

Deep-fill of the tear trough with hyaluronic acid

Preenchimento profundo do sulco lacrimal com ácido hialurônico

ABSTRACT

The protrusion of the orbital fat, aggravated by local dyschromia, causes an unpleasant aesthetic appearance, which worsens with age. This study describes 15 cases of treating the tear trough with hyaluronic acid filling. The substance was deeply injected through retro injection. Eleven patients (73%) were satisfied with the procedure. Two cases (13%) presented edema in the treated area, one case (6%) developed hyperchromia of the lower eyelids, and another (6%) developed an irregularity on the cutaneous surface in the area that was filled, and was treated with hyaluronidase. This technique demonstrated good results, with no serious complications.

Keywords: hyaluronic acid; rejuvenation; orbit; skin.

RESUMO

A aparência resultante da protusão da gordura orbital, agravada com discromia local, é esteticamente desagradável e piora com o envelhecimento. O objetivo deste trabalho é relatar o tratamento do sulco lacrimal de 15 pacientes com preenchimento de ácido hialurônico. O produto foi introduzido profundamente através de retroinjeção. Onze pacientes (73%) demonstraram satisfação após o procedimento. Dois casos (13%) apresentaram edema na região, um (6%) passou a salientar a hiperchromia das pálpebras inferiores, e outro (6%) apresentou irregularidade na superfície cutânea preenchida, sendo tratado com hialuronidase. Essa técnica demonstrou bons resultados sem complicação grave.

Palavras-chave: ácido hialurônico; rejuvenescimento; órbita; pele.

INTRODUCTION

Under-eye circles are an important aesthetic problem, causing an appearance of fatigue or sadness, which have a considerable negative impact on the quality of life.^{1,3} Several factors are implied in its etiology, and recognizing each of them is key for correctly treating this condition.^{2,5}

Its main cause is local hyperpigmentation, which can be due to post-inflammatory hyperchromia, as is the case in atopic or allergic dermatitis. In addition, a genetic predisposition and excessive exposure to the sun can lead to an increase in the production of melanin that results in local darkening.^{2,4,5}

Although under-eye circles can occur in young patients with malar hypoplasia, they become more noticeable as patients age. This is partly due to the pseudo-herniation of the orbital fat that simulates the formation of a pad that causes a shadow and emphasizes the tear trough, worsening the appearance of under-eye circles.^{2,6}

The excessive transparency of the periorbital skin, combined with its hypervascularization, also causes a darkening of the area, for the subcutaneous vessels become more visible.^{2,5} With

Case Report

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that in mind, the most suitable treatment would be to fill the infraorbital region to reduce the skin's transparency.³⁻⁵

Hyaluronic acid (HA) is currently the safest and most commonly used agent in cosmetic fillings, since it is well tolerated and leads to good aesthetic results.^{1,7-9} It rarely presents serious adverse effects, and most complications disappear once the product is degraded.⁸ Nonetheless, the periorbital region presents anatomical features that are challenging for cutaneous filling procedures.¹⁰ Although rare, retinal artery occlusion and optic nerve lesions are the most undesirable complications – which can be avoided with a sound understanding of the local anatomy.^{1,6,10}

OBJECTIVE

To describe the treatment of the tear troughs of 15 patients, through deep-fill injections of HA.

METHODS

This study was carried out at a dermatologic private practice. The 15 patients were photographed before and 15 days after the procedure. A topical anesthesia of 5% lidocaine combined with 5% prilocaine was used. A 30G needle supplied with the filler was used to apply HA beneath the orbital muscle and anteriorly to the infraorbital border of the periosteum, in the tear trough region. The product was injected deeply, parallel to the orbital border. No injections were carried out in the medial part; the product was manually massaged to direct and mold it into that space. In order to reduce possible complications, the needle penetrated the skin bilaterally in approximately three points. Approximately 0.4 ml of Juvederm® Ultra XC (Allergan, Irvine, CA, USA) (containing lidocaine) was injected in each crease. Only ice was applied locally, and no additional care was administered after the procedure. No additional treatments, such as laser, peeling or botulinum toxin, were carried out at this moment. The patients were evaluated 15 days and six months after the procedure, and adverse effects were described.

RESULTS

Of the 15 patients treated, 14 (93%) were female. The average age was 42. No patient needed more than one session to have the tear trough filled (Figures 1 to 4).

Eleven patients (73%) were satisfied with the procedure. Four patients complained about transient and mild adverse effects. Two cases (13%) presented edema in the lower palpebral region in subsequent days, but this spontaneously resolved in roughly one month. In one case (6%) the hyperchromia of the lower eyelids was intensified after the procedure, and another (6%) presented irregularity in the filled cutaneous surface (hypercorrection), which required local treatment with 2000 UTR (0.01 ml in two points) hyaluronidase. No patient complained about ecchymoses or hematomas in the follow-up.

DISCUSSION

Due to the orbital region's peculiar anatomy, there is no consensus in the literature on the best HA application method.¹⁰ Coimbra described the string of beads technique in the

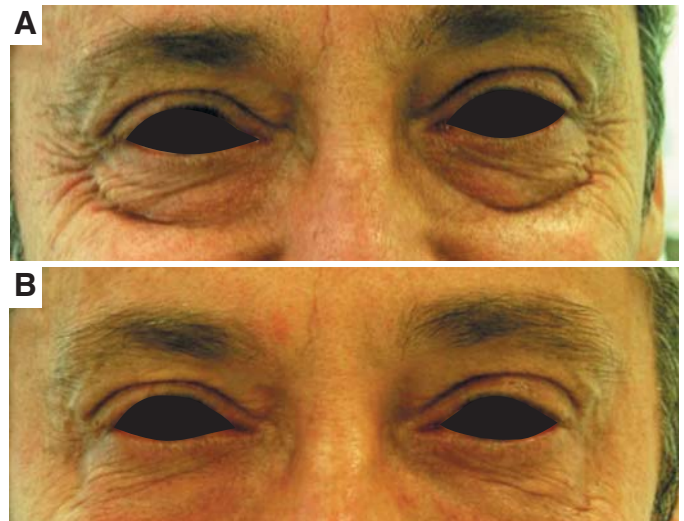


Figure 1 - A - Patient 1 smiling before the filling procedure. B - Patient 1, not smiling, 15 days after the procedure



Figure 2 - A. Patient 3 before the filling procedure B. Patient 3, 15 days after the procedure

application of low concentration and viscosity (18 mg/ml) HA in superficial planes, demonstrating that 15 days after the procedure, seven of the 30 patients needed complementary treatment.¹⁰ However, most studies show the use of higher HA concentrations (ranging from 20 to 24 mg/ml).¹⁰ Given that the objective of filling the under-eye circle area is to restore the local volume, we also opted to use HA in a higher concentration (24 mg/ml), obtaining great results with a single session.

Although Coimbra needed more than one session to achieve the abovementioned results, the total amount of product used was similar to that employed in the present study (0.4 ml of HA for each side, on average). Our data diverge from most studies, which in general use larger amounts of product applied in more than one session.^{2-4,11}

When the product is applied superficially, some studies describe cases of bluish color arising in the filled site (Tyndall

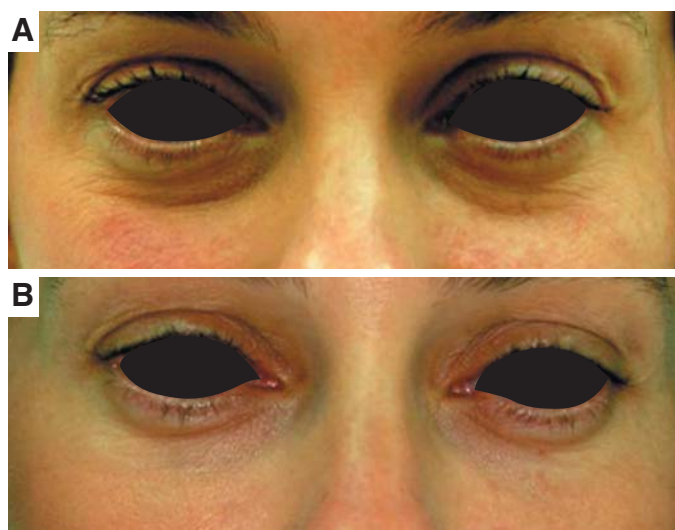


Figure 3 - A. Patient 5 before the filling procedure.
B - Patient 5, 15 days after the procedure.



Figure 4 - A. Patient 11 before the filling procedure.
B. Patient 11, 15 days after the procedure.

effect), mainly in patients with low phototypes.^{1,11} This complication was not noticed in our patients, probably due to the fact that the filler was applied in deeper planes – a technique similar to the one described by other authors.^{1,3,6,11}

Goldberg et al. used HA (Restylane R,[®] Q-Med, Uppsala, Sweden) in infra-muscular filling with multiple passes of the needle in several directions, simultaneously treating other areas of the face.¹² In turn, Steinsapir et al. carried out deep micropunctures with Restylane R.[®] Both described a greater number of complications, such as persistent edema.^{6,12} The present study used the retro injection technique in the tear trough only, for the number of punctures is smaller and has a lower risk of ecchymoses.

According to the literature, some degree of local ecchymoses and mild and transient edema should be expected in most patients.^{2,4,11} Although the authors of the present study noticed mild ecchymosis during the application, no alteration was noticeable in the evaluation carried out 15 days after the procedure.

When under-eye circles are mainly caused by cutaneous hyperpigmentation, the use of fillers can worsen their appearance, since they elevate the eyelid tissue.¹² In the present study, one patient complained about the worsening of dyschromia, which

resulted from administering an inadequate treatment for the cause of her under-eye circles.

Only one patient – a figure much lower than those found in the literature – needed hyaluronidase to correct irregularities after the procedure.^{6,12} Other possible complications that were not found in this study are: lymphedema that is unresponsive to hyaluronidase, migraine and local cellulite.^{6,12}

Vascular interruption caused by compression or obstruction of the blood flow can occur as often from direct vascular lesion as from embolization, and could besides lead to amaurosis.^{1,2,4,11} As described, there were no cases of visual complications after the procedure in the present study. Nevertheless, understanding the local anatomy and mastering the appropriate technique is of paramount importance to avoid possible complications.

CONCLUSION

Despite the periorbital region's complex anatomy, with appropriate understanding and training, the under-eye circle area can be treated with deep applications of HA. Notwithstanding the adverse effects described, the majority of our patients believed that the filling of their under-eye circle region improved their appearance and self-esteem, reduced the appearance of fatigue and provided local rejuvenation. ●

REFERENCES

- Hirsch RH, Carruthers JDA, Carruthers A. Infraorbital hollow treatment by dermal fillers. *Dermatol Surg.*2007;33(9): 1116-1119.
- Steinsapir KD, Steinsapir SMG. Deep-fill hyaluronic acid for temporary treatment of the naso-jugal groove: a report of 303 consecutive treatments. *Ophthal Plast Reconstr Surg.*2006; 22(5):344-348.
- Bosniak S, Sadick NS, Cantisano-Zilkha M, Glavas IP, Roy D. The hyaluronic acid push technique for the nasojugal groove. *Dermatol Surg.*2008;34(1):127-31.
- Roh MR, Chung KY. Infraorbital dark circles: definition, causes, and treatment options. *Dermatol Surg.* 2009;35(8):1163-71.
- Roh MR, Kim TK, Chung KY. Treatment of infraorbital dark circles by autologous fat transplantation: a pilot study. *Br J Dermatol.*2009;160(5):1022-5.
- Steinsapir KD, Steinsapir SMG. Deep-fill hyaluronic acid for the temporary treatment of the naso-jugal groove: a report of 303 consecutive treatments. *Ophthal Plast Reconstr Surg.*2006;22(5):344-8.
- Kalil CLPV, Caramori APA, Balkey MD. Avaliação da permanência do ácido hialurônico injetável no sulco nasogeniano e rítmides labiais. *Surg Cosmet Dermatol.*2011;3(2):112-5.
- Coimbra DD. Preenchimento dos sulcos orbital inferior e naso-jugal com ácido hialurônico de baixa concentração: uma nova técnica de aplicação. *Surg Cosmet Dermatol.*2010;2(1):67-70.
- Hirmand H. Anatomy and nonsurgical correction of the tear trough deformity. *Plast Reconstr Surg.*2009;125(2):699-708.
- Goldberg RA, Fiaschetti D. Filling the periorbital hollows with hyaluronic acid gel: inicial experience with 244 injections. *Ophthal Plast Reconstr Surg.*2006; 22(5):335-343.