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CASE REPORT

Lipotransfer: An alternative for the treatment of acquired facial deformity

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***Abstract*:** The case is presented of a 58-year-old male patient, with an apparent health history, who refers to having received surgical treatment for a complex fracture of the middle third of the face (Lefort II and right malar III type fractures), who refers to aesthetic discomfort due to the post-traumatic facial deformity he presents. It was decided to admit him to the Maxillofacial Surgery Service of the Hospital Universitario "General Calixto García" for treatment. Post-traumatic deformity secondary to a complex facial fracture and its consequent aesthetic damage was diagnosed. The results achieved with the use of abdominal fatty tissue lipotransfer for the treatment of facial deformity were satisfactory with permanence and stability in one year, while meeting the patient's expectations. Lipotransfer is a viable alternative in the treatment of acquired facial deformities.

Keywords: lipotransfer; facial deformity; acquired facial deformities

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Introduction

Facial deformities are a set of volumetric alterations resulting from genetic malformations, trauma and post-oncological scars that affect the individual. The reconstruction of craniofacial defects is a challenge for the maxillofacial surgeon, given that facial aesthetics is complex because it must harmonise a set of anatomical structures that guarantee the psychosocial integrity of the individual and his or her validism. For decades, surgeons and researchers from various specialties have been looking for alternatives to satisfy reconstruction needs, with the aim of restoring the anatomical and functional integrity of the damaged structures, but to date, there is no ideal material in terms of reproducibility and duration of the results[1–3].

Among the treatment alternatives for facial deformities, autologous fat grafting or lipotransfer in its different variants have evolved, with the aim of adjusting to the needs of utility and viability. The first reported fat graft was performed in 1893 by the German surgeon Gustav Neuber, who took a block of fat from the arm to treat scarring and adhesions in the inferior orbital rim, reporting good results. Great advances have been made in the design of the technique, with the aim of improving the survival of the transplanted fat tissue, but to date there is no general consensus on the matter[1].

Facial fillers and, specifically, autologous fat grafts have a specific role in reducing macroscopic changes due to ageing and as an adjuvant in surgical results. It is one

of the main substances used given its advantages, described extensively by Erich Lexer (1867–1937): few allergic reactions, little inflammation, an excellent safety profile and good aesthetic results, fundamentally in areas that are not very mobile, such as the upper and middle third of the face. The disadvantages are the need for an operating theatre and specific material, as it is a complex and invasive technique and the longer duration of the intervention compared to the time used when synthetic materials are used, in addition to the wound and postoperative care of the donor site[1,4-6].

Several studies have been published which endorse its use in progressive facial hemiatrophy (Parry Romberg syndrome), hemifacial microsomia, microgenia, lipoatrophy associated with antiretroviral therapy for HIV infection, reconstruction of defects secondary to depressed scars, hypertrophic scars, morphea and radiodermitis, and it is also proposed as an alternative treatment for post-acne scars, correction of facial contour defects and for reconstruction[6,7].

The procedure is contraindicated in patients with blood dyscrasias, allergic to local anaesthetics, those taking anticoagulants or suffering from psychiatric disorders, body dysmorphic syndrome, patients with false or unrealistic expectations, recent weight loss of more than 10 kg, as well as suspicion of infectious panniculitis and other infections of the donor and recipient site. Pregnancy is an absolute contraindication. Others, such as type 2 diabetes mellitus and liver failure, are considered relative[7].

Fat is taken from a donor site, often the abdomen, and re-injected into the desired area. Local anaesthesia is used and there are various techniques for handling the harvested tissue, and it is conclusive that the less trauma and manipulation of the adipose tissue, the longer its survival after grafting. The bibliography shows centrifugation as the most popular technique, even though it has its detractors due to the possible trauma to which the cells to be transferred are exposed[4].

All of the above motivated the authors to use lipotransfer as a treatment alternative in a patient diagnosed with post-traumatic deformity secondary to a complex facial fracture and its consequent aesthetic damage, so it was decided to carry out this study with the aim of socialising the results achieved.

Presentation of the case

A 58-year-old male patient, with an apparent health history, who reported having received surgical treatment more than two years ago for a complex fracture of the middle third of the face (Lefort II and right malar III type fractures), who showed aesthetic discomfort due to the post-traumatic facial deformity he presented. It was therefore decided to admit him to the Maxillofacial Surgery Service of the Hospital Universitario “General Calixto García” for treatment.

Figure 1. Facial asymmetry due to depression of the nasal dorsum on the right side.

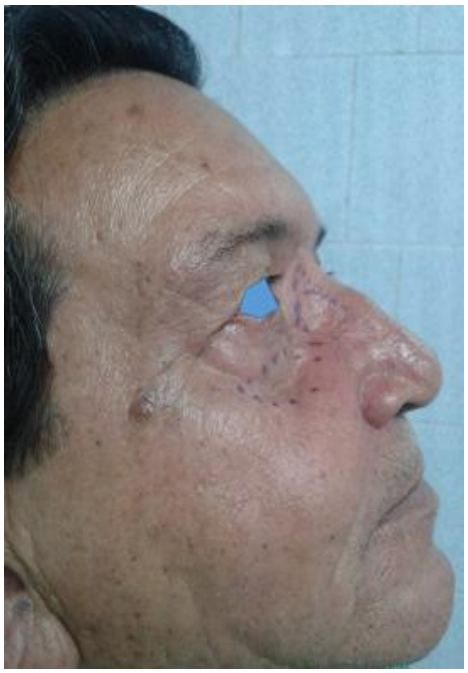

Figure 2. Facial asymmetry due to depression at the junction of the genial and palpebral regions.

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Physical examination from the front and profile revealed facial asymmetry due to a depression on the nasal dorsum on the right side (**Figure 1**) and another at the junction of the ipsilateral genial and palpebral regions (**Figure 2**), with normal to slightly translucent overlying skin, as shown in the photographic studies below.

Fat tissue was harvested from the patient's abdominal region. Using aseptic and antiseptic techniques, tumescent anaesthesia was infiltrated (250 ml of 0.9% saline, 5 ml of sodium bicarbonate and 10 ml of lidocaine with 2% epinephrine), a 20 ml syringe with a multi-hole aspiration cannula of 2.5 mm in diameter was inserted and negative pressure was applied after the puncture, and the fat tissue was collected manually by means of this gentle aspiration. The material obtained was then left to settle and decanted. The non-fatty material was removed. The fatty tissue was injected into both depressions (nasal and geniopalpebral), at the level of the subcutaneous cellular tissue in radiated tunnels extended in this plane by means of an infiltration cannula with a 1.5 mm diameter orifice, which was used to tunnel and subsequently leave the fatty deposits in them until an overcorrection of the defect was achieved with a total of 35 ml between both locations[2].

Micropore dressings were applied to the puncture sites without compressing them. The patient was instructed to remove the bandage after 24 hours, facial hygiene (washing with boiled water and soap 3 times a day), dipyrone in tablet form (300 mg), once every 8 hours if pain was present, and to avoid trauma to the treated areas. The patient was followed in consultation once a week for one month. Subsequently, at 3 months, 6 months and 1 year after the procedure, a discreet resorption was observed with good aesthetic results.

Figure 3. Patient in the immediate postoperative period.

Figure 4. Patient at one year of evolution.

The images below show the immediate postoperative period (**Figure 3**) and the evolution at one year (**Figure 4**).

Discussion

Fat grafting, lipotransfer, lipofilling, lipografting or autogenous fat transplantation as it is called by some authors, is a technique used internationally for facial and body sculpting, both in reconstructive, regenerative, rejuvenation and cosmetic treatments. This procedure increased by 40% in the United States between 2007 and 2013[1,2].

Lipotransfer has been used previously as an alternative for facial deformities. It has been shown to be useful for the treatment of trauma-induced lipoatrophy in 50%, which coincides with the clinical case presented. According to the literature consulted, the durability of the fat graft varies between 3 months and 5 years with a longer lasting effect in areas of low facial mobility. Previous studies indicate a viability of between 50 to 90%, so the area should be overcorrected. However, it has been observed that as the number of infiltrations increases, absorption is lower and once the cellular elements contained in the infiltrate are integrated, they are permanent[1,2,4,5,7,8].

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Currently, there is a controversy between the two main techniques for the preparation of the fat tissue to be transplanted: centrifugation and decantation. We are warned of the obvious mechanical trauma to which the adipocyte is subjected during centrifugation and it is believed that this may diminish the vitality and survival of the graft in the recipient bed[1].

The most common complications related to fat grafting are minor and easily managed complications, including for facial treatments: ecchymosis, oedema, minor contour irregularities, infection, post-inflammatory hyperpigmentation, fat resorption and fat hypertrophy (which can be observed at the time of weight gain by the patient). However, although autogenous fat grafting as a facial filler is considered safe, there have been reports of vascular occlusions with significant sequelae such as necrosis, blindness or cerebral infarction, caused by intravascular injection which is the rarest complication, usually associated with the use of sharp needles or 10 ml syringes with high injection pressure[1,2,7,9].

Transplanted adipose tissue remains alive in the recipient tissue if it receives adequate nutrition. After fat grafting, the tissue undergoes ischaemia and is nourished by plasma diffusion from the recipient tissue for a few days until revascularisation. New, small pre-adipocytes appear around the dead adipocytes within the first and second week, and replace the dead ones completely within three months. In the meantime, no regeneration is observed in the zone of necrosis. The radius of the three zones may vary, depending on the vascularity of the recipient tissue and postoperative care[6].

It should be noted that fat grafts survive approximately 1.5 mm from the edge of the graft and, for this reason, deeper tissue may undergo necrosis and calcification, resulting in nodules in the treated are[1,2].

For best results, fat should be removed from less vascularised areas and transferred to more vascularised areas, such as abdominal fat to the face. Better vascularity of the recipient site increases the survival zone, whereas excessive internal pressure decreases the survival zone. Immobilisation aids revascularisation. The size of the graft in relation to the recipient surface is critical to minimise the zone of necrosis, the diameter of the graft should be less than 2 mm, small numbers of grafted cells in large fields are more likely to survive, this facilitates revascularisation, which occurs within the first 48 hours, similarly, low pressure aspiration is supported by recent studies[6,8,10].

Conclusion

In the authors' opinion, the treatment of acquired facial deformity with the use of lipotransfer in the case in question constitutes a viable, safe, economical treatment alternative, with satisfactory results due to its permanence and stability over time, with good acceptance by the patient who fulfils their aesthetic requirements, satisfies their expectations and restores the anatomical and functional integrity of the damaged structures, which allows their validation and full incorporation into their biopsychosocial environment.

Conflict of interest

The authors declare that they have no conflict of interest.

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