

The use of a liquid silicone implant for aesthetic treatment: coursing with late local and systemic adverse reactions

Implante de silicone líquido para tratamento estético: cursando com reações adversas tardias locais e sistêmicas

ABSTRACT

Since ancient times, humans have had an interest in improving their body contour. Liquid silicone has been used for this purpose, in order to improve deformities. The authors present a case of a female patient with paralysis in the right lower limb, who underwent improper injections of a large volume of injectable silicone in the affected limb aimed at correcting its contour. Ten years later, the patient developed local complications linked to the silicone injections – localized scleroderma lesions and superficial lipomatous nevus with progressive growth in the affected limb – and clinical and laboratory pictures of rheumatoid arthritis. Injectable liquid silicone should be contraindicated as a substance for implants.

Keywords: postoperative complications; silicones; skin neoplasms

RESUMO

Desde a Antiguidade, o ser humano tem interesse em melhorar seu contorno corporal. O silicone líquido tem sido utilizado para esse fim, com o objetivo de melhorar deformidades. Apresentamos o caso de paciente portadora de paralisia do membro inferior direito, submetida a injeções de grandes volumes de silicone injetável no membro afetado para correção de seu contorno. Após 10 anos a paciente apresentou complicações locais decorrentes das injeções de silicone – lesões de esclerodermia localizada e nevo lipomatoso superficial de crescimento progressivo no membro afetado – e quadro clínico e laboratorial de artrite reumatoide. O silicone líquido injetável deve ser contraindicado como material para implante.

Palavras-chave: complicações pós-operatórias; neoplasias; silicones

INTRODUCTION

Between 1960 and 1970, physicians and lay people worldwide used silicone oil injections or industrial silicone to enlarge breast size and improve the body's contour. After a variable period ranging from three to twenty years, many of the individuals who received such injections developed serious complications, ranging from product migration causing siliconoma (foreign body reaction), auto-inflammatory disease, and even carcinomas, leading to the cessation of this technique and its prohibition by the Food and Drug Administration (USA) and the Dimed in Brazil.¹

In a retrospective study carried out from 1960 to 1996 with more than seven thousand patients who underwent silicone breast implantation, it was possible to observe the presence of a probable risk of rheumatoid arthritis, lupus erythematosus, scleroderma or Sjögren's syndrome development.²

Case Reports

Authors:

Carlos Augusto Zanardini Pereira¹
Luiz Carlos Pereira²
Ivo Acir Chermicoski³
Margarete Iassuko Furusho⁴
Valeria Zanela Franzon^{4,5}

¹ Instructor at the Pontifícia Universidade Católica do Paraná (PUCPR) - Curitiba (PR), Brazil, Education and Research Director at the Pró-Hansen Foundation - Curitiba (PR), Brazil

² Member of the Paraná State Academy of Medicine, Full Professor of Dermatology at PUCPR

³ Medical Dermatologist Physician and Clinical Director of the Pro-Hansen Foundation

⁴ Dermatologist Physician at the Pró-Hansen Foundation

⁵ Instructor at the PUCPR

Correspondence:

Carlos Augusto Pereira Zanardini
R. Fernando Amaro 1116, Cristo Rei
Cep: 80045-380 - Curitiba (PR), Brazil
E-mail: carloszpereira@brturbo.com.br

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The superficial cutaneous lipomatous nevus is an idiopathic abnormality, being considered a variant of the connective tissue nevus. It is histologically characterized by the presence of ectopic mature adipose tissue in the dermis. The rarest is the Hoffmann-Zurhelle variant, which consists of nodular or “mammillated” lesions grouped in cerebriform plaques in a segmental arrangement. It is usually congenital or emerges in the first three decades of life, having the pelvis and buttocks as its primary location.³

METHODS

The present study describes the case of a 50-year-old Caucasian married female patient, with polio sequelae in the right leg. She described having undergone a large volume implant of injectable silicone in the affected limb in procedures performed by physicians in 1994, aimed at improving the contour of the thigh and leg, which had been disfigured by the polio sequelae (Figure 1).

Approximately 10 years after the procedure had been carried out, the patient attended her first medical visit at the Fundação Pró-Hansen, describing cutaneous complications consisting of hardening of the skin of the right lower limb, with formation of asymptomatic erythematous plaques – possibly characterizing the clinical picture of morphea – and of a verrucous erythematous-pigmented plaque of approximately 15 cm x 25 cm and with progressive growth in the right gluteal region, which led to the suspected diagnosis of lipomatous nevus (Figure 2). The clinical and laboratory diagnosis of rheumatoid arthritis was also made at the time. According to the patient's report, there was no family history of the condition.

In 2011, the patient sought care at the Fundação Pró-Hansen presenting a poorly healing ulcer on the right leg following a trauma on the hardened plaque. The wound's debridement and cleansing were carried out, with the daily change

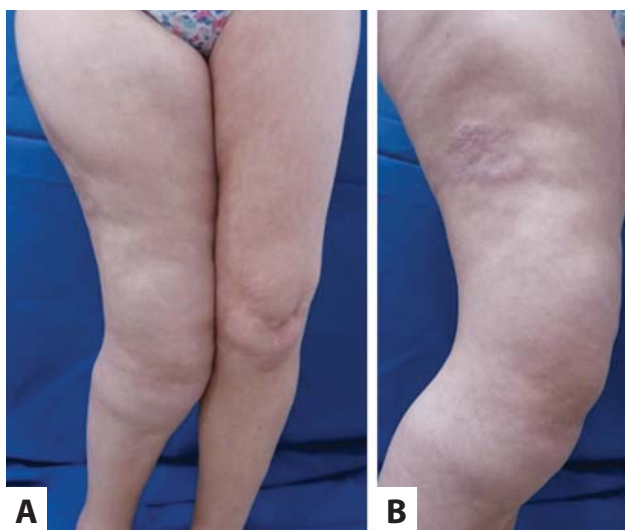


FIGURE 1 (A e B): Fifty-year-old patient with paralysis of the right lower limb, which shows edema, infiltration and subcutaneous nodules

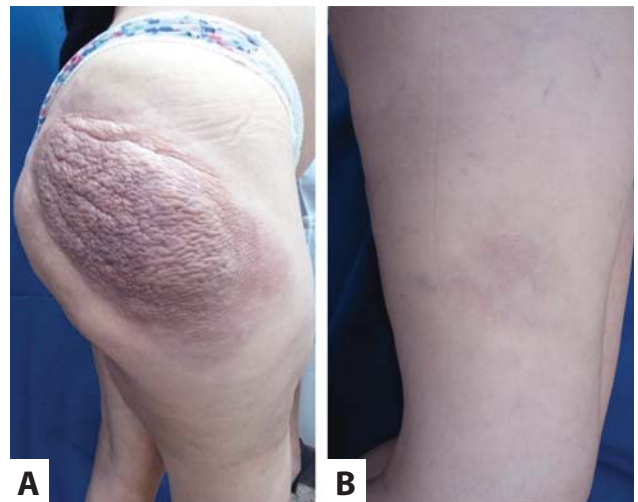


FIGURE 2 (A e B): Superficial lipomatous nevus and sclerodermiform plaque

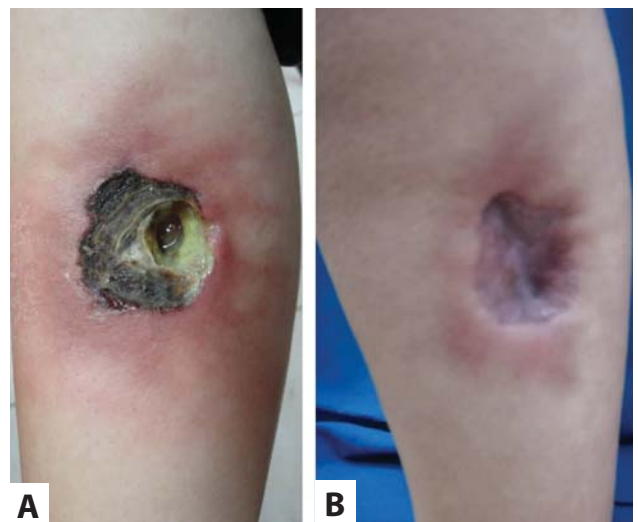


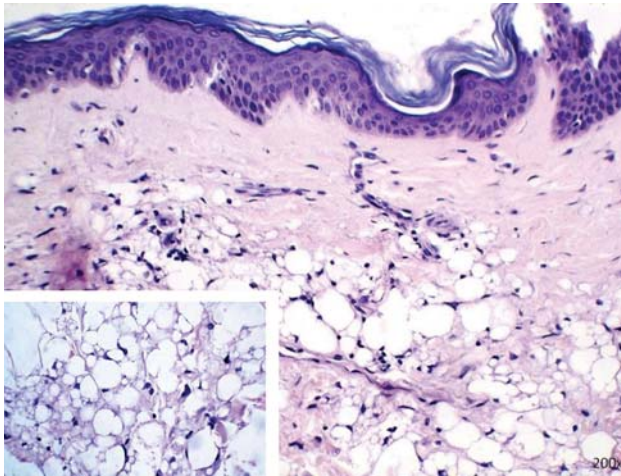
FIGURE 3 (A e B): Ulcerated lesion in the right leg with difficult healing resulting in a depressed and unsightly scar

of dressings with healing ointment and the administration of systemic antibiotics. Complete re-epithelialization occurred after four months of treatment, resulting in a depressed and unsightly scar (Figure 3). Laboratory tests, incisional biopsies of the hardened plaque and the verrucous lesion, as well as a MRI of the affected limb were carried out. The rheumatoid arthritis continued to be treated with 7.5 mg/week methotrexate and 1g/day paracetamol.

RESULTS

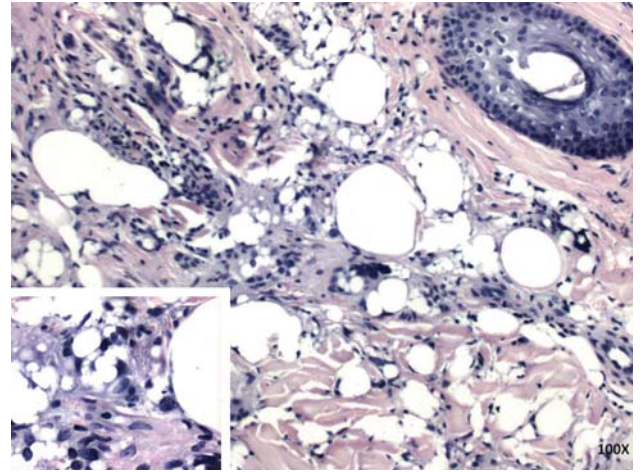
Histology

Hardened plaques: dermis and adipose tissue diffusely infiltrated by silicone droplets of different sizes, in addition to the presence of silicone within the macrophages and alteration of collagen fibers (Figure 4).



*Lipomatous nevus

FIGURE 4: HE 100x – Dermis and adipose tissue diffusely infiltrated by silicone droplets of different sizes, alteration of collagen fibers. HE 400x detail demonstrating silicone within the macrophages



*Histopathological

FIGURE 5: HE 200x – Tapered epidermis, great accumulation of adipose cells of varying sizes. HE 400x detail demonstrating typical nuclei, interspersed with thin fibro-vascular septa

Verrucous lesion: tapered epidermis, with great accumulation of adipose cells of varying sizes, compatible with histological diagnosis of superficial lipomatous nevus (Figure 5).

MRI: atrophy of all muscles, sharp increase in volume of the right thigh due to edema and infiltration of the subcutaneous. It was possible to observe a marked morphostructural alteration and architectural distortion of the soft tissues in the gluteal region due to the diffusion of silicone (siliconoma). Presence of joint effusion in the knee and hip joints (Figure 6).

Laboratory tests: FAN (-), AntiRO (-), AntiLA (-), ESR 50mm/h, rheumatoid factor (+) 60UI/ml, blood count (normal) and liver function tests (normal).

DISCUSSION

Almeida Jr, Gevehr and Pinto⁴ reported a case of late onset of superficial lipomatous nevus, which is the only publication to date featuring this content. The pathogenesis in superficial lipomatous nevus is not well understood. Some authors suggest

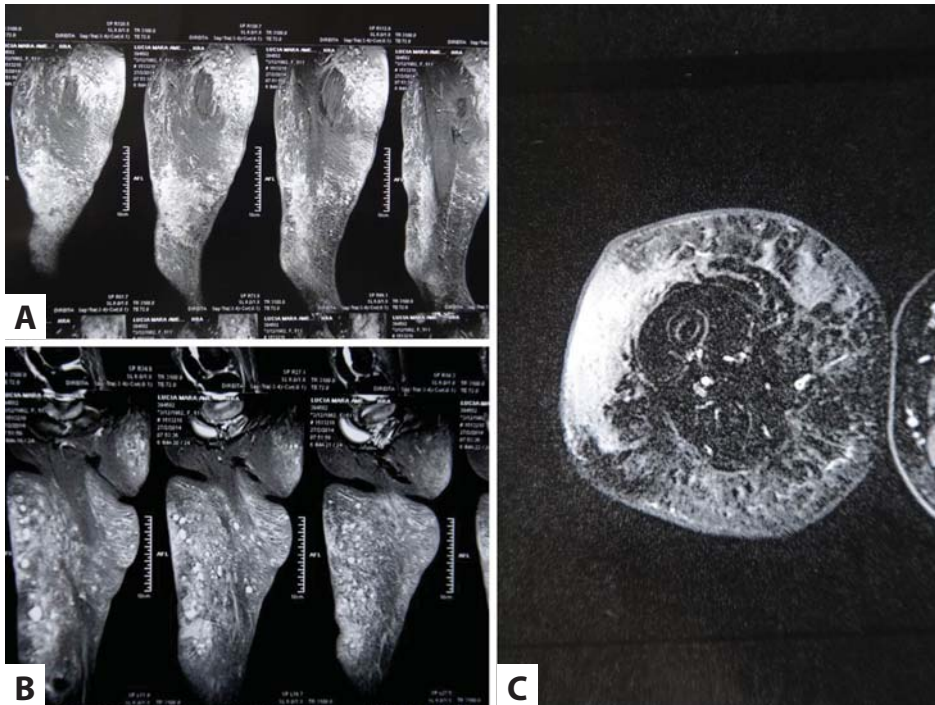


FIGURE 6 (A, B e C): MRI – atrophy of all muscles, a sharp increase in volume of the right thigh due to edema and infiltration of the subcutaneous. It is possible to note a marked morphostructural alteration and architectural distortion of soft tissues in the gluteal region due to the diffusion of silicone. Joint swelling in the knees and hip joints

that this lesion originates from adipose precursor cells, as they were observed in the vicinity of the nevi, however this fact was not confirmed by electron microscopy.

The patient whose case is described in the present case report also referred to the late onset of the lesion, after 40 years of age.

Brotas et al.⁵ reported a case of a 40-year-old female patient who presented coalescing erythematous papules, forming a scleroderma plaque throughout the gluteal region two years after the application of liquid injectable silicone in the region.

A syndrome called ASIA (Autoimmune/Autoinflammatory Syndrome Induced by Adjuvants) has recently been incorporated into the “siliconoses”, a term referring to the various events that occur after exposure to silicone. This syndrome's pathogenesis is based on the hypothesis that early exposure to an adjuvant can trigger a chain of biological and immunological events, which in susceptible individuals, can lead to the development of autoimmune diseases. The hypothesis that allowed linking breast implants with the development of autoantibodies was that of the presence of an adjuvant action.⁶

The silicone can migrate from the site of application to nearby or even distant body sites, with the presence of granulomas in the anterior and posterior sides of the lower limbs – resulting from the application of substances for increasing the thighs and buttocks – becoming increasingly common. The cause for the product's migration is the large volume applied at short intervals, a fact that allows the silicone to travel to distant sites through the tissular planes.⁷

In an article published by Silva,⁸ a patient received injectable industrial liquid silicone in the breast, with complications ten years later. The patient developed abscesses that led to a bilateral mastectomy 35 years later, due to complications caused by the siliconoma.

In addition, there was a report of a case of a woman who underwent the application of injectable liquid silicone in both buttocks, with a late onset of difficult to resolve ulcerations.⁹

In the present case report, the ulcer that wouldn't heal was located on a hardened plaque, and infiltrated with silicone, according to the pathological examination.

Shvartsbeyn et al.¹⁰ published a case of a 35-year-old transsexual woman with bilateral masses in the buttocks, in which the histopathological evaluation revealed a collection of cells with cytoplasmic vacuoles containing lipids similar to lipoblasts. This pattern can be clinically and histologically mistaken for neoplastic processes, particularly when this adverse effect of the industrial silicone develops several years after injection.

Among the environmental factors that compromise the immune system are the adjuvants (silicone, aluminum, pristine and infections, among others), which can be deemed as being the “triggers” that initiate autoinflammatory diseases in humans.⁶⁻¹¹

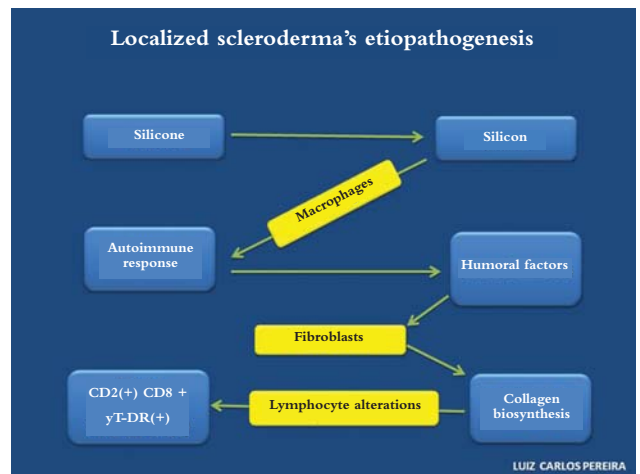


FIGURE 7: Schematic representation of the localized scleroderma's etiopathogenesis

The etiopathogenesis of localized scleroderma (morphoea) can be explained by the presence of silicone in the body turning into silica or silicon, and producing an autoimmune response with macrophages that phagocytoses silicon and releases humoral factors. The latter, in turn, trigger the biosynthesis of collagen by fibroblasts that induce lymphocyte alterations in the subpopulations CD2 +, CD8 + γ T-DR (+)¹¹ (Figure 7).

CONCLUSION

The literature has not reported to date any case of patients with poliomyelitis sequelae who have undergone implants with injectable silicone, for the purpose of trying to improve the body's aesthetic and coarsing with serious late onset complications arising from such conduct. Liquid injectable silicone should be contraindicated as a material for implantation. It is a drug that brings late onset complications when injected directly into human tissue and can cause local and systemic complications, interfering with the immune system and causing the development of autoimmune diseases. Deformities and damage to the healing of cutaneous wounds can take place due to the migration of the liquid. The etiology of lipomatous nevus remains unclear. Further studies are needed due to its rarity, especially regarding their possible correlation with liquid silicone implant.

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