Filling of the nasojugal fold and the lateral infraorbital depression with a 30G microcannula

Preenchimento do sulco nasojugal e da depressão infraorbital lateral com microcânula 30G

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ABSTRACT

The techniques for filling the nasojugal fold with hyaluronic acid are widely discussed by dermatologists, plastic surgeons, and ophthalmologists but lack consensus in the recent literature reviews. Due to the location of the nasojugal fold – in a topographic region that has thin skin, is close to the eye, and is intensely vascularized – the application of hyaluronic acid with needles can cause undesired complications such as intravascular injection, echymoses, and hematomas. Thus, an innovative hyaluronic acid filling technique for this area was developed based on the careful evaluation of patients: retroinjection with the 30G microcannula.

Keywords: *hyaluronic acid; staphysagria; rejuvenation.*

RESUMO

As técnicas de preenchimento do sulco nasojugal com ácido hialurônico são amplamente discutidas pelos dermatologistas, cirurgiões plásticos e oftalmologistas, inexistindo, entretanto, consenso a esse respeito nas recentes revisões bibliográficas. Pelo fato de o sulco nasojugal localizar-se em topografia de pele delgada, próxima ao globo ocular, e ser em região muito vascularizada, a aplicação de ácido hialurônico com agulhas, pode trazer complicações indesejáveis como: injeção intravascular, equimoses e hematomas. Assim, desenvolvemos técnica inovadora de preenchimento com ácido hialurônico nessa área, em retroinjeção e com microcânula 30G, sempre após criteriosa avaliação do paciente.

Palavras-chave: *ácido hialurônico; staphysagria; rejuvenescimento.*

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INTRODUCTION

The rejuvenation of the inferior periorbital region has gained attention over the past two decades, and has become a fundamental element of facial cosmetic surgery. [1] The nasojugal fold (tear trough deformity) is one of the more difficult depressions to correct due to its complex anatomy, combined with thin skin – which contributes to the visibility of the fold. [1-3] Various surgical and non-surgical procedures to correct or minimize this defect are described in the literature. [2] Non-surgical treatments include filling procedures with controversial materials, which range from fluid silicone to collagen and the controversial polymethylmethacrylate, which leads to inconsistent results. [1] In attempts to improve that area's contour, several authors propose treating the nasojugal fold (NJF) or tear trough deformity,and palpebromalar groove (PMG), or lateral infrapalpebral depression by injecting hyaluronic acid (HA). [1-6] This study's objective is to demonstrate an innovative filling technique with HA using a 30G 25 mm long microcannula in the nasojugal fold.

METHODS

The authors selected patients complaining of "dark eye circles" who had previously been treated with topical depigmenting agents (at home) and intense pulsed light sessions. The procedure was performed in patients with depressed NJF and PMG, using low concentration HA (Juvederm Refine,® 18mg/ml,Allergan, Inc.,Irvine,CA) at a private practice between November 2010 and October 2011.

The patients were treated in a sitting position at 45,° in an illuminated environment. Local asepsis was carried out with 70% alcohol, with the evaluation of the morphology of the lower eyelid. The NJF to be filled was then marked in an elliptical shape, with a micropuncture made 25 mm from the lacrimal duct for the insertion of the microcannula. Given the small calibers of the needle and microcannula to be used, it is not necessary to prepare an anesthetic button for the insertion of the microcannula in the skin. The entry micropuncture is carried out using a 26G 1/2 (0.38 x 13 mm) needle up until the subcutaneous layer, in the lateral region of the NJF. A 30G thick and 25 mm long microcannula is then inserted (Figure 1). The dermis' fibrotic barriers are passed with slow and steady movements, ensuring that the sub-dermal plane – the appropriate site for this filling – is reached. After introducing the microcannula, the product is injected 1 cm from the lacrimal duct, in order to avoid compressing it. The HA is retro-injected until just before the microcannula is withdrawn from the skin. Finally, after removing the microcannula, the area is delicately massaged to avoid overcorrection. In order to treat the PMG, the depressed area is marked (the sites for the micropuncture should be located 1 cm lateral to or below the area to be filled). The micropuncture is made with a 26G 1/2 needle, and the 30G microcannula is subsequently inserted (Figure 2). A maximum of 0.1 ml is injected, followed by massage against the osseous region.

RESULTS

To date, 287 patients have been treated using the technique described (198 women and 89 men, aged 18-51, mean age = 34.5). A high degree of patient satisfaction was reported, along with the absence of pain during the application and immediate improvement in the treated areas (Figures 3 to 5). No edema or irregularities in the skin were observed. Twelve patients presented minor ecchymosis of short duration in the area. The injected volume ranged from 0.1-0.2 ml per side. Touch ups sessions were necessary in 32 patients after 15 days.

Figure 1: A. After marking the area to be filled, the 26G 1/2 needle is introduced to carry out the micropuncture; **B.** 30G x 25 mm cannula; **C.** 30G x 25 mm cannula inserted into the subdermal plane for correcting the NJF

Figure 2: A. Introduction of the 30G microcannula in the micropuncture located 1 cm below the area marked for the treatment of PMG; **B.** Micropuncture located laterally 1 cm from the area marked for the treatment of PMG; **C.** Immediately after filling the PMG with 30G microcannula

DISCUSSION

HA filling of the NJF is recommended in several situations, including the early appearance of the tear trough deformity or

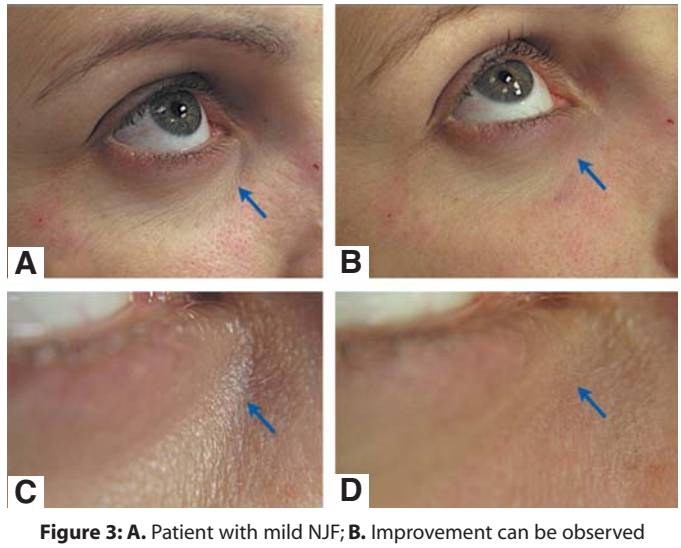

Figure 3: A. Patient with mild NJF; **B.** Improvement can be observed immediately after the HA filling with 30G x 25 mm cannula; **C.** Detail of the NJF through macro lens before implantation; **D.** Detail of the NJF through macro lens after implantation

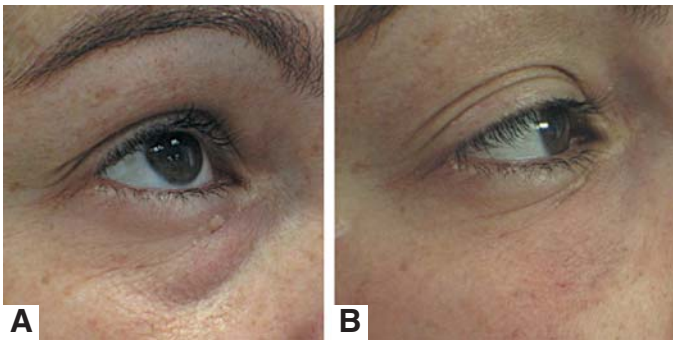

Figure 4: A. Patient with moderate NJF and mild anterior malar volumetric loss; **B.** Improvement can be observed immediately after the HA filling of the NJF and the anterior malar region, with a 30G x 25 mm cannula

a herniation of orbital fat and sagging associated (or not) with a decrease of the malar fat pad, which results in the flattening of the anterior malar region. There may be a combination of NJF and PMG, with a loss in the volume of the middle third of the face.

In 2010, Haideh Hirmand categorized the patterns of periorbital volume loss in the face and malar region into three classes. Class I patients have a loss of volume in the NJF. In Class II there is a loss of volume in the lateral and medial orbital areas, with the flattening of the anterior malar region, while in Class III there is a complete depression of the medial and lateral folds, with advanced deficiency of volume in the anterior malar region and in the malar eminence 5 (Figure 6). The author believes that the application of HA in the NJF must always occur in the subdermal plane (Figure 7). When there is a need for supraperiosteal volume the anterior malar region must be corrected at the same time, however in the deep subcutaneous plane, anteriorly. Therefore, the author suggests that volume correction in Class I that takes place only in the NJF should take place in the subdermal plane.

In Class II, where there is already a visible loss of malar volume, NJF, and PMG, the malar region must be moderately corrected. The NJF should be corrected at a second step, during the same surgical procedure. When necessary, the PMG must also be corrected in the subdermal plane.

In Class III, the anterior malar correction should take place in the deep subcutaneous plane, and the NJF and PMG should be subsequently corrected in the subdermal plane.

There are different application techniques for filling procedures. The three main techniques are: 1) in *bolus*, in which the material is deposited in the supraperiosteal plane; 2) retroinjection with cannula or needle in the subdermal plane; and 3) anteroinjection. The latter is widely used in Europe, where its supporters believe that as the product is injected, it progressively separates the region's anatomic important structures due to its viscoelasticity, thus decreasing the risk of intravascular injection. However, the author considers this to be the riskiest of the described techniques. [6]

A 30G microcannula was chosen for the filling procedure due to the excellent results associated with greater safety in the application, since the region is highly vascularized and close to the eye. All adverse events in the current study were mild, transient, self-limited, and resolved spontaneously.

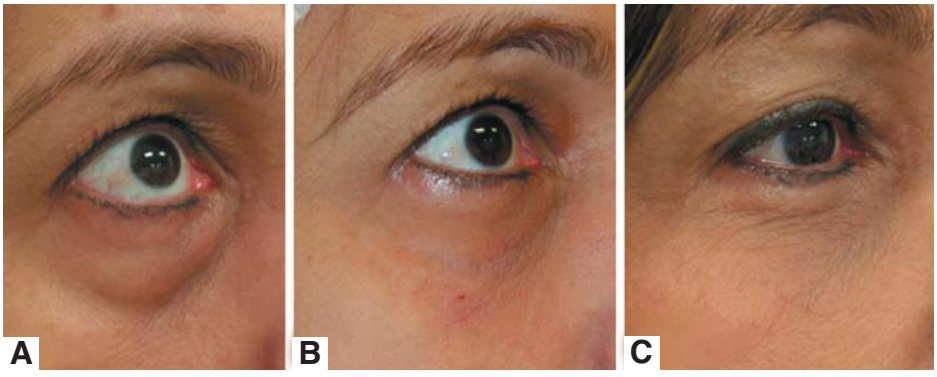

Figure 5: A. Patient with advanced NJF and PMG, with significant volume loss in the malar region; **B.** Improvement of the NJF, PMG, and malar region can be observed immediately after the HA filling with a 30G x 25 mm cannula; **C.** View of the same patient seven days after the filling procedure

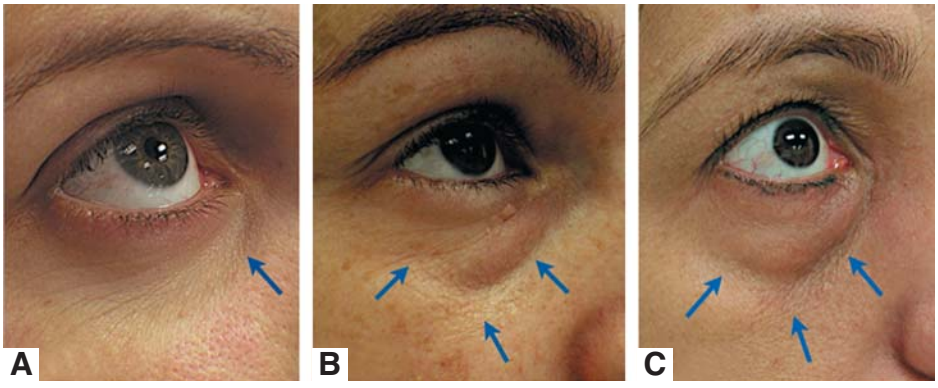

Figure 6: A. Class I: Patient with mild loss of volume in the NJF; **B.** Class II: Moderate loss of volume in the NJF, mild loss of volume in the PMG, and a moderate flattening of the malar region; **C.** Class III: Advanced loss of volume in the NJF, significant depression in the PMG, and advanced volume deficiency in the malar region

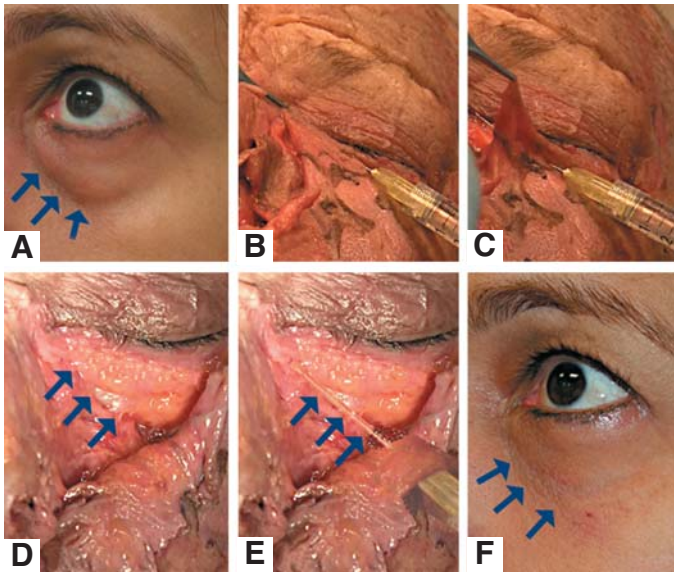

Figure 7: A. Blue arrows showing advanced NJF to be filled; **B.** Introduction of a 30G microcannula in the skin of the dissected face of a cadaver (Med System/Anatomy Course, Miami, USA); **C.** The dissected skin is folded with the assistance of tweezers, exposing the 30G cannula; **D.** Blue arrows showing NJF located inferiorly to the orbicularis muscle of a cadaver (Med System/Anatomy Course, Miami, USA); **E.** Blue arrows showing a 30G x 25 mm microcannula inserted into the skin's subdermal plane, above the NJF to be filled; **F.** Significant correction of NJF immediately after the filling procedure

Figure 8: A. 64-year-old patient with advanced NJF and significant PMG on both sides; **B.** Same patient after successful correction with HA filling using a 30G x 25 mm cannula

The author has performed the described technique using the 30G microcannula for 10 months without the need for additional applications. In the author's experience, a proper injection of HA in the NJF produces durable results of about one year. The product's longevity in that location is probably linked to the more restricted movement of the area, in addition to the collagen stimulus caused by HA and applications of botulinum toxin in the lateral orbicularis muscle, which is a useful complementary treatment that prevents the early loss of the filler due to muscular action. [5]

CONCLUSION

Specific areas, such as the NJF, nasogenian fold, and malar region, are generally treated with cutaneous filling procedures. Nevertheless, according to the current approaches, it is necessary to treat all areas that present a loss of volume. A sharp aesthetic sense is crucial in order to recommend filling procedures in specific topographies and at the right time, according to the needs of each patient, paying critical attention to facial patterns. As a result, the filling procedure should be carried out in two steps within the same surgical procedure: first fill the malar region, and then fill the NJF (and, if necessary, the PMG) with a less reticulated product in the subdermal plane, all with the safety of the 30G cannula (Figure 8). ●

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