decided to

abandon the ornament use and correct the defect for aesthetic and self-esteem reasons. There was no interest in using ornaments again in the short term.

After studying the defect, we noted that the lobe had a vertical elongation, requiring a reduction in this dimension for a more aesthetic result (Figure 1).

We performed the procedure on an outpatient basis using local anesthesia with infiltration of lidocaine 2% without vasoconstrictor in the ear lobes. An incision was made with a scalpel blade number 11, simultaneously in the anterior and posterior part of the lobe (Figure 2). The incision had a triangular shape around the defect caused by the gauge ear piercing, dividing the lobe into two halves (Figure 2). Then, we excised a fragment from the lower border of the proximal lobe half. The other intact half underwent a rotation of approximately 90° so that it would fit correctly in the space left by removing the quadrangular fragment (Figures 2 and 3). The suture was performed with 5-0 mononylon (Figure 4). Micropore tape was used for the primary dressing applied directly to the wound and secondary dressing with gauze fixed with micropore tape for replacement.

RESULTS

The primary dressing remained for seven days. The patient was reviewed on the 14th and 60th day after the operation (Figure 5).

As a final result, we observed a shortening of the lobes compared to the preoperative period, a small central scar, no gap in the area corresponding to the suture in the lower region of the lobe, a round shape, and a final natural appearance. The patient was satisfied with the outcome.



FIGURE 1: Preoperative: partial cleft and lobes with vertical elongation

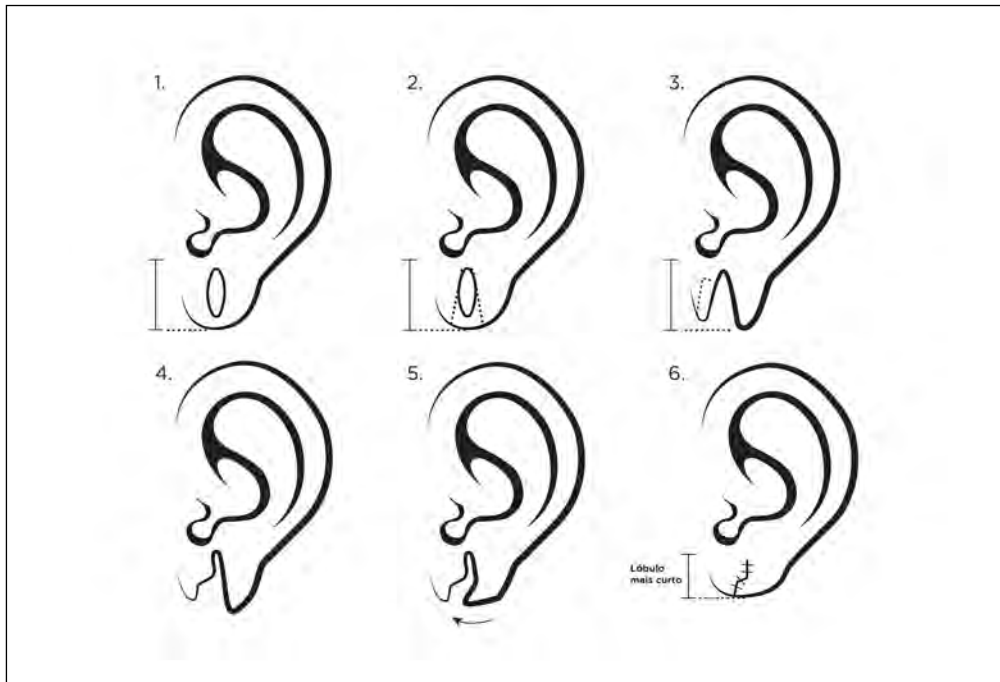


FIGURE 2: Schematic illustration of the adapted "L" technique:
 1. Lobe with partial cleft and vertical elongation.
 2. Triangular incision around the defect.
 3. Removal of a small rectangular fragment from the proximal half of the defect.
 4 and 5. Distal half pulled up and forward.
 6. After suturing and correction of the defect resulting in shortening of the lobe



FIGURE 3: Perioperative: final aspect of the defect after performing the adapted "L" technique

DISCUSSION

The earlobe is a crucial structure of the face, with several causes and/or changes requiring surgical correction.

Auricular lobuloplasty is performed to correct clefts in the earlobe, congenital deformities, aging, keloid formation, or auricular tumors.¹⁰ The satisfaction rate related to the results of lobuloplasty is about 92% to 100%.^{11,12} Good local vascularization allows the surgeon greater freedom in manipulating local tissues for making flaps and overlapping them, if necessary.¹³ The rate of

postoperative complications is low, around 0 to 33.3%. The reported complications were hypertrophic scar, depressed scar, wide scars, recurrence of the cleft, and surgical wound infections.^{14,15}

The use of ornaments and jewels in this topography has been traditional throughout the centuries and cultures. Currently, this trend continues. Also, a study showed that individuals with gauge ear-piercing deformities in the earlobes are more prone to negative image effects. These findings corroborate pa-



FIGURE 4: Immediate postoperative: simple suture with 5-0 mononylon



FIGURE 5: 2 months after the procedure

tients' motivation to seek correction for these conditions.¹⁶

Consequently, there is a high demand for specialized treatments for aesthetic earlobe correction.⁵

Many techniques have already been described, including direct suture, zeta-plasty, lobe correction rhytidoplasty, "V" flaps, "L" flaps, and others that use combined techniques or a variation of these, as in the case reported, which describes the adapted "L" technique.⁵

The lobe size and the cleft type should be considered when choosing the best surgical option: partial, typically bilateral and associated with the prolonged use of heavy ornaments, as in the case shown; and complete, usually unilateral, and occurs when the adornment is pulled abruptly.^{2,3} Given the existing surgical possibilities, the choice is generally for the technique that makes the lobe more similar to the original, with a rounded shape, no indentations or unevenness. If the orifice is performed,

it must be centered.²

In the case presented, we reported a modified technique for reducing and remodeling the earlobe. The L-plasty⁸ divides the lobe into two parts by an “L” incision in both the distal and proximal halves.

In the adapted “L” technique, the lobe was divided by a triangular incision around the defect, dividing it into two halves. A small quadrangular fragment was excised from the lower border of the proximal lobe half, and the other half remained intact. It was pulled upwards and forwards (Figure 2), resulting in a fit in the space left by removing the quadrangular fragment. This

maneuver reduces the vertical dimension of the previously elongated lobe.

In conclusion, we chose the adapted “L” technique due to the type of cleft presented (vertical lobe elongation). Also, it is a simple technique that presents less chance of recurrence, provides rapid correction of the primary defect, has discrete scarring, and a high probability of patient satisfaction. ●

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Standardization of the body vectoring technique with calcium hydroxyapatite

Padronização da aplicação corporal de hidroxiapatita de cálcio com a técnica de Figures vetorizadas

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ABSTRACT

Introduction: Calcium hydroxyapatite in a carboxymethylcellulose carrier gel presents unequivocal results for facial skin improvement, stimulating the collagen and elastin production. Regulatory agencies recently approved its use after scientific proof of its benefit in greater dilution.

Objective: This study aimed to demonstrate a technical standardization to rationalize body application. Methods: This study idealized vectorized figures to apply calcium hydroxyapatite with intermediate dilution (1:4).

Results and discussion: The proposed technique makes it possible to accurately calculate the required for each patient, depending on the anatomical unit's size to be treated and the region's topographic characteristics. This technique's rationale also allows homogeneous distribution, minimization of complications due to product accumulation, good tolerability by the patient and optimization of results.

Conclusions: The vectorized figures' technical simplicity facilitates calcium hydroxyapatite application, and customizations must be made with the injector's greatest experience.

Keywords: Collagen; Hydroxyapatites; Cosmetic techniques

RESUMO

Introdução: a hidroxiapatita de cálcio em gel carreador de carboximetilcelulose apresenta resultados inequívocos para a melhora cutânea facial, estimulando a produção de colágeno e elastina. Seu uso para tratamento corporal tornou-se on-label apenas recentemente, após comprovações científicas de seu benefício em maior diluição. O objetivo deste trabalho foi demonstrar uma padronização técnica para racionalização da aplicação corporal. Neste estudo foram idealizadas Figures vetorizadas para aplicação da hidroxiapatita de cálcio com diluição intermediária. Com a técnica proposta, é possível calcular, com exatidão, o volume de produto necessário para cada paciente em função do tamanho da unidade anatômica a ser tratada e das características topográficas da região. A racionalidade desta técnica permite ainda distribuição homogênea, minimização das complicações por acúmulo de produto, boa tolerabilidade pela paciente e otimização dos resultados.

Conclusões: a simplicidade técnica das Figures vetorizadas facilita a aplicação da hidroxiapatita de cálcio, e as customizações devem ser feitas com a maior experiência do injetor.

Palavras-chave: Colágeno; Hidroxiapatitas; Técnicas Cosméticas

INTRODUCTION

Skin aging is a complex and multifactorial process that develops with progressive thinning of the epidermis and dermis, in addition to subcutaneous tissue atrophy. Histologically, there is a reduction and disruption of elastic and collagen fibers leading to tone and elasticity loss and skin wrinkles.^{1,2,3} Some specific factors accelerate these phenomena, such as smoking and massive weight loss.⁴ Hyaluronic acid fillers significantly contribute to restoring these structures. However, they have a small biostimulating property for collagen and elastic fibers. In this flaccidity and fibroelastic disorganization context, there is a need for a product that is biocompatible, non-allergenic, safe, and that acts explicitly by stimulating these structures.

Radiesse® (Merz Pharmaceuticals, Germany) is a product that fulfills these requirements. It consists of a mixture of 30% calcium hydroxyapatite (CaHA) associated with 70% carboxymethyl cellulose (CMC) carrier gel, combining the biostimulatory capacity of the first component with the filling capacity of the latter. Once applied, this product has an initial volume of carboxymethyl cellulose, which can last for a few months, and is then replaced by the formation of collagen and elastin. Despite its widespread use on the face,⁶ it is recently indicated as a body biostimulator, limited mainly by the lack of data on the dose and dilution to be used to maintain the biostimulatory effects.^{5,6}

In 2015, Cogorno documented the flaccidity and thickness improvement of the skin of the abdomen, thighs, and arms with the application of Radiesse distributed with the vectorization technique.⁷ Several other scientific studies have proven its efficiency even with the product dilution. Histology confirmed the production of collagen and elastin, and ultrasonography established an increase in skin thickness. These data can be observed in arms,^{8,9} abdomen,⁹ hands,¹⁰ neck, and chest.¹¹

Based on these studies and the experts' experience, the global consensus on hyperdiluted Radiesse use was published in 2018, and the Brazilian consensus in the following year.^{12,13} By definition, hyperdiluted Radiesse is any dilution greater than 1:1. The recommended body dilution varies from 1:2 to 1:6, depending on the anatomical topography, flaccidity degree, local skin thickness, and injector experience.

Briefly, the thinner the skin of the place to be treated, the more diluted the product must be. Also, the more diluted the product is, its volumizing effect and the chance of nodule for-

mation will be less decreased. The consensus also allows the use of cannulas or needles. The body regions to be treated include arms, thighs, abdomen, buttocks, neck, chest, knees, and elbows.

Although studies and consensus facilitate the use of body Radiesse, there are many variables to be analyzed, such as topography, final product dose, and product distribution pattern, limiting its use mainly to the less experienced.

OBJECTIVE

This study aims to standardize a form of intermediate dilution of Radiesse for body use and use figures with vectors to calculate the final amount of diluted product needed for each area.

METHODS

Dilution

A Radiesse® syringe containing 1.5 ml of product is inserted in 6 ml of diluent, making a final volume of 7.5 ml. The diluent solution consists of 4.5 ml of saline and 1.5 ml of lidocaine (with or without vasoconstrictor) (Figure 1).

Lidocaine (1.5 ml) and saline (4.5 ml) are placed in a 10 ml syringe with luer lock. The solution receives Radiesse® (1.5 ml) using the three-way. Another 10 ml syringe is used for homogenization (reserve the original Radiesse® syringe for the application moment). The number of passes between the two 10 ml syringes is variable, enough to observe all the homogeneous material, which, on average, takes 10 to 20 back and forth movements.

At the application time, the original syringe with the product is used. With the dilution, we have five syringes of the diluted product.

Vectorized figures

This technique employs pre-patterned figures in vector format (asterisk and seven points) (Figure 2).

Application with a 5 cm long microcannula and 22 gauge needle is recommended. Each vector must be drawn with a 5 cm length, which is the length of the microcannula to be used. The application technique is linear retroinjection, in the justadermal plane. In each retroinjection, 0.2 ml of the diluted product will be deposited. The red circle is the entry hole of the

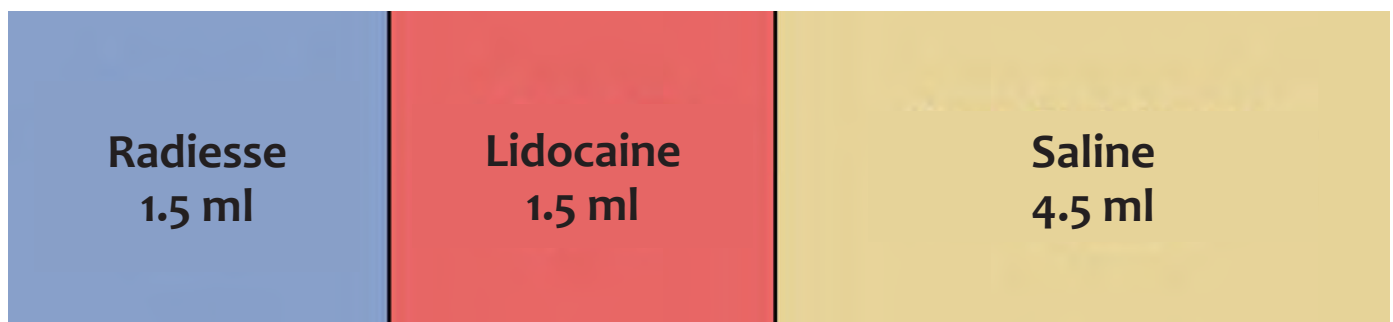


FIGURE 1: Figure 1: Dilution of Radiesse for body use (1:4)

microcannula and is not red by chance, as attention should be paid at the end of each retroinjection to avoid overpositioning the product in this area.

Therefore, on average, each of these figures would use 1.5 ml of the hyperdiluted Radiesse®; that is, with this standardized dilution, we can work with five vectorized figures in the body region to be treated. The choice between one and the other design must be based on the comfort of the hand for application to avoid bone shields or undesirable contacts with the stretcher, for example. For example, seven-point designs are usually more comfortable in the submental and neck, while the abdomen and buttocks are comfortable with both, as we will see below.

The region to be treated is marked with a pen, keeping in mind the drawings size and the dose used in each, and estimating the final quantity of product for the proposed treatment with total safety. It is imperative to have a homogeneous distribution of the product throughout the region to be treated, leaving no uncovered application areas. This protocol drastically reduces the chances of error in calculating the number of syringes needed for treatment.

This study used a female model with a medium body size by the Brazilian standards, measuring 1.68 m and weighing 65 kg of body weight (BMI = 23 kg/m²).

Post-procedure recommendations

At the end of the application, massage is performed, and it is recommended to continue it at home for seven days, twice a day. Massage helps to spread the product and prevents complications such as nodules. Nodules are rare in this dilution unless there is an overlap of product at some point due to technical error, being more common in the entrance orifice.

On average, three sessions are recommended at intervals of 30 to 60 days.

RESULTS

When conducting the application in this model, we observed:

1 – Abdomen

The overall treatment of the abdomen requires around nine to ten vectorized figures, that is, two Radiesse syringes in this dilution (Figure 3). As noted in the figure, it is worth mentioning that, in specific clinical situations, only the superior or inferior abdomen can be treated. In this situation, only a product syringe is required (five vectorized figures).

2- Buttocks

For global biostimulation of the gluteal region, five vectorized figures are required in each gluteus, demanding two syringes for bilateral treatment (Figure 4).

Thighs

Crural cutaneous flaccidity is quite variable between patients, but generally, it compromises the thigh root primarily and then the inner central region, as we can see in Figure 5. With this marking, we used five vectorized figures (one product syringe) across the thigh. These figures can be transposed to all sides of the patient’s thigh according to the clinical need.

Arms

Brachial flaccidity, like crural flaccidity, is highly variable. A large proportion of patients complain predominantly of their inner faces. When it happens, two to three vectorized figures are required per side; that is, in this situation, a syringe could treat both internal faces of the arms (Figure 6). Due to the heterogeneity of the flaccidity clinical presentation and the area size, there is often a demand for a syringe (five figures) per side.

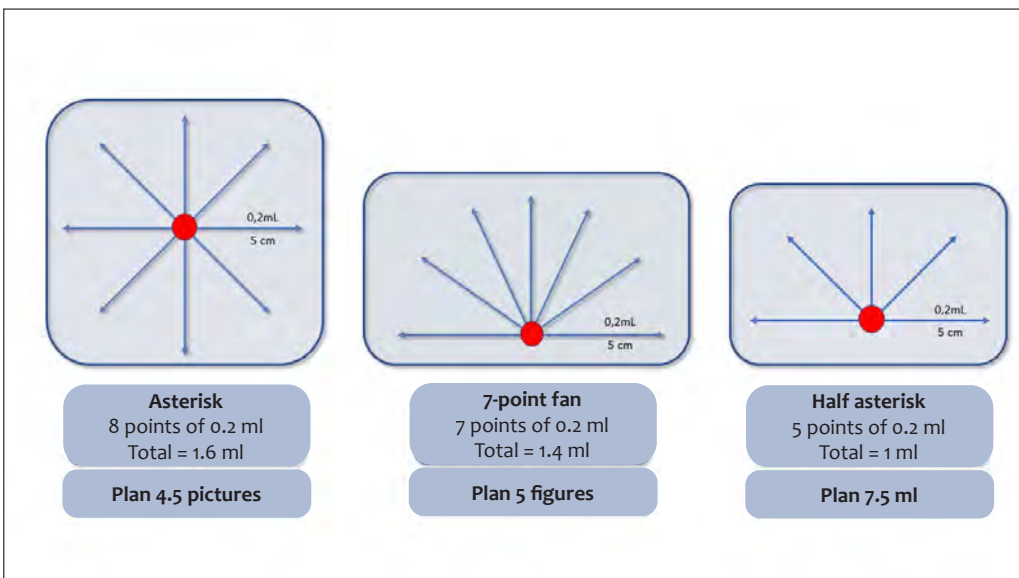


FIGURE 2: Vectorized figures in asterisk, fan of seven points and half asterisk. Attention to the length (5cm), number of vectors, and the volume injected in each vector (0.2ml). Observe the possible number of figures to be planned and the total volume of product used

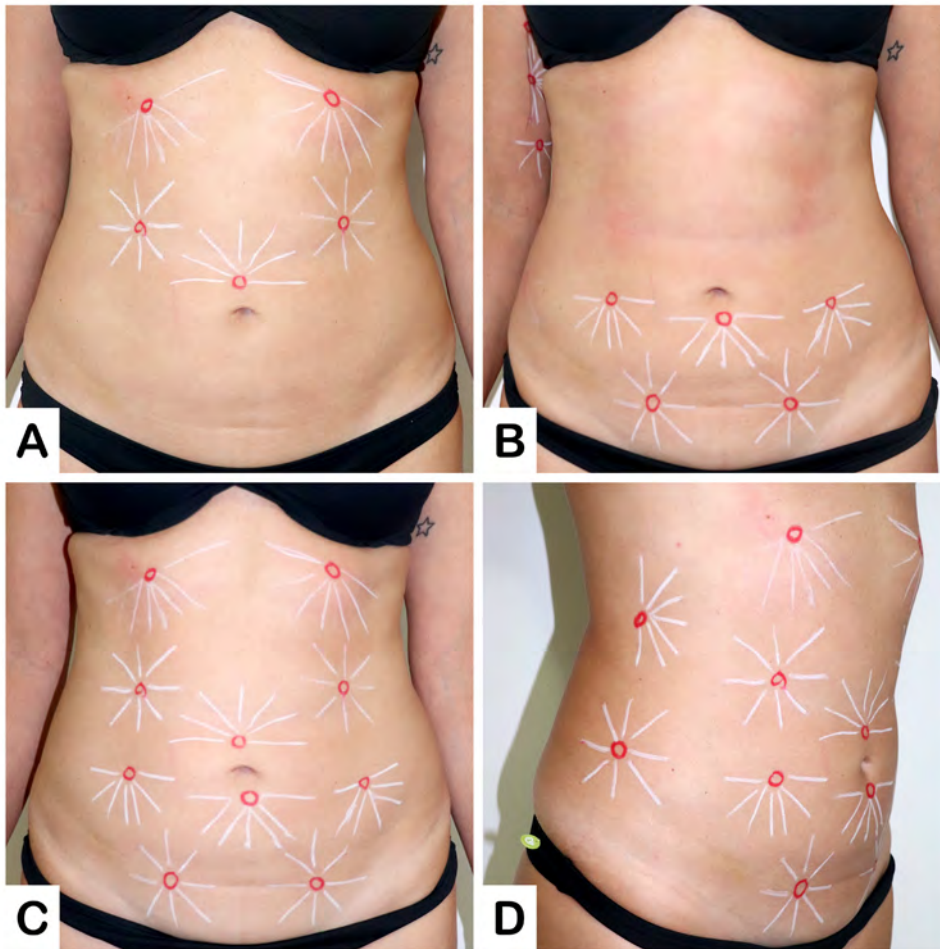


FIGURE 3: Abdominal treatment possibilities according to the patient's needs: upper abdomen (A), lower abdomen (B), upper and lower abdomen, (C) and abdomen associated with flanks (D)

Cervical

The cervical region is usually very comfortably treated with seven-pointed figures, with an average of five vectorized figures, as shown in Figure 7. Each cervical session, therefore, requires, in this technique, one Radial syringe.

Chest

The chest area usually treated is commonly not large, corresponding to the most exposed place in necklines. Therefore, no more than one syringe is needed in this technique. In Figure 8, three vectorized figures were sufficient to cover the area.

DISCUSSION

Radiesse® today must be categorized as a biostimulator. Its renowned and safe use on the face was a stimulating factor for its use in body treatment. The major concern would be the dose necessary to achieve the results of biostimulation without resorting to many syringes of product, making the indication financially unfeasible. Studies have shown that it keeps its ability to thicken the skin even when hyperdiluted, consequently improve the flaccidity. Thus, its use for this purpose started to be encouraged.^{8,9,10,11}



FIGURE 4: Global biostimulation of the gluteus with two asterisks and three figures of seven points



FIGURE 5: Demarcation of the inner side of the thigh with two figures with seven points and three subsequent asterisks

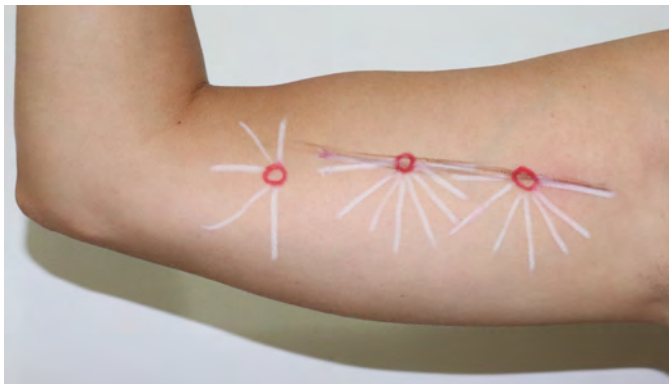


FIGURE 6: In this treatment, two figures with seven points were taken on the bicipital line, associated with the middle asterisk distally

The numerous possible dilutions and the various application techniques make the use for beginners confusing, mainly when calculating the number of syringes for a given area and how to distribute the application points. It is not uncommon to hear stories of injectors referring to the application asymmetrically or that the product was not enough for the entire target area, demonstrating that proper planning is essential for the success of any application.

The literature has not yet met the medical need for standardization. Hence, we conducted a body dilution protocol to meet the varied anatomical topographies and qualities of local skin. In this average dilution (1:4), studies show the biostimu-

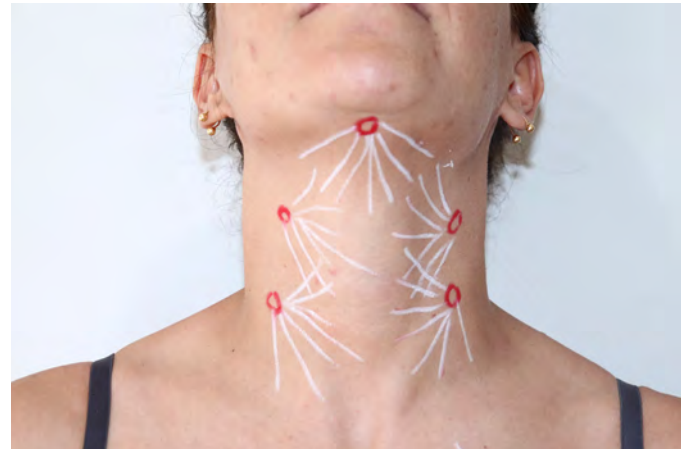


FIGURE 7: Demarcation of the cervical region with five figures with seven points



FIGURE 8: Demarcation of the neck region with a central asterisk and two adjacent figures with seven points

latory capacity and minimal or absent complications related to nodules formation.

Although studies indicate that a product syringe can treat a skin area between 100 to 300 cm², this information is confusing in practice. In contrast, this new standardization technique with vectorized figures facilitates pre-procedure marking and the final calculation of the exact amount of product needed specifically for each patient.

Interestingly, these data corroborate the Brazilian and worldwide consensus regarding the total dose per session for each anatomical unit. According to the consensus, on average, one product syringe per hemiabdomen would be needed. A syringe would also be enough to treat each face of the thigh, each gluteus, and the cervical region, which was consistent with our results. Although the consensus recommends one syringe for the neck and each arm, our results observed relative savings in the product in this technique. The great collaboration in this application form is the ability to presume with relative safety the final dose of product needed for that specific patient, based on the pre-procedure marking of the vectorized figures, remembering that each 1.5 ml syringe of Radiesse[®], in this technique, allowed to make up to five figures.

In addition to these benefits of rationalizing the quantity of product, the vectorized figures technique allows a homogeneous distribution of the product, preventing the treated areas from receiving different doses of hydroxyapatite and, consequently, precluding them from being unevenly stimulated.

Although the international and Brazilian consensus allow the use of needles or microcannulas for body treatment,^{12,13} this technique indicates the use of the second device. In addition to better safety,¹⁴ the retroinjection with microcannula is very comfortable for the patient. It is believed that, due to the rationality of the vectorized figures technique, the number of punctures is lower, not requiring an anesthetic block of the accesses. Consequently, pain tolerance to treatment becomes even higher.

All standardizations seek to bring simplicity and technical security, not necessarily being a rule. With the greatest professional experience, different forms of dilution and application can be chosen, based on anatomical topography and local skin thickness.

CONCLUSION

Applying body Radiesse[®] with vectorized figures is suitable for different body regions, providing safety and simplicity in executing and calculating the final dose of the product. ●

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Smart Mohs: Innovative technique in Mohs surgery

Smart Mohs: técnica inovadora em cirurgia de Mohs

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ABSTRACT

The tissue processing in Mohs surgery aims at histological slides that allow the analysis of 100% of the surgical margins. The embedding tissue is a critical step and prone to errors. As there is no standardization when mounting the blocks, there may be unevenness in the different samples cutting surfaces, leading to the need for continuous adjustments on the X-Y axis inside the cryostat, slowing down the process. A device was developed to solve this problem, minimizing any blocks inclination, keeping the surgical margins parallel in all samples, accelerating the process, and maintaining the histological slides high quality.

Keywords: Mohs micrographic surgery; Laboratory equipment; Histology; Tissue embedding; Innovation

RESUMO

O processamento tecidual em cirurgia de Mohs visa à confecção de lâminas histológicas que permitam a análise de 100% das margens cirúrgicas. É uma etapa crítica e passível de erros. Como não há padronização na montagem dos blocos, há desnivelamento das superfícies de corte das diferentes amostras, levando à necessidade de contínuos ajustes no eixo X-Y no interior do criostato, lentificando o processo. Visando à resolução desse problema, desenvolveu-se um dispositivo que minimiza quaisquer inclinações dos blocos, mantendo-se as margens cirúrgicas paralelas em todas as amostras, acelerando-se o processo e mantendo-se a alta qualidade das lâminas histológicas.

Palavras-chave: Cirurgia de Mohs; Equipamentos de laboratório; Histologia; Inclusão do tecido Inovação

INTRODUCTION

Mohs micrographic surgery is a thorough technique composed of different steps, making very high-quality histological slides, favoring a great histological control of the surgical margins.

Although minor modifications aimed at optimizing tissue processing have already been described, the concept of the original Mohs technique remains the same until today.¹ The surgeon needs to remove the tissue, to allow all peripheral margins to be flattened on a plane surface, making possible the histological analysis of 100% of the surgical margins.^{1,2} Thus, tissue excision is performed with the scalpel blade making a 45 degrees

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angle in relation to the skin surface, facilitating the inclination of the lateral tissue edges, allowing all margins to be relaxed and positioned in the same plane.³ After this step, the block is successively assembled for tissue embedding, microtomy, staining, histological slide assembly, and microscopic analysis.

Tissue embedding is technically dependent, corresponding to tissue freezing and block assembly, which co-occur. Usually, the tissue is flattened on a glass slide, and then a freezing gel is placed on the tissue that starts to freeze. A freezing pin chuck is positioned on the set manually. The gel serves as a “glue” joining the pin chuck to the tissue. It also solidifies into a single block, providing the necessary rigidity so that the surface containing the surgical margins (cut surface) can be sectioned uniformly in the cryostat (Figure 1 AB). Tissue inclusion aims to allow the microtomy of the cut surface uniformly inside the cryostat.³

Tissue embedding is a thorough and error-prone step, with three especially critical points: 1) Ability to keep the surgical margins uniformly flat, because if part of the tissue is lifted, it will not be visualized on the histological slide; 2) Capacity to keep the cut surface parallel to the pin chuck's surface, because when manually positioning the pin, small angles can cause misalignments and the block can be thinned asymmetrically, potentially causing a false positive (Figure 1 C, D). The correction of such misalignment requires adjustments to the X-Y axis in the cryostat, increasing the time spent on the procedure. Such a problem is critical when processing multiple samples. The lack of standardization in the assembly of the blocks requires adjustments between each processed block; 3) Capability to allow rapid freezing since slowing the freezing causes undesirable histological artifacts.^{2,3}

To minimize histotechnical errors and optimize tissue processing, the device in question, called SmartMohs®, was developed and patented.

METHOD

The device consists of two metal parts, a block with a flat surface and an opposite surface containing a circular depression for fitting a plastic mold. There are also four holes for the second metal part to fit perfectly with the first. There is a central hole in this second cross-shaped piece where the pin chuck fits (Figure 2 A-C). As aluminum has an excellent thermal capacity, the temperature remains low even outside the cryostat, allowing the block to be assembled outside the cryostat. The device can work in three different ways according to the operator's preference or the characteristics of the tissue sample to be included:

Working mode 1:

The tissue is flattened directly on the flat surface of a specific, circular, transparent plastic mold. In this technique, and in the glass slide technique, it is possible to view the bottom of the tissue, verifying if all surgical margins are placed on the flat surface of the mold. The mold is then positioned in its specific slot on the main part. The gel is placed on the tissue in the plastic mold. The secondary piece containing the pin chuck is fitted like a sandwich in the other piece. The four points of engagement

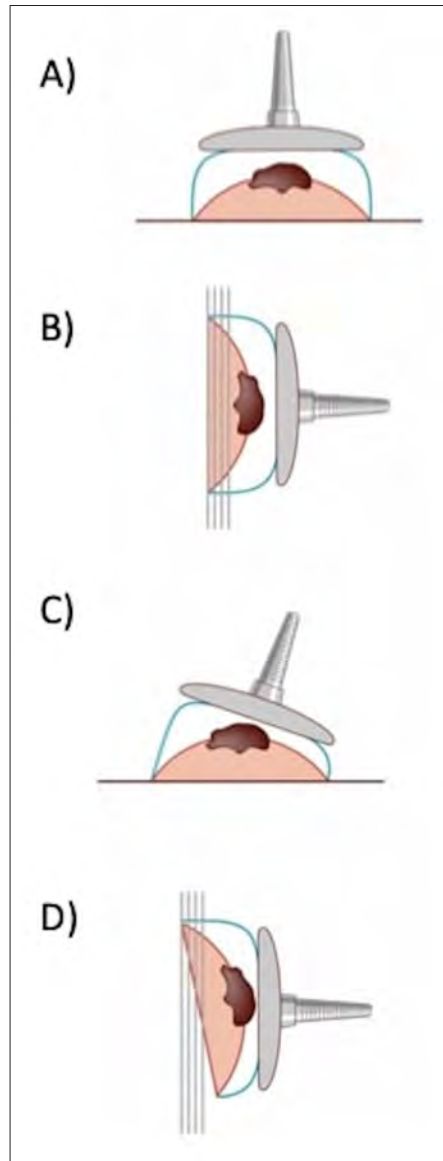


FIGURE 1: A - Block containing the sample perfectly flat on a flat surface; B - The block-pin chuck set is taken to the cryostat for microtomy, the alignment of the margins regarding the blade ensures uniform microtomy and good quality histological slides; C - Pin chuck misalignment regarding cutting surface; D - Misalignment can cause asymmetric thinning of the block and potentially cause a false positive, to avoid this it is necessary to adjust the X-Y axis in the cryostat.

between the two parts of the device allow an exact coupling, preventing any excess inclination of the pin chuck's surface concerning the flat surface of the metal block. Thus, there is rapid tissue freezing and diminishment of any unwanted pin chuck's inclination regarding the flat cut surface of the surgical margins. The plastic mold is then separated from the frozen block. The pin chuck containing the block is ready to be sectioned (microtomy) (Figure 3).

Working mode 2:

The tissue is flattened and frozen directly on the plane surface of the device. The circular groove is only used to delimit the work area. An amount of gel is placed on the sample. The

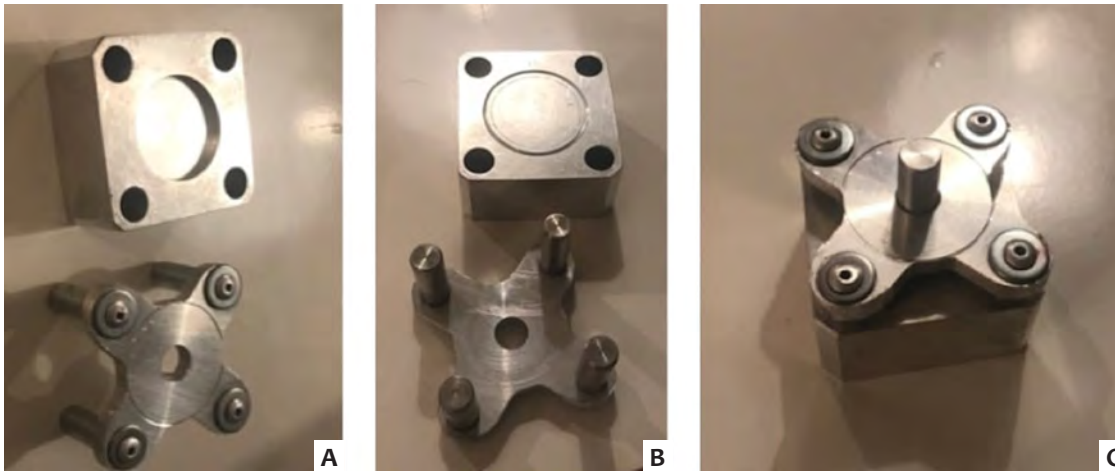


FIGURE 2: A - SmartMohs® prototype with its fitting for the plastic mold on one of the surfaces; B - On the opposite surface, flat area to directly flatten the sample; C - Perfect fit between the two pieces making a "sandwich" with the pin chuck

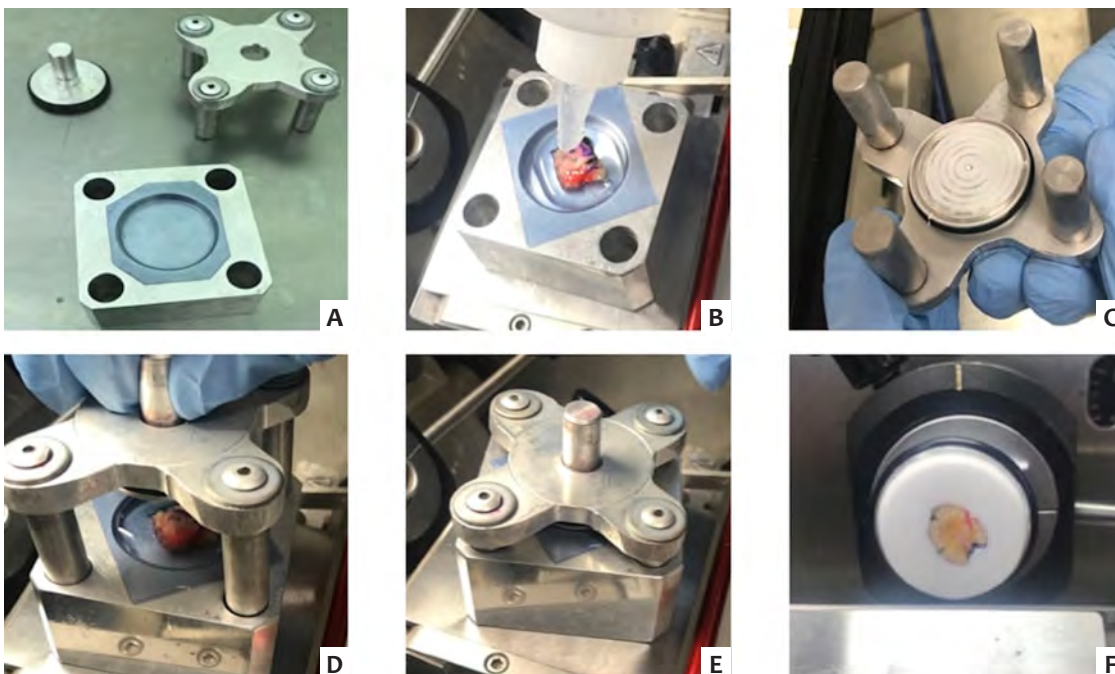


FIGURE 3: A - Working mode with plastic mold; B - Gel placed on the sample in the mold; C - Additional gel placed on the pin chuck; D - Alignment of the two pieces and the pin chuck E - Flattening of the sample; F - Sample with its uniform cut surface ready for microtomy

secondary piece containing the pin chuck is fitted like a sandwich in the first piece. The pin chuck with the block is frozen and separated from the device, ready for microtomy (Figure 4). This working mode is ideal for tissues that are thick, difficult to relax, or that contain cartilage since the flattening directly on the metallic surface, instantly freezes the tissue, keeping the edges flat and glued to the surface of the device.

Working mode 3:

This method is similar to the traditional one, but it allows better alignment and standardization in making the blocks. The tissue is flattened directly on the surface of a glass slide for histology. It allows the cut surface to be viewed due to the trans-

parency of the glass, making it possible to check the occurrence of bubbles and if the margins are perfectly flat. Then the blade containing the tissue is placed on the frozen surface of the main piece. The circular groove serves only as a guide for positioning the tissue within the limits of this circle. An amount of gel is placed on the sample. The secondary piece containing the pin chuck fits like a sandwich. The glass slide is detached from the frozen block, and the pin chuck containing it is separated from the device, being ready for the microtomy (Figure 5).

DISCUSSION

Due to the remarkable performance of SmartMohs® compared to conventional tissue embedding methods, the au-

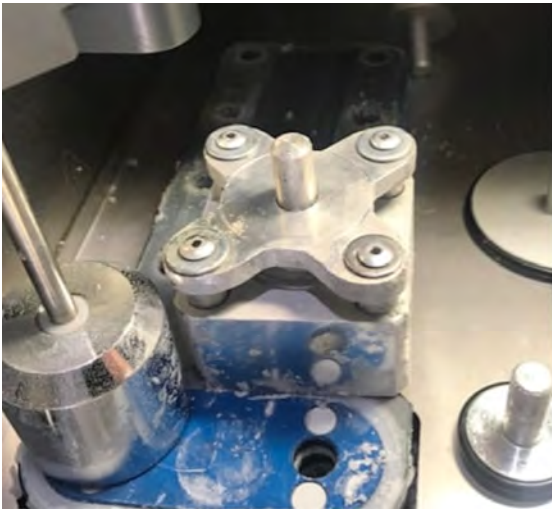


FIGURE 4: **A** - Working mode with direct flattening of the sample on the metal surface; **B** - The block ready to be detached and go to the microtomy

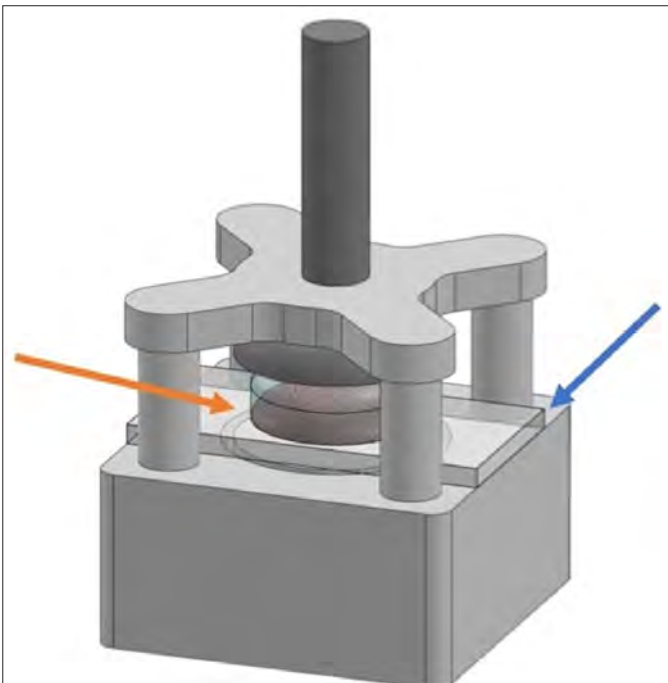


FIGURE 5: Instructions for use in conjunction with a glass slide for histology. In this method, the sample (orange arrow) is flattened directly on the glass slide (blue arrow) that fits perfectly between the two parts of the device, which flattens the sample together with pin chuck

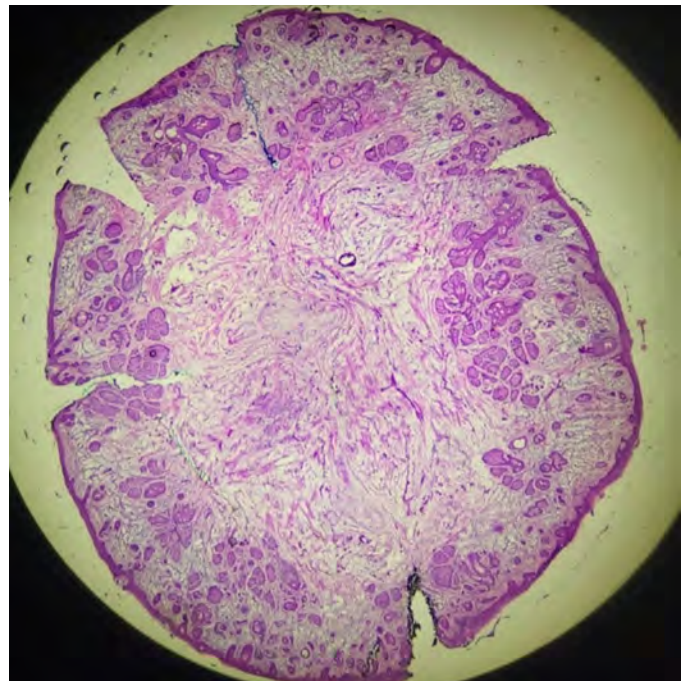


FIGURE 6: High quality of histological slide with 100% of surgical margins and the nicks

thor has adopted as a standard the use of this device, having treated 72 cases with the technique so far. Despite the limitation that there are no comparative studies, it is possible to notice advantages over other techniques immediately. With each of its three working modes, some benefits can be pointed out regarding the usual method of tissue embedding: (1) Maintenance of

a pattern in the inclination of the blocks, minimizing the need for adjustments in the cryostat between each processed sample, (2) Alignment of the cut surface, minimizing irregular thinning of the block, thus avoiding possible false positives (3) Time optimization, providing faster freezing and assembly of the block.

CONCLUSION

Although there are still no comparative studies of this method with other techniques of tissue embedding in Mohs surgery, the use of SmartMohs® can be an excellent option

to optimize the histological processing, providing faster speed, maintaining the high-quality of the histological sections (Figure 6). ●

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Atrophic scars treatment with subcutaneous insulin

Tratamento das cicatrizes atróficas com insulina subcutânea

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ABSTRACT

Atrophic acne scars are persistent and undesirable sequelae that have a negative cosmetic and psychosocial impact on patients. This issue becomes more delicate when such scars are located in the presternal region due to the risk of hypertrophic scars appearing when performing these procedures in the area. The literature has long recognized the role of insulin in promoting protein and fat synthesis. Insulin properties as a growth factor to treat these sequelae seems logical and has proved cosmetically satisfying, with quality of life improvement.

Keywords: Acne Vulgaris; Atrophy; Scar; Wound healing; Injections, subcutaneous; Insulin; Ambulatory surgical procedures; Quality of life; Tissue therapy

RESUMO

As cicatrizes atróficas de acne, sequelas persistentes, são indesejáveis e causam impacto negativo cosmético e psicossocial nos pacientes. A questão torna-se mais delicada quando tais cicatrizes localizam-se na região pré-esternal, pelo risco do surgimento de cicatrizes hipertróficas com a realização de procedimentos na região. O papel da insulina na promoção da síntese de proteínas e gorduras é, há muito tempo, reconhecido. A utilização de suas propriedades como fator de crescimento para tratar estas sequelas parece lógica e provou ser gratificante cosmeticamente, com melhora na qualidade de vida.

Palavras-chave: Acne vulgar; Atrofia; Cicatriz; Cicatrização; Injeções Subcutâneas; Insulinas; Procedimentos Cirúrgicos Ambulatoriais; Qualidade de Vida, Terapêutica

INTRODUCTION

Acne scars have a negative impact on the quality of life and lead to feelings of shame and low self-esteem.^{1,2} Destruction of the extracellular matrix (ECM) components at the beginning of acne lesions is a foundation for the resulting atrophic scars.³ Jacob *et al.* classified this pattern of scars into the three basic types: icepick (<2 mm, narrow scars that taper as they extend to the deep dermis), rolling (4–5 mm, the depressed scars with sloping and shallow edges), and boxcar (1.5–4 mm, round to oval depressions with markedly demarcated vertical limits).^{1,4} There are several treatments to mitigate these scars.^{1,3} However, the pre-sternal region presents a tendency to hypertrophic scarring,⁵ discouraging the aggressive approach. Few observations of subcutaneous insulin administration suggest a good response in atrophic scars.^{6–8}

CASE REPORT / METHODS

A 20-year-old man (ACC) with no morbidities presented rolling and boxcar atrophic acne scars. The scars were distensible and hypochromic in the pre-sternal region.

We divided the sternal region into two parts (upper and lower) and applied 5 units of NPH insulin, according to the protocol described in Figures 1 and 2. We observed petechiae, erythema, and edema after microneedling.

One week later, the treated area presented hyperemia and hyperchromia, in addition to partial improvement of some scars. Given the clinical improvement, we applied NPH insulin over the entire length of the lesion.

On each session, up to 15 units of NPH insulin were infused due to the extent of the lesions. Eleven sessions were held, with a weekly interval. There were no adverse events such as hypoglycemia or lipothymia.

The patient presented a satisfactory result, with improvement in atrophy, as showed in the follow-up photographs after seven months (Figures 3 and 4).

DISCUSSION

Insulin is a peptide hormone and growth factor with numerous physiological roles. In addition to the regulation of serum glucose levels, it plays a promoting role in wound healing.⁹ We know that its deficiency slows tissue repair. Burned patients submitted to its systemic administration evolve with lesion improvement, in part, by improving the local protein balance.¹⁰ However, systemic administration generates metabolic changes and imbalances (hypoglycemia and hypokalemia) that limits its use.¹⁰

Insulin topical administration has been described in animal models and clinical trials.¹¹⁻¹³ The local insulin application prevents systemic repercussions while maintaining its beneficial action on local healing. Liu *et al.* observed that insulin acts through its receptors, helping in the migration of keratinocytes in wounds without interaction with epidermal growth factor receptors.¹⁴ It is believed that the direct action on fibroblasts and keratinocytes, cells in which the presence of the insulin receptor has been identified, mediates its effect.⁹

Evidence from the literature suggests the role of insulin in regulating energy metabolism, protein synthesis, cell differentiation, and growth. Thus, its local injection promotes the granulation tissue's growth and development, with consequent healing.¹⁵⁻¹⁸

Insulin stimulates the incorporation of (3H) thymidine in the skin's fibroblasts, resulting in collagen synthesis.¹⁹ Topically, it accelerates wound healing in diabetes by improving the Protein Kinase B (AKT) and Extracellularly Regulated Kinase (ERK) pathways. It is assumed that insulin uses these two routes to increase repair.¹⁶ Upon connecting to the receptor, the intracellular tyrosines located in its b-subunits are phosphorylated and allow the Src 2 homology and collagen-A protein, found in the cytosol, to bind through the Src-2¹⁴ homology domains. The signal is transduced through a series of messenger molecules to activate Ras (a member of a large family of small molecular weight GTP binding proteins)¹⁶ and transmitted via Raf, MEK (members of the GTP binding protein family), and ERK.²⁰ It moves to the nucleus, where the cell receives the command to replicate DNA and multiply, with consequent tissue repair and wound healing.⁹ In the other pathway, the insulin receptor substrate 1 and 2 binds to it and transduces the signal via PI (3) kinase, PDK, and AKT. Such a reaction induces nitric oxide (NO) production, increased blood flow, cell survival, morphogenesis, and angiogenesis. The increase in phosphorylation of GSK-3 β (Glycogen Synthase Kinase-3 β) by AKT decreases its activity, which may be another mechanism to increase collagen production, reduce apoptosis, and accelerate wound closure.²¹

The insulin-like growth factor-1 (IGF-1) stimulates the production of an extracellular matrix component²² and induces the transformation factor-beta (TGF- β) in dermal fibroblasts, corroborating wound healing.^{23,24}

Collens first described the reversing diabetic lipotrophy technique by injecting the purest forms of insulin.²⁵ Insulin is an anabolic hormone in the metabolism of fats and proteins. Adipose tissue is exquisitely sensitive to insulin; minimal amounts can inhibit lipolysis⁶ and promote the synthesis of proteins and fats.⁷

Amroliwalla administered subcutaneous insulin injections and achieved complete post-vaccine atrophic scars regression.⁶ Likewise, Kalil-Gaspar *et al.* achieved complete lesions remission in lipotrophy inducing insulin and corticosteroids, respectively.⁷ Hallam *et al.* conducted a randomized controlled study to assess the potential of insulin as an anti-scar therapy, analyzing patients undergoing bilateral cosmetic breast operations. They observed that subcutaneous injections into scars reduced their appearance compared to placebo and suggested that the properties of insulin in lowering scars were more effective in individuals who were at risk of excessive or pathological scarring.⁸

Protocolo	Insulina NPH 100UI
<p>-Após antissepsia e marcação da região, aplicamos Insulina NPH 5 unidades diluída em 1 mL de soro fisiológico 0,9% nos planos dérmico e subdérmico, na metade superior.</p> <p>-Após anestesia infiltrativa de lidocaína 2% com vasoconstrictor, realizamos <u>microagulhamento</u> com caneta, através do manuseio por movimentos retílineos, na profundidade de 2,5 mm, com ponteira de 9 agulhas, na metade inferior.</p>	<p>0,01 ml/<u>ponto</u> intralesional (e <u>periférico</u>)</p> <p><u>repetidas vezes</u> (de acordo com o <u>tamanho da lesão</u>)</p> <p><u>qualquer intervalo</u> de tempo entre as <u>sessões</u></p>

FIGURE 1: Protocol used in the first session, when the patient underwent insulin intralesional infiltration in the upper part of the pre-sternal region and microneedling in the lower part; detail of the use of insulin in atrophic scars



FIGURE 2: Initial marking in two parts: upper (I) and lower (R) (they would be treated differently)

Faced with a very distressed patient presenting extensive boxcar and rolling scars in the pre-sternal region, insulin infiltration, a technique overlooked by many dermatologists, could benefit tissue recovery. The most significant advantage of the method would be the ease of finding the drug and its cost. Moreover, its major disadvantage would be the need to repeat the scheme for a long period. Our patient was treated with weekly intralesional infiltration sessions for three months. The studies of Amroliwalla⁶ and Kalil-Gaspar⁷, which maintained therapy with daily frequency and an average time of 90 days, indicated continuity for a longer period. However, the patient was a university student and would be hindered from attending the clinic in the coming months for academic reasons. After seven months (free of treatment), although there is great difficulty in photographic documentation (two-dimensional) of normochromic atrophic scars, the patient and the attending physicians observed genuine lesions improvement. Today's use of purer insulin forms can explain the maintenance of results without the long-term lipoatrophy produced by insulin in the past.

CONCLUSION

Insulin increases protein synthesis in the skin and stimulates the growth and development of different cell types. It also affects the proliferation, migration, and secretion of keratinocytes, endothelial cells, and fibroblasts.^{26,27} Therefore, it can correct keratinocyte proliferation blockade and replace excessively destroyed collagen, which would help recover some of the



FIGURE 3: Enlarged boxcar and rolling scars in the pre-sternal region, before and seven months after treatment, with partial improvement of atrophic scars




FIGURE 4: Scars in the pre-sternal region, closer image, before and after treatment

defects responsible for atrophic acne scars.³ It is interesting for wound care and scarring treatment, mainly because of its low cost compared to other growth factors and its universal availability. Further studies are needed to better understand insulin's role in wound healing and more precisely outline which individuals can benefit from anti-scar insulin therapy. ●

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Case Reports

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Basal cell carcinoma of the lower eyelid affecting the lacrimal canaliculus and reconstruction with transposition flap and oral mucosa graft

Carcinoma basocelular da pálpebra inferior com invasão do canalículo lacrimal e reconstrução com retalho de transposição e enxertia de mucosa oral

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ABSTRACT

The lower eyelid is one of the sites most affected by basal cell carcinoma (BCC). We present an option of inner corner skin flap with oral mucosa graft for eyelid reconstruction after BCC excision. This tumor affects approximately 60% of the lower eyelid and shows complete lower lacrimal canaliculus involvement. The use of internal corner skin transposition flap and oral mucosa graft is safe. The technique is reproducible and with good postoperative evolution. Positioning and eyelid movement were restored, allowing tear drainage through the upper canaliculus with complete correction of the tears' overflow (epiphora).

Keywords: Basal cell carcinoma; Skin Neoplasms; Dermatological Surgical Procedures; Surgical Flaps

RESUMO

A pálpebra inferior é uma das regiões mais acometidas pelo carcinoma basocelular (CBC). Apresentamos uma opção de retalho da pele do canto interno com enxerto de mucosa oral para reconstrução palpebral após exérese de CBC acometendo aproximadamente 60% da pálpebra inferior e com comprometimento completo pelo tumor do canalículo lacrimal inferior. A utilização do retalho de transposição de pele do canto interno e enxertia de mucosa oral é segura. Apresentamos uma técnica reproduzível e com boa evolução no pós-operatório. O posicionamento e a movimentação palpebral foram restabelecidos, permitindo a drenagem da lágrima pelo canalículo superior com correção da epífora.

Palavras-chave: Carcinoma Basocelular; Neoplasias Cutâneas; Procedimentos Cirúrgicos Dermatológicos; Retalhos Cirúrgicos

INTRODUCTION

Eyelids are the preferred site of involvement of 5% to 10% of all skin tumors. Basal cell carcinoma (BCC) is the most prevalent palpebral malignant tumor, followed by epidermoid cancers, sebaceous gland carcinomas, and melanomas.¹ BCC primarily affects the lower eyelid, with 70% of prevalence, followed by medial corner 20%, upper eyelid 7%, and lateral corner 3%.¹⁻²

The eyelid skin is the thinnest one of the body, with virtually no subcutaneous tissue. It has an internal conjunctiva lining, which allows eyelid movement with minimal friction. Dense bands of thick connective tissue named tarsus, whose function is to support the eyelids, reinforce them. Three lamellae constitute

the lower eyelid: the anterior, consisting of skin and orbicularis muscle; the middle, composed of the orbital septum; and the posterior, comprising the tarsus, palpebral fascia, and conjunctiva. The septum originates in the marginal arc along the orbital border separating the anterior from the posterior lamellae.³⁻⁴

The eyelids hold essential functions for the integrity of ocular viability, such as cornea and eyeball mechanical protection, humidification, oxygen, and nutrients transport by tear movement, foreign substances removal, and protection against excessive light.³⁻⁴ These functional aspects should be prioritized in a palpebral reconstruction, valuing the aesthetic features. The dermatological surgeon should be aware of the anatomy and physiology of the region for adequate reconstruction programming.

We present the option of a skin flap in the inner corner with an oral mucosa graft for eyelid reconstruction after BCC excision affecting approximately 60% of the lower eyelid and showing the tumor's complete involvement of the inferior lacrimal canaliculus.

CLINICAL CASE

A 68-year-old man reported a lesion on the lower eyelid for about a year, with slow and progressive growth, referring to symptomatic tearing (epiphora). The examination revealed a translucent normochromic nodular lesion with well-defined borders, affecting the proximal third and part of the middle third of the lower eyelid (Figures 1A and 1B). Ophthalmologic evaluation using the Monier fluorescein eye stain test showed involvement and total destruction of the inferior canaliculus. We performed aseptis, antisepsis, lesion marking, and anesthesia with tumescent solution. An incision was made with complete removal of the lesion (with margins of 3 mm to 4 mm, creating a primary surgical defect occupying 60% to 70%) of the lower eyelid (Figure 2). We performed another incision of skin and

subcutaneous cellular tissue and part of the orbicularis muscle of the inner corner of the eye to make the transposition flap. In the same operative act, the cheek mucosa was incised and sutured on the internal surface of the musculocutaneous flap. Laterality was used to fill the area of the surgical defect (Figure 3), with the flap positioned and sutured by planes (Figure 4).

DISCUSSION

The treatment goal of malignant tumors is complete surgical excision of the tumor. Surgical reconstruction of large eyelid defects is a complex process that relies on the extent of tissue loss, location, and experience of the surgeon. Full-thickness eyelid defects are divided into small (margin involvement less than one-third of the eyelid size); moderate (involvement between one-third and one-half of the eyelid); and large (margin involvement more extensive than half of the eyelid size). The direct primary closure of the eyelid is a possible option in defects of total thickness up to one-third of its horizontal extension. However, major defects require the reconstruction with cutaneous flaps associated or not with grafts. The literature describes several options: advancement; Transposition; Mustardé and McGregor; Fricke,² Landolt-Hughes, Dutupuy-Dutemp-Hughes, and interpolation (utilizes skin and mucosa from the upper eyelid); Abbe.⁵

The cartilage graft is usually indicated for defects occupying more than 50% of the lower eyelid or total palpebral resections. However, in our case, we believe that an exact musculocutaneous flap for the filled region with perfect coaptation of the palpebral margins would be sufficient for the ideal functioning of the superior lacrimal duct. It would also correct the epiphora presented by the patient. The graft of the oral mucosa has the function of replacing the posterior lamellae in the palpebral reconstruction. In this case, we chose the cheek over the palate mucosa because it is easier to access and has a lower com-

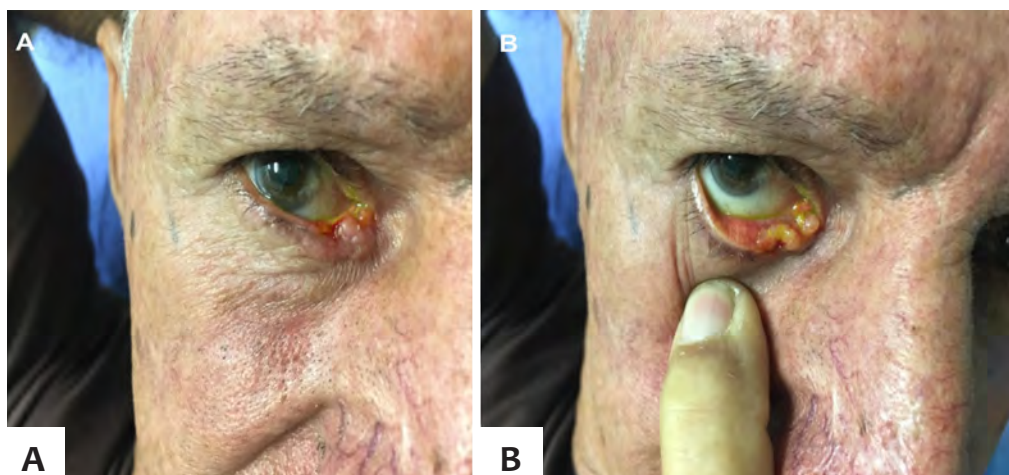


FIGURE 1: A and B - External and internal lesion view
A translucent normochromic pearly nodular lesion with well-defined borders affecting the medial third and part of the middle third of the lower eyelid, the tarsus, and adjacent conjunctiva with external (A) and internal (B) vision



FIGURE 2: Raw area. Primary surgical defect corresponding to about 60% of the lower eyelid



FIGURE 4: Flap sutured by planes. Suture of the flap and donor area



FIGURE 3: Transposition flap positioning. Transposition flap positioned to fill the primary defect site



FIGURE 5: Postoperative. Appearance 4 months postoperatively

plication rate when compared to a palate graft, whose hemorrhage and oronasal fistulas are feared complications.⁴

Surgical excision is considered the most effective therapy for basal cell carcinomas, with cure rates ranging between 95% and 98%. In our case, the tumor was well delimited, which facilitated the surgical removal. The material was sent to histopathology, confirming the complete removal of the tumor.⁶ Also, removing the lesion in a block and assessing the lateral margins eased the pathology.

Using skin transposition flap from the inner corner and oral mucosa graft is safe, with little morbidity in the donor area, resulting in maintenance of functionality and preservation of the aesthetic aspect, with rapid postoperative recovery. We present a reproducible technique capable of restoring the eyelid anatomy (Figure 5), with good postoperative evolution, with no ectropion, retraction, or anatomical distortions. Eyelid positioning and movement were restored, as well as the perfect occlusion of the eyelid cleft, allowing the drainage of the tear through the superior canaliculus with complete correction of tearing (epiphora). ●


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Basosquamous carcinoma in lower eyelid: reconstruction with auricular cartilage graft associated with the Tripier flap after Mohs surgery

Carcinoma basoesquamoso na pálpebra inferior: reconstrução com enxerto de cartilagem auricular associado ao retalho de Tripier após cirurgia de Mohs

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ABSTRACT

Basosquamous carcinoma has a high potential for local recurrence and metastasis, especially when it recurs and at the periocular area. A 49-year-old man underwent Mohs micrographic surgery and subtotal reconstruction of the lower eyelid with cartilage graft from the helix of the ear associated with the Tripier flap, evolving with excellent functional and aesthetic results.

Keywords: Basosquamous carcinoma; Eyelid Neoplasms; Mohs surgery; Skin Neoplasms

RESUMO

O carcinoma basoesquamoso tem alto potencial de recorrência local e metástase, especialmente quando recidivado e na localização periocular. Um paciente masculino de 49 anos foi submetido a cirurgia micrográfica de Mohs e reconstrução subtotal da pálpebra inferior com enxerto de cartilagem da hélice da orelha associado ao retalho de Tripier, evoluindo com ótimo resultado funcional e estético.

Palavras-chave: Carcinoma Basoesquamoso; Cirurgia de Mohs; Neoplasias Cutâneas; Neoplasias Palpebrais

INTRODUCTION

The eyelids contain numerous histological elements that can be the source of benign and malignant tumors. They are composed of four layers: skin and orbicularis muscle (anterior lamella), tarsus and conjunctiva (posterior lamella). The skin is composed of epidermis, dermis, and its attachments. Among the annexes, we find the eccrine glands (sweat and accessory lacrimal glands of Wolfring and Krause), apocrine glands of Moll, and sebaceous glands (Zeiss and Meibomian). Most tumors in this location have an epidermal origin. In Caucasians, basal cell carcinoma (BCC) is responsible for about 90% of palpable cancers, followed by squamous cell (SCC) and sebaceous carcinomas, responsible for 5% of cases each.¹

Basosquamous carcinoma (BSC), or metatypical, clinically indistinguishable from BCC, represents about 2% of non-melanoma skin cancers and can be more aggressive than SCC (local recurrence of up to 45% and distant metastases of 5-10%). It usually occurs in the head and neck of older white men. Histologically, typical areas of BCC and SCC are observed, in addition to a transition zone between them.^{2,3}

Mohs micrographic surgery (MMS) allows complete removal of malignant skin tumors while maximizing the preservation of normal tissue. This technique provides the lowest recurrence rate and postoperative complications in the treatment of skin cancer. MMS success derives from obtaining circumferential intraoperative frozen sections with a complete assessment of the lateral and deep surgical margins. Eyelid tumors are at high risk for recurrence and metastasis, but MMS can minimize it. Complete resection of peri-tumoral tumors is crucial because recurrence can lead to devastating consequences, including loss of eye function, invasion of the skull base, and even death. A complete ophthalmological evaluation is recommended preoperatively. Some signs, such as adherence to deep planes, decreased ocular motility, dystrophy, eyeball displacement, eyelid ptosis and proptosis, suggest better investigation with image exams to establish compression or periorbital invasion. A retrospective study of two centers showed that the overall complication rate after repairing the periorbital defect by Mohs surgeons were equivalent, if not lower, to the complication rates in procedures performed by oculoplastic surgeons.^{4,5} MMS is the gold standard in BSC treatment.³ About 1/3 of the cases require more than one phase, with approximately 5% of local recurrence.⁶

CASE REPORT

A 49-year-old man, skin phototype II, with no comorbidities, presented a lesion affecting the right lower ciliary border (from the lateral extremity to near the lower lacrimal point). Clinical and dermoscopy exams suggested basal cell carcinoma (Figure 1). The patient reported treatment (unspecified) of a minor lesion in the same site for seven years with an ophthalmologist.

The histopathological examination of a previous incisional biopsy concluded that it was a solid basal cell carcinoma. Surgical treatment using the Mohs technique was proposed, and the patient was submitted to local anesthesia and conscious intraoperative sedation in a hospital surgical center.

The clinically visible lesion was excised with a margin of more than 2 mm in the first phase (Figure 2). Microscopic examination revealed nodular basal cell carcinoma and poorly differentiated squamous cell carcinoma areas, significantly compromising the resection's deep margin. The next phase obtained free margins, although with an intense inflammatory infiltrate. Though indicated, a new stage was not performed due to the coincidence of the deep margin with the fornix and the bulbar conjunctiva, making it impossible to enlarge the surgery site without damaging the eyeball (Figure 3).

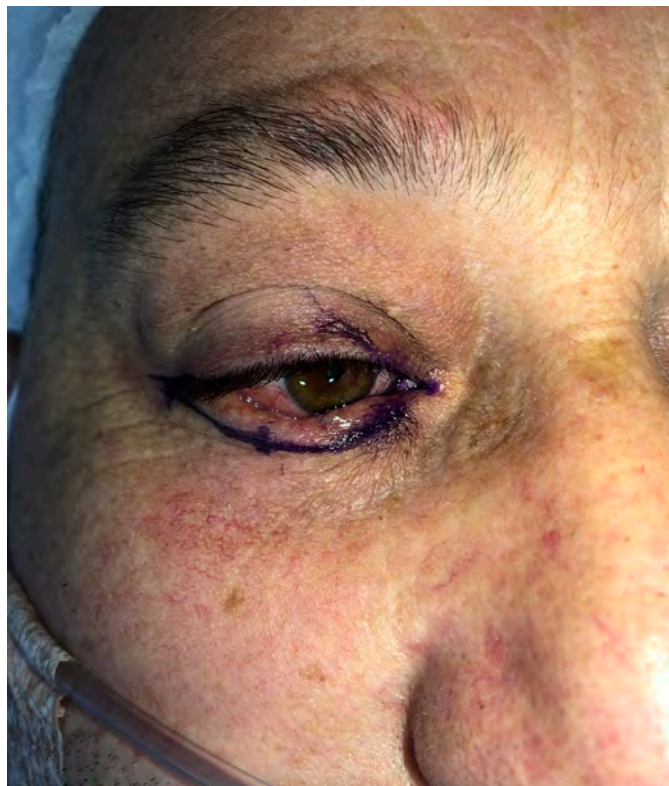


FIGURE 1: Infiltrated lesion, with rounded, pearly, telangiectatic, and focal scar surface involving the lower right palpebral border, with ciliary loss



FIGURE 2: Defect after excision of the first phase of Mohs surgery, with a surgical piece on the gauze

We chose a chondro-perichondrial graft of the ear helix (Figure 4) and a bipediced myocutaneous flap (Tripier) - from the upper eyelid to the anterior lamella - to reconstruct the posterior lamella, promoting vascular support to the graft (Figure 5). After lateral canthotomy, the graft was sutured in the periosteum of the lateral corner (with 5-0 nylon), in the remnant of the medial tarsus, and the lower eyelid retractor muscle (with 7-0 polypropylene) (Figure 6). The flap was sutured on the upper edge of the graft (with 7-0 polypropylene) and the remaining anterior lamella (with 6.0 nylon, in two layers). The donor area was sutured with 6-0 nylon (Figure 7). After 30 days, the flap reached autonomization (Figure 8).

The conventional paraffin histopathological examination of the residual surgical specimen confirmed the diagnosis of basosquamous or metatypical carcinoma. The patient had an excellent aesthetic and functional result on the reconstructed eyelid, with no complications or abnormal healing of the graft donor area. The patient is undergoing dermatological and ophthalmological follow-up.

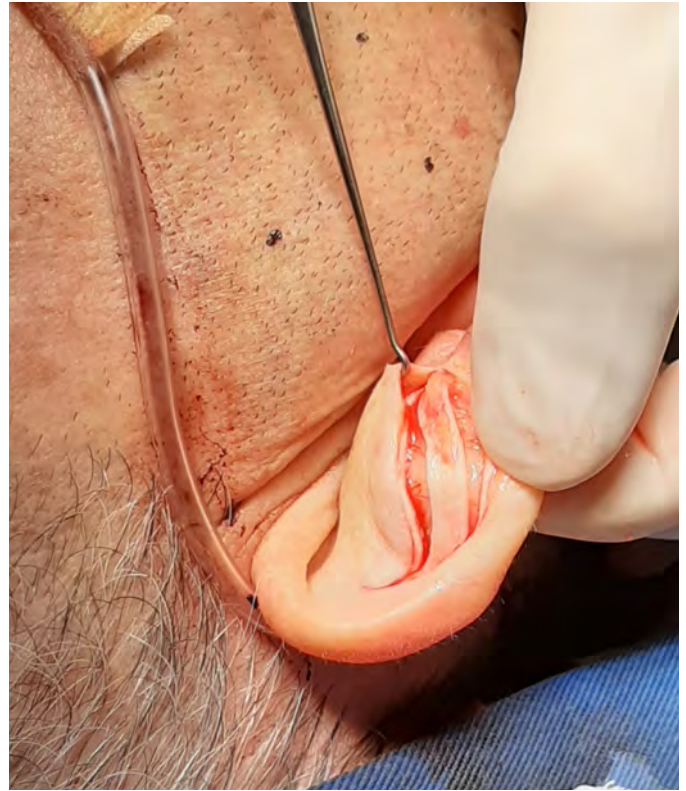


FIGURE 4: Ear cartilage fragment obtained for grafting



FIGURE 3: Final defect after excision of the second phase of Mohs surgery

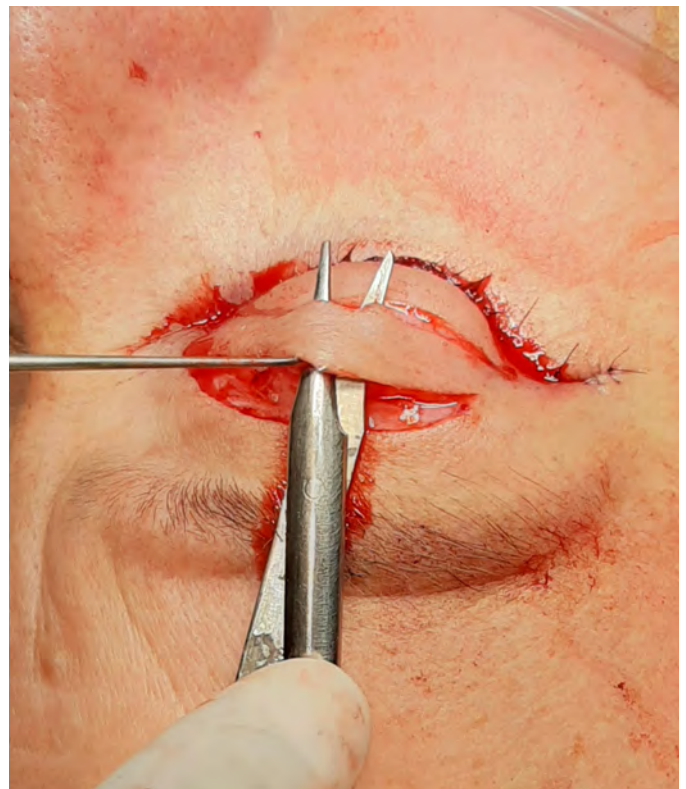


FIGURE 5: Detachment of the bipediced myocutaneous flap of the upper eyelid



FIGURE 6: Thinned and sutured chondro-perichondrial graft in position

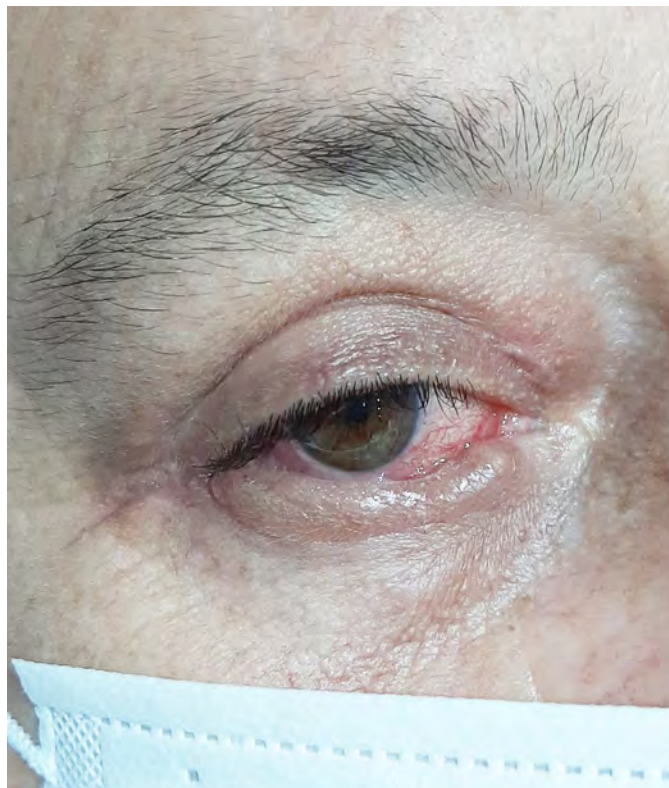


FIGURE 8: Final result after autonomy of the flap



FIGURE 7: Immediate postoperative period, before sectioning the pedicles

DISCUSSION

The histological criteria and terminology of BSC are still controversial in the literature from a prognostic point of view. However, it is essential to differentiate it from the keratotic basal cell carcinoma, an indolent subtype of BCC that does not present squamous differentiation, only formation of horny cysts surrounded by parakeratotic cells within the atypical basaloid cell blocks.⁷ The present case reinforces the importance of the Mohs surgeon's full histopathological knowledge since the previous incisional biopsy showed only a solid BCC.

About 10% of BSCs involve the eyelid region,⁸ and ocular invasion is reported.⁹ The dense inflammatory infiltrate present under the microscope of the second phase of MMS raises doubts about the complete removal of the tumor in this case. On the other hand, an additional phase could have meant an unnecessary orbital exenteration. Rapid immunohistochemistry could have helped differentiate between inflammatory and neoplastic infiltrate, but unfortunately, it was not available.¹⁰ Clinical and radiological follow-up of the patient is indispensable in this case.

Primary closure can reconstruct full-thickness defects of the lower eyelid when it involves up to 25% of the length of the ciliary border. Between 25% and 50%, lateral canthotomy, lower cantholysis, and even a temporal flap can be associated.

Defects above 50% need reconstruction of the posterior lamella: a periosteal flap can be used for defects involving the

lateral third, while the Hughes tarsoconjunctival flap is the best option for central defects.¹¹

An option to reconstruct defects larger than 2/3 of the length of the lower eyelid is combining a graft to restructure the posterior lamella with a flap to restore the anterior lamella. The graft can be harvested from the nasal septum, oral mucosa, or auricular cartilage.¹² Matsuo initially described the chondro-perichondrial graft of the ear in 1987, using the auricle (pinna) as the donor area for reconstruction of the posterior lamella. However, Sanchez and Lerner, in 2013, proposed the use of the ear helix as a donor area due to its smaller thickness, the greater malleability of the cartilage, and, consequently, the better adaptation to the eyeball concerning the shell cartilage.¹³

The Tripiet bipedicle upper eyelid flap is indicated to reconstruct defects in the lower eyelid, especially in the middle third. This technique requires a second surgical time to section the lateral pedicles.¹⁴ Although other local flaps can be used,¹⁵ the Tripiet flap, because it is myocutaneous, allows better nutrition of the underlying graft, and provides a superior aesthetic result by using skin from the eyelid region.

CONCLUSION

MMS is the gold standard to treat malignancies in the eyelid region, including more aggressive tumors such as basosquamous carcinoma. The reconstruction of extensive full-thickness defects of the lower eyelid with the association of chondro-perichondrial graft of the ear helix with the Tripiet bipedicle myocutaneous flap presents as a practical and safe option with good functional and aesthetic results. ●

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Squamous cell carcinoma and micrographic surgery: a case report

Cirurgia micrográfica no carcinoma espinocelular recidivante: relato de caso

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ABSTRACT

The recurrent squamous cell carcinoma (SCC) needs an appropriate approach to decrease the risk of recurrences. We report the case of a man diagnosed with SCC on the left temporal region treated by conventional surgery, with infiltration and erythema in the scar area. Reflectance confocal microscopy suggested the diagnosis of recurrent SCC confirmed by histopathology. New surgery and traditional intraoperative frozen section were performed. After two months, the patient had a new relapse, finally treated with Micrographic surgery without new involvement. This article highlights the importance of micrographic surgery in treating SCC, aiming to decrease new recurrences.

Keywords: Skin Neoplasms; Mohs Surgery; Carcinoma, Squamous Cell

RESUMO

O carcinoma espinocelular (CEC) recidivante necessita de abordagem adequada, visando à diminuição do seu risco de recorrência. Relata-se o caso de paciente com histórico de CEC na região frontal esquerda, apresentando placa infiltrada de limites imprecisos, cuja biópsia confirmou o diagnóstico de recidiva. Fez remoção cirúrgica e congelamento intraoperatória convencional. Após dois meses, apresentou nova área suspeita, com biópsia evidenciando carcinoma pouco diferenciado infiltrativo, que foi tratado com cirurgia micrográfica (CM) sem novo acometimento. Ressaltamos a importância do uso de métodos de análise periférica das margens cirúrgicas na ocorrência de recidiva local ou em paciente com carcinoma de alto risco.

Palavras-chave: Neoplasias Cutâneas; Cirurgia de Mohs; Carcinoma de Células Escamosas

INTRODUCTION

Squamous cell carcinoma (SCC) is a keratinocytic neoplasm, which is part of the group of non-melanoma skin cancer. It represents about 20% of cutaneous malignancies, has an invasive character, and can produce metastases. It arises mainly in regions exposed to the sun and can originate from precursor lesions.¹

The estimated incidence of non-melanoma skin cancer in Brazil in 2016 was 81.66 cases in men and 91.98 cases in women per 100 thousand inhabitants.² Among the risk factors for the development of the disease stand out exposure to sunlight, age, fair skin, in addition to family and personal history of skin cancer.³

Case Reports

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The lesions can manifest as shallow ulcers, papules and/or nodules, scaly, itchy macules, or wounds that have not healed for more than four weeks. The limits of the lesion may be indistinguishable from the skin surrounding the actinic damage.^{2,4}

SCC diagnosis is histopathological, made from tumor samples obtained by biopsy. Needle aspiration is indicated in regional lymph nodes if they are palpable. Contrast-enhanced magnetic resonance imaging should be used when there is a suspicion of bone, lymphatic, perineural, or vascular tissue involvement.³

Treatment is conducted according to the characteristics of the primary lesion. Curettage and electrocoagulation in non-hairy areas, excision of the tumor with margins of 4 mm to 6 mm, and radiotherapy in patients with surgical contraindication are indicated in cases of low-risk SCC. For high-risk SCC, excision with wide margins and reconstruction, Mohs micrographic surgery or methods of peripheral analysis of surgical margins, and radiotherapy for patients with surgical contraindication are recommended. The persistence of tumor residues after the indicated treatments or the impossibility of reaching free margins during micrographic surgery leads to the indication of a multidisciplinary approach, such as chemotherapy or immunotherapy. Sentinel lymph node biopsy should also be considered. Follow-up should be performed every three to 12 months for two years, every six to 12 months for three years, and then once a year.³

Considering the increasing incidence and implications of SCC, its appropriate approach is essential, valuing a therapeutic choice that allows the maximum eradication of the tumor and minimizes the risk of recurrence.

In this scenario, the authors report the case of a patient with squamous cell carcinoma with two relapses treated with micrographic surgery.

CASE REPORT

A 67-year-old white man presented an infiltrated plaque with imprecise limits located in the left frontal region close to the surgical scar. The patient presented a history of surgical excision in the left forehead region four months ago, preceded by biopsy. The anatomopathology revealed SCC grade 3, poorly differentiated, with edges larger than 4 mm, infiltrating the fat tissue. After four months, he noticed a bulging in the scar region and sought specialized care to perform confocal microscopy. Physical examination showed left forehead with a graft area and a 1 cm diameter bulging in the middle of the surgical scar, hardened and adhered to deep planes (Figure 1), and an area of intense erythema, adhered to deep planes in the left suprapalpebral region (Figure 1). Confocal microscopy revealed the presence of an atypical honeycomb pattern throughout the epidermis and suprabasal region, and large shiny round cells at the dermal-epidermal junction (DEJ) and papillary dermis. Large and grouped round brilliant cells, thick collagen, and great vessels were also present, suggesting a diagnosis of atypical keratinocytes lesion and probable recurrence of squamous cell carcinoma (Figure 1).

Two incisional biopsies were performed in the areas described. The anatomopathological result showed infiltration of moderately differentiated squamous cell carcinoma in the skin of the left frontal region and dermal fibrosis on the scarring skin of the left supraorbital area. Before the first surgery, magnetic resonance imaging was performed, ruling out the hypothesis of perineural and skullcap infiltration. The patient underwent surgical removal with conventional intraoperative freezing, with free margins. After two months, the patient presented a new suspicious area, and a new incisional biopsy was performed. The anatomopathological result was poorly differentiated carcinoma infiltrating subcutaneous tissue and surgical margins coinciding with the neoplasm. Giving the new relapse, we chose treatment with micrographic surgery. The excision was performed at 90° to check the lateral edges with higher accuracy.

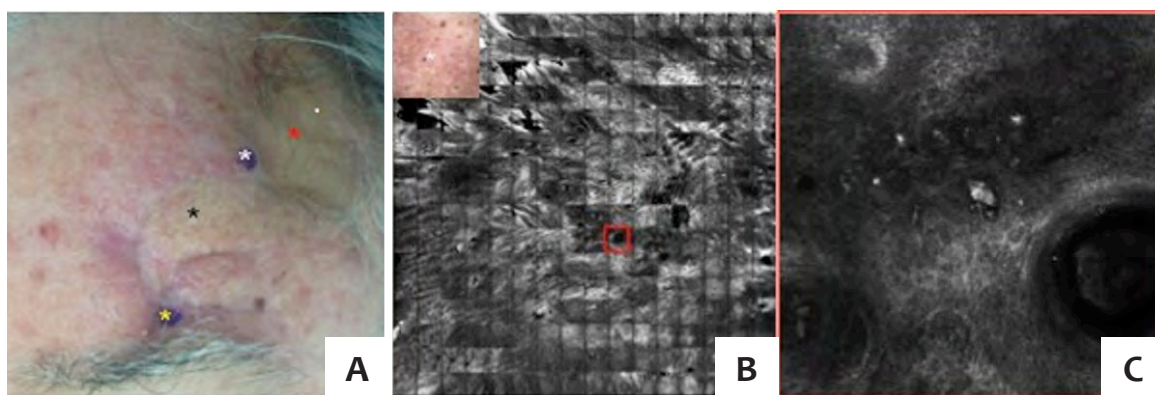


FIGURE 1: A - Macroscopic photograph of the left frontal region. We can observe the graft area (red asterisk) and flap area (black asterisk) from previous surgery. In the region of the white asterisk, erythema and local bulging is noted (area in which the confocal reflectance microscopy and biopsy examination were performed), and in the region of the yellow asterisk, erythema and infiltrated appearance (biopsy was also performed). B - Dermoscopy (10x magnification) of the site where the reflectance confocal microscopy (white asterisk) and confocal microscopy (8 x 8mm) of the JDE / superficial dermis were performed, showing clustered bright cells (red square). C - Reflectance confocal microscopy (250 x 250µc) showing the grouped shiny cells (suggesting atypical keratinocyte cells)

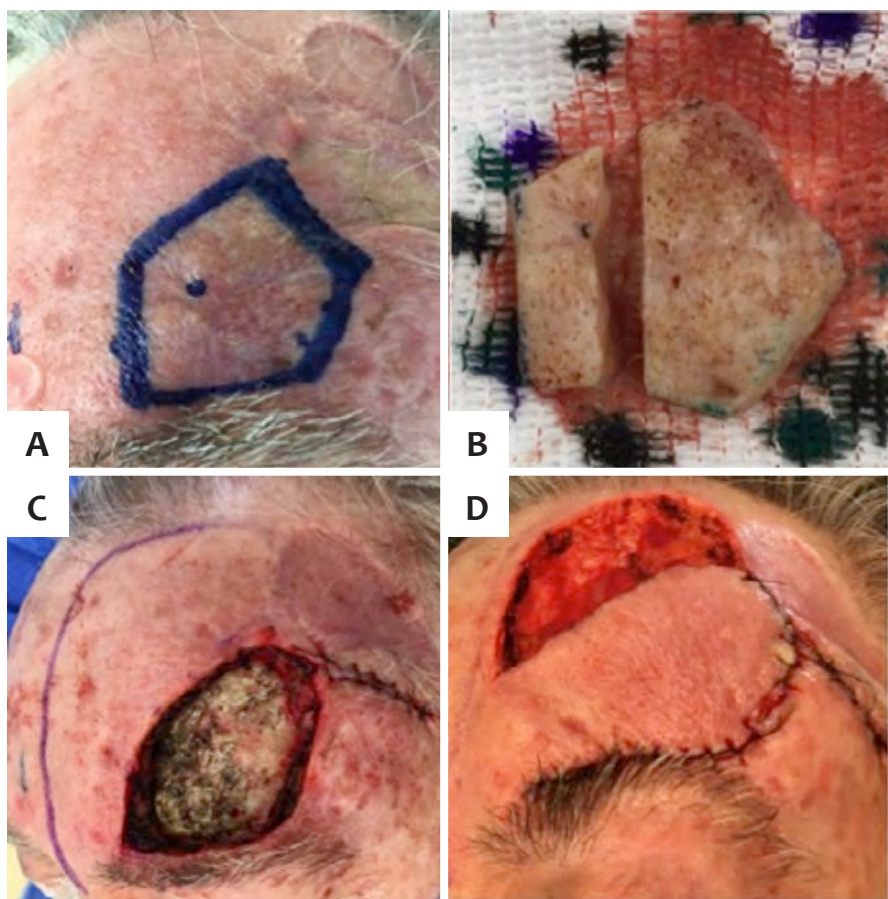


FIGURE 2: A - Demarcation of the surgical margins of the tumor on the left frontal face. B. Surgical specimen with the cut in the center of the fragment. C. Surgical margins, focusing on the skullcap, after superficial sanding. D. Reconstruction with medial frontal rotation flap



FIGURE 3: Image of the patient after surgery, focusing on the surgical scar, with no clinical signs of tumor recurrence

A central fragment of the surgical specimen was cut through the tumor to assess the involvement of the deep margin. It evidenced the presence of tumor infiltration up to the periosteum. The peripheral surgical margins (superficial and deep) were free of neoplasia. Due to the periosteum involvement, we conducted the superficial abrasion of the skullcap to ensure better safety regarding the deep margins, removing possible remaining tumor foci. We performed the reconstruction using a median frontal rotation flap, nourished by the supra-trochlear artery (Figure 2), with the donor area healing by secondary intention (Figure 2). The surgical oncology team is still following the patient, who hasn't show any recurrence (Figure 3). No radiotherapy was performed.

DISCUSSION

Risk factors for tumor recurrence are location, size, immunosuppression, tumor differentiation degree, tumor depth, and/or perineural, lymphatic, or vascular involvement, making the appropriate therapeutic choice essential.³

Micrographic surgery is one of the first lines therapies to treat recurrent and high-risk tumors. It is also recommended for any tumor in more exposed areas. Its implementation allows intraoperative evaluation of the compromised margins, reducing the risk of recurrence to 3.1% in the treatment of the primary tumors, and to 5.9% in recurrences.³

The micrographic surgery technique can be summarized in five parts: the first is the topographic marking of the tumor and its margins, followed by excision in the shape of a basin at 45°. Then, three dimensions slides are made to recognize the lateral, deep, and superficial margins of the lesion, analyzing whether these margins are compromised or not. If the margins are compromised, the tumor is further excised until the margins are free.⁵

The diagnosis is based on the history of the lesion development, clinical examination, and histopathological analysis. Reflectance confocal microscopy (RCM) is an essential tool, helping with clinical diagnosis. Possible differential diagnoses are basal cell carcinoma, keratoacanthomas, and actinic keratosis, which must be ruled out through biopsy in the presence of a clinical lesion indicative of SCC.^{1,2,3}

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The main advantage of the chosen treatment is the reduced risk of recurrences and metastases. The fact that they are invasive approaches is the main disadvantage, both in the diagnostic and therapeutic methods.

This report highlights the importance of performing a peripheral analysis of the surgical margins (Mohs micrographic surgery or other methods) in the first local recurrence and in patients with high-risk carcinomas, thus decreasing the number of surgeries.

CONCLUSION

Micrographic surgery has a high success rate and minimizes the risk of tumor recurrence, allowing most patients to undergo a single surgery. It reduces or eliminates the costs of more complex surgeries and mitigates the psychological impact in treating the disease. ●


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Superficial acral fibromyxoma involving the fingers: a case report

Fibromixoma acral superficial envolvendo quirodáctilo: um relato de caso

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ABSTRACT

Superficial acral fibromyxoma is a rare and benign mesenchymal tumor. It mainly affects middle-aged men; however, it can occur in any gender and age group. It has a slow growth, with a preference for nail and periungual areas.

Keywords: Ambulatory surgical procedures; Fibroma; Antigens, CD34; Fingers

RESUMO

O fibromixoma acral superficial é um tumor mesenquimal raro e benigno. Acomete principalmente homens de meia-idade; entretanto, pode ocorrer em qualquer sexo e faixa etária. Apresenta crescimento lento, com predileção por áreas ungueais e periungueais.

Palavras-chave: Procedimentos cirúrgicos ambulatoriais; Fibroma; Antígenos CD34; Dedos

INTRODUCTION

Superficial acral fibromyxoma is a rare and benign mesenchymal tumor. It mainly affects middle-aged men; however, it can occur in any gender and age group. It has slow growth, with a preference for nail and periungual areas.

CASE REPORT

A 66-year-old man presented a nodular lesion on the lateral face of the third right finger. The lesion was asymptomatic and non-mobile, with fibroelastic consistency and progressive growth for five years. The patient was ex-alcoholic, ex-smoker, diabetic, hypertensive, and had ischemic heart disease. The tumor was resected with free margins after nail abrasion to access the lesion topography (Figures 1,2,3, and 4).

The histological examination showed dermal fusocellular proliferation amid myxoid stroma. The immunohistochemi-

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cal examination was positive for the CD34 marker. Both results suggest the diagnosis of superficial acral fibromyxoma (Figure 4). At 28 months of follow-up after surgical resection, there were no signs of recurrence of the lesion. There is no description in the literature of malignant or aggressive behavior; however, focal atypia in some reported cases makes this tumor's malignant potential uncertain.²



FIGURE 1: Superficial acral fibromyxoma in the third finger



FIGURE 2: Intraoperative with lesion exposed



FIGURE 3: Immediate postoperative



FIGURE 4:
18 months after
surgical resection

DISCUSSION

Fetsch et al.¹ first described superficial acral fibromyxoma in 2001. Since then, there are just over 340 cases reported in the literature.² The disease affects men and women in a 2:1 ratio and has a preference for the involvement of the feet.¹ Although it is predominantly an unguinal and periungual tumor, it can also affect the heel, ankle, and palms.

Typically, the condition is painless or little symptomatic and has slow growth. Still, it can cause nail deformities due to nail bed involvement and is not usually related to previous trauma.

Histopathological examination shows a well-delimited, circumscribed tumor, without a capsule, composed of a proliferation of fibroblasts in the myxoid stroma, sometimes accompanied by mast cells. On the other hand, immunohistochemical examination reveals characteristic positivity for the CD34 marker; however, CD99, CD10, and epithelial membrane antigen (EMA) may be present.¹ Also, negativity is expected for cytokeratin, melanocytic markers, smooth muscle actin (SMA), and desmins.

The differential diagnosis must be made with ungual and periungual fibroma, neurofibromas, fibrokeratomas, sarcomas, and angiokeratomas, in addition to other benign conditions, such as onychocriptosis and cutaneous myxoma. Complete surgical resection is always indicated, given the lesion's high recurrence rate.²⁻⁵

CONCLUSION

Given the relatively recent description of this tumor, the diagnosis of superficial acral fibromyxoma is still a challenge. Although it is not mandatory to perform imaging tests such as simple radiography and ultrasound, these tests are helpful tools for diagnostic clarification. The currently available rule out generic names such as myxoma, fibroma, and dermatofibroma as a histopathological diagnosis since the immunohistochemical examination differentiates the lesion.

The correct diagnosis indicates the best treatment. Currently, the literature recommends the surgical resection of the block lesion with free margins, contrasting with the past, which included even the amputation of the affected limb given the disease's uncertainty of diagnosis and prognosis.

Although the dermatologist is trained to resolve such a condition, patients commonly seek orthopedists and hand surgeons. We report the present case due to the low incidence of this type of lesion and the need for suspicion in the dermatological consultation. The pathology seems to be not so rare, but it is still underdiagnosed and little reported. ●

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Nevus sebaceous with malignant transformation treated with Mohs surgery: A case report

Nevo sebáceo com transformação maligna tratado com cirurgia micrográfica de Mohs: relato de caso

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ABSTRACT

Nevus sebaceous of Jadassohn is a congenital skin hamartoma often located on the face and scalp. A small percentage of these tumors evolve into malignant lesions, including basal cell carcinoma. We report a case of an elderly patient with nevus sebaceous since early childhood that evolved with a malignant transformation from the lesion to basal cell carcinoma. The treatment performed was surgical excision using Mohs surgery.

Keywords: Nevus, Sebaceous of Jadassohn; Carcinoma, Basal Cell; Mohs Surgery

RESUMO

Nevo sebáceo de Jadassohn é um hamartoma congênito da pele que se localiza mais frequentemente em face e couro cabeludo. Uma pequena porcentagem desses tumores evolui para lesões malignas, dentre elas o carcinoma basocelular. Relata-se um caso de paciente idoso com nevo sebáceo desde a primeira infância, que evoluiu com transformação maligna da lesão para carcinoma basocelular. O tratamento realizado foi a excisão cirúrgica por meio da cirurgia micrográfica de Mohs.

Palavras-chave: Nevo Sebáceo de Jadassohn; Carcinoma Basocelular; Cirurgia de Mohs

INTRODUCTION

Nevus sebaceous is a benign skin tumor composed of numerous malformed sebaceous glands, degenerated hair follicles, and ectopic apocrine glands. It is located mainly on the scalp and face. Two-thirds of lesions are present since birth, and one-third develop in early childhood.¹ The most common complication of nevus sebaceous is its transformation into other tumors, benign or malignant. Among the malignant ones, the most common is basal cell carcinoma, which occurs in less than 1% of cases.² This is a case report of nevus sebaceous with malignant transformation to basal cell carcinoma, treated with Mohs micrographic surgery.

CASE REPORT

A 68-year-old man, Caucasian, presented a brownish-yellow plaque of approximately 5 cm on the scalp, with a warty appearance (Figure 1). The patient reported having the lesion since childhood but that it had been growing and changing texture over the years. Dermoscopy revealed round and yellow-white oval structures in cobblestones (Figures 2 and 3), ovoid nests, maple leaf-like areas, and diffuse erythema. An incisional biopsy of the lesion, guided by dermoscopy, was performed at three points for suspected malignancy.

Anatomopathology showed two fragments compatible with solid extensive basal cell carcinoma and one with solid infiltrative basal cell carcinoma. Mohs micrographic surgery was indicated to excise the lesion. The surgical margins of the first stage were considered free of neoplasia, with nine lateral and three deep fragments (Figures 4 and 5). We opted for the primary closure of the lesion (Figures 6 and 7).



FIGURE 3: Whitish-yellow round and oval structures, ovoid nests



FIGURE 1: 5 cm brownish plaque on the scalp



FIGURE 4: Image of the surgical map according to the Mohs micrographic technique

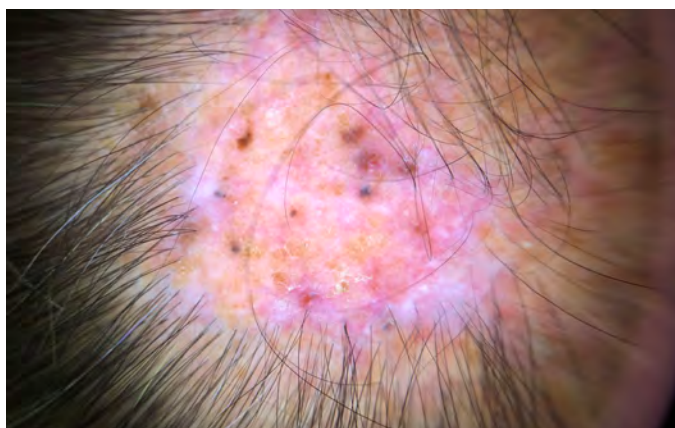


FIGURE 2: Dermoscopic detail of the lesion



FIGURE 5: Image of the surgical map according to the Mohs micrographic technique



FIGURE 6: Seventh postoperative day



FIGURE 7: Two months postoperative

DISCUSSION

The lesion's rapid growth and ulceration may indicate it.

In histology, the presence of immature hair follicles is characteristic. The sebaceous glands are few and underdeveloped in childhood. After puberty, acanthosis and papillomatosis are observed in varying degrees, in addition to abundant hyperplastic sebaceous glands. Furthermore, several lesions have ectopic apocrine glands.⁵ The diagnosis is clinical-histopathological.

The most common complication of sebaceous nevus is its transformation into other tumors, benign or malignant. Among benign tumors, the most frequent are syringocystadenoma papilliferum and trichoblastoma.^{4,5} Among the malignant ones, the most commonly associated with nevus sebaceous is basal cell carcinoma, being observed in less than 1% of cases.² The risk of malignant transformation increases with age, but the literature

reports cases in children.⁶ The etiology of basal cell carcinoma in nevus sebaceous is not yet well established. Studies suggest a link to the human papillomavirus (HPV). This virus would cause a modification in cell proteins, changing their function and expression.⁷ Another risk factor associated with basal cell carcinoma development in organoid nevus is light skin phototypes (Fitzpatrick I and II).

The rapid lesion growth and the appearance of pigmentation or ulceration areas should raise the suspicion of malignant transformation. Most malignant tumors developed from a sebaceous nevus are not very aggressive.⁸ Reports of higher aggressiveness are associated with squamous cell carcinoma.⁹ The definitive treatment for nevus sebaceous is surgical excision. Some authors indicate the lesion removal in childhood, as it prevents its malignant transformation.¹⁰ However, surgery in children sometimes requires general anesthesia, which can have essential complications due to the age group.¹¹ Other authors recommend periodic observation of the lesion and suggest surgery if malignancy is suspected or, for aesthetic purposes, after puberty.¹² Injuries on the scalp can be challenging to follow clinically due to the location. Alternatives to surgery are photodynamic therapy, dermabrasion, and laser.¹³ However, these treatments do not completely remove the lesion, and the risk of secondary neoplasia and recurrence remains.

Nevus sebaceous, also known as sebaceous nevus of Jadassohn's and organoid nevus, is a congenital skin hamartoma. Its incidence is estimated in 0.3% of live births, with no preference for sex.^{1,2} Its etiology is not very well defined; some recent studies have found an association with a mosaic mutation in the HRAS and KRAS genes.³

Nevus sebaceous is a benign tumor that includes sebaceous, follicular, and apocrine elements. It is most commonly located on the scalp and face. On the scalp, it is usually associated with local alopecia. It appears as a flat yellow-orange lesion that can be oval, round, or in a linear plaque in childhood. In puberty, under hormonal influence, the lesion tends to develop a warty or nodular surface. There is also a trend towards linearity. Over the years, some lesions may evolve with the appearance of tumors and/or with malignancy under the original nevus.⁴

Scalp surgery, regardless of age, is challenging because of the convex surface of the skull, the presence of hair, and the little looseness of the tissue. Mohs micrographic surgery is a surgical technique that removes the lesion and conducts the histological evaluation concurrently.¹⁴ The fragments are removed and assessed. Finding neoplastic cells in any component leads to a new phase of resection until the margins are free. Thus, this technique removes the least amount of healthy skin possible and is an excellent tool for scalp injuries.¹⁵ In the reported case, the primary closure of the lesion was possible, with aesthetically satisfactory results (Figure 7). Although the risk of malignancy is higher in adulthood, we believe that strict clinical follow-up in childhood and adolescence and early surgical excision are beneficial in the management of nevus sebaceous. ●

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Reconstruction options for the closure of nasal surgical defects

Opções de reconstrução para fechamento de defeitos cirúrgicos nasais

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ABSTRACT

Basal cell carcinoma is the most common type of nonmelanoma skin cancer, and the nose is the most common site. The treatment of choice, surgical excision, may cause nasal defects, which may be challenging for surgeons for maintaining functionality and aesthetics. When planning the reconstruction, one should carefully consider the nose's anatomical features and the patient's individual characteristics. We report four cases of nasal defects due to surgical excision of basal cell carcinoma approached with different closure techniques (primary closure, flap, graft, and second-intention healing), achieving equally satisfactory esthetic and functional results..

Keywords: Carcinoma Basal Cell; Nose; Reconstruction; Surgical Flaps; Skin Transplantation

RESUMO

O carcinoma basocelular é o câncer de pele não melanoma mais comum, sendo o nariz o local de maior ocorrência. O tratamento de primeira escolha é a excisão cirúrgica. Defeitos nasais são um desafio para os cirurgiões devido à dificuldade para manter a funcionalidade e o bom resultado estético. Ao planejar a reconstrução, deve-se considerar as características anatômicas do nariz e individualidades do paciente. Relatamos quatro casos com defeitos cirúrgicos localizados em topografias semelhantes, abordados com técnicas de fechamento diferentes - fechamento primário, retalho, enxerto e segunda intenção - com resultados igualmente satisfatórios dos pontos de vista estético e funcional.

Palavras-chave: Carcinoma Basocelular; Nariz; Reconstrução; Retalhos Cirúrgicos; Transplante de Pele

INTRODUCTION

Non-melanoma skin cancer is the most common neoplasm in the world, and basal cell carcinoma (BCC) is the most frequent (75%), followed by squamous cell carcinoma (SCC) (20%) and melanoma (5%).¹ Head and neck are the most affected regions, most commonly the nose due to cumulative sun exposure.²

When approaching malignant lesions on the face, the primary objective is to perform surgery with free oncological margins to excise the tumor completely – the gold standard treatment. Secondary endpoints are maintenance of functionality and obtaining a good aesthetic result.^{1,2}

However, the resulting surgical defect is close to orifices in the head and neck. Thus, resection with safety margins and reconstruction constitutes a significant challenge, demanding knowledge, experience, and creativity on the surgeon's part, and often requiring flaps and grafts.¹

METHODS

Case 1 - A 63-year-old man presented a papular lesion in the right nasal wing. The lesion was excised and closed by secondary intention (Figure 1).

Case 2 - A 64-year-old woman exhibited a nodular lesion with an ulceration area between the lateral wall of the nose and the left nasal wing. The lesion was excised and closed by primary intention (Figure 2).

Case 3 - A 70-year-old man had an ulcerated nodular lesion on the right side of the nose. The patient underwent excision and reconstruction with a rotation flap (Figures 3 and 4).

Case 4 - A 91-year-old man presented an ulcerated nodular lesion on the left side of the nose. The patient underwent excision and skin graft using the infraclavicular region as donor area (Figures 5 and 6).

All cases were clinically suggestive of BCC, and an experienced professional confirmed the diagnosis through dermoscopy. Local anesthesia was applied with an anesthetic solution, and the lesions were excised with 4 mm surgical margins delimited by dermoscopy. The suture, when performed, used 5-0 nylon. The procedures had no complications in the intra and postoperative periods.

DISCUSSION

The nose plays an essential role in facial aesthetics.³ It is the facial structure most exposed to the sun and, therefore, the most affected by BCC. BCC is a malignant neoplasm of follicle

germ cells, with no precursor lesions described. Its risk factors include exposure to ultraviolet radiation, light skin phototypes, positive family history, childhood ephelides, immunosuppression, exposure to arsenic, scarring, and hereditary diseases.

Mortality from BCC is less than 0.1% - with a cure rate greater than 90% when excised - and metastases are rare.⁴

The general principles of skin defect reconstruction encompass characteristics, comorbidities, patient preferences (which must be well established in the preoperative consultation), location, and dimensions of the defect.^{5,6} Other aspects that deserve attention are the use of anticoagulants and smoking due to the negative impact on the healing process.⁵

Regardless of the lesion's location or size, the entire face must be prepared at the time of surgery, providing the surgeon with a good view and access if the incision needs to be enlarged.⁵ According to the National Comprehensive Cancer Network (NCCN), the therapeutic plan must be established based on the BCC risk stratification. The criteria include the lesion's location and size, margins definition, whether the lesion is primary or recurrent, immunosuppression presence, previous treatment with radiotherapy at the lesion site, histological subtype, and perineural involvement. Regarding surgical excision, NCCN recommends 4 mm margins for lesions considered to have a low risk; and resorting to Mohs surgery for lesions at high risk. In the case of techniques without a complete assessment of the tumor margins, guidelines advise identifying the BCC subclinical extension, establishing wide margins, evaluating the lesion in the postoperative period, and performing primary or late closure of the surgical defect. Radiotherapy appears as an option for patients who are not candidates for surgery. Systemic therapy - Vismodegib and Sonidegib - is indicated for high-risk cases, such as locally advanced disease where radiotherapy or curative surgery is not viable.⁷

Concerning lesions excised in the nasal region, options for repairing the surgical defect involve healing by secondary intention, primary closure, flaps, and skin graft.⁶ Secondary healing is underutilized.^{5,8} However, it has numerous advantages,

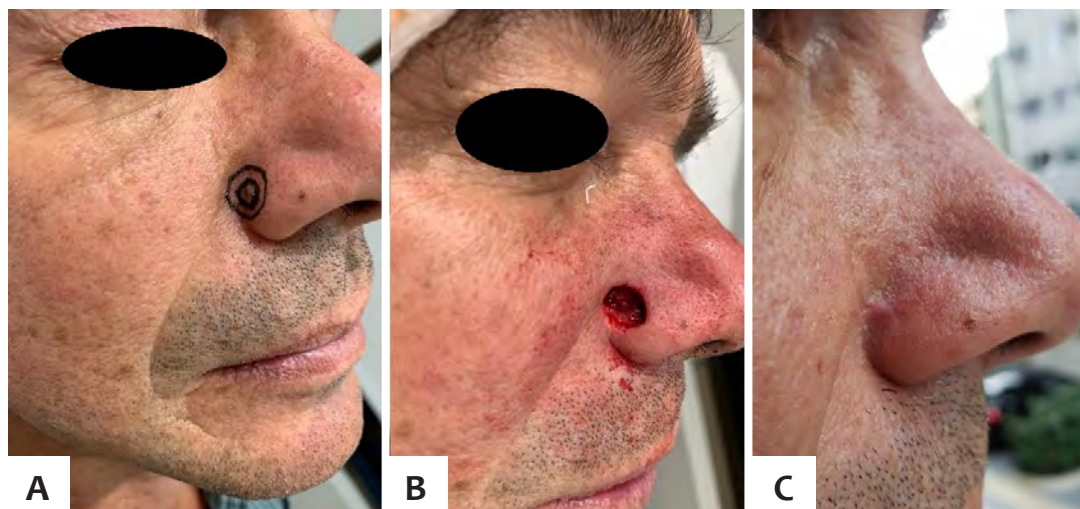


FIGURE 1: CASE 1. A - Right nasal wing lesion. B - Surgical defect. C - Final result after healing by secondary intention

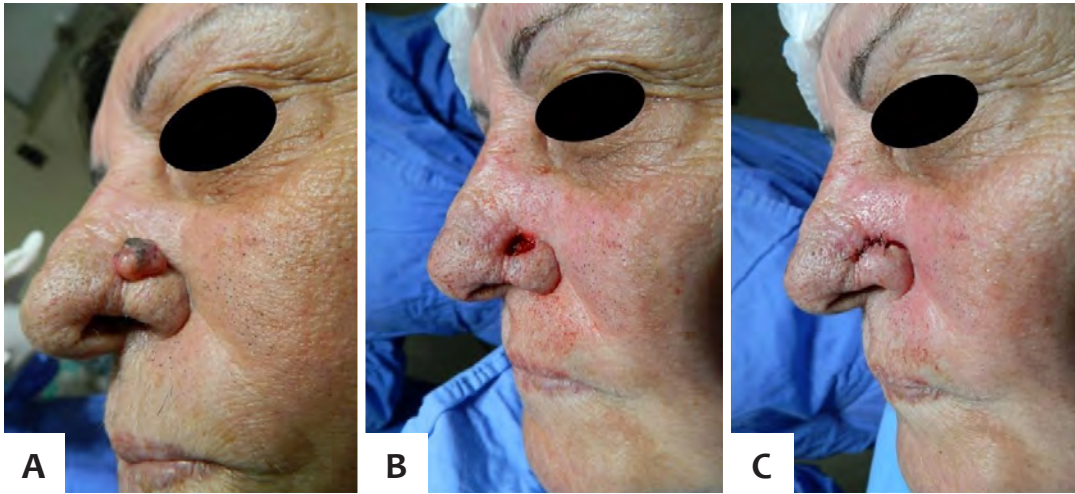


FIGURE 2: Case 2. A - Lesion between the lateral wall of the nose and the left nasal wing
B - Surgical defect
C - Primary closure with a single stitch

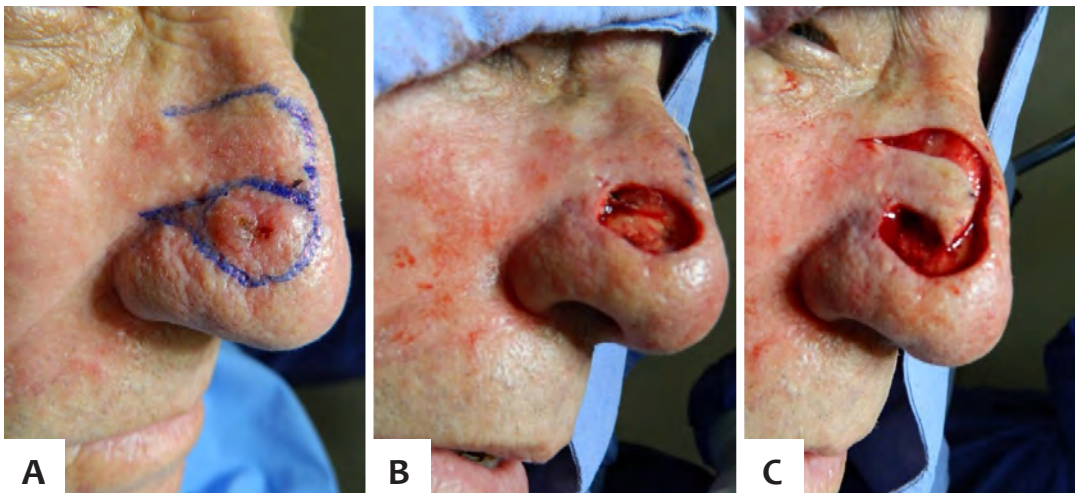


FIGURE 3: Case 3. A - Lesion on the right side of the nose and marking of the flap
B - Surgical defect
C - Positioning the rotation flap

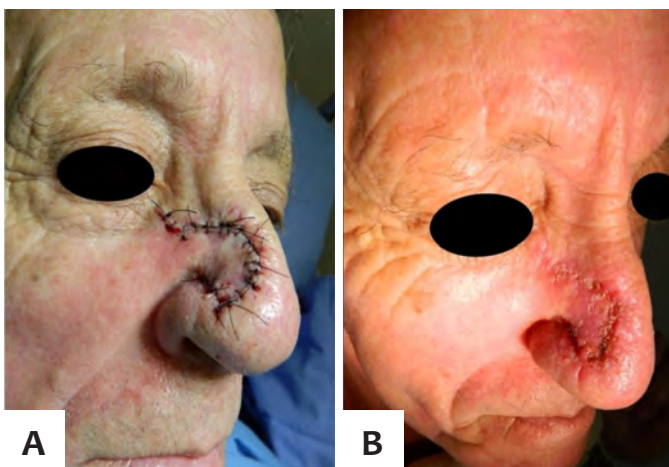


FIGURE 4: CASE 3. A - Rotation flap fixation. B - Result after one week of the procedure

including excellent aesthetic results – the best ones observed in concave areas of the nose, more superficial lesions, and injuries smaller than 2 cm.⁵

Also, it is helpful for patients who would not tolerate the reconstructive procedure.⁵ Healed wounds continue to improve their appearance over time.⁸

Primary closure is commonly used for defects up to 1 cm.^{2,9} Higher nose regions, non-sebaceous, are more favorable to the technique due to greater mobility. Comprehensive dissection is crucial to approach the margins under minimal tension, in addition to the internal suture, which also reduces the pressure in the wound closure. Primary closure is widely used due to its simplicity, fewer complications, and lower costs.² However, the skin of the lower third of the nose has limited mobility and, therefore, the use of primary closure is restricted to minor defects.²

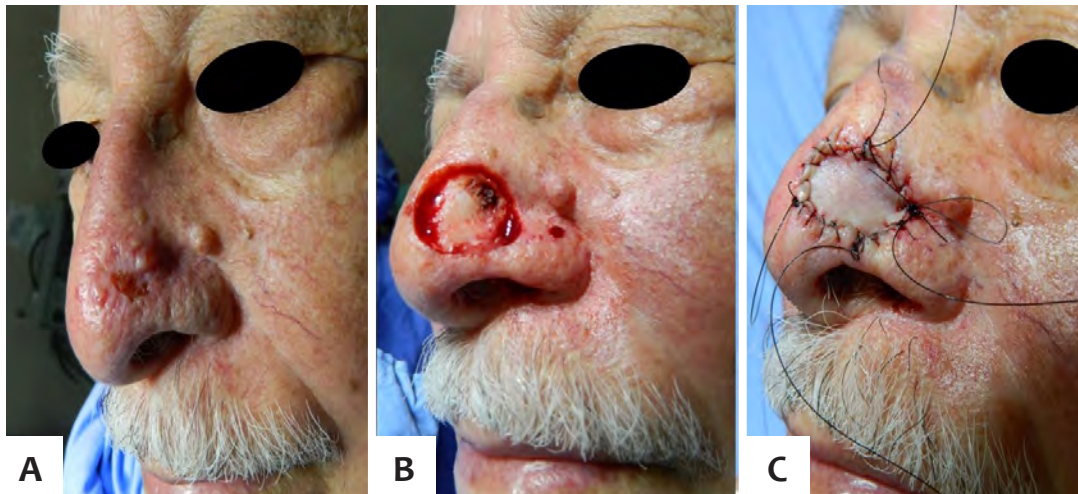


FIGURE 5: CASE 4. A – Lesion on the left side of the nose. **B** - Surgical defect. **C** - Graft fixation

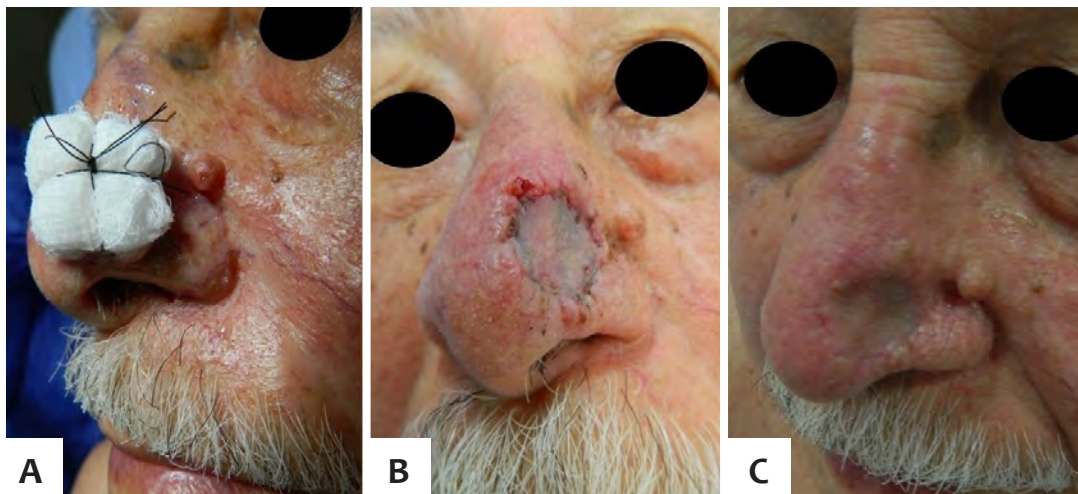


FIGURE 6: CASE 4. A - Brown bandage **B** - Result after one week of the procedure. **C** - Result 14 days after the surgery

Regarding flaps, there are three basic types of tissue movement: transposition, advancement, and rotation.⁶ The rotation flap can reconstruct defects of 1 cm to 2 cm in the nasal dorsum and tip.^{2,10}

It consists of rotating the adjacent tissue around an axis to close the primary defect.⁶ The rotation flap presents the best outcomes. It recruits an integument adjacent to the defect, with similar clinical (texture, thickness, color) and histological (dermal thickness, pilosebaceous gland density) properties. Thus, it satisfies the Millard principle, according to which “the closest skin is the best skin”, or the Gillies analogy, which advocates replacing a tissue by an equivalent coming from neighboring donor sites.¹¹

Among the flaps, it is worth mentioning the interpolation ones: the paramedian forehead flap (Indian), with great applicability for broad and deep nasal defects in the distal region of the nose,^{12,13,14} as well as the nasolabial interpolation, excellent option for nasal wing reconstruction. Despite the need for two

or more operative times, the final aesthetic and functional results are satisfactory.¹⁴

If not correctly designed, the flap can cause anatomical distortions. They are contraindicated if the neoplasm is not entirely excised due to the risk of tumor recurrence under the flap.⁶

Relative contraindications include the risk of bleeding and aspects that may predispose to poor wound healing.^{6,15}

The skin graft is not considered an ideal substitute for nasal skin, especially for thick and sebaceous skin of the nasal tip, wing, lower sidewalls, or dorsum.² However, it is a quick and straightforward solution in patients at high surgical risk or in lesions with a high probability of recurrence.¹⁶ It recruits tissue at a distance, favoring the occurrence of dyschromia, difference in skin thickness, and irregularity in its surface, in addition to the possibility of retraction, leading to less symmetrical and unsightly results.^{12,16} The most used donor areas are the supraclavicular and retroauricular.¹⁶

CONCLUSION

Reconstructions of surgical defects in the nose are complex due to its unique anatomical contours, besides this structure's functional and aesthetic importance.

The choice of reconstructive modality will depend on the location, size and depth of the surgical defect, in addition to the surgeon's experience. Although there are several forms

of nasal defects reconstruction, it is up to the surgeon to decide which approach brings the best aesthetic and functional results, with individual treatment being the best choice.

This study encompasses four cases of defects located in similar topographies, each one approached with different closure techniques, according to the local characteristics of the patient's skin, culminating in satisfactory functional and aesthetic results. ●

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Osteoma cutis on the scalp - Surgical treatment with a rotation flap "S" italic for the removal of a rare lesion

Osteoma cutis em couro cabeludo: tratamento cirúrgico com retalho em rotação tipo "S" itálico para exérese de lesão rara

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ABSTRACT

Osteoma cutis is a rare tumor characterized by the presence of bone tissue in the dermis and/or hypodermis. We describe the case of a patient diagnosed with osteoma cutis on the scalp for approximately ten years with progressive growth and local alopecia area. The patient underwent surgical excision of the lesion using the rotation flap "S" italic technique to reconstruct the area aiming at the best possible aesthetic result.

Keywords: Nasal Surgical Procedures; Neoplasms, Basal Cell; Nose Neoplasms

RESUMO

O osteoma cutis é um tumor raro, caracterizado pela presença de tecido ósseo na derme e/ou hipoderme. A seguir, iremos descrever o caso de um paciente com diagnóstico de osteoma cutis no couro cabeludo há cerca de 10 anos, com crescimento progressivo e área de alopecia local. O paciente foi submetido à excisão cirúrgica da lesão com técnica de retalho em rotação tipo "S" itálico para reconstrução da área visando ao melhor resultado estético possível.

Palavras-chave: Osteoma; Scalp; Surgical Flaps

INTRODUCTION

Osteoma cutis is a rare lesion characterized by bone tissue in the skin, with unknown etiology.¹ It manifests with the formation of bone nodules in the dermis and/or hypodermis, consisting of lamellar bone with the presence of osteocytes in the center and osteoclasts in the peripheral area, similar to the mesenchymal bones.^{2,3} Although it is a benign lesion, it can lead to skin deformities in the affected areas, causing aesthetic changes and triggering psychological consequences to the patient.⁴

The disease affects mainly the face, scalp, chest, and extremities. The lesions are generally painless and asymptomatic, presenting as hard, irregular, and circumscribed papules, nodules, or single or multiple plaques, although they may also present as milium lesions.^{5,6,7} They are usually skin-colored and, occasionally, they cause skin discoloration that becomes white or yellowish.⁸

Case Reports

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We classify osteoma cutis lesions as primary or secondary. Primary osteoma cutis (POC) occurs in 15% of cases, is not associated with a local history of trauma or previous skin lesion, and can occur in isolation or in association with a metabolic dysfunction syndrome (the main associated syndromes are Albright's hereditary osteodystrophy, progressive ossifying fibrodysplasia, progressive osseous heteroplasia, and plaque-like osteoma cutis). The secondary osteoma cutis (SOC) is the most common type. It is responsible for 85% of the cases and it is associated with previous skin lesions, such as scleroderma, pilomatricoma, nevus, dermatomyositis, basal cell carcinoma, scars, skin inflammation, trauma, and epidermal cyst, among others.^{4,9,10}

We report a case of large primary osteoma cutis located on the scalp and its surgical treatment.

CASE REPORT

A 39-year-old man presented a lesion on the scalp for about ten years, asymptomatic and with progressive growth. A well-defined alopecia plaque with a hardened appearance and some yellowish nodules in the center characterized the lesion, which measured 5 cm x 3 cm in diameter and was located at the apex of the scalp (Figure 1). One of the nodular lesions was biopsied, and the histopathological diagnosis was osteoma cutis. The patient had no previous clinical lesion at the tumor site, and serum calcium and parathyroid hormone levels were normal. Therefore, we classified the lesion as isolated primary osteoma cutis.

We chose to perform the surgical treatment of the lesion since it presented progressive growth, leading to alopecia and consequent aesthetic impairment.

Given the lesion's size and location, surgical treatment has become a challenge, aiming at reconstruction with the best possible functional and aesthetic result.



FIGURE 2:
Excision of the lesion



FIGURE 1:
Hardened plaque 5 x 3 cm in the apex region of the scalp



FIGURE 3:
Excision of the lesion

The lesion was excised with a 0.5 cm safety margin, including cutaneous and subcutaneous tissue until reaching the galea aponeurotica (Figures 2 and 3). To repair the excised area, we decided to perform the rotation flap, performing the semicircular movement of rotation of the skin segment, subcutaneous tissue, and galea aponeurotica adjacent to the lesion, to reconstruct the defect.

The rotation flap performed was "S" italic or pinwheel scalp flap, in which the adjacent area is detached at the level of the galea aponeurotica in an "S" shape from the lateral margins of the excised area, aiming at the best result to not compromise the hair implantation site and the forehead with a suture scar¹¹ (Figure 4 A and B).

It was possible to close the excised area with minimal local tension and excellent aesthetic results since the entire surgical scar was located on the scalp, and there was no change in the appearance of the face (Figure 5). Also, to minimize the surgical scar, we use the trichophytic suture since, when performing simple sutures on the scalp, there is no hair growth on the suture line. Therefore, the trichophytic suture is a technique that pro-



FIGURE 5: Result of suturing the flap



A



B

FIGURE 4: A and B - Rotation flap "S" italic

motes hair growth through the final scar, making it less visible. Initially, the margins are brought closer together by suturing the subcutaneous tissue with absorbable thread (Vycril 3.0) every 2 cm. Then, the epidermis and the superficial dermis of one of the edges are removed using a scissor or a scalpel (a thin epithelium strip of 1.0 mm to 1.5 mm is removed). Finally, the margins are closed with a continuous suture.

This technique places the upper edge of the lesion on the deep bottom edge. Thus, the hair follicles located below the de-epithelialized border will normally grow through the future scar, allowing its camouflage.^{12,13,14}

DISCUSSION

Wilkins first described osteoma cutis in 1858. It corresponds to a rare and benign dermatosis, characterized by the presence of mature, compact, or spongy bone tissue in the dermis and/or hypodermis.¹⁵ It occurs at any age, sex, or race. Also, family occurrences suggest associated genetic factors.⁷ Pathogenesis is inconclusive. There are two theories regarding the possible tumor origin: the first and most accepted is based on local metaplasia of mesenchymal cells, from fibroblasts to osteoblasts. The second theory supports the abnormal migration of osteoblasts to the skin due to an embryological disorder.^{4,7,16}

Osteoma cutis treatment varies according to location, clinical manifestation, and size and must be individualized in each case. Surgical excision is the treatment of choice, but other therapeutic options are described, such as punch excision, excision and curettage, dermabrasion, topical tretinoin 0.05%, Erbium:YAG laser as an epidermal ablative, CO₂ laser, and trichloroacetic acid 100% on the lesions to promote transepidermal elimination of the osteoma.^{4,7,17,18}

In the case presented, we opted for surgical excision due to the size of the lesion located on the scalp. Scalp lesions are a challenge for reconstruction due to the low mobility of the region's skin, among other factors, making it difficult to close lesions of medium to large extent. The choice for the rotating flap "S" italic aimed to reconstruct the surgical resection defect

targeting a better functional and aesthetic result with minimal morbidity to the donor area.

In addition, the suture technique used, known as trichophytic suture, to optimize the result further since it enables the hair growth through the scar, making it less visible.

The treatment performed was successful due to the complete removal of the tumor, the aesthetic results, and the recurrence absence. ●

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Giant keratoacanthoma in a patient with acquired immunodeficiency syndrome treated with Mohs micrographic surgery

Queratoacantoma gigante em paciente com síndrome da imunodeficiência adquirida tratado com cirurgia micrográfica de Mohs

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RESUMO

O queratoacantoma (QA), apesar de frequente na prática diária, é um tumor que gera questionamentos. O aspecto mais intrigante associa-se à sua posição no limite entre malignidade e benignidade. A abordagem do tumor, bem como sua classificação, é controversa. Na definição da conduta, é importante levar em conta o potencial de transformação para carcinoma espinocelular. Desse modo, a excisão cirúrgica é a terapia de escolha, sempre que possível. Algumas situações merecem atenção adicional, como a imunossupressão associada. Neste artigo, relatamos um caso de QA gigante em um paciente com síndrome da imunodeficiência adquirida tratado com cirurgia micrográfica de Mohs.

Palavras-chave: Ceratoacantoma; Retalhos Cirúrgicos; Neoplasias Nasais; Neoplasias Cutâneas; Cirurgia de Mohs; Síndrome de Imunodeficiência Adquirida; HIV; Imunossupressão

ABSTRACT

Keratoacanthoma (KA), although frequent in clinical practice, is a tumor that raises questions. The most intriguing aspect is associated with its position on the border between malignancy and benignity. The approach to the tumor, as well as its classification, is controversial. When defining the conduct, it is essential to consider the potential for transformation into squamous cell carcinoma. Thus, surgical excision is the therapy of choice, whenever possible. Some cases require additional attention, such as associated immunosuppression. In this article, we report a case of giant KA in a patient with acquired immunodeficiency syndrome treated with Mohs micrographic surgery.

Keywords: Keratoacanthoma; Surgical flaps; Nose Neoplasms; Skin Neoplasms; Mohs surgery; Acquired Immunodeficiency Syndrome; HIV; Immunosuppression

INTRODUCTION

Keratoacanthoma (KA), although common, is a tumor that still raises questions. Although described in 1888 by Sir Jonathan Hutchinson, its etiology, epidemiology, histopathological diagnostic criteria, prognosis, and treatment guidelines remain controversial until today. The most intriguing aspect is its position on the limit between benignity and malignancy, which must be considered when defining the conduct.¹

Several clinical presentations are described, and solitary KA is the most common manifestation. The giant KA represents an unusual variant, characterized by a lesion larger than 2 cm in diameter, with a preference for the face, especially affecting the nose and eyelids.²

Case Reports

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We report a case of giant KA in an immunosuppressed patient due to infection by the human immunodeficiency virus (HIV), treated with Mohs micrographic surgery (MMS).

CASE REPORT

A 47-year-old man presented KA in the nasal region, relapsed after conventional surgery excision with 4 mm margins two months before. He received recent HIV diagnosis, and was in regular use of antiretroviral therapy, with undetectable viral load (CV). However, he still presented low CD4+ lymphocytes levels (138 cells/mm³), characterizing immunosuppression. The examination revealed a hardened nodule with a smooth surface, regular borders, and central hyperkeratosis, affecting the nasal dorsum and wall, measuring 4.4 x 3.8 cm, with absence of palpable lymph node enlargement (Figure 1). Additional investigation with computerized axial tomography scan and nuclear magnetic resonance revealed involvement restricted to soft tissues. New anatomopathological examination was compatible with invasive squamous cell carcinoma (SCC) type KA. Because it was a recurrent, extensive tumor, and in a high-risk location, a MMS approach was indicated. The surgical procedure was performed obtaining free margins in the third stage. The surgical defect was reconstructed using a paramedian forehead interpolated flap (Figure 2). Due to the close relationship between the deep margin and the nasal bone, identified during the intraoperative period, we chose adjuvant radiotherapy. The patient is being followed up, with good evolution and no signs of recurrence (Figure 3).



FIGURE 1: Hardened nodule with smooth surface, regular borders, and central hyperkeratosis affecting the nasal dorsum and wall

DISCUSSION

The relationship between KA and SCC is widely discussed. While some authors consider the KA as a scaly proliferation with a distinct follicular base that generally follows a benign clinical course, others claim that it is a clinical variant of SCC prone to spontaneous regression, but with occasional aggressive behavior and even metastasis. The conclusion of the problem is hampered by the lack of anatomopathological criteria that differentiate the two entities. Reports of transformation of KA into SCC also suggest the possibility of dealing with different stages of the same entity.^{3,4,5,6,7} For this reason, some specialists prefer to use broader terms in histopathological reports, such as “SCC - KA type”, “probable KA”, or “SCC cannot be ruled out”, to define the tumor.¹

The approach to solitary KA is controversial, but it is important to consider its potential to transform into invasive SCC and metastasize defines the treatment. Expectant conduct is questionable, unless clear signs of resolution are present. It can cause considerable damage in major lesions due to destruction of underlying structures or unsightly scar resulting from involution.^{1,2} Other therapeutic options include curettage and electrodissection, intralesional application of chemotherapeutic agents, radiotherapy, and topical agents. However, the disadvantage is that they do not allow the histopathological confirmation of the complete removal of the tumor. Thus, surgical excision is the first-line therapy, whenever possible. There is no specific determination on the margins in conventional surgery, considering the same ones recommended for non-invasive SCC (4–6 mm).¹ Adjuvant radiotherapy is an option in selected situations, such as in cases of higher clinical aggressiveness or even in giant KA, such as the case presented.^{2,8}

MMS shows the lowest recurrence rate among all modalities.⁸ The procedure allows intraoperative assessment of 100% of the tissue margins, different from the conventional surgical approach, where only representative sections of the tumor are examined, limited to less than 0.01% to 1% of the entire excised margin. When available, it is the method of choice for extensive lesions (larger than 2 cm) or those that affect critical areas, where tissue preservation is desired due to the advantage of minimizing the size of the surgical defect before the wound closes. MMS is also indicated in immunosuppressed patients because of the higher frequency and aggressiveness of keratinocytic carcinomas in this group.^{10,11,12}

The increased risk of SCC in immunosuppressed individuals is well established. Regarding specifically to HIV, studies show that infected people have higher rates of SCC recurrence, even among younger individuals with well-controlled HIV, suggesting that the disease itself may represent an additional factor in immunosuppression.^{13,14} Moreover, concerning the development of subsequent SCCs, a relationship between an increased risk of new tumors and a lower number of CD4 and high CV was observed. It suggests that, in this context, there is an association with immunodeficiency biomarkers.¹⁴ Therefore, due to the relationship between KA and SCC, patients with HIV require

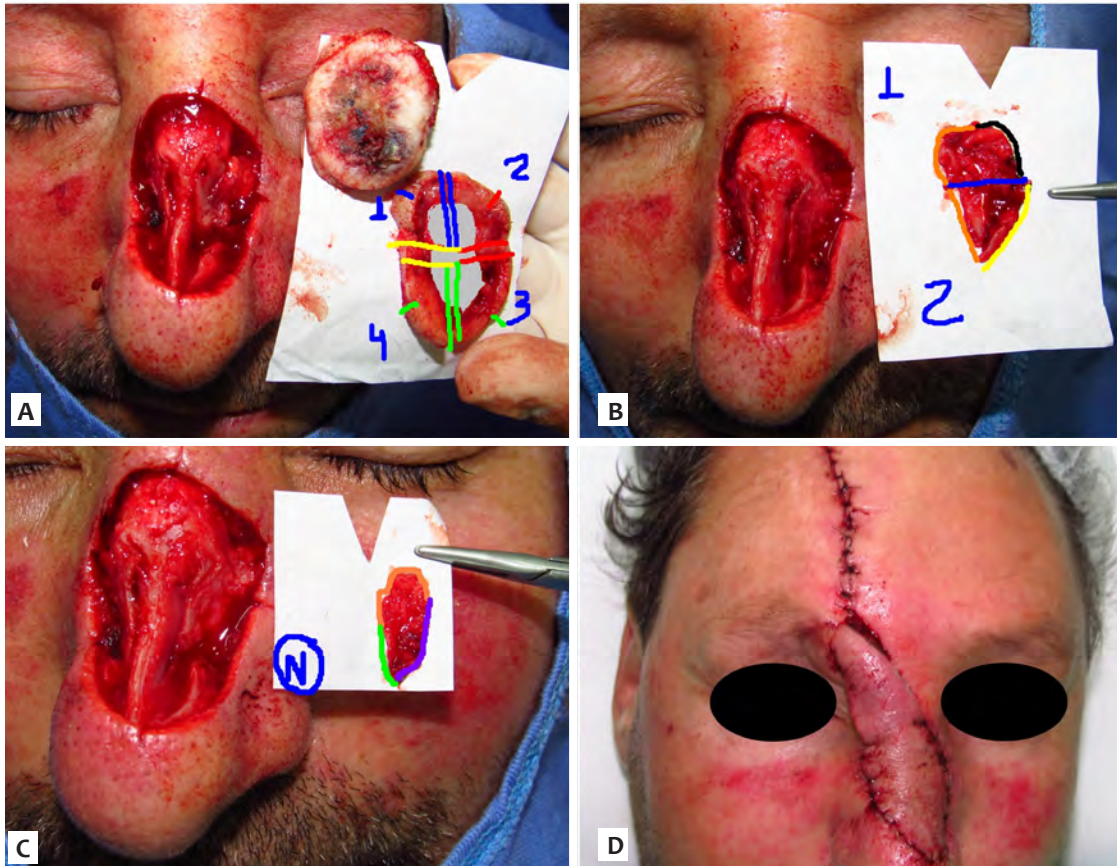


FIGURE 2: A - Surgical defect after removal of the specimen with a small margin in the first stage, with residual tumor.

B - Surgical defect in the second stage, still with residual tumor.

C - Final surgical defect after obtaining free margins in the third stage, with a deep margin closely related to the nasal bone.

D - Immediate postoperative period of the first surgical procedure - reconstruction with paramedian frontal flap



FIGURE 3: Third postoperative month, with irrigation pedicle of the paramedian frontal flap sectioned in a second surgical procedure, showing good functional and aesthetic results, with no signs of tumor recurrence

special attention in determining the ideal therapy, with MMS being an excellent option.

The case reported corroborates the greater aggressiveness in this group since tumor recurrence occurred after conventional technique excision, considered a first-line method to approach KA.

Patients with KA should be monitored after treatment for the possibility of recurrence or, due to Koebner's phenomenon, the development of a new lesion in the area previously addressed, usually between one week and eight months after the intervention.

Guidance to avoid possible triggering factors, such as prolonged and intense exposure to ultraviolet light and medical or cosmetic procedures in photodamaged skin areas, are also important.¹ It is noteworthy that HIV patients require additional attention during follow-up, considering influence of the disease on the risk of SCC.^{13,14}

CONCLUSION

Giant KA is a rapidly evolving tumor that can reach large dimensions, causing local destruction and presenting the possibility of malignancy. MMS represents a good treatment option in these cases, especially in the presence of additional risk factors, such as immunosuppression, given the possibility of a complete evaluation of margins and high cure rates, in addition to the aesthetic and functional benefits resulting from preserving healthy tissue. ●

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Primary cutaneous alveolar rhabdomyosarcoma: Case report in a young adult

Rabdomiossarcoma cutâneo primário de padrão alveolar: relato de caso em adulto jovem

DOI: <https://www.dx.doi.org/10.5935/scd1984-8773.20201243709>

RESUMO

Sarcomas são neoplasias mesenquimais malignas, raras, que acometem, principalmente, crianças e adolescentes. O rabdomiossarcoma, subtipo oriundo da musculatura esquelética, é condição incomum em adultos, acometendo sítios de localização não habitual, crescimento rápido e de difícil tratamento. Apresenta-se caso de adulto jovem com nodulação em lóbulo auricular esquerdo, cuja análise histopatológica e imuno-histoquímica confirmou tratar-se de rabdomiossarcoma alveolar, o qual foi conduzido em conjunto com a Oncologia.

Palavras-chave: Rabdomiossarcoma Alveolar; Miogenina; Desmina; Excisão de Linfonodo

ABSTRACT

Sarcomas are rare and malignant mesenchymal neoplasms that mainly affect children and adolescents. Rhabdomyosarcoma, a subtype originating from skeletal muscle, is an uncommon condition in adults. It affects sites of unusual location, presents fast growth, and is challenging to treat. We report a case of a young adult with nodules in the left auricular lobe. The histopathological and immunohistochemical analysis confirmed the alveolar rhabdomyosarcoma, and treatment was conducted in association with Oncology.

Keywords: *Rhabdomyosarcoma, Alveolar; Myogenin; Desmin; Lymph Node Excision*

INTRODUCTION

Rhabdomyosarcoma is an uncommon malignant neoplasm occurring mainly in children. It affects most commonly the head and neck (35%), genitourinary system, and extremities (40%). Less frequently, the condition affects the trunk, orbit, intrathoracic region, and retroperitoneum. The alveolar subtype is the most aggressive, with the worst prognosis.

CASE REPORT

A twenty-one-year-old man reported a lesion on the left ear lobe for about a month, with a progressive increase in size. He denied other associated symptoms such as pain, fever, or weight loss. The general physical examination was normal.

Case Reports

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FIGURE 1:
Nodulation
of hardened
consistency in
the ear



FIGURE 2: Detail of
painless nodulation

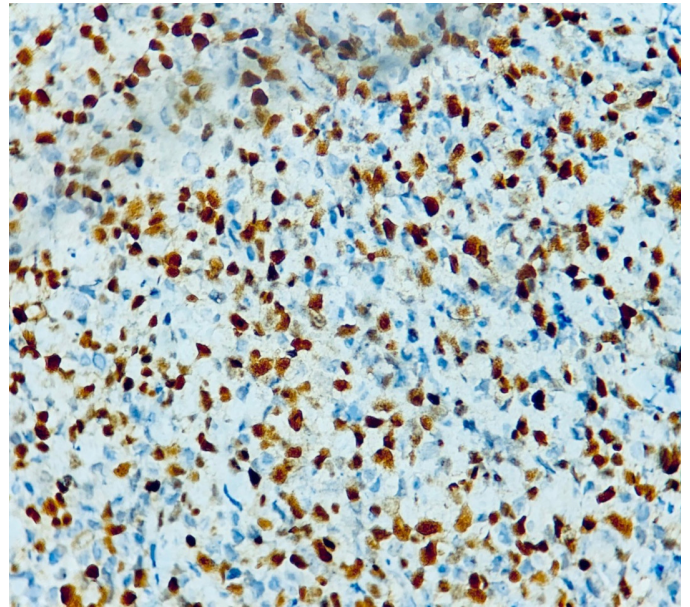


FIGURE 3: Resection of the left ear tumor, resection of a left parotid lesion,
and left modified radical cervical lymphadenectomy

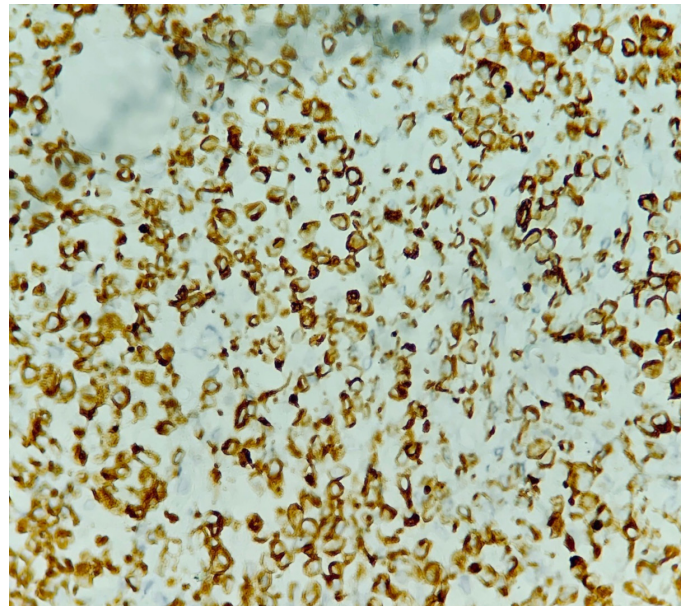


FIGURE 4: Neoplasm of small and round cells infiltrating adipose tissue.
Positive immunohistochemistry for desmin and myogenin

The dermatological examination revealed presence of hardened nodulation, painless on palpation, and without phlogistic signs at the anterior region of the left lobe, extending to the posterior region (Figures 1 and 2). An attempt to perform fine-needle aspiration (FNA) biopsy was unsuccessful. After an incisional biopsy, the anatomopathological examination showed neoplasia of small and round cells, infiltrating adipose tissue.

The immunohistochemistry was positive for desmin and myogenin (Figures 3 and 4), confirming the diagnosis of alveolar rhabdomyosarcoma. The patient was then referred to the On-

cology Service. Computed tomography of the neck to detect metastasis evidenced an intraparotid lymph node enlargement on the left, with suspicion for secondary neoplastic involvement. Therefore, we conducted the resection of the left ear tumor, left parotid lesion, and left modified radical cervical lymphadenectomy (Figure 5). Histopathological analysis of tumor resection showed alveolar rhabdomyosarcoma, stage pT3 pN1. The resection product from parotid lesion showed infiltration by such sarcoma. On the left cervical lymphadenectomy, rhabdomyosarcoma metastasis was confirmed in four of the thirty resected lymph



FIGURE 5: - Positive immunohistochemistry for desmin and myogenin: alveolar rhabdomyosarcoma

nodes. The patient underwent four chemotherapy sessions and 28 radiotherapy courses and is currently being followed up.

DISCUSSION

Sarcomas are rare malignant mesenchymal neoplasms that mainly affect children and adolescents.

Rhabdomyosarcoma, a subtype originating from skeletal muscle, is the most common type of soft tissue sarcoma in children, corresponding to approximately 50% of these tumors. The head and neck region are the most affected site, followed by the genitourinary tract, extremities, chest, and retroperitoneum.¹ There are few reports in the literature of primary cutaneous rhabdomyosarcoma since this is an extremely rare condition. In adults, the occurrence is even more unusual – about 90% of all rhabdomyosarcomas occur in individuals under 25 years old – affecting sites of unusual location, presenting fast growth, and being difficult to treat.²

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A biopsy is necessary to conclude the diagnosis. The biopsy can be surgical or with thick or fine needle aspiration (FNA).

Differential diagnoses of cutaneous lesions of the head and the neck include: hemangioma, lymphoma, lymphangioma, leukemia cutis, angiofibroma, neuroblastoma, cutaneous myofibroma, glioma, cellulitis, abscess, mastoiditis, and other sarcomas.²

A dermal infiltrate of small and oval-shaped cells with an acidophilic cytoplasm characterizes the histopathology of cutaneous alveolar rhabdomyosarcoma. Such changes can occur in various pathological conditions, and immunohistochemistry is essential to define the diagnosis. It is possible to find rhabdomyoblasts and characteristic neoplastic multinucleated giant cells in well-differentiated types, although immunohistochemistry is always an integral part of the diagnosis.²

There are four histopathological types, with their variants: embryonal, alveolar, pleomorphic, and sclerosing. The alveolar subtype is the most aggressive, with rapid progression, which causes early metastasis and increasing mortality rates. In this histological type, there is no association with environmental factors. Chromosomal translocations – t (2;13) and t (1;13) – are fundamental pieces in its development. There are also reports of involvement of individuals with other changes in the central nervous system, urogenital and gastrointestinal tract, and melanocytic nevi; thus it is believed these groups have to have a genetic predisposition.¹

The first choice treatment is surgical, always combined with adjuvant chemotherapy to avoid metastasis. Radiotherapy is necessary when total lesion resection is not possible.

The prognosis depends on the site of origin, size of the lesion, clinical stage, age of the patient, and histological type. Good prognostic factors include early age at diagnosis, primary site in the genitourinary tract and orbit, and embryonal and botryoid histological types.^{2,3}

The totally resected lesions are associated with a 90% survival in five years, which evidences the importance of diagnosis and treatment institution as early as possible.^{2,4} ●

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Necrobiosis lipoidica and isotretinoin: A case report

Necrobiose lipóidica e isotretinoína: Relato de caso

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RESUMO

Paciente do sexo feminino, com diabetes tipo I e tireoidite de Hashimoto, apresentou necrobiose lipóidica aos 15 anos de idade. Foi tratada com 100mg/dia de ciclosporina, porém um abscesso na região inguinal levou à interrupção do tratamento. Posteriormente, utilizou dimetil fumarato em doses crescentes até 120mg/dia por três meses e, devido à ausência de resultados, cessou o uso do medicamento. A terceira tentativa foi com isotretinoína 40mg/dia por oito meses, com cicatrização da ferida. Recentemente, após cirurgia reparadora de cicatriz no joelho, houve aparecimento de lesões de necrobiose lipóidica no local da sutura. Tomou novamente 40mg/dia de isotretinoína, e a lesão regrediu em três meses.

Palavras-chave: Necrobiose Lipóidica; Diabetes Mellitus Tipo 1; Infecções Bacterianas

ABSTRACT

A woman with type I diabetes and Hashimoto's disease presented necrobiosis lipoidica at 15 years of age. Cyclosporine 100 mg/day was prescribed; however, an abscess in the inguinal region led to treatment interruption. Then, she tried dimethyl fumarate at increasing doses up to 120 mg/day. The lack of results led to the discontinuation of the therapy. The third attempt was isotretinoin 40 mg/day for eight months, with wound healing. Recently, after a knee scar repair surgery, necrobiosis lipoidica lesions appeared at the suture site. The patient received isotretinoin 40 mg/day again, and the lesion regressed in three months.

Keywords: Necrobiosis Lipoidica; Diabetes Mellitus, Type 1; Bacterial Infections

A 36-year-old woman reported the onset of an excruciating skin lesion with a brown crust adhered to its surface in the bilateral pre-tibial region at 15 years of age after blunt local trauma. Three years ago, she already had type I diabetes mellitus comorbidity under control using insulin. The patient sought dermatological assistance, and an incisional biopsy was performed. The pathology was compatible with necrobiosis lipoidica. On this occasion, the use of cyclosporine 100 mg/day was indicated, with no significant improvement over a month. The appearance of an abscess in the inguinal region led to treatment interruption.

Case Reports

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The second therapeutic option was dimethyl fumarate, in the recommended dose used for psoriasis of 30 mg/day during the first week, 60 mg/day in the second week, 90 mg/day in the third week, and then 120 mg/day. The patient used the drug for three months. However, as there was no improvement and importing the drug was complicated, she gave up treatment.

Improvement in necrobiosis lipoidica was only observed with the third therapeutic option, isotretinoin. The dosage was 40 mg/day for eight months, culminating in the lesion healing. The patient presented severe dysfunctional myalgia during treatment.

Three months ago, she sought our service. An unsightly scar had been removed from the knee, with the development of a lesion with characteristics of necrobiosis lipoidica in the suture area confirmed histologically (Figure 1). The patient uses levothyroxine sodium to control Hashimoto's disease.

Because previously she had presented a good response to oral isotretinoin, pre-treatment control tests were requested, resulting in:

Blood glucose 361 mg/dl and glycated Hb 6.7%; Total cholesterol 198 mg/dl with HDL 88 mg/dl;

Thyroid peroxidase antibody 214.80 IU/ml (Normal up to 34 IU/ml);

Anti-thyroglobulin antibody 487.4 UI/ml (Normal up to 115 UI/ml);

TSH 1.370 uUI/ml (Normal 0.400 to 4.500 uUI/ml);

Serum creatinine 0.82 (Normal:0.50 to 0.90 mg/dl).

After 12 weeks of treatment with isotretinoin 40 mg/day, there were no more necrobiosis lipoidica lesions (Figure 2).



FIGURE 1: Photo before isotretinoin treatment



FIGURE 2: Photo after treatment with isotretinoin

DISCUSSION

According to Burgdorf et al.,¹ necrobiosis lipoidica is similar to necrobiotic xanthogranuloma with paraproteinemia, presenting as hard yellowish plaques, with central atrophy and telangiectatic vessels or blue veins, large and visible due to atrophy. Histopathologic findings reveal sally, granulomatous masses, intersecting bands of the dermis and subcutaneous tissue, and extensive necrobiosis. Granulomas contain histiocytes and foam cells. Frequently, it has a mixture of inflammatory cells and numerous foreign-body and Touton giant cells, with a peripheral ring of foamy cytoplasm. Cholesterol aggregates in wounds are common.

In most patients, Protein electrophoresis shows monoclonal IgG, a gammopathy that usually consists of light chain kappa. Bone marrow examination has revealed multiple myeloma in several patients.

Lipoid necrobiosis² is a rare idiopathic, granulomatous pathology that affects diabetic individuals in 0.3% to 1.2% of cases. It can precede diabetes in more than 14% of cases, appear simultaneously in 24%, or appear after diagnosis in 62%. Other diseases may be associated, such as thyroid diseases (Graves, Hashimoto), Crohn's disease, ulcerative colitis, rheumatoid arthritis, and sarcoidosis; as well as other skin diseases, such as granuloma annulare, erythema nodosum, necrobiotic xanthogranuloma, and chronic venous ulcers. Multiple myeloma can accompany this condition or appear in the future. The discussion of etiopathogenesis is open. Deposition of immunocomplexes in the vessels or microangiopathic degeneration leading to collagen alteration is discussed. The abnormality of collagen is

observed in the fibrils. The absence of transverse stretch marks³ is the most important finding.

In some cases, the complete collagen and elastin loss or the increase in collagen crosslinking caused by higher lysyl oxidase levels, typical of diabetic patients, have been suggested to contribute to the basement membrane thickening observed in necrobiosis lipoidica. Deposits of fibrin and immunoglobulin M (IgM) and C3 at the junction of blood vessels have also been found. In 30% of cases, vasculitis was demonstrated in the dermis by antibodies, leading to vascular occlusion. The most common finding in necrobiosis is the thickening of the vascular walls due to the endothelial enlargement, responsible for occlusion in the deeper layers of the dermis. The decreased flow is a potential factor that can also result from the deposition of glycoproteins in the vascular wall and an increase in Glut-1 (human erythrocyte glucose transporter).

The exact mechanism for increasing Glut-1 receptors is still under discussion. Researchers continue to consider the inflammatory factor because there are similar blood flows inside and outside the lesion. A case report described the simultaneous occurrence of ulcerated necrobiosis lipoidica and granuloma annulare.⁴

Several therapies have already been described: topical and intralesional corticosteroids if the lesion is closed, dapsone, injections of gold and bismuth, isoniazid, colchicine, clofazimine, topical nitrogen mustard, imiquimod, bovine collagen, PUVA, UVA-1, photodynamic therapy, glycemic control, dressings with animal gels, GM-CSF (Recombinant Human Granulocyte Macrophage Colony - Stimulant Factor), chloroquine, hydroxychloroquine, cyclosporine, fumaric acid ester, adalimumab, systemic and intralesional etanercept, systemic and intralesional infliximab, tacrolimus, pentoxifylline, aspirin, ticlopidine, CO2 laser, pancreatic transplant, thalidomide, platelet-rich plasma, topical tretinoin, intravenous immunoglobulin, pioglitazone, pulsed dye laser, surgical treatments such as grafts, cryotherapy, anti-TNF drugs, hyperbaric oxygen with steroid.^{5,6,7}


CONCLUSION


Necrobiosis lipoidica is a disease with still unclear etiology and pathogenesis. The multiple therapeutic options for this entity demonstrate its complex treatment. We report a case of necrobiosis lipoidica where oral isotretinoin had effective control, but it did not eliminate the possibility of recurrence. ●


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Multiple glomus tumor in a patient with neurofibromatosis type 1: a case report and literature review

Tumor glômico múltiplo em paciente com neurofibromatose tipo 1: relato de caso e revisão de literatura

DOI: <https://www.dx.doi.org/10.5935/scd1984-8773.20201242543>

ABSTRACT

Neurofibromatosis type I (NF1) is an autosomal dominant disease, with an incidence of 1/2,500–3,000 births and a prevalence of approximately 1/4,000–5,000 individuals. Genetic mutations in the NF1 gene cause it, affecting neural and skin tissues. Glomus tumor is a benign neoplasm originating from the glomus, a neuromyoatrial structure of the skin present at the fingertips and involved in thermoregulation. The literature historically considered these tumors isolated and sporadic, but some studies have proved a relationship with neurofibromatosis type I. Thus, patients with neurofibromatosis type 1 should be investigated. The case report provides additional support for the notion that NF1 has a risk associated with multiple glomus tumors.

Keywords: Glomus Tumor; Association; Case Reports; Neoplasms; Neurofibromatoses

RESUMO

Neurofibromatose tipo I (NF1) é uma doença autossômica dominante, com incidência de 1/2.500-3.000 nascimentos e prevalência de aproximadamente 1/4.000-5.000 indivíduos; é causada por mutações genéticas no gene NF1, que afetam tecidos neurais e cutâneos. Tumor glômico é uma neoplasia benigna originada do glomo, uma estrutura neuromioatrial da pele presente nas pontas dos dedos e envolvida na termorregulação. São considerados historicamente tumores isolados esporádicos, porém existem estudos que comprovam sua relação com a neurofibromatose tipo I. Pacientes com neurofibromatose tipo 1 devem ser investigados. O relato de caso fornece suporte adicional à noção de que NF1 tem um risco associado a múltiplos tumores glômicos.

Palavras-chave: Tumor Glômico; Associação; Relatos de Casos; Neoplasias; Neurofibromatoses

INTRODUCTION

Glomus tumors are extremely painful benign tumors of the glomus body, a neuromyoarterial structure that exists in high concentrations in the fingertips, and is involved in thermoregulation. Glomus tumors are usually solitary and often arise in a subungual location, although multifocal disease and non-subungual presentation are not uncommon. They occur more commonly in women and usually in the fourth decade of life.¹ Although the true incidence of glomus tumors is unknown, they represent less than 2% of primary hand tumors.²

Historically, they have been considered isolated sporadic tumors, not associated with other disease processes. However, multiple case reports, a molecular genetics research, and an epidemiologic study have confirmed that neurofibromatosis type I is associated with glomus tumors.¹

Neurofibromatosis type 1 (NF1) is an autosomal dominant disorder, with an incidence of 1/2,500–3,000 births and a prevalence of approximately 1/4,000–5,000 individuals.^{3,4} It is caused by mutations in the NF1 tumor suppressor gene, located on chromosome 17 (17q11.2), which encodes neurofibromin (nf), a protein able to downregulate the Ras-Raf/MAPK signaling pathway that activates cell proliferation. Mutations of the NF1 gene result in function alteration or loss of negative regulator of growth and cellular differentiation of nf. It leads to uncontrolled cell proliferation and an increased risk of developing cancer.^{4,5}

CASE REPORT

A 26-year-old woman with NF1 was assisted at our institution complaining of severe pain in the subungual region of the fifth right finger, on the hyponychium and the lateral nail fold of the third left finger, and the subungual region of the left hallux.

Clinically, the fifth right finger presented longitudinal erythronychia, with purple color and local pain in the proximal nail fold (Figures 1 and 3). The examination of the third left finger was normal, while in the left hallux, we noticed a purple tumor on the middle of the nail bed (Figure 2).

She presented the triad of Carroll (severe pain, point tenderness, and cold sensitivity) in all fingers.

A high-frequency ultrasound showed a 6 mm tumor on the fifth right subungual finger.

After troncular anesthesia, an oblique incision was made in the lateral portion on both sides of the proximal nail fold,

exposing the nail matrix. We conducted the avulsion of the nail and incision in the nail bed, visualizing a reddish tumor, easily detached by divulsion using mosquito forceps. Histological examination of the tumor confirmed the diagnosis of glomus tumor.

DISCUSSION

Glomus tumors, usually present in the fingers and toes, are benign tumors that develop from cells that resemble the modified smooth muscle cells of the glomus apparatus.⁶ NF1, an autosomal dominant inherited disorder, is caused by mutations of the NF1 gene located on chromosome 17. The protein encoded by the NF1 gene, neurofibromin, acts as a tumor suppressor. Patients with NF1 lose neurofibromin expression, which leads to increased cell proliferation associated with protein kinase, with a propensity to develop many different types of tumors.⁷

With four glomus tumors excised, the present case indicates, together with some previously reported cases, that there is an association between glomus tumors and NF1.

In 1938, Klaber provided the first report of a glomus tumor arising in a patient with neurofibromatosis.⁸ The literature no longer contains reports of glomus tumors in patients with neurofibromatosis until 1995, when Sawada et al.³ reported three patients with neurofibromatosis type I and subungual glomus tumors. Between 1995 and 2013, another 13 case reports described glomus tumors arising in the setting of neurofibromatosis type I. Although many of the authors speculated about the possibility of an association, it was not confirmed until 2009,¹

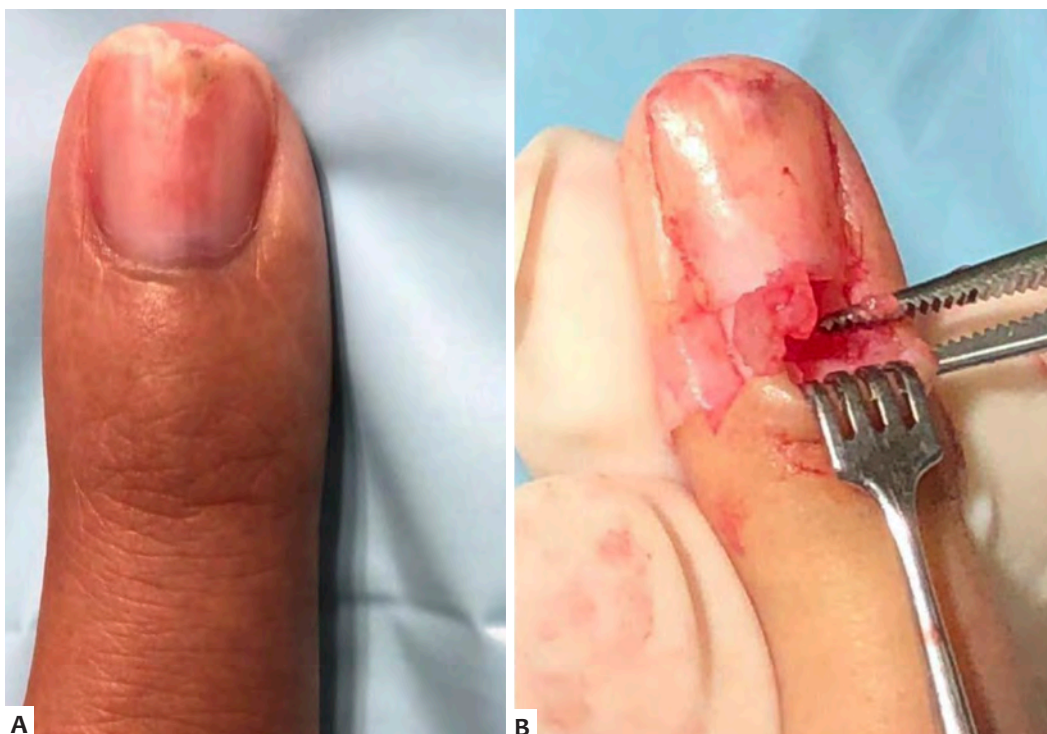


FIGURE 1: A - Longitudinal erythronychia in the fifth right finger and its proximal nail fold, with a purplish color. B - Visualization of the tumor during surgery

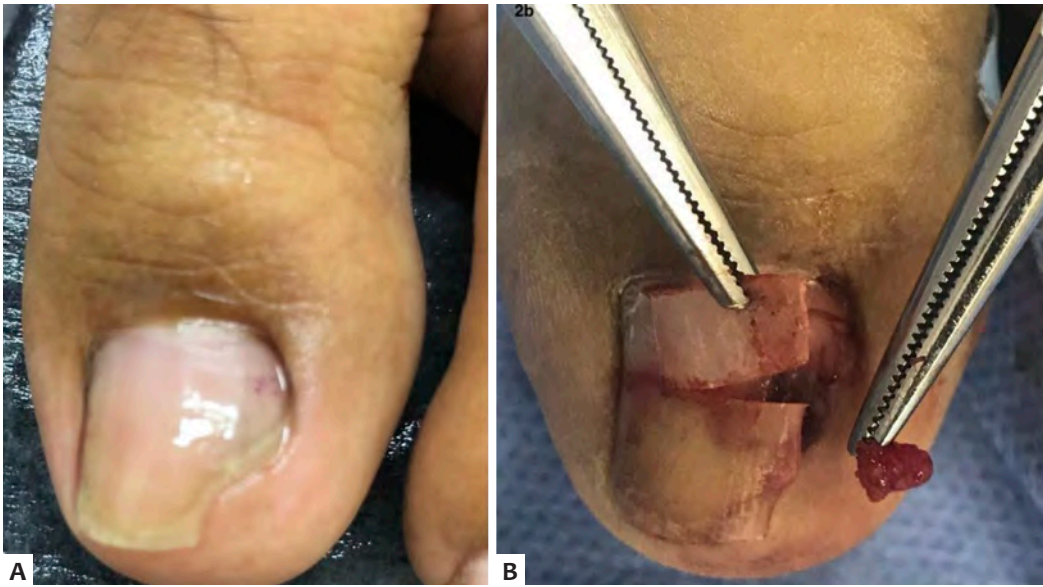


FIGURE 2: A - Glomus tumor in the hallux, clinical aspect of the nail before surgery. The patient cut the nail to improve the pain. B - Visualization of the tumor during surgery



FIGURE 3: Erythematous-wine color on the side of the finger with pain on palpation; the glomus tumor was removed with surgery

when Brems et al.⁹ firmly established a causal relationship between NF1 and glomus tumors. Glomus tumors associated with NF1 exhibit biallelic inactivation of the NF1 gene; thus, seven of the 12 tumors assessed harbored gene and somatic mutations, while two sporadic glomus tumors did not present abnormalities in the NF1 gene.

In 2013, Harrison et al.² conducted an epidemiological case-control study comparing a cohort of patients undergoing excision of a glomus tumor with a similar cohort of patients who underwent excision of other benign hand injuries. The study found that 29% of patients undergoing excision of the glomus tumor had a diagnosis of neurofibromatosis, while none of the patients in the control cohort had the disorder.

Most glomus tumors are unique. It is improbable that there will be synchronous tumors in adjacent fingers, as in the present case. However, in a patient with NF1, the risk of glomus tumors is increased. As this case exemplifies, the diagnosis of multifocal glomus tumors should be considered in these patients, especially when the classic triad of clinical features (spontaneous paroxysmal pain, point tenderness, and hypersensitivity to cold) is present. Most are located in the subungual area. Delayed diagnosis and treatment can lead to unnecessary debilitation in such patients.¹⁰

CONCLUSION

The case report provides additional support for the concept that NF1 has a risk associated with multiple glomus tumors. For dermatologists who manage patients with NF1, knowing this association can facilitate early diagnosis and appropriate treatment. ●

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Use of cervicofacial flap for reconstruction of extensive facial damage following Mohs surgery: a case report

Retalho cervicofacial para reconstrução de extenso defeito na face após cirurgia de Mohs: relato de caso

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ABSTRACT

Introduction: Facial skin cancer can be very challenging to surgical treatment. Reconstruction with cervicofacial flap is an adequate option when extensive damage is present. We describe a surgical procedure for complex lesions with high morbidity potential. **Case study:** 69-year-old woman with a large, recurring sclerodermiform basal cell carcinoma (BCC) in the left zygomatic area. Due to the lesion characteristics, we opt to perform Mohs surgery. A cervicofacial flap was used with good aesthetic results and no relapse. **Discussion:** The cervicofacial flap is ideal for extensively damaged areas and can be used as an alternative to skin graft.

Keywords: Carcinoma, Basal Cell; Mohs Surgery; Surgical Flaps

RESUMO

Introdução: os tumores cutâneos localizados na face podem ser desafiadores ao tratamento cirúrgico. A reconstrução com retalho cervicofacial é uma opção adequada para defeitos extensos. Apresentamos uma opção cirúrgica para lesões complexas e com grande potencial de morbidade. **Relato do caso:** mulher, 69 anos, consulta por carcinoma basocelular (CBC) esclerodermiforme recorrente e de grandes dimensões em região zigomática esquerda. Devido às características da lesão, optou-se pela cirurgia de Mohs. Um retalho cervicofacial foi utilizado com um bom resultado estético e sem recidiva. **Discussão:** o retalho cervicofacial é ideal para defeitos amplos e pode ser usado como alternativa ao uso de enxerto de pele.

Palavras-chave: Carcinoma Basocelular; Cirurgia de Mohs; Retalhos Cirúrgicos

INTRODUCTION

Basal cell carcinoma (BCC) is the most common type of skin cancer. Among its subtypes, sclerodermiform BCC is responsible for approximately 5% to 10% of the cases. It is called sclerodermiform because of its clinical similarity with plaque morphea or localized scleroderma. The condition is usually more aggressive than nodular and superficial subtypes. It tends to present subclinical spread with potential for extensive local dissemination.^{1,2} Surgical treatment is recommended for most of these carcinomas, and Mohs micrographic surgery is the method of choice. The technique is preferred for high-risk, recurrent, large-sized tumors and facial location. Its main advantage is to provide precise microscopic control of the entire margin of the tumor, maximizing the conservation of healthy tissue.³

During the performance of both Mohs micrographic surgery and the conventional technique, one of the most significant challenges is to repair the surgical defect while obtaining a good esthetic and functional result.⁴ In cancer cases in the malar, maxillary, and periorbital regions for more than 30 years, the literature has described the reconstruction technique with cervicofacial flap. Conceptually, it is a flap that explores the flaccidity of the skin of the cheek, pre-auricular, and neck regions. Its main advantage is maintaining the color and texture of the native tissue. Another advantage is that the method positions the incisions in areas of natural grooves, respecting the limits of facial aesthetic subunits. In some cases, this flap also allows adequate exposure of the cervical and facial structures for additional cancer procedures, such as lymph node dissection.⁵

We present a case of cervicofacial flap following Mohs surgery with multiple stages for excision of a sclerodermiform BCC in the left zygomatic region. The case proves challenging because of the large dimensions of the surgical wound and its location. A surgical option for complex lesions on the face and with great potential for morbidity has been demonstrated.

CASE REPORT

A 69-year-old woman was diagnosed with recurrent sclerodermiform carcinoma in the left zygomatic region that appeared more than ten years ago. She had undergone two previous (conventional) surgeries and treatment with radiotherapy with posterior recurrence of the lesion. The examination showed an erythematous plaque, infiltrated about 4.5 centimeters in its largest diameter, with multiple telangiectasias in dermoscopy and a small central crust. We chose the Mohs surgery (Figure 1) with local anesthesia and sedation. Free margins were obtained after four stages of additional 5 mm each. The resulting defect measured 6.5 x 7.5 cm, affecting the malar, pre-auricular, and left temporal regions (Figure 2). We used a cervicofacial transposi-

tion flap to repair the defect. The transposition arch was drawn up to the mandible, ipsilateral retroauricular, and cervical regions (Figure 3). The flap was elevated and transposed from the retroauricular and cervical regions to the surgical defect (Figure 4).

The flap was fixed with vicryl 4-0 (suture anchorage) in the zygomatic region and subcutaneous suture, and 5-0 mononylon thread for superficial cutaneous suture. We close the secondary defect primarily in the posterior portion, and by secondary intention in the retroauricular and mid-cervical regions (Figure 5).

External sutures were removed after 15 days. In the post-operative period, the patient presented a small focus of necrosis



FIGURE 2: Defect after four stages of micrographic control



FIGURE 1: Careful marking of the tumor margins



FIGURE 3: Extensive skin flap, detached, elevated. Careful hemostasis was performed. Note the level of surgical dissection



FIGURE 4: Mobilization of the flap to the region of the surgical defect



FIGURE 6: Late result



FIGURE 5: Aspecto após a síntese cutânea, notar que o defeito secundário foi fechado primariamente na porção posterior e deixado por segunda intenção na região retroauricular e cervical média

in the upper scar region, with improvement after debridement in about five weeks. After two months, the patient had a good healing. The patient currently presents a one-year postoperative period without signs of recurrence of the lesion and maintains a good result (Figure 6).

DISCUSSION

Skin flaps are necessary resources for closing skin tumor excisions.⁶ Transposition flaps are versatile and can be used anywhere on the face. They recruit tissues from different regions, resulting in color and texture compatible with the defect area,

especially when coming from nearby areas. The skin abundance in the neck and retroauricular areas make the use of these flaps an attractive option for reconstructions in the mid-lateral region of the face.⁷ On the face, the smooth and harmonic reconstruction remains challenging. The procedure must not only recover the facial function, but it also has to present a good aesthetic result, avoiding ectropion formations and, mainly, injury to the facial nerve.

When making the flap, after emerging from the parotid gland 1.7 cm before the tragus, the temporal branch of the facial nerve crosses the zygomatic arch between 3.2 cm and 3.9 cm posterior to the lateral border of the orbit, at the level of the orbital-tragus line, which corresponds to the middle third of the zygomatic arch. There is vulnerability of the temporal branch at the middle third of the zygomatic arch. However, although this branch of the facial nerve presents a wide pattern variation, its direction is constant. It allows the definition of a safe dissection plane for the temporal region.⁸

Cervicofacial flap is ideal for significant defects that can't be repaired with small local tissue mobilization, allowing reconstruction without the need for grafting.⁹ Its versatility and good rotation arc allow this flap to cover large areas of a surgical wound.⁵ However, the main disadvantage of this type of flap is the possibility of distal ischemia, which can lead to necrosis, primarily when the flap is sutured with tension due to defect extension or when the patient already has some disease that could compromise the local microcirculation.¹⁰ In the present case, the patient had already presented numerous lesion recurrences, requiring several stages of Mohs surgery to obtain free margins. It led to an extensive surgical defect that was adequately corrected with the cervicofacial flap, with no evidence of recurrence after one year of surgery. ●

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Reconstructive surgery of complex calcaneal defects using the medial plantar flap post-treatment of acral melanoma

Retalho plantar medial inervado para reconstrução de defeito complexo de calcâneo pós-tratamento de melanoma acral

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ABSTRACT

The lower limbs defects reconstructions are complex and impose a challenge for the reconstructive surgeon. The use of local fasciocutaneous flaps can be helpful when dealing with these defects. We report the case of two patients who underwent calcaneal reconstruction surgery using a medial plantar artery flap after the resection of acral melanoma. This flap provides a resistant and long-lasting tissue with a neurovascular sparing technique. The preserved sensitivity contributes to good long-term outcomes. The neurovascular flaps, such as medial plantar artery flap, promote good adaptation and healing regarding foot and heel defects.

Keywords: Plastic surgery; Lower extremity; Melanoma; Surgical flaps

RESUMO

A reconstrução de defeitos da região distal dos membros inferiores é complexa e gera um desafio ao cirurgião restaurador. O uso de retalhos fasciocutâneos locais deve ser considerado para este fim. Nesse relato de casos, apresentamos duas pacientes submetidas à reconstrução de calcâneo com retalho plantar medial inervado após ressecção de melanoma acral. Este retalho proporciona um tecido com elevada resistência e durabilidade, mantendo a sensibilidade da região ao preservar o tronco nervoso. Em nossa prática, o retalho plantar medial tem se mostrado uma excelente opção para reconstrução de defeitos do pé, especialmente do calcâneo, promovendo boa adaptação e resultados duradouros.

Palavras-chave: Cirurgia plástica; Extremidade inferior; Melanoma; Retalhos cirúrgicos

INTRODUCTION

The reconstruction of defects in the distal third of the lower limbs using local flaps is a real challenge for the plastic surgeon. The thin skin of the neighboring region, associated with the scarcity of soft tissues and the relative immobility of the structures, restricts the therapeutic options and hinders good final results. Harrison and Morgan initially proposed the use of the medial plantar flap for the treatment of these injuries in 1981,¹ and its use has become very popular with the advancement of anatomical-vascular knowledge in the region. It is based on a fasciocutaneous flap on the plantar arch and provides a very versatile tissue for covering defects of the foot, heel, and ankle.

This pedicled flap spares the neurovascular bundle and preserves the cutaneous sensory branches, transferring an innervated skin segment to the recipient area.² Thus, it provides the flap's long-lasting preservation and contributes to the patient's rehabilitation.

Furthermore, because it is a local flap, it maintains the characteristics of the plantar skin with high resistance and durability, capable of withstanding high pressures and shear forces.³

OBJECTIVE

This study aims to report two cases of calcaneal reconstruction after resection of acral melanoma using the innervated medial plantar fasciocutaneous flap.

METHODS

This is a primary, retrospective, clinical study conducted in a single center. The Clinical Case Reporting Guideline Development (CARE) was used⁴ to report a series of two cases conducted by the Microsurgery Sector of Plastic Surgery Discipline at the Federal University of São Paulo (Unifesp), respecting all ethical precepts and rights, among others ensured.

Case 1

A 60-year-old woman presented an irregular and painful lesion in the region of the right heel with progressive growth for three years. She reported difficulty in accessing the specialized health system, leading to a delay in diagnosis. Physical examination revealed an irregular and ulcerated melanocytic tumor in the right heel with a nodular growth component. The lesion was approximately 8 cm long, painful, and adhered to deep planes. Dorsalis pedis and posterior tibial pulse were present on palpation. There were no lymph nodes in the popliteal and inguinal regions (Figure 1).

Following the investigation, an incisional tumor biopsy was performed, showing an acral melanoma with Breslow thickness of 3.4 mm, ulceration, and eight mitoses/field. The disease was classified as locally advanced with cleavage in the calcaneus. We opted for resection with 2 cm margins and sentinel lymph node biopsy. The anatomopathological result was compatible with acral melanoma with free margins and negative sentinel lymph node (T3bN0M0 Clark V). The skin cancer treatment team performed immediate reconstruction using elastic sutures and biological dressings (Figure 2).

After two years of follow-up, the patient did not present disease evolution and was referred to the Microsurgery Sector of Plastic Surgery at Unifesp for late reconstruction. The defect extended for 9.3 cm x 8.6 cm. Thus we opted for reconstruction using an innervated medial plantar flap, as shown in the images. The patient is currently in the 6th postoperative month with good evolution, showing no difficulty walking or tumor recurrence (Figure 3).

Case 2

A 32-year-old woman was referred from an external service with a diagnosis of acral melanoma in the left heel. She had already undergone an excisional biopsy, with the anatomopathological result showing Breslow thickness of 0.7 mm, without mitosis or ulceration (T1aN0M0 Clark II).

Physical examination showed a good-looking scar on the heel, presence of dorsalis pedis and posterior tibial pulse, and ab-

sence of lymph node enlargement in the popliteal and inguinal region.

The staff decided to expand the surgical margins by 1 cm, resulting in a bloody area with 3.5 cm in diameter. We opted for reconstruction with a medial plantar fasciocutaneous flap, as shown in the figures 4 and 5.

DISCUSSION

Fasciocutaneous flaps should be considered when dealing with complex lesions or extensive defects in the distal region of the lower limbs. Among the possible options, the medial plantar flap has a prominent role in an area with the function to support weight, friction, and high shear forces.⁵ This flap provides a highly resistant coating with a thick epidermis, specialized subcutaneous tissue, and fascia with good adhesion to deep tissues.

The medial plantar artery is a branch of the posterior tibial artery responsible for maintaining the irrigation of this flap.⁶ By emitting superficial and deep branches, it irrigates the muscles of the hallux and skin of the plantar region. The possibility of transferring this flap to several surrounding locations and the viability when transferred to previously infected areas evidences this artery's good blood flow. Adequate blood supply favors good early and late outcomes (Figure 6).



FIGURE 1: Extensive acral melanoma in the calcaneal region



FIGURE 2: 6-month postoperative outcome



FIGURE 3: 6-month postoperative outcome



FIGURE 6: Retalho com fácil mobilização para fechamento do defeito

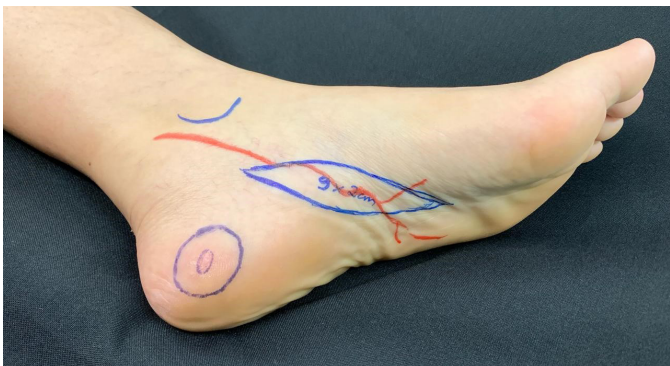


FIGURE 4: Preoperative marking: segment to be resected with safety margins and medial plantar fasciocutaneous flap measuring 9 x 2 cm



FIGURE 7: Immediate postoperative



FIGURE 5: Lesion excision respecting 1.0 cm margins



FIGURE 8: Postoperative in 45 days

Another important characteristic for the success of the medial plantar flap is nerve preservation. The dissection of the medial plantar nerve and its branches makes it possible to maintain the sensitivity of this skin segment without impairing the innervation of the rest of the forefoot. The sensory cutaneous branches preserve the perception of stimuli, such as pressure, pain, and thermal sensitivity, contributing to the protection and preservation of the flap.⁷ In patients with some degree of peripheral neuropathy, this property is crucial.

The unique skin characteristic of the plantar region should be highlighted. The plantar skin is highly specialized to support the body weight, with a thick epidermis, richly keratinized, and an additional protective layer called stratum lucidum. Add to that the support of a very differentiated and resistant subcutaneous tissue permeated with fibrous septa. Because it comes from a neighboring region, the medial plantar flap maintains the “like with like” property, replacing the skin of the plantar area with another skin with the same characteristics (Figure 7).

For reconstructions of distal defects in the lower limbs, the surgeon may opt for alternative flaps. The reverse superficial sural artery flap (RSSAF), propeller flap (reverse flow axial flap), or even microsurgical flaps are good alternatives and should be considered in surgical planning.⁸ However, because it does not have the “like with like” characteristics, it is not usually the first option for reconstructing the plantar region.

It is worth mentioning that, although there is no transfer of the muscle layer, the medial plantar fasciocutaneous flap promotes a cushion with adequate thickness and durability. The transferred fascia adheres well to bony prominences and deep structures in the receiving area, promoting resistant anchorage and hampering shearing.⁹ Also, secondary contraction promotes a “mushroom effect”, which contributes to the thickening of the flap, making its thickness more similar to the original tissue (Figure 8).

This type of flap has additional value in patients with diabetic neuropathy and distal ulcerations.^{10, 11} Ulcers in these patients are challenging to treat and often lead to deep defects, with exposure of the muscle and bone layer. Usually, such patients have already undergone conservative treatments with little or no improvement. Although simple rotation or advancement flaps achieve good outcomes in minor defects, they are usually insufficient for complex ulcerations. In these cases, fasciocutaneous flaps show better results.

CONCLUSION

The medial plantar flap is an excellent option for reconstructing calcaneal defects due to its versatility,¹² resistance, and reproducibility, with relatively constant anatomy. It allows an innervated flap without the need for nerve grafting, and it replaces a highly specialized tissue with another with similar characteristics. In line with the literature,¹³ our experience with such flaps encourages short and long-term outcomes and should be considered an option for this type of treatment. ●

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“Drumhead” graft technique to repair deep surgical defects in the nasal tip and ala regions

Técnica de enxerto “drumhead” no reparo de defeitos cirúrgicos profundos na região da ponta e asa nasais

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ABSTRACT

The reconstruction of deep surgical defects of the nasal tip and wing of the nose often presents a challenge to the surgeon. In these cases, full-thickness skin grafting is widely used, but it often results in sinking or graft depression. We present a surgical technique that is easy to perform and reproducible; nonetheless still very little diffused in Brazil: the “Drumhead” graft. This method performs the grafting of a rigid plastic suspension together with the full-thickness skin graft. Thus, this technique constitutes another tool for the dermatological surgeon to prevent irregularities of undesirable contours, graft depression, and nasal vestibule collapse.

Keywords: Nose; Nose neoplasms; Skin neoplasms; Skin transplantation

RESUMO

A reconstrução de defeitos cirúrgicos profundos da ponta e asa do nariz frequentemente representa um desafio ao cirurgião. Nesses casos, o enxerto de pele com espessura total é muito utilizado, porém frequentemente resulta em afundamento ou depressão do enxerto. Apresentamos uma técnica cirúrgica de fácil execução, reprodutível e muito pouco difundida no Brasil: o enxerto drumhead. Realiza-se a aplicação sobrejacente ao enxerto de uma suspensão de plástico rígida juntamente ao enxerto de pele de espessura total. A técnica é mais uma ferramenta para o cirurgião dermatológico que impede irregularidades de contornos indesejáveis, depressão do enxerto e colapso do vestíbulo nasal.

Palavras-chave: Nariz; Neoplasias cutâneas; Neoplasias nasais; Transplante de pele

INTRODUCTION

Skin cancer is the most common malignancy in Brazil, representing 25% of malignant tumors, with about 130,000 new cases per year.¹ Basal cell carcinoma (BCC) is the most common skin cancer (70%), followed by squamous cell carcinoma (25%) and melanoma, with approximately 4% of cases.^{1,2} Approximately 80% of all BCCs occur on the face, of which 25% to 30% are located in the nose.^{2,3} This fact gives considerable morbidity to these tumors.

Skin cancer treatment is primarily surgical, with frequent localized defects in the nose resulting from the cutaneous tumor excision in this region in the dermatologic surgeon practice. Lo-

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cated in the center of the face, with three-dimensional anatomy and cosmetic and functional relevance, the nose often represents a challenge to the dermatologic surgeon involved in the surgical removal of facial tumors of the face. Its free margins (nasal wing and tip) may suffer distortions that lead to unsightly results. These results highlight its high cosmetic importance.³

Practically, we can subdivide the nose anatomical regions into nasal tip and dorsum. These two regions have different characteristics that are relevant when choosing the reconstruction method. The nasal dorsum is supported on a firm structure (nasal bone), presenting thinner, more mobile, and elastic skin. In contrast, the nasal tip is sustained on a mobile framework (nasal cartilages), which has thick, sebaceous, inelastic, and little mobile skin.⁴

Several methods can be used to reconstruct surgical defects in the nose, such as closure by secondary intention, primary suture, flaps, and grafts. Primary closure is preferable whenever possible, but it is more used to reconstruct surgical defects located on the nasal dorsum. The little distensibility of the nasal tip's skin associated with the mobile cartilaginous framework often leads to distortions of the nasal tip and wing, presenting undesirable results.⁴

Flaps are more challenging to perform and, when properly used, can present optimal aesthetic results. On the other hand, its oncological safety in nasal tumors is questioned, presenting a high risk of local recurrence when surgical margins are not assessed before reconstruction. Thus, from an oncological point of view, it is recommended to evaluate the surgical margins before a reconstruction using a flap or graft.⁴

Full-thickness skin graft (FTSG) is a versatile technique, easy to perform, and with high oncological safety.⁵ However, its lower aesthetic quality is known since it can lead to discrepancies in the color and texture of the grafted skin compared to the adjacent skin of the nasal region. Also, in deepest surgical defects of the nasal tip and wing, where the skin is usually quite thick and oily, the method can result in graft sinking with marked contours and unsightly results.⁶

We present a surgical technique that is easy to perform, reproducible, and still little disseminated in Brazil.

METHODS

A 58-year-old man with a diagnosis of BCC located on the left nasal tip received an indication of surgical excision of the lesion placed in a thick and sebaceous skin. The lesion removal resulted in a circular, deep defect, measuring 15 mm in its largest diameter (Figure 1). We decided to perform the drumhead graft.

Technique: First, the FTSG donor site must be chosen. In this case, we opted for the pre-auricular region because it has some photodamage and good correspondence with the receiving area. Using the suture's envelope, a mold of the recipient site was made, marking the donor site.

Then, the donor skin was removed in the subdermal plane using Joseph skin hook and curved iris scissors. Once removed, the tissue was defatted, trimmed, and preserved in 0.9% saline. Unlike the usual procedure, in this case, the FTSG was

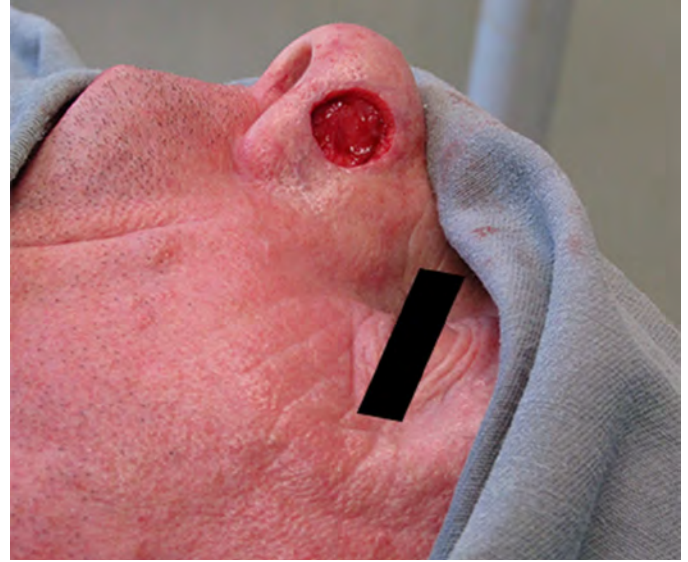


FIGURE 1: Deep circular defect resulting from BCC excision on the nasal tip



FIGURE 2: Undersized graft removed from the preauricular region sutured at the receptor site (nasal tip)

undersized to be placed over the deep surgical defect as if it were the “drumhead”. Then, it was sutured to the recipient site with 5-0 nylon suture with simple stitches (Figure 2).

The patient received a gauze pad (Figure 3) and stitches (poliglecaprone - Monocryl 4-0) crossing the entire nostril width, starting at the graft, leaving the nasal cavity, and returning to the graft surface, forming a loop.

The gauze pad was placed in the intranasal region, directly below the graft recipient site, with a generous amount of antibiotic ointment. The intranasal suture loop was pulled out of the nose to keep the gauze pad firm in the nasal vestibule (Figure 4).

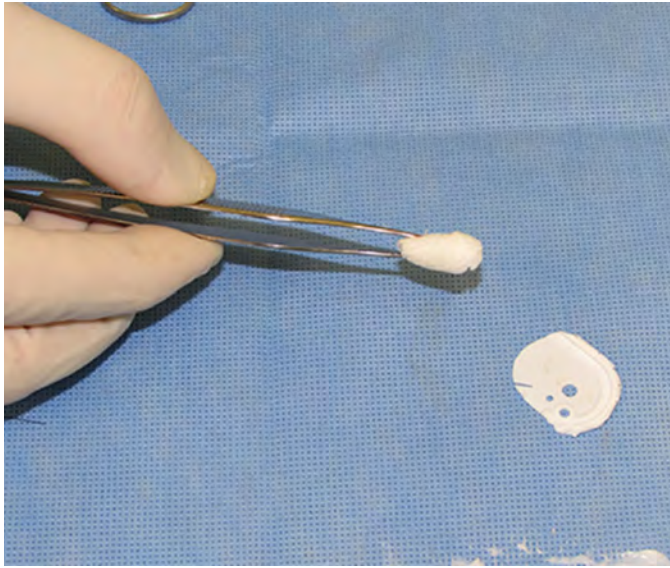


FIGURE 3: Performance of the gauze pad



FIGURE 5: Tailoring of a rounded piece of rigid plastic for placement above the graft



FIGURE 4: Firm placement of the gauze pad in the nasal cavity



FIGURE 6: Positioning the piece of plastic with the same suture as fixed the intranasal gauze pad

In the next step, we used a piece of rigid plastic from the poliglecaprone packaging (Monocryl 4-0), which was cut and placed directly on the graft. Care was taken to leave the edges rounded so they wouldn't traumatize the patient's skin (Figure 5). The support was attached to the same stitch fixing the intranasal gauze pad (Figure 6).

This rigid support had the function of supporting the intranasal gauze pad, which, in turn, pulled the graft bed, so it came into contact with the grafted skin.

The rigid plastic support and the full-thickness skin graft were soaked with antibiotic ointment and covered with gauze. The intranasal support remained for seven days to prevent any collapse or depression of the nasal vestibule.⁶ On the 7th post-

operative day, the plastic support and intranasal gauze were removed, and on the 13th day, the suture was removed (Figure 7).

RESULTS

The patient evolved without any complications, such as surgical site infection, seroma formation, hematoma, or graft loss, in the postoperative period. He developed with good cosmetic results and was followed up until nine months after the operation when he was referred to the outpatient clinic of origin (Figure 8).

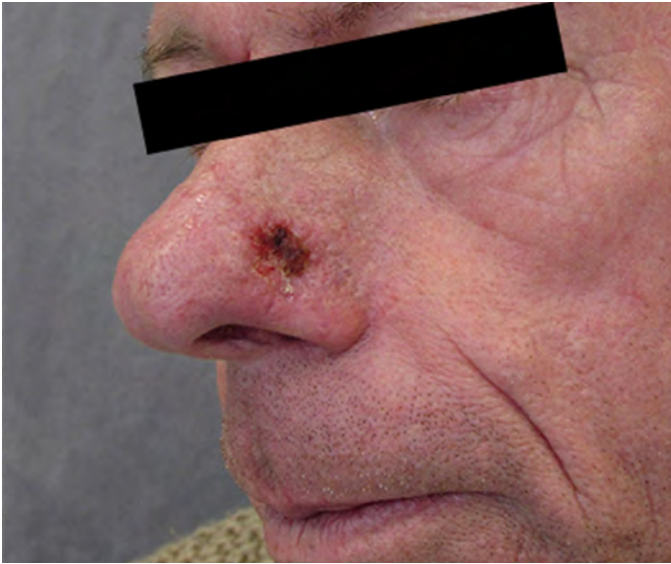


FIGURE 7: Resultado do enxerto após a retirada dos pontos no 13º dia

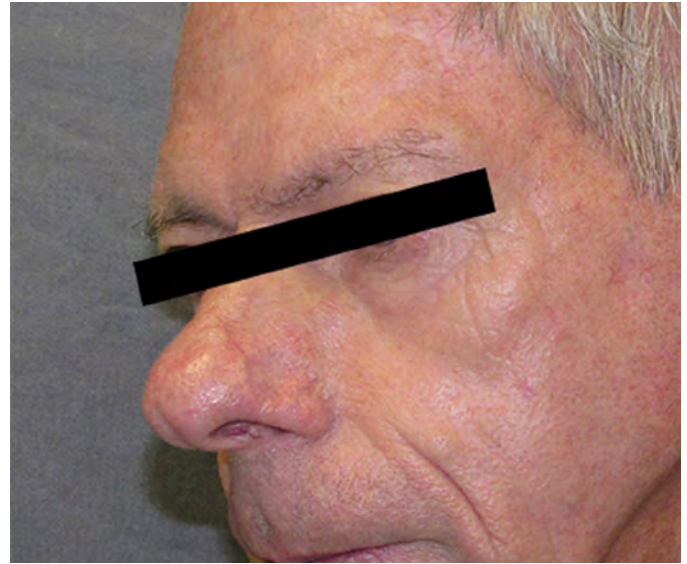


FIGURE 8: Ótimo resultado funcional e cosmético após 09 meses da cirurgia

DISCUSSION

The FTSG is effective in repairing nasal defects but often unsuitable for deep surgical defects in the lower third of the nose, requiring the use of complementary techniques to prevent deformities.⁶

In reconstructions of this type of lesion with FTSG, the dermatologic surgeon usually tends to oversize the graft so that it can “cover” the entire bottom of the bed, ensuring graft contact with the bed and, consequently, its viability. In these cases, a dressing is sutured to the graft (Brown’s dressing) with the function to push it against the bed.

These two steps are fundamental to the graft take, but they are also responsible for the graft “sinking” in the postoperative period, with loss of the nasal contour.

The drumhead technique adapts these two steps since it undersize the graft and, instead of pushing it against the bottom, it pulls the bed against the graft. The wound bed contact with the grafted skin allows neovascularization and graft survival, in addition to preventing hematoma,⁵ seroma formation, and, mainly, internal collapse of the nasal vestibule or any graft depression.

CONCLUSION

We conclude that the drumhead graft method is a relatively simple and reproducible technique. Through it, we were able to unite the aesthetic qualities of the flaps with the oncological safety and execution simplicity of the grafts in the reconstruction of deep surgical defects in the region of the nasal tip and wing, preserving its functionality and cosmetics. ●

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Angiokeratoma of Fordyce treated with long pulsed Nd:YAG 1064 nm laser

Angioqueratoma de Fordyce tratado com laser Nd:YAG 1064nm pulso longo

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ABSTRACT

Introduction: Angiokeratoma of Fordyce are benign vascular lesions that present as small, asymptomatic, purple papule on the scrotum, shaft of the penis, or labia majora. Therapeutic options comprise several methods, including lasers. **Case report:** Men presented with multiple violaceous papules on the scrotum, compatible with angiokeratoma of Fordyce. The patient was treated with a single session of long pulsed Nd:YAG 1064 nm laser. **Discussion:** Treating angiokeratomas with lasers has the benefit of allowing vessel coagulation without bleeding. **Conclusion:** Even though these are benign lesions, patients seek treatment because of cosmetic concerns. Dermatologists should be aware of treatment options available.

Keywords: Ambulatory Surgical Procedures; Dermatology; Nails

RESUMO

Introdução: angioqueratomas de Fordyce são pequenas pápulas violáceas, assintomáticas, localizadas no escroto, corpo do pênis ou nos grandes lábios. Vários métodos estão entre as opções terapêuticas, incluindo lasers. **Relato do caso:** homem, com múltiplas pápulas violáceas na bolsa escrotal, compatíveis com angioqueratomas de Fordyce. Foi realizado tratamento com uma única sessão de laser Nd:YAG de pulso longo. **Discussão:** o benefício do tratamento de angioqueratomas com lasers é permitir a coagulação dos vasos sem sangramento. **Conclusão:** embora sejam lesões vasculares benignas, angioqueratomas podem gerar preocupação estética. Dermatologistas devem estar cientes das opções de tratamento disponíveis.

Palavras-chave: Doenças da Unha; Procedimentos Cirúrgicos Ambulatoriais; Terapêutica

INTRODUCTION

Angiokeratoma of Fordyce are benign vascular lesions that present as small, asymptomatic, purple papule located on the scrotum, shaft of the penis, or labia majora. Therapeutic options include several locally destructive methods, such as electrode-siccation, laser, cryotherapy, and surgery.¹ Besides the cosmetic concern regarding these lesions, they become an issue due to the possibility of bleeding.²

CASE REPORT

A 37-year-old man, Caucasian, Fitzpatrick skin phototype III, presented multiple painless violaceous papules on the scrotum. Physical examination revealed more than 50 purple papules 2–3 mm in size on each side of the scrotum, compatible with angiokeratoma of Fordyce (Figure 1a). The patient



FIGURE 1: **A** - Clinical image of the scrotum containing several angiokeratoma of Fordyce before treatment; **B** - Clinical image of the scrotum one month after the procedure showing reduction of the lesion in number and size

reported varicocele surgery performed seven years ago. There was no evidence of testicular tumor or inguinal hernia. He had already tried treatment some months before with little response and desired to achieve more significant improvement. Before the procedure, an anesthetic cream containing lidocaine 23% and tetracaine 7% was applied and completely removed using soap and chlorhexidine solution after 60 minutes. The patient received a single session of long-pulse Nd:YAG laser ablation (Solon Platform®, LMG Lasers) at a wavelength of 1064nm, with a spot size of 3mm, energy 212J, and pulse duration 15ms. The endpoint achieved was vessel darkening. One month after the procedure, we observed lesion reduction (Figure 1b) and overall improvement in skin texture. The patient was satisfied with the results achieved.

DISCUSSION

John Addison Fordyce first described Fordyce angiokeratoma of the scrotum in 1896. They can occur on the scrotum, shaft of the penis, labia majora, inner thigh, or lower abdomen.³ The lesions can be unique or numerous and diffusely spread. The pathophysiology remains uncertain.⁴

Fordyce angiokeratoma can occur in young men who underwent intense physical activity and in older men. Its prevalence ranges from 0.6% in men aged 16 to 20 years to 16.6% in men over 70 years.⁵

Differential diagnosis includes angiokeratoma corporis diffusum, malignant melanoma, and melanocytic nevus. Dermoscopy can be helpful to diagnose the condition, but sometimes a biopsy can be necessary.³

Laser treatment of Fordyce angiokeratoma has been described with KTP 532nm laser, long-pulsed Nd:YAG 1064nm, and 595nm pulsed dye laser.^{1,2,6-8} Treating angiokeratomas with lasers has the benefit of allowing vessels coagulation without bleeding. Bleeding can affect treatment performance and efficacy because it compromises the visualization of the lesions. The studies available described that up to six sessions are necessary to achieve complete lesion clearance.^{1,6,8}

Ozdemir et al. treated ten patients with 1064nm long-pulse Nd:YAG laser in two to six sessions, reaching significant (>75%, <100%) and moderate (>50%, <75%) improvement in six and two patients, respectively, two months after the end of therapy. One patient achieved complete improvement. Short-term adverse events observed in the study included transient swelling, purpura, bleeding, and pain.⁸ Another study by Ibrahim et al. compared long-pulsed Nd:YAG 1064nm laser with pulsed dye laser to treat angiokeratoma of Fordyce. The study treated 22 patients with three sessions of pulsed dye laser on a selected side or part of lesion area and with long-pulsed Nd:YAG laser on the other. Results showed that both lasers presented statistically significant improvements in angiokeratoma of Fordyce. Nd:YAG presented superior results (overall mean improvement with pulsed dye laser: 61.8% versus Nd:YAG: 77.63%; $p < 0.005$).¹ Therefore, we chose to use the Nd:YAG laser because, besides being the laser available (and access to pulsed dye lasers is not so easy), its use is also endorsed by literature.

CONCLUSIONS

Even though angiokeratomas of Fordyce are benign vascular ectatic lesions, some patients may seek treatment of these lesions to improve their quality of life because they can cause cosmetic concerns. Dermatologists should be aware of the treatment options available and discuss them with the patient to choose the best suitable method. ●

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Association of intense pulsed light and Erbium: Yag 2940 nm laser for treatment of lentigo on the face

Associação de luz intensa pulsada e laser Erbium: Yag 2940nm para tratamento de lentigo na face

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ABSTRACT

Solar lentigo is present in 90% of the population over 50 years of age and characterizes as hyperchromic spots in photoexposed regions. It increases with aging and is more frequent in light skin. There are several therapeutic modalities, which achieve better results when associated. We describe the case of a 62-year-old man with Fitzpatrick skin phototype II, complaining of brownish macules in nasal dorsum for eight years. The patient underwent a skin biopsy, and the histological study confirmed solar lentigo. The patient was treated with six sessions of Intense Pulsed Light associated with Erbium-Yag 2940 nm Laser with a good clinical result.

Keywords: Skin aging; Lentigo; Melanosis; Low Intensity Laser Therapy; Intense Pulsed Light Therapy

RESUMO

O lentigo solar está presente em 90% da população com mais de 50 anos de idade, apresentando-se como manchas hipercrômicas em regiões fotoexpostas, que aumentam com o envelhecimento e são mais frequentes em peles claras. Há diversas modalidades terapêuticas com melhores resultados quando associadas. Descrevemos o caso de um homem de 62 anos, fototipo II de Fitzpatrick, com queixa de máculas acastanhadas em dorso nasal há oito anos. Foi submetido à biópsia de pele, e o estudo histológico confirmou ser lentigo solar. O paciente foi tratado com seis sessões de luz intensa pulsada associada a laser de Erbium:YAG 2940nm, com bom resultado clínico.

Palavras-chave: Envelhecimento da Pele; Lentigo; Melanose; Terapia a Laser de Baixa Intensidade; Terapia de Luz Pulsada Intensa

INTRODUCTION

Solar lentigos (SL) are associated with chronic exposure to ultraviolet radiation (UV). They usually present as hyperchromic macules of different shades of brown, preferably in photoexposed areas, in individuals with low skin phototypes, between the fourth and sixth decades of life.^{1,2}

Histologically, epidermal hyperplasia is associated with hyperpigmentation and actinic damage of the dermis, in addition to an irregular elongation of the grooves with hyperpigmentation predominantly at the tips of the epidermal crests.³ Structural studies reveal that melanocytes show signs of changes in their function, with increased epidermal growth concomitant with melanocytic proliferation, corroborated by a large number of melanosomes in complexes and by ultrastructural melanosomes.³

Therapy for solar lentigos can be divided into two major categories: physical and topical treatment. Currently, several topical therapies are in use, including hydroquinone, tretinoin, adapalene, and, more recently, a stable fixed combination of mequinol and tretinoin. Although topical therapies present satisfactory aesthetic results, they usually require a longer time and are not so effective. In addition to active therapy, patients are generally advised to use sunscreens as a preventive treatment to maintain treatment success.

Physical modalities include Intense Pulsed Light (IPL), lasers, chemical peelings, ultrasonic depigmentation, microdermabrasion, among other options. These are often used with excellent clinical success rates. However, this type of therapy should be balanced with the associated adverse events and recurrence rates of lesions. These resources, associated or not, act superficially, such as depigmenting therapy, bleaching, and cell renewal, providing effective results in the short and medium-term. Studies suggest that these combined therapies with preventive maintenance with photoprotection and lighteners can provide effective and satisfactory results.^{4,5} Among them, it is worth mentioning that the combination of Intense Pulsed Light and laser can be a good option, with very satisfactory aesthetic results.⁵

Literature has demonstrated that therapy with Intense Pulsed Light (IPL) alone combined with other types of treatment can be equally effective or even superior to ablative laser systems with melanin affinity.⁵⁻⁷

Studies have demonstrated that the treatment with ablative laser Erbium-YAG for solar lentigos management is effective by vaporizing the pigment-containing epidermis. However, there are adverse events such as post-inflammatory hyperpigmentation.^{7,8}

Conceptually, the combination of technologies can potentially increase treatment effectiveness and reduce the risk of adverse events. It is expected that, once two different but complementary mechanisms are combined, the duration of treatment can also be reduced.

CASE REPORT

A 62-year-old man was referred to the Dermatology Service of the Mackenzie Evangelical University Hospital in 2017 to investigate the appearance of asymptomatic brownish stains on the nasal dorsum nine years ago. The examination revealed a well-defined brownish stain on the nasal dorsum and bilateral cheek. Biopsy was performed in the nasal region to rule out an association with pigmented actinic keratosis and lentigo maligna. Histological examination of the skin showed epidermal hyperplasia without atypia, hyperkeratosis, and solar elastosis, compatible with solar lentigo (Figure 1).

The patient started treatment with IPL (Etherea®Platform) with a 540 nm filter in two passes (Table 1). After the session, a multi-purpose soothing repairing balm (Cicaplast®) was prescribed, associated with a sun protection factor.

One month after this first IPL session, we performed five further IPL sessions in association with Erbium-YAG 2940nm Laser (100MTZ tip) with one-month intervals between them (Table 1).

A subsequent evaluation showed significant improvement of the nasal spots (Figure 1).

DISCUSSION

Solar lentigos (SL) are also known as solar melanosis and actinic lentigos. The potential negative social impact of this condition should be considered, given that these lesions appear in highly visible parts of the body, such as the face, neck, hands, and forearms. The hyperchromic macules can be considered the first signs of the photoaging process, which can also significantly impact patients' quality of life. The incidence of SL increases with age, affecting more than 90% of white people over 50 years of age.⁴

In the differential diagnosis, SL should be differentiated from ephelides, pigmented actinic keratosis, flat seborrheic keratosis, melanocytic neoplasia, and malignant melanoma. They can be distinguished based on clinical aspects and, if not possible, histopathological differentiation may be necessary.⁷

TABLE 1: Protocol to use Intense Pulsed Light and Erbium-Yag 2940nm Laser

Session	Intense Pulsed Light (nm filter, mj/cm ² creep, ms pulse duration)		Laser Erbium:Yag 2940nm (Tip mtz, mode // creep mj/cm ² , pulse duration μs)	
	1 st Past	2 nd Past		
1	540, 15, 15	540, 16, 10		–
2	540, 17, 15	540, 16, 10		100, single mode // 17,5, 300
3 and 4	540, 19, 15	540, 18, 10		
5	540, 20, 15	540, 19, 10		100, dual mode // ablation 20, 300; coagulation 45, 5
6	540, 21, 15	540, 20, 10		

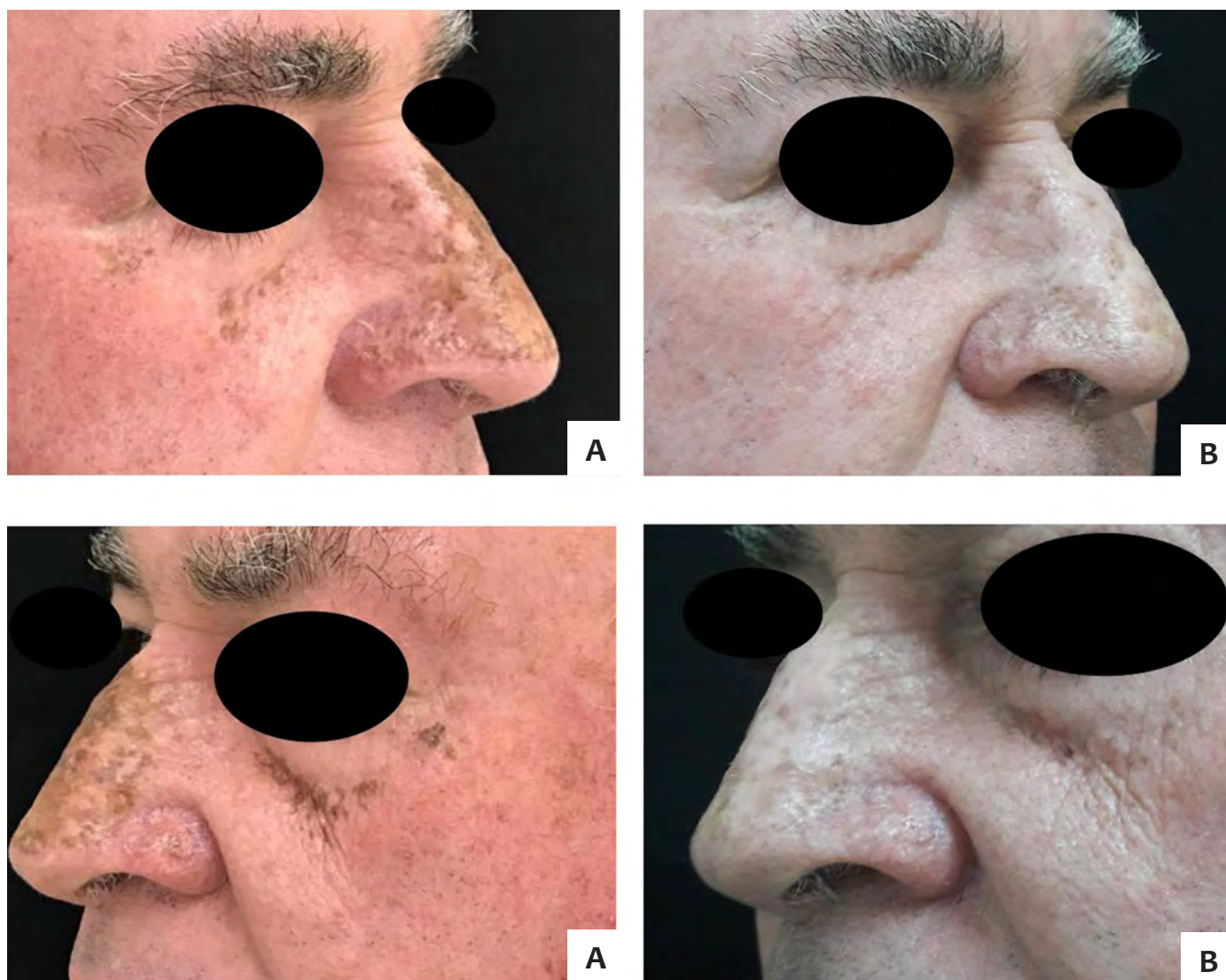


FIGURE 1: Before (A) and after (B) six sessions of combined Intense Pulsed Light (IPL) and Laser Erbium-YAG 2940nm therapy showing whitening of brownish macules in the bilateral malar region and nasal dorsum

In general, skin pigmented lesions are frequent targets of combined laser treatment and IPL.⁶

In the case of solar lentiginous lesions, the main target of treatment with IPL is the melanosome.⁶ The effect of the treatment is cumulative, and a few sessions are necessary, usually from three to six, every three to four weeks.

Combined with this therapy, the use of ablative lasers can be an effective alternative to treat benign pigmented lesions, as in our case. This may be a good option especially when there is keratinocyte hyperplasia, once ablation leads to better quality epidermis renewal.

Regarding the association of these techniques, we initially opted for using the IPL alone, seeking the lesion whitening. As the response obtained was less than expected, we decided to

associate Laser Erbium-YAG 2940nm in its ablative mode to IPL in the second session to renew the epidermis, thus promoting a more accentuated whitening. After achieving this result and now aiming at improving the skin texture, the Laser parameter was modified from the third session onwards to include the coagulation mode. This way, the dermis and epidermis were treated. Raising IPL parameters at each session but maintaining the pulse duration at 15ms and 10ms had the main objective of reaching different skin depths.

Although the literature reports numerous cosmetic applications using the laser Erbium-YAG, they have been used more frequently in the facial rejuvenation of photodamaged skin, including dyschromias.⁶

CONCLUSION

IPL is a highly versatile, safe, and effective modality to treat benign pigmented lesions. The association of ablative lasers offers the additional benefit of promoting the ablation of hyperplastic portions of the epidermis, directing skin homogenization. Once SL is an injury with melanic and hyperkeratotic components, the combined therapies targeting these two elements are more effective. Many publications corroborate the

effectiveness of the phototherapy technique of Intense Pulsed Light associated with ablative Laser in the depigmentation of skin spots, in particular senile. It can be used as a resource in the process of whitening hyperchromic spots from photoaging.⁵⁻⁷ Combining technologies made possible an effective treatment with faster and better results than monotherapy would probably have. ●


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Case Reports

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Synchronous multiple primary melanomas on congenital nevus: Case report

Melanoma primário múltiplo sincrônico sobre nevo congênito: relato de caso

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ABSTRACT

Patients with giant congenital melanocytic nevus are at higher risk of developing melanoma. After the first diagnosis of melanoma, there is also a higher incidence of subsequent melanomas in the same patient. However, the ideal therapy for this type of nevus is still controversial. We report the case of a patient with giant congenital nevus associated with multiple synchronous melanomas and the proposed treatment.

Keywords: Melanoma; Nevi and melanomas; Neoplasms

RESUMO

Pacientes com nevo melanocítico congênito gigante possuem maior risco de desenvolver melanoma. Após o primeiro diagnóstico de melanoma, há também uma maior incidência de melanomas subsequentes em um mesmo paciente. No entanto, a terapêutica ideal para esta forma de nevo ainda é controversa. É relatado o caso de um paciente com nevo congênito gigante associado a melanoma múltiplo sincrônico e o tratamento proposto.

Palavras-chave: Melanoma; Neoplasias; Nevos e melanomas

INTRODUCTION

Melanocytic nevi are benign proliferations of melanocytic cells with distribution in nests in the epidermis, inside the dermis, or other tissues.^{1,2} The melanocytic nevus present at birth is defined as congenital. Some authors also include melanocytic nevi that appear up to six months of life, during the first year, or up to two years of age in this classification.^{1,3} Congenital nevi also differ from acquired ones by histology. In general, they have more varied architecture and morphology, and their nevus cells spread to the deeper layers of the skin, including the subcutaneous tissue.^{4,5,6,7} The occurrence of nevus cells within nerves, blood vessels, and sebaceous glands is the most specific finding for this distinction.^{5,8}

The giant congenital melanocytic nevus (GCMN) is defined as a congenital melanocytic lesion that reaches at least 20 cm in diameter in adulthood.^{9,10} One of the biggest concerns involving patients with GCMN is the possibility of the appearance of melanoma. Currently, the literature has already proven the increased risk of these individuals developing the tumor.^{4,10,11}

The malignant melanoma incidence has been growing significantly in recent years.^{12,13} The reasons for this increase are not proven, but it is known that exposure to sunlight, ultraviolet irradiation, genetic factors, and early detection are essential elements.¹³ It is also known that patients with melanoma have a higher risk of developing another one, which is called multiple primary melanoma.¹⁴

CASE REPORT

A 48-year-old man, white, presented giant congenital nevus in the right upper limb (RUL). He complained of asymptomatic blackened lesions on the nevus two years ago. Dermatological examination revealed a brown stain affecting the entire RUL, with increased local body hair, overlaid with blackish papules with irregular borders (Figures 1 and 2).

The patient had a history of excision of two lesions on the RUL two years earlier, with an anatomopathology of superficial extensive (Breslow thickness of 1 mm) and nodular (Breslow thickness of 0.2 mm) melanoma. At the time, no margin enlargement or sentinel lymph node research was performed. The patient denied other personal or family background relevant to the case.

Due to the presence of two suspected melanocytic lesions in the RUL (Figures 3 and 4) at the first consultation, the diagnostic hypothesis of melanoma with in-transit metastases was suggested. Thus we opted for an excisional biopsy, with a



FIGURE 2: Giant congenital nevus in the right upper limb with blackened papules overlapping



FIGURE 1: Giant congenital nevus in the right upper limb with blackened papules overlapping

2 mm margin, of the two lesions. Then, we conducted the margins enlargement of previously removed lesions lesion in an external service, requesting the staging exams (chest CT, abdominal US, and sentinel lymph node biopsy). The anatomopathological features of the two lesions showed malignant melanoma with an in situ pattern (Figures 5 and 6), and the staging exams showed no signs of neoplastic involvement.

Six months later, three new suspicious melanocytic lesions were identified in the RUL. The anatomopathology revealed malignant melanoma in situ without ulceration. After three more months, due to many new suspicious lesions, photographic mapping and excisional biopsy of all lesions on the nevus were indicated (Figure 7). In total, we performed 30 excisional biopsies: two of them revealed melanoma in situ, Clark's level I, without ulceration. Enlargement of the margins and rigorous clinical follow-up in conjunction with the Oncology and Plastic Surgery teams were conducted.

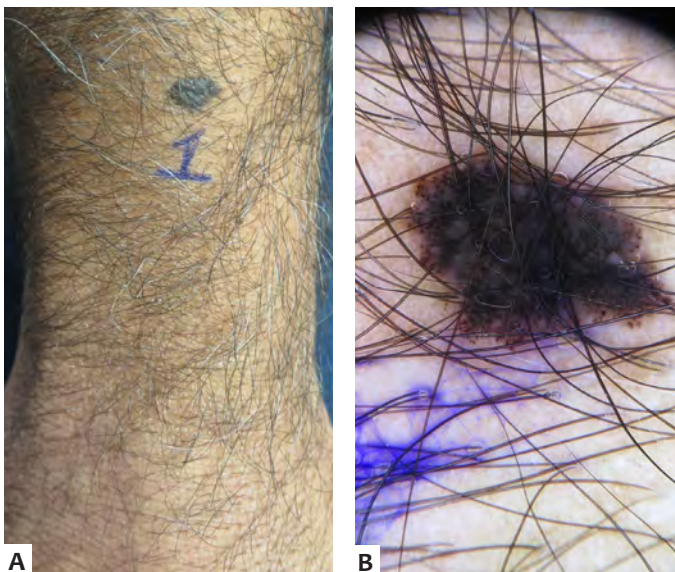


FIGURE 3: **A** - Blackish papule with rough surface and well-defined edges on the right forearm. **B** - Dermoscopy (10x) of melanocytic lesion with globules and pseudopods on the periphery, homogeneous blackened center, and whitish areas without structures

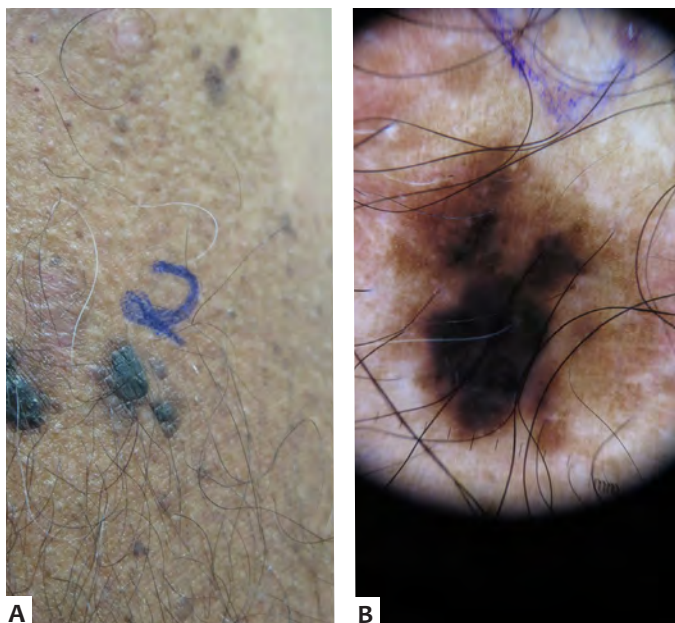


FIGURE 4: **A** - Brownish plate topped by black asymmetric papule on the right arm. **B** - Dermoscopy (10x) of lesion with asymmetric homogeneous blackened area with whitish areas without structures and atypical brownish pigment network

DISCUSSION

There is a growth in multiple melanoma frequency associated with the increasing number of primary melanoma cases. Currently, the more prolonged survival of patients with melanoma contributes to this fact. In addition, the risk of a second melanoma is higher than the occurrence of secondary metastases from the first in patients with thin melanoma, a fact consistent with the case reported.¹⁵ Authors calculate that melanoma patients have a 900-fold higher risk of developing another mel-

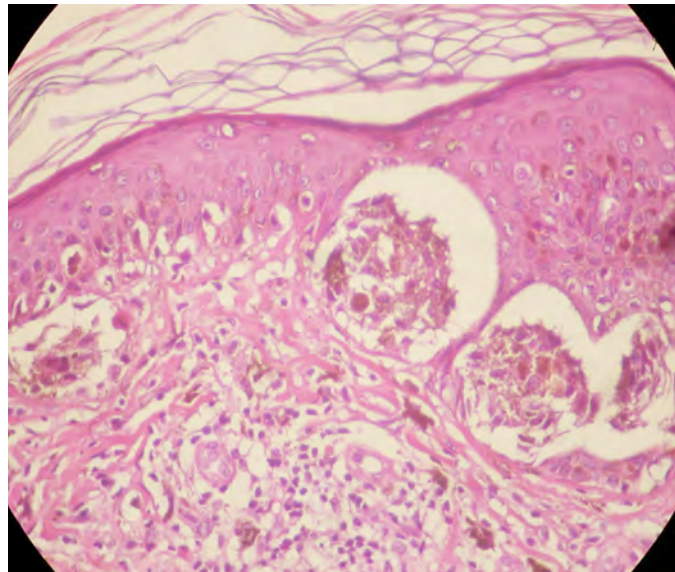


FIGURE 5: Histopathology (Hematoxylin & eosin 400x) showing melanocytic proliferation with nest areas with more than three cells in the junctional region, without atypia (on the left) and melanocytic malignant neoplasm in a large nest on the right; between both lesions, there is a variable melanocytic hyperplasia

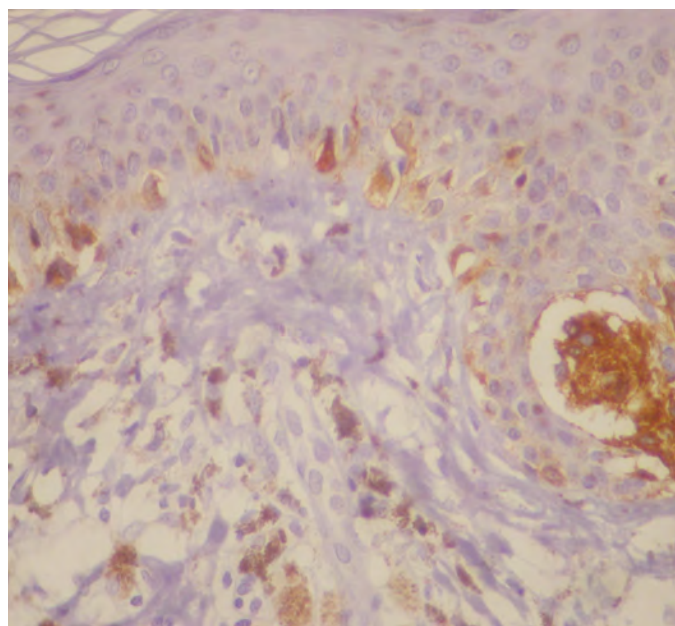


FIGURE 6: Immunohistochemistry Melan A/Mart1 (400x): markings in melanocytes are noted reinforcing the diagnosis of conventional benign melanocytic lesion on the left, malignant melanoma on the right, and areas of melanocytic hyperplasia between both

nomia than the general population of developing a first melanoma.¹⁴

There is also a higher prevalence of multiple melanoma in men, as in the case described.¹⁴

It is necessary to establish criteria to differentiate between a possible second melanoma, epidermotropic metastasis (cutaneous metastasis with epidermis involvement), or residual tumor to characterize multiple melanoma.^{13,16} Several clinical

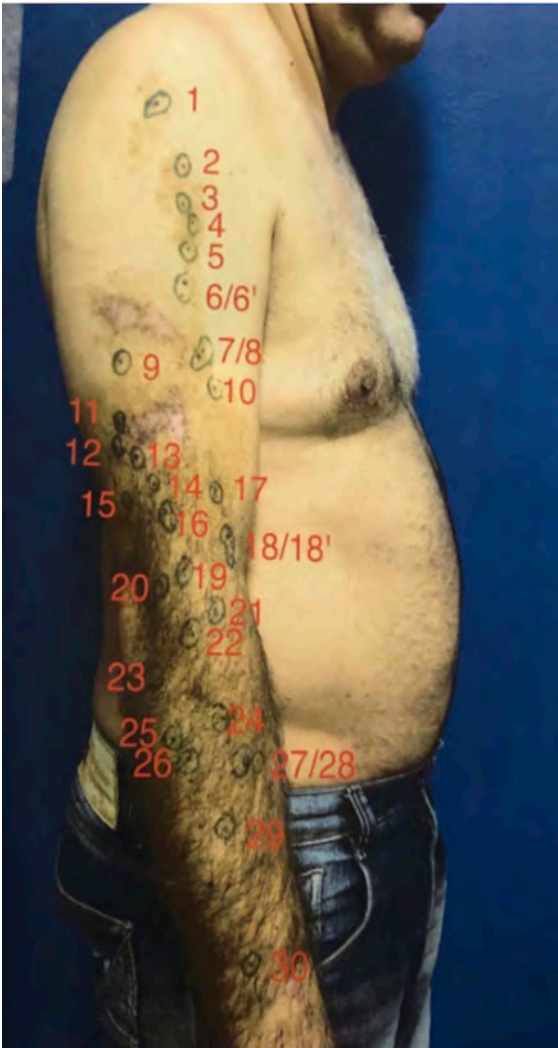


FIGURE 7: Photographic mapping showing melanocytic lesions overlapping the congenital nevus on the right upper limb

and anatomopathological elements are used for this diagnostic distinction: macro and microscopical different aspect among tumors; clinical and histological evidence of normal skin between synchronous lesions; presence of junctional alteration; and intraepidermal nests of malignant cytology cells demonstrating epidermal rise and spread.¹⁶

Despite the significant evidence showing that individuals with GCMN have an increased risk of developing melanoma, the exact incidence is still controversial. The low prevalence of GCMN and the scarcity of prospective comparative studies contribute to this fact.¹⁷

Some studies estimate that the malignancy rate is between 5% and 10%.⁴ It is believed that this higher incidence is related both to the high number of melanocytic cells and to the biological behavior different from the melanocytes present in the GCMN, citing as an example the structural chromosomal changes in the malignant process of these lesions.^{5,10}

The development of melanoma in a patient with GCMN has a particularly poor prognosis. There are some justifications for this unfavorable evolution. The often rough or nodular surface of the GCMN can make early detection difficult.¹⁸ Also, the malignant transformations of small or medium congenital melanocytic nevi (CMN) begin more superficially at the dermal-epidermal junction, thus quickly showing the appearance of the lesion. However, in GCMN, melanoma usually develops in the deep dermis, making its detection harder and later.^{10,19} The large extent of GCMN is another factor that may contribute to this severity due to the greater likelihood that multiple channels will conduct its lymphatic drainage.¹⁸

The therapeutic approach of the GCMN is controversial and still represents a challenge. The therapy must consider several factors such as patient's age, the size and location of the lesion, the possible functional impairments resulting from invasive procedures, and the presence of lesions suspicions on the nevus. The prophylactic surgical nevus excision has limitations regarding the uncertainties on its effectiveness as prevention for the neoplasia development since up to 50% of melanomas in patients with GCMN do not necessarily occur on the nevus. Also, there are technical difficulties in the execution and psychological impact associated with scars.²⁰

Some authors defend the prophylactic excision of lesions that are more heterogeneous, thick, rough, or, for some other reason, challenging to follow clinically.¹⁹ This was the option in the case described due to the high risk of the patient because of the GCMN presence and previous evidence of melanoma.

In contrast to most of the cases described in the literature, the evolution was favorable in the case reported, possibly due to regular monitoring in a specialized service, easy visualization of clinical changes in the congenital nevus described due to the brownish color, and orientation to the patient regarding the risks and severity of the condition. The patient was encouraged to periodically self-examine the skin, observing changes in the nevus' color, shape, or surface. These facts made the early detection and treatment possible, leading to the excision of the suspicious lesions and preventing neoplasia from having greater involvement. ●

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The role of the use of combined technologies in the approach to a patient with microstomia

O papel do uso de tecnologias combinadas na abordagem de uma paciente com microstomia

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ABSTRACT

Facial surgeries are often challenging for surgeons due to their complex anatomy, aesthetic and functional importance. Interventions in the cosmetic subunit that comprises the eyebrows can be particularly difficult. This case report aims to demonstrate the use of island flap in this region. We performed the excision of melanocytic nevus, with a good outcome and absence of postoperative complications. This technique is commonly used for facial reconstruction; however, the literature describes only a few cases using this method for eyebrow reconstruction.

Keywords: Scleroderma, Systemic; Microstomia; Lasers; Laser Therapy; Intense Pulsed Light Therapy; Combined Modality Therapy

RESUMO

A microstomia ocorre em 70% dos pacientes com esclerose sistêmica e há poucas opções terapêuticas. Descrevemos caso de mulher de 39 anos com diagnóstico de esclerose sistêmica em 2010, em uso de micofenolato de mofetil e rituximabe, apresentando microstomia. Foram realizadas duas sessões de luz intensa pulsada e sete sessões de laser fracionado ablativo Erbium:YAG de 2940nm, com resposta clínica importante. A formação e reorganização de fibras colágenas e elásticas foram responsáveis pela melhora da microstomia. Há poucos estudos com o uso de tecnologias para a abordagem da microstomia. Este é o primeiro com Er:YAG 2940nm para esta finalidade.

Palavras-chave: Escleroderma Sistêmico; Microstomia; Lasers; Terapia a Laser; Terapia de Luz Pulsada Intensa; Terapia Combinada

INTRODUCTION

Scleroderma is a connective tissue disorder characterized by cutaneous fibrosis, vascular abnormalities, and the presence of autoantibodies.¹ It is a rare disease, with a prevalence of 8 to 30 cases/100,000 inhabitants. Also, it is more common in women,¹ with a peak incidence in the third and fifth decades of life.²

The face is affected by systemic or localized sclerosis.¹ Orofacial changes usually begin with the stiffness of the lingual connective tissue and facial skin, leading to a thinning of the lips and nose, and then to the appearance of deep rhytids on the face, an aspect known as mask-like facies.² The main oral manifestation is microstomia, present in 70% of patients, characterized by

a reduction in the opening of the oral cavity due to sclerosis of the perioral soft tissues.²

Microstomia is defined as an interlabial commissure distance less than 45 mm or an interincisal distance less than 40 mm.³

Clinically, microstomia can negatively interfere with chewing, jaw movements, oral hygiene, and, consequently, quality of life.³ There is an increased incidence of dental caries, periodontal disease, and oral infections (especially by *Candida* sp) in these patients, at the same time that dental treatments may become impractical depending on the intensity of the oral opening limitation.¹ Tongue cancer has a significantly increased frequency in scleroderma patients with a mouth opening of less than 30 mm.⁴

Due to the high prevalence of oral disorders in patients with scleroderma, Mouthon et al. developed the Mouth Handicap in Systemic Sclerosis Scale (MHISS), the first specific measurement instrument to assess the degree of oral disability designed for patients with systemic sclerosis. This scale considers three distinct factors: restriction of mouth opening, presence of Sicca syndrome, and aesthetic concern (mainly skin retraction and presence of telangiectasias). The scale consists of 12 questions, comprised of five answers, with final results ranging from zero to 48 points (Box 1).⁵

Regarding treatment, there is a consensus in the literature that patients with limited motion range and oral opening should receive guidance on reinforcing oral hygiene. Such patients can be treated with physical and occupational therapy,² associated with lips and labial commissures lubrication with petroleum jelly.⁴ Removable partial dentures combined with physiotherapy for oral rehabilitation are highly recommended.⁴ Some patients may benefit from bilateral commissurotomy,⁴ skin grafts, and local flaps.⁶

The CO2 laser can be used to treat perioral rhytids and telangiectasias. In a preliminary study, Barete et al. demonstrated good aesthetic and functional results using CO2 laser, in addition to a significant improvement in the degree of mouth opening.⁷ Bennani *et al.* also showed good results with the use of CO2 laser: in four patients with microstomia due to systemic sclerosis, the study exhibited an increase in the interincisal distance after the first session, with an average gain of 5 mm.⁸ The authors also observed progress regarding lip flexibility and mouth opening, with better phonation, chewing, and dental care.⁸

Concerning intense pulsed light therapy (IPL), it is known that the longest wavelengths penetrate deeper into the dermis, leading to the stimulation of neocollagenesis, making the skin softer and more elastic.

BOX 1: MHISS Scale- Mouth Handicap in Systemic Sclerosis Scale

	Never	Rarely	Occasionally	Frequently	Always
1. I have difficulties opening my mouth.	0	1	2	3	4
2. I have to avoid certain drinks (fizzy drinks, alcohol, acidic drinks).	0	1	2	3	4
3. I have difficulty chewing.	0	1	2	3	4
4. My dentist has difficulty taking care of my teeth.	0	1	2	3	4
5. My dentition became altered.	0	1	2	3	4
6. My lips are retracted and/or my cheeks are sunken.	0	1	2	3	4
7. My mouth is dry.	0	1	2	3	4
8. I have to drink liquids all the time.	0	1	2	3	4
9. My meals consist of what I can eat and not what I want to eat.					
10. I have difficulty speaking clearly.					
11. The appearance of my face has changed.					
12. I have problems with the appearance of my face.					

Comstedt et al. demonstrated good results with the use of IPL in four patients with systemic sclerosis and microstomia, with improved speech articulation, feeding, and dental hygiene care.⁹

We report a case of a patient with microstomia due to systemic sclerosis, treated with two sessions of IPL and seven sessions of ablative fractional laser (AFL) Erbium:YAG 2940nm. There are no studies in the literature on the treatment of microstomia with Er:YAG 2940nm laser.

CASE REPORT

A 39-year-old woman, skin phototype IV, had systemic sclerosis diagnosed in 2010. She presented pulmonary fibrosis, esophagopathy, digital ulcers, Raynaud's phenomenon, ANA positive (1:640) with fine speckled pattern, and microstomia. The patient was using mycophenolate mofetil 1 g/day, rituximab, amlodipine, and omeprazole, with disease control.

In addition to clinical treatment, therapy was proposed to approach the microstomia. During the initial assessment, the patient's score on the MHISS scale was 22, the inter-commissural distance was 4.7 cm, and the interincisal distance was 3.7 cm. The patient was submitted to the IPL Etherea[®] platform in the perioral region, with a 695 nm filter, 17 J/cm² fluency, 40 ms

pulse duration, and a second application with 580 nm filter, 16 J/cm² fluency, 20 ms pulse duration, in two sessions.

However, she evolved with dyschromia. Then, we opted for treatment with AFL Er:YAG 2940nm Etherea[®] platform, in the perioral region, in seven sessions, with minimum intervals of 45 days. The sessions were performed from September 2017 to December 2018, with Dual Mode, using an 8 mm tip of 100 thermal microzones. The ablation mode had fluency of 10 J/cm² and a pulse duration of 300 ms, and the coagulation mode used a fluency of 40 J/cm² and pulse duration of 5 ms. Throughout the treatment, the patient received oral acyclovir 200 mg, five times a day, for seven days following the session, for prophylaxis of herpes simplex labialis, as well as healing creams and sunscreen. No complications were observed during treatment. In the last session, the score on the MHISS scale was 13, the intercommissure distance was 5.3 cm, and the interincisal distance was 4.5 cm (Figures 1 and 2).

At the end of the treatment, the patient reported she was very satisfied with the result and that she will maintain sessions every six months.



FIGURE 1: Frontal assessment of oral opening (A) before treatment, (B) in the seventh session of Er: YAG 2940nm ablative fractional laser

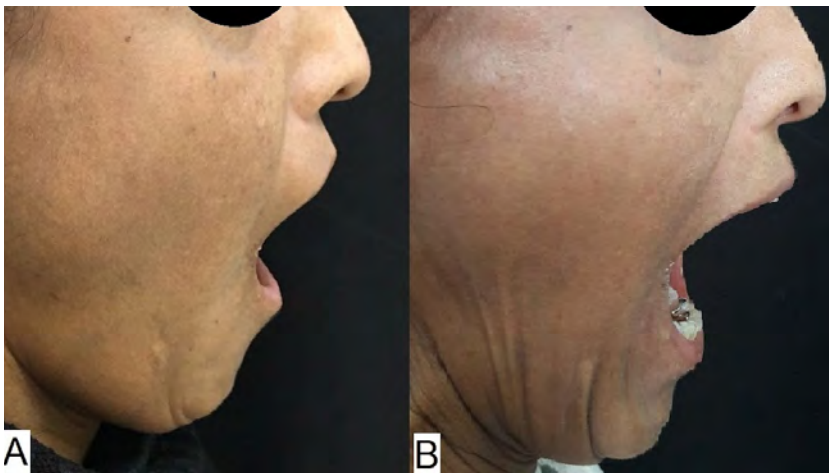


FIGURE 2: Frontal assessment of oral opening (A) before treatment, (B) in the seventh session of Er: YAG 2940nm ablative fractional laser

DISCUSSION

We present a case of microstomia in a patient with systemic sclerosis treated with two sessions of IPL and seven sessions of AFL Erbium:YAG 2940nm.

At the end of the treatment, the patient showed significant clinical improvement with an increase of nine points on the MHISS scale, 6 mm in the intercommissure opening, and 8 mm in the interincisival opening.

In systemic sclerosis, there is an increase in the number of activated fibroblasts with disorganized collagen production, mainly I, III, and IV,¹⁰ leading to fibrosis.

In the treatment with AFL Er:YAG 2940nm, we observed histological production of collagen types I, III, and VII, reduction of elastotic material, and elastin, with an increase of tropoelastin. These changes would be responsible for the improvement in skin texture through the healing in the procedure and oral opening.¹¹ Probably, the mechanism of action that justifies

the improvement of the patient is the reorganization of the collagen and the replacement of affected fibers with new ones of better quality.

There are few data in the literature on microstomia laser treatments, only case series and pilot studies using IPL and CO₂ lasers,^{8,9} without studies on AFL Er:YAG 2940nm.

CONCLUSION


Treatment with AFL Er:YAG 2940nm was effective in the clinical and microstomia improvement of a patient with systemic sclerosis.

Therapeutic methods for stimulating collagen can be offered to patients with microstomia with improvement in the impact scores and, mainly, in the quality of life of these patients. AFL Er:YAG 2940nm emerges as a promising therapy in the approach to microstomia in patients with systemic sclerosis. ●

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Reversal of lip ischemia with local heat after filling with Hyaluronic Acid

Reversão de isquemia labial com calor local após preenchimento com ácido hialurônico

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ABSTRACT

Introduction: One of the most feared complications when using facial fillers is the potential risk of intravascular injection. Therefore, all applicators must be aware of the treatment algorithm in the case of ischemia.

Objective: This article reports a case of lip ischemia after filling with hyaluronic acid, completely reversed only after the use of warm compresses.

Methods: Use of warm compresses in case of lip ischemia.

Results: Complete reversibility of ischemia.

Conclusions: Despite not being the only measure to be adopted in an ischemia condition after hyaluronic acid filling, this case demonstrates the value of using warm compresses, which in the present report was sufficient to revert the condition.

Keywords: Cosmetic techniques; Hyaluronic acid; Lip

RESUMO

Introdução: uma das mais temidas complicações com o uso de preenchedores faciais é o potencial risco de uma injeção intravascular e, por isso, todos os aplicadores devem ter conhecimento do algoritmo de tratamento no caso de um quadro de isquemia.

Objetivo: o presente artigo relata caso de isquemia labial após preenchimento com ácido hialurônico, com reversibilidade completa apenas com o uso de compressas mornas.

Métodos: uso de compressas mornas em quadro de isquemia labial.

Resultados: reversibilidade completa da isquemia.

Conclusão: apesar de não ser medida única a ser adotada num quadro de isquemia após preenchimento com ácido hialurônico, este caso demonstra o valor do uso de compressas mornas que, no presente relato, foi suficiente para reverter o quadro.

Palavras-chave: Ácido Hialurônico; Estética; Face

INTRODUCTION

The human face has a rich vascular network. Its numerous collateral arteries and the presence of anastomoses between vascular territories make it a potentially dangerous environment for the use of facial fillers due to the risk of ischemia.¹

Ischemia induced by injection of fillers is a rare but feared consequence and usually occurs due to injecting the product directly into an artery. However, it can also result from compression or vascular injury.

The immediate diagnosis and early treatment are essential for the satisfactory resolution of the problem.^{2,3}

This article reports a case of late ischemia after lip filling, resolved only with the use of local heat applied by the patient at home and complete reversal of the condition, verified on the patient's return to the office for the continuity of the treatment algorithm.

CASE REPORT

A 29-year-old woman performed lip filling for aesthetic purposes in a dermatologic office. She was healthy, with no known comorbidities or allergies.

Topical anesthesia was performed with lidocaine 30 minutes before the procedure, followed by cleaning with alcoholic chlorhexidine. The product was applied with a 30G needle, with 1.5 ml of hyaluronic acid (Juvederm vollift – Allergan) in the lip contour and vermilion. Before the injection, an aspiration test was performed for seven seconds, negative on all points. The patient reported no pain during the application. At the end of the procedure, no pain and no evident clinical signs of ischemia were observed. She was instructed to take prednisone 40 mg daily for three days, maintaining the follow-up.

The next day, 16 hours after the procedure, the patient informed that she was feeling well, with no pain, and forwarded photos for evaluation showing the presence of signs suggestive of vascular occlusion (Figure 1). The patient's immediate presence at the clinic was requested, and she was instructed to put warm compresses and massage the area until she arrived at the clinic. After 10 minutes of warm compresses, the patient sent new photos demonstrating a critical reversal of the process (Figure 2).

The image sent by the patient 16 hours after the procedure shows clear signs of vascular ischemia on the lips. Comparatively, after the warm compresses, it's possible to note the improvement in ischemic signs (Figure 3).

The patient was assessed in person, for three consecutive days, with no clinical changes.

No other treatment was performed, such as the use of hyaluronidase or anticoagulants.

DISCUSSION

The vascular anatomy of the face is complex, and doctors who apply facial fillers must be familiar with it. The professional should also quickly recognize the signs and symptoms of an ischemic condition and keep in mind the recommended management in these cases.

The initial presentation of embolic vascular events is the presence of momentary whitening, which can last only a few seconds (sometimes it is even absent). It progresses to livedo reticularis (which can last up to a few days), blistering (which usually appears on the third day), crusts, necrosis, sloughing, and, finally, healing by secondary intention – a process that can take six weeks or more.^{3,4} A slow capillary recharge time (the regular time is from one to two seconds) associated with skin sensitivity to touch can alert the presence of an ischemic condition.¹ Symptoms may include pain and discomfort disproportionate to those typically experienced in conventional fillers. However, it is essential to note that newer fillers are composed of local anesthetics, changing the clinical picture in these cases.^{1,3}

Depending on the inserted material's nature and quantity, the product's viscosity and cohesion, as well as the pressure applied at the injection time, different scenarios gravities are observed.¹ If only a small amount is injected, the material may be deposited in a location where the guarantee of adjacent blood vessels still provides sufficient blood supply in such a way that no ischemic result occurs. The rich vascular network ignores the obstruction so entirely that the accident never manifests clinically.¹



Figure 1: 16 hours after the procedure. Note the signs of vascular ischemia on the lips



Figure 2: Ten minutes after warm compresses. Note the improvement in ischemic signs



Figure 3: Observable differences before (figure above) with clinical signs of ischemia and after warm compresses (figure below)

Therefore, in general, it is likely that the safest practice is to inject small product amounts (0.1 mL) into several areas.^{1,5} Other potential factors for intra-arterial injection would be the use of smaller, sharper needles and the presence of scars in the treatment area.¹

Facing a case of vascular obstruction, it is necessary to follow the treatment protocol. Its onset time is decisive in the outcome success. After the first recognition of vascular impairment, warm compresses and massage on the site are recommended.

The local heat promotes vascular dilation, and the massage can help distribute the material as the pressure moves the plunger. The compress can be applied for five to ten minutes every 30–60 minutes, taking care not to cause skin burns.^{2,5}

Hyaluronidase is a particular part of managing ischemic conditions since it is responsible for degrading injected hyaluronic acid (HA). Although a hypersensitivity reaction can rarely occur with the use of hyaluronidase (incidence of 1 in 1,000 patients), most articles do not recommend skin testing in cases of imminent necrosis. However, the attending physician must be prepared for the rare possibility of allergy and even the extreme possibility of anaphylaxis.^{2,6,7} According to consensus recommendations, in the case of imminent local necrosis, high doses of the enzyme (400 units or more per area) and an injection every 3 cm to 4 cm in the ischemic area (bleached, violet, or reticulated discoloration region) should be applied, followed by a massage. If no improvement is observed in 60 minutes, an additional three to four injection cycles should be performed.^{2,6,7,8}

Aspirin administration (two 325 mg tablets a day for seven days) can be useful as an antiplatelet agent. Nitroglycerin paste at the site may promote vasodilation, but its use is controversial.² Low molecular weight heparin and systemic prostaglandins have also been a clinical treatment to promote vasodilation.^{1,7} Although there are no studies with a significant number of patients yet, hyperbaric oxygen therapy seems to provide a better benefit when associated with treatment, especially in cases of severe necrosis or when the tissue has slowed healing. Hyperbaric oxygen can deliver oxygen deep within the skin and help keep oxygen-dependent tissues viable.^{1,2,7,9}

When starting the measures early, the clinical outcomes are positive in most cases, with a complete reversal of ischemia and no sequelae.

In our case, as it is late ischemia, we opted to immediately guide the patient to apply local heat and massage and, as soon as possible, to attend the medical office to continue the therapeutic algorithm and hyaluronidase application.

The patient presented a complete resolution of the ischemic signs a few minutes after applying the compresses, to the

authors' surprise, and it was not necessary to follow the treatment protocol.

CONCLUSION

Knowledge of the location and distribution of the main vessels of the face is essential for clinicians involved in this type of work. The risk of ischemia is higher when large bolus injections of the product are sent more deeply into tissues for volume increase and when using needles.

The treatment starts with the event's early diagnosis and must continue with the administration of warm compresses and gentle massage, together with the application of hyaluronida-

se and oral aspirin. In the authors' experience, hyaluronidase is the most effective treatment and, therefore, should be the first measure applied in cases of suspected ischemia. After the recommended initial management, if ischemia is still present, the evidence suggests that hyperbaric oxygen therapy may benefit some patients.

All applicators must be aware of the vascular impairment therapeutic algorithm to avoid severe and potentially irreversible sequelae after ischemia. ●

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Multiple adult xanthogranuloma: case report of successful treatment with CO₂ Laser

Xantogranuloma múltiplo do adulto: relato de caso de tratamento exitoso com laser CO₂

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ABSTRACT

Multiple adult xanthogranuloma is a rare and late variant of Juvenile xanthogranuloma, a non-Langerhans cell histiocytosis. It usually corresponds to a single lesion in adults, and the manifestation of multiples lesions is uncommon. We report a case of multiple adult xanthogranuloma, with Isotretinoin therapy failure and optimal response to CO₂ Laser treatment in the surgical mode.

Keywords: Histiocytosis non-Langerhans-cell; Lasers gas; Xanthogranuloma juvenile

RESUMO

O xantogranuloma múltiplo do adulto é uma apresentação mais rara e tardia do xantogranuloma juvenil, uma histiocitose de células não Langerhans. No adulto, normalmente, é uma lesão única, sendo a manifestação por múltiplas lesões infrequente e pouco descrita na literatura. Relatamos um caso de xantogranuloma múltiplo do adulto, com falha terapêutica à isotretinoína e ótima resposta ao tratamento com laser CO₂ no modo cirúrgico.

Palavras-chave: Histiocitose de células não Langerhans; Lasers de gás; Xantogranuloma juvenil

INTRODUCTION

Xanthogranuloma is a benign and self-limited dermatosis characterized by non-neoplastic proliferation of histiocytes. It has phenotypic features different from Langerhans cells, with CD1a and S100 negative in immunohistochemistry and absence of Birbeck granules (cytoplasmic organelles identical to those of the Langerhans cell) in electron microscopy.¹ Juvenile xanthogranuloma, the most common form of non-Langerhans cell histiocytosis, is prevalent in children, presenting as multiple yellowish-brown papules or nodules distributed preferentially in the head and neck region. The appearance in adults is rare, with few cases published since its first description in 1963 by Gartmann and Titsch. It usually manifests as a single lesion and, exceptionally, as multiple lesions, this form being called multiple adult xanthogranuloma.² Cutaneous involvement is the rule, but extracutaneous manifestations have also been reported.

Possible spontaneous involution may occur. However, treatment with local cryotherapy, lesion excision, carbon dioxide laser (CO₂ laser), and oral retinoids⁵ are potential therapies. We present a case of multiple adult xanthogranuloma without extra-cutaneous manifestation.

CASE REPORT

A 37-year-old man, previously healthy, living in an urban area, presented asymptomatic symptoms but progressive papular lesions on the face for 15 days, without any other complaints. He denied external factors related to the onset of the condition.

The dermatological examination showed several papules, normochromic to slightly yellow, firm, shiny, and well defined. The papules were diffuse on the face and some on the anterior chest, without central umbilication (Figures 1 and 2). The patient underwent a complete physical examination without adenomegaly or visceromegaly.

We investigated one of the lesions through excisional biopsy. The anatomopathological examination showed dermal cell proliferation with numerous foamy histiocytes and giant cells (Touton cells). These findings are compatible with xanthogranuloma (Figure 3). Immunohistochemical analysis revealed expression of CD68 (clone PGM1) and absence of expression of Langerhans cell markers S100 (polyclonal) and CD1a (clone 010) (Figure 4).

After assessing the clinical aspect of the patient and the anatomopathological and immunohistochemical findings, we concluded the diagnosis of multiple adult xanthogranuloma. Visceral involvement was assessed, with laboratory tests, chest radiography, ultrasound of the total abdomen, and ophthalmological evaluation, with no evidence of abnormalities.



FIGURE 1: Observation of several normochromic papules, slightly yellow, firm, and shiny

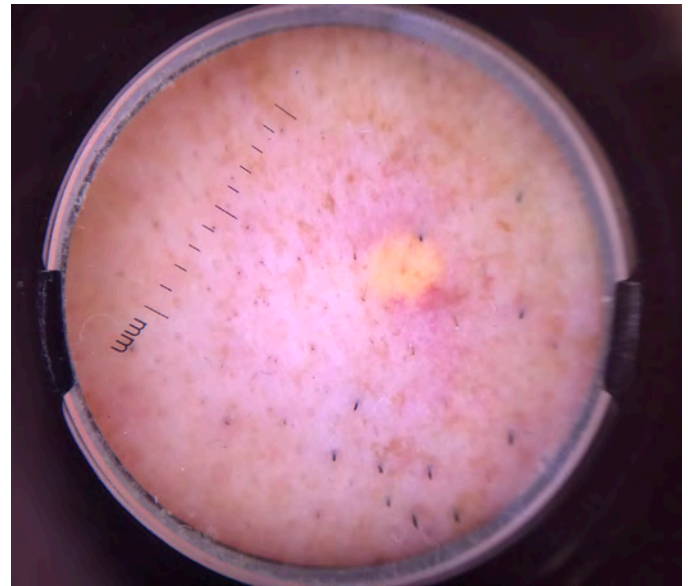


FIGURE 2: Dermoscopy showed yellowish papule with slightly erythematous halo and vessels on the periphery of the lesion

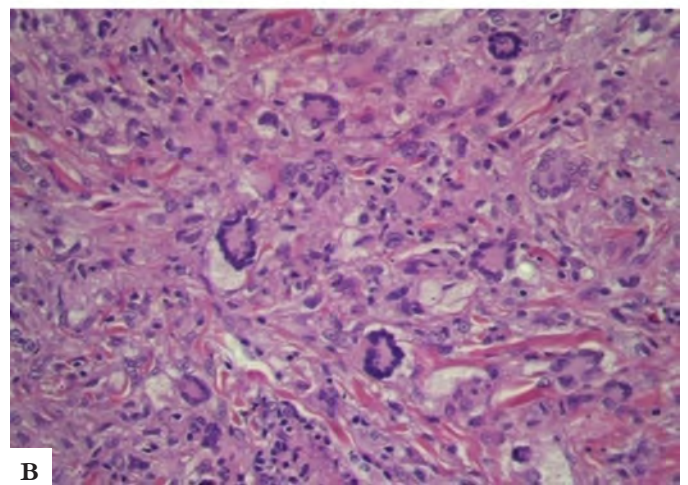
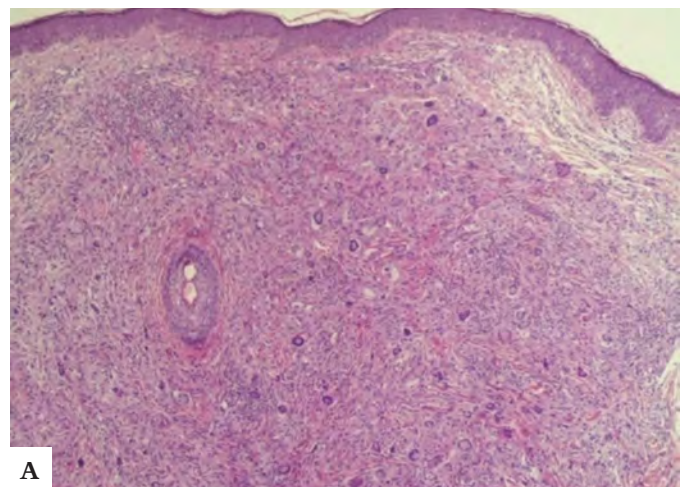


FIGURE 3: Skin showing dermal cell proliferation with the presence of numerous foamy histiocytes and Touton giant cells, compatible with xanthogranuloma. Magnifications 10x (image A) and 40x (image B)

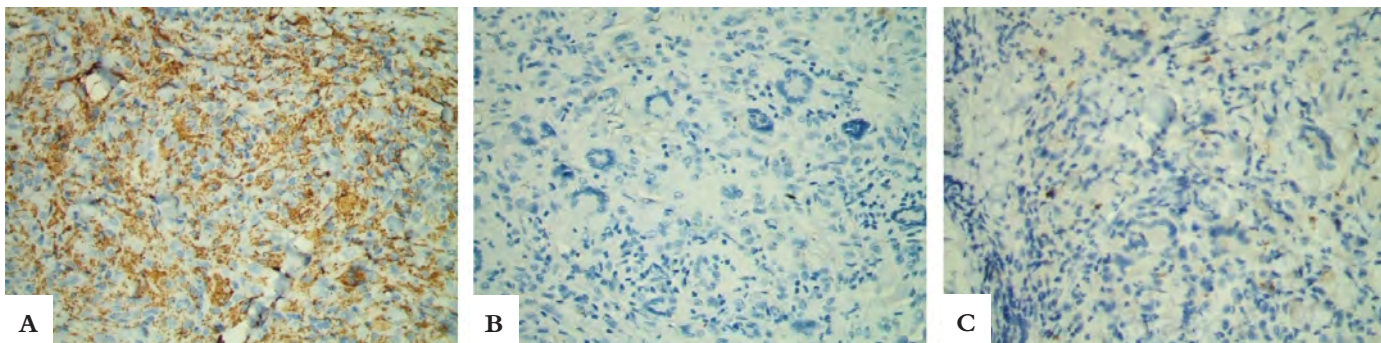


Figure 4: Immunohistochemical examination with CD68 expression observed in image A, absence of expression of Langerhans cell markers S100 and CD1a observed, respectively, in images B and C

Due to the extent of cutaneous involvement and the patient's discomfort, we decided to start isotretinoin 20 mg/day. After 30 days, there was an increase in the number of lesions. Thus, the medication was suspended, and CO₂ laser sessions were performed in the surgical mode with excellent aesthetic results (Figure 5).

DISCUSSION

Multiple adult xanthogranuloma is a non-Langerhans cell histiocytosis. It is considered a rare and later manifestation of juvenile xanthogranuloma, occurring most frequently between the third and fourth decades of life,³ and the mean age at diagnosis is 47 years. The disease is slightly more common in men, at a ratio of 1.6/1.⁴ Clinically, it presents with five or more lesions, characterized by erythematous-yellow, firm, well-defined, asymmetric, and asymptomatic papules affecting predominantly the trunk, followed by the face and, less commonly, in the limbs.⁴ With the evolution of the condition, the lesions become brownish-yellow and present telangiectasias, which may result in small atrophic scars or hyperpigmentation after resolution.^{3,5} Differing from the juvenile form, which tends to involve in three to six years, spontaneous involution of the lesion in adults is not common.⁶

Despite preferentially affecting the skin, the disease can have extracutaneous involvement in 4% of children and 5-10% of adults, and the eyeball is the most frequently affected. Extracutaneous manifestations, which include liver, spleen, lungs, central nervous system, and hematopoietic tissue,^{3,5} can cause, for example, thrombocytosis and monoclonal gammopathy. As a dermatological manifestation, there are reports of underlying hematological neoplasia, which may appear before, concomitantly, or after the development of the disease, being considered a cutaneous marker of hematological disease.⁸ There is a hypothesis that excess gamma globulins in leukemic states could stimulate histiocytic production, resulting in the development of lesions.⁴ Serum lipid profiles are normal in patients with adult and juvenile xanthogranuloma.⁷ The etiology of xanthogranuloma is unknown; associations with trauma, infections, and neoplasms have been suggested.⁸



FIGURE 5:
Post CO₂ result

The tumor presents an accumulation of differentiated histiocytes that express the phenotype of dermal dendrocytes, although studies suggest that the cells of its origin could be plasmacytoid monocytes.⁷

From the histological point of view, the lesions present a dermal cell infiltrate composed of histiocytes, lymphocytes, eosinophils, and, occasionally, neutrophils. They exhibit a pleomorphic histiocytic infiltrate with a predominance of empty cells without lipids at the beginning. Later foam cells prevail, corresponding to lipid-filled histiocytes,² together with the appearance of multinucleated giant cells, the Touton cells, in 95% of cases (multinucleated xanthomatous giant cells with nuclei arranged in a wreath-like pattern).³ The appearance of histiocytes laden

with lipids and giant cells occurs late and is probably a secondary event in response to cytokine production by the lesion histiocyte.⁷ In the immunohistochemical study, histiocytes differ from Langerhans cells by positive CD68 and HAM56 macrophage cell markers as well as dermal dendrocyte markers (FXIIIa), presenting negative Langerhans cell markers S100 and CD1a. There is also a lack of Birbeck granules inside cells in the ultrastructural study.² In doubtful cases, the expression of factor XIIIa offers more evidence for the diagnosis of xanthogranuloma.⁶

Juvenile xanthogranuloma was noted in association with different diseases, such as neurofibromatosis, Niemann-Pick disease, urticaria pigmentosa, and juvenile chronic myelomonocytic leukemia.⁷ The differential diagnosis is made between diseases classified as Langerhans cell histiocytosis, in addition to molluscum contagiosum, cryptococcosis, lepromatous leprosy, and neurofibromatosis.⁸

Therapeutic management is conservative, with spontaneous involution being possible but unlikely. Local cryotherapy, surgical excision, carbon dioxide laser (CO₂ laser), and oral retinoids are reported, with an emphasis on isotretinoin.^{5,7,8}


Extensive skin involvement, with several lesions, of the adult form of the condition, can cause unsightly discomfort and require treatment to accelerate the improvement of the disease. ●

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Effective treatment of Xanthelasma Palpebrarum with laser Er:YAG

Tratamento eficaz de xantelasma palpebrarum com laser Er:YAG

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ABSTRACT

Case study of exceptional response to treatment of recurrent xanthelasma palpebrarum with an ablative laser. The patient underwent a single session of laser Erbium:Yttrium-aluminum-garnet (Fotona[®]) 2940 nm, and we performed photographic records with Vectra[®] H2 2019 before and after the procedure. Satisfactory clinical results were reported, with good pain tolerability and early recovery compared to surgical procedures and, consequently, less time away from work activities.

Keywords: Lasers; Laser therapy; Laser coagulation; Xanthelasma palpebraum

RESUMO

Este estudo demonstrou o excelente resultado do tratamento de xantelasma palpebrarum recidivado com laser ablativo. A paciente foi submetida a uma única sessão de laser Érbio: ítrio-alumínio-granada (Fotona[®]) 2940nm, e registros fotográficos foram realizados com Vectra[®] H2 2019 antes e após o procedimento. O tratamento com laser mostrou resultados clínicos satisfatórios, boa tolerabilidade algica, recuperação precoce, quando comparado a procedimentos cirúrgicos, e menor tempo de afastamento das atividades laborais.

Palavras-chave: Lasers; Lasers de Estado Sólido; Recidiva; Xantelasma palpebraum

INTRODUCTION

Xanthelasma palpebrarum (XP) is a benign disease of the eyelid and periorbital region.¹ Yellowish and thin polygonal papules and plaques characterize the condition, occurring most commonly in the area near the medial corner of the upper eyelid. Lesions can be single or multiple and, in the latter case, tend to be symmetrical.^{2,3}

The condition belongs to the group of xanthomas, and it is the most common cutaneous presentation. It may also involve the neck, trunk, shoulders, and armpits.³ The disease most commonly affects the elderly, with a preference for women.⁴

The exact pathogenic mechanism is not fully understood. Still, it is known that cutaneous xanthelasma represents the deposition of fibroproliferative connective tissue associated with lipid histiocytes, also known as foam cells.

Histologically, foam cells are typically found in the middle, superficial, and perianxial dermis, and they are associated with fibrosis and inflammation. There is no association between xanthelasmas and levels of high-density lipoprotein or triglycerides.³

XP is typically asymptomatic, with no reports of skin complications. However, due to aesthetic dissatisfaction and psychological damage, it must be treated effectively.

Literature frequently cites as treatments the application of topical trichloroacetic acid (TAC) 50% and 70%, surgical excision, and laser ablation. Scientific evidence is limited regarding the most effective treatment.³ Adverse events, such as ectropion, post-inflammatory hypo or hyperpigmentation, infection, and healing defects, are possible, depending on the technique chosen, in addition to a high recurrence rate.

The ablative laser is a therapy targeted for XP. The proposed mechanism of action is perivascular foam cells destruction by thermal damage and dermal vessel coagulation. It blocks the lipids leakage into the tissue, thus preventing recurrence. The literature describes different types of lasers, including carbon dioxide (CO₂), argon, Erbium (Er), and pulsed dye.³

The Erbium:yttrium-aluminum-garnet (Er:YAG) is purely ablative,³ with a wavelength of 2940nm. It has a high affinity with tissue water and can remove thin skin layers guaranteeing minimal thermal damage. Also, it allows precise ablation of the tissue in delicate places, with excellent depth control. Because it is not very invasive, it minimizes the adverse events of the treatment.

In this study, we report a case of XP recurrent after surgical excision that presented a satisfactory result with just one session of Er:YAG laser, with minimal peri and postoperative discomfort, rapid healing, less time away from daily activities, and better aesthetic outcomes than those presented in the previous treatment.

CASE REPORT

A 51-year-old woman, married, Fitzpatrick skin phototype IV, presented yellowish plaques, with bipolar location, for approximately 14 years. She denied previous comorbidities and illnesses or similar family conditions. The physical examination revealed a xanthomatous plaque of approximately 2 cm in its largest diameter on the upper eyelid and about 1.2 cm in its largest diameter on the lower eyelid, both in the left eye, in addition to xanthomatous papules with a tendency to confluence in the lower eyelid of the right eye (Figure 1). The patient reported having undergone two previous surgical corrections. The laboratory tests presented a slight increase in total cholesterol levels (232 gm/dL). After obtaining the informed consent, the patient received lesion treatment with the Er:YAG 555 laser (Fotona[®] Dallas, Texas) in benign lesions mode, with a wavelength of 2940nm, energy of 5J, delivery speed of 7 Hz, and 3 mm tip. The patient underwent a single session with excellent pain tolerance based on the use of a topical anesthetic of tetracaine 3.5% associated with lidocaine 10%, carried on a transdermal basis with a pre-procedure action time of 30 minutes.

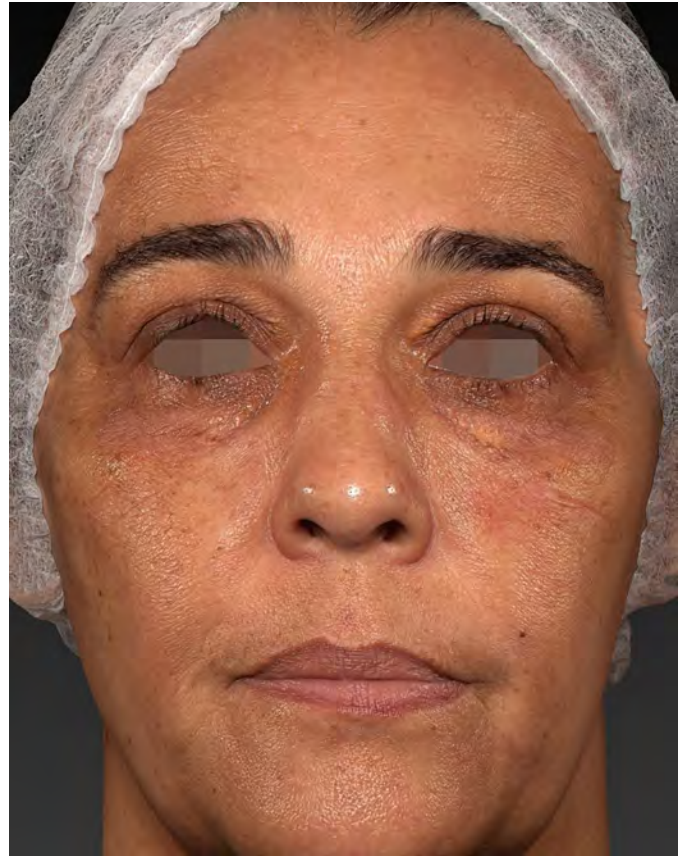


FIGURE 1: Well-defined xanthomatous plaques on the upper/lower left eyelids and xanthomatous papules with a tendency to confluence on the right lower eyelid

Serial photographs were taken: before the procedure (Figure 2), seven days after the procedure (Figure 3), and two months after the procedure (Figure 4). Records were made with the Vectra[®] H2 2019 equipment. There was complete regression of the lesions and healing in 20 days, with mild hypochromia, shorter time interval, and better recovery compared to previous surgical procedures, as well as a lower risk of perioperative and postoperative bleeding. There was a significant improvement in quality of life assessed by the DLQI (Dermatology Life Quality Index) questionnaire.

DISCUSSION

From a cutaneous point of view, XP is, in most cases, a purely aesthetic problem. Thus, the therapies used for its treatment must cause minimal adverse events.

Surgical excision always leaves a scar, although it is often discreet. However, postoperative complications such as infections, bleeding, and unsightly scars can occur. The CO₂ laser removes xanthelasmas in a cosmetically acceptable way. However, it creates a comparatively deeper zone of temperature and damage associated with postoperative erythema persisting for months.⁴



FIGURE 2: Magnification of the image for greater detail of the well-defined xanthomatous plaques on the upper/lower left eyelids and confluent papules on the lower right eyelid



FIGURE 3: Seven days after the procedure: hematic crusts in the upper and lower left eyelids, accompanied by ecchymosis in the regression phase in the lower eyelids

The Er:YAG 2940nm laser has an extremely high absorption by the water contained in the tissue and can ablate thin layers of skin in the range of a few nanometers ensuring minimum thermal damage.⁴ It allows precise ablation and dermal extrusion of aggregated esterified cholesterol, dermal remodeling, and excellent depth control.⁵ In addition, it has a smaller thermal coagulation zone compared to the CO₂ laser.

Er:YAG laser also has the advantage of faster healing, less erythema, and less post-inflammatory dyschromia.³

In a clinical trial with 15 patients, Borelli and Kaudewitz⁴ concluded that Er:YAG 2940nm is effective in the xanthelasma treatment, causing minimal adverse events with no recurrences in the follow-up period that ranged from seven to 12 months.



FIGURE 4: Two months after the procedure: complete re-epithelialization and ecchymosis regression. The evolution, with minimal achromia in the upper eyelid and hypochromia in the lower eyelids, is due to the patient's phototype

Abdelkader and Alashry⁵ demonstrated that Er:YAG is more effective than Q-switched neodymium:yttrium aluminum garnet (QSNd:YAG) laser in treating XP lesions, in addition to having less unsightly adverse events.

Er:YAG laser represents an effective method for the XP treatment, causing less pain discomfort and allowing the use of only topical anesthetic. Also, there is no need for suturing and, consequently, better healing with less time away from work activities. ●

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