

New techniques

The use of microcannulas in facial volume restoration treatment with Poly-L-Lactic acid

Uso de microcânulas em tratamentos de restauração do volume facial com ácido poli-L-lático

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ABSTRACT

The use of Poly-L-Lactic acid has enabled improvements in filling and volume restoration procedures. Since large areas of the body may be treated with injectable products, patients worry about pain and bruising after such procedures. In addition, the traditional technique that uses short needles makes it difficult to reach deeper areas. An innovative application technique is described, using a 40 X 0.8 mm microcannula (long tube, blunt tip), with retrograde injection in some areas of the face. The new approach has presented satisfactory results, with a reduction in adverse effects and good patient satisfaction.

Keywords: skin aging; skin; aging; infiltration.

RESUMO

O uso de ácido poli-L-lático (PLLA) vem aprimorando os procedimentos de preenchimento e restauração de volume. Por ser abordagem extensa com produto injetável, observa-se alguma resistência por parte dos pacientes, temendo a dor e equimoses posteriores. Além disso, a técnica com agulha curta tradicionalmente utilizada dificulta a abordagem de regiões profundas. Descreve-se, então, nova forma de aplicação, utilizando microcânula (instrumento longo de ponta romba) 40 x 0,8mm, com retroinjeção em algumas áreas da face. Essa nova abordagem apresentou resultados satisfatórios, com boa aceitação pelos pacientes e redução de efeitos adversos.

Palavras-chave: envelhecimento da pele; pele; envelhecimento; infiltração.

INTRODUCTION

Filling procedures and volume restoration techniques are often used in search for minimally invasive treatments for facial aging. Although using fillers to improve facial contour is not a recent phenomenon, this technique has become prominent in the literature over the last 20 years. Medical reports dating back to 1898 describe the introduction of materials into the face in order to obtain aesthetic improvements¹. Increasingly advanced products with few adverse effects, high durability and straightforward application have been launched, accompanied by studies of diverse application techniques for each². These developments facilitate efficient treatments, in which the product blends into the structure of the face to create a natural appearance³⁻⁵. Poly-L-Lactic acid (PLLA)-based volume restoration stands out

among the most advanced treatments for facial aging. Rather than directly targeting wrinkles and creases, this treatment restores the volume of lipoatrophy, osseous reabsorption and sagging areas that lead to their formation⁶⁻⁸. Since the development of PLLA, techniques linked to its reconstitution and application have been refined in attempts to produce the best results with the fewest adverse effects. In this study we describe a new application technique using a 40 x 0.8 mm microcannula, with retro injection in some areas of the face and traditional application in the other areas.

METHODS

PLLA was reconstituted in 8 ml of distilled water 48 hours prior to the procedure. The flask was vigorously shaken until a homogeneous gel was obtained. Lidocaine (2%) was blended into the PLLA in the proportion of 0.5 ml of lidocaine for each 2 ml of reconstituted PLLA (2 ml of 2% lidocaine 2% per PLLA vial). A final volume of 10 ml (four 2.5 ml syringes) was obtained. After the analysis and marking of the areas of volume loss and sagging, aseptis and positioning of the patient, two or three points of access for the microcannula were demarcated on each side of the face: one close to the mandible's angle, one in the buccinator region, and a third below the malar region. After infiltration at the points of introduction with a 2% lidocaine solution, a 18G needle was used to open the entry orifices. The orifice needed to reach the plane to be infiltrated in order to facilitate the microcannula's access. A 40 x 0.8 mm microcannula was introduced in the deep dermis, subdermis or supraperiosteal, depending on the area to be treated. The infiltration was performed using the retro injection technique. The lateral region of the face (from the mandible's angle to the zygomatic arch) was infiltrated. Due to the presence of important nervous, vascular and glandular structures in this region's deep plane, great care must be taken to avoid deepening the cannula beyond the infiltration plane (subdermic). The mandible's border was infiltrated through the same orifice of introduction of the cannula, however with the cannula turned down. That area was infiltrated through the buccinator region's orifice.

The third entry point was used to treat the malar region. Traction was applied to the region's skin and musculature in order to facilitate the introduction of the cannula between the muscle and the malar bone (supraperiosteal). The area of malar lipoatrophy was infiltrated with small amounts (0.5-1.5 ml). If indicated, the zygomatic region can also be treated through that access route (Figures 1 and 2).

Applications are subject to individual evaluation and were not always performed in all described areas. Other areas, such as the nasogenian crease, temporal region and labiomental



Figure 1 - 40 x 0.8 mm (Biomedical®, Sao Paulo, Brazil) microcannula

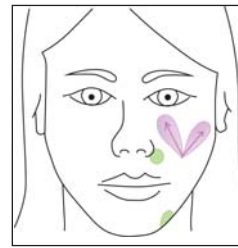


Figure 2 - Pink lines: supraperiosteal infiltration with microcannula; Green lines: supraperiosteal infiltration with needle

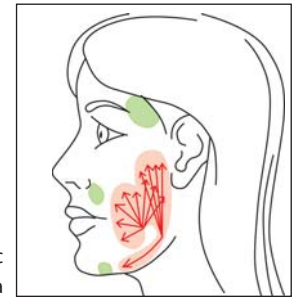


Figure 3 - Red lines: subdermic infiltration with microcannula

crease, were treated with 26.5G needle and supraperiosteal or subdermic infiltration. Application was followed by massage with lubricating gel, which patients were instructed to repeat two to three times a day for 7-10 days.

DISCUSSION

Application techniques have changed since the introduction of PLLA. There is a current trend to use greater dilutions and depths of application. In the past, PLLA was reconstituted using 3 ml of distilled water. Today, most studies describe reconstitutions ranging from 5-10 ml, combining 2% lidocaine^{1,2,4,5,8,9}. Vleegar and Fitzgerald describe supraperiosteal points of entry associated with application points in the deep dermis or subdermis aimed at treating the lipoatrophy and osseous reabsorption areas^{6,8}.

Studies demonstrated the importance of lipoatrophy and facial fat redistribution in the formation of wrinkles and creases¹⁰. The reduction and change in position of pre-auricular, malar and buccal fat areas, as well as osseous reabsorption, cause the loss of important sustentation structures of the skin, resulting in the loss of the convex shapes and arches typical of a young face. In the same way that the loss of volume in those regions leads to alterations in other areas (for example, nasogenian and labiomental creases), the replacement of their volume also helps repair those sites⁶. Therefore it is important to be cautious when treating those regions with volume restorers such as PLLA.

Since the injection of PLLA is painful, patient resistance due to the fear of pain or excessive ecchymoses was often observed. The treatment of extensive areas with needles requires a great number of punctures, exacerbating the problem. In addition, deep treatments – as the malar and the zygomatic regions – require the use of a long instrument. A long instrument with a blunt tip can be more comfortable for both the patient and the physician⁵. Therefore, we chose to use microcannulas.

This filling procedure option is increasingly discussed and evaluated. Initially, only large diameter cannulas – those used in fat grafting or in the infiltration of viscous fillers in deep planes – were available. While the availability of diverse sizes is



Figure 4 -
Patient before
treatment



Figure 5 -
Treatment
planning: areas
of application
with cannulas
(arrows) and
with needles (X)



Figure 6 -
12 months after
the last of 3 PLLA
applications (1
flask per session)

not yet satisfactory, it is currently possible to find delicate microcannulas. Also, new brands are being launched to target this growing market. At the time of the submission of this study, the authors had been performing PLLA applications using this technique with very satisfactory results for 18 months. Highly spreadable, the product reduces the risk of nodules and granulomas forming. The procedure has become faster and less painful. Due to their greater diameter, microcannulas are hardly obstructed, which prevents frequent interruptions during the procedure. The possibility of treating deeper planes such as the malar region makes even more satisfactory results possible, without the risk of vascular lesions. Patients who had been treated with the previous method showed a preference for the new

technique, due to the reduced discomfort and incidence of ecchymoses.

CONCLUSION

The use of microcannulas in filling procedures is becoming increasingly frequent. In some cases, microcannulas present advantages over traditional needles; their use in PLLA application has presented satisfactory results both during the procedure and in the post-treatment evaluations. ●

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