



CASE REPORT

LeFort I osteotomy and secondary procedures in full-face transplant patients

Juan P. Barret*, Jordi Serracanta

Department of Plastic Surgery and Burns, University Hospital Vall d'Hebron, Universitat Autònoma de Barcelona, Passeig Vall d'Hebron 119-129, Barcelona, Spain

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Summary Composite tissue allotransplantation has been the latest addition to reconstructive plastic surgery of limbs and faces. These techniques have opened up a new paradigm in reconstruction. However, plastic surgeons will have to face a new patient population that receives the application of vascularised tissue allografts and immunosuppression. Secondary surgery may be necessary in this population, especially in the transplanted tissues, to improve aesthetics and function following the transplant, although little is known regarding the exact clinical protocol to be followed and the feasibility of standard plastic surgery techniques on transplanted tissues. We present our experience of a LeFort I osteotomy, limited rithideotomy and blepharoplasty in a full-face transplant recipient.

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Facial composite tissue allotransplantation (FCTA) has opened up a new frontier in facial reconstruction. The development of different FCTA techniques around the world has proved that a robust team approach renders excellent outcomes with a low mortality rate and good functional outcomes.^{1–3} To date, 22 patients have been transplanted, with different amounts of tissues being replaced. The main purpose of face transplantation is to

replace missing anatomy and function with like tissue that replaces absent parts and restores function. However, like in many other reconstructive disciplines, similar principles and guidelines apply. The provision of intact, functional structures and tissues is the main principle of the operation, although it has been proved that the allotransplantation procedure is the foundation of the treatment, which has to be followed by a continuing, intense rehabilitation programme, and during this period, some secondary procedures may be contemplated to further improve function.

When dealing with a patient under immunosuppression, with transplanted tissues that may behave in a different

* Corresponding author. Tel.: +34 934893475; fax: +34 934893413.

E-mail address: jpbaret@vhebron.net (J.P. Barret).

manner compared to common plastic surgery patients, many questions arise. It is still uncertain which procedures are safe, what sort of immune interventions may be necessary during the surgery and what are the real risks of reconstructive surgery on transplanted faces. The learning curve is still at the initial phase; therefore, more than ever reporting early experiences of CTA groups is necessary.

In the present communication, we report our experience of a LeFort I advancement rotation operation to improve teeth occlusion and mastication in a full-face (including bone) transplant patient.

Case report

A 30-year-old patient received a full-face allotransplant in March 2010, which not only involved all skin and soft tissues and muscles of the face and oral cavity but also the mandible, maxilla, teeth and zygomas.⁴⁻⁶ In the initial transplant operation, the patient received internal rigid miniplate fixation and intermaxillary occlusion.

During the rehabilitation phase, the patient presented with malocclusions with an open bite and posterior contact of the molars. The patient could progress to a semi-solid diet but the malocclusion prevented him from being able to chew properly and progress to a solid diet (Figure 1(a) and (b)).

In July 2011, the patient was operated on and a LeFort I rotation-inferior distraction osteotomy was performed. The osteotomy was fixated with four (two on each side) rigid titanium miniplates and filling with demineralised bone matrix (DBX, Synthes®) (Figure 2(a) and (b)). During the same procedure, a bilateral limited ritidectomy and skin lower-eyelid blepharoplasty was also performed to improve the cosmetic appearance of the patient.

The immunosuppression protocol remained unchanged (the patient was on 10 mg prednisone daily, tacrolimus target levels 5–10 µg ml⁻¹ and 1 g of mycophenolate

mofetil (MMF) daily). Infection prophylaxis included antibiotics against Gram-positive microorganisms for 24 h.

During the postoperative period the patient followed a liquid diet, which progressed to a soft diet for 6 weeks. The patient was allowed to freely open his mouth and no intermaxillary fixation was used.

The patient did not present any complication and he was discharged home on day 7 postoperative. The patient showed good dental occlusion and he could progress to a solid diet 6 weeks after the operation. Good consolidation of the bone osteotomy was obtained and no late complication occurred thereafter.

Discussion

Plastic surgeons have dealt with different patient populations that present specific individual problems. Among them, we may include acute burns, diabetic foot reconstruction, pressure sores in spinal-cord injury patients and oncologic patients. Many of them will present with chronic conditions, malnourishment and systemic diseases that challenge prompt and successful reconstruction operations. Collaborative efforts and a multidisciplinary team approach are necessary to provide state-of-the-art surgical reconstruction.

CTA is a new paradigm for extremity and face reconstruction.⁷ Few patients may present with a real indication for this type of surgery, but those that require a CTA need indeed to be treated and followed up with a multidisciplinary team approach. Transplanting a whole face carries significant difficulties, among them dealing with immunosuppression and infections. Information from other solid organ transplant teams' experiences can be extrapolated to FCTA, in particular when dealing with secondary procedures that need to be performed on transplanted facial tissues in patients under intense immunosuppression.

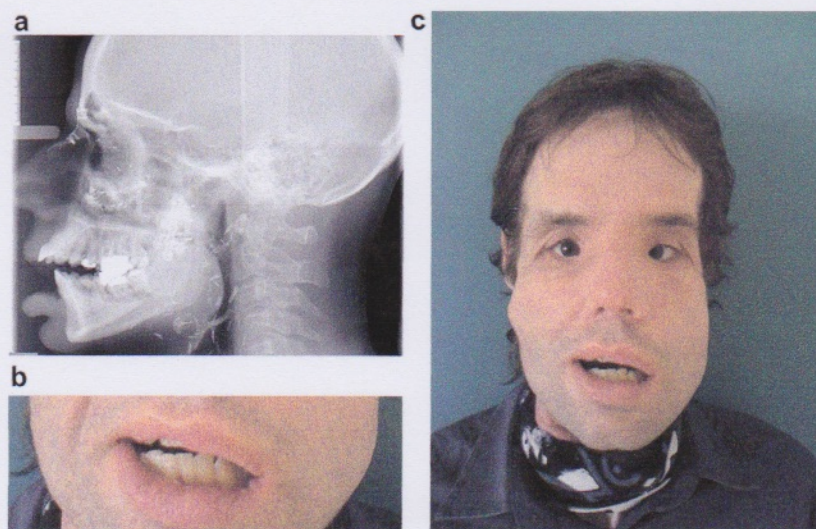


Figure 1 a: Preoperative cephalometric analysis showing an open bite and contact of molars. A rotation inferior distraction LeFort I osteotomy was contemplated as the best and safest option to improve dental occlusion. b and c: Clinical appearance of the patient at 14 months posttransplant. Note incomplete activation of left zygomatic muscles and open bite.



Figure 2 a: Postoperative cephalometry after LeFort I osteotomy. Good dental occlusion was achieved and the patient could progress to a solid diet. b and c: Clinical appearance showing good occlusion postoperatively.

In our experience, the patient could be managed as any other plastic surgery reconstructive patient. Preoperative work-up included the same protocol used for other patients, the immunosuppression protocol remained unchanged and the patient received antibiotic prophylaxis according to the Transplant Infectious Disease Division Protocol.

Attempting plastic surgery procedures on transplanted soft tissues raises the question about feasibility of the reconstruction, distorted anatomy and vitality of the area operated on. Face allografts are transplanted *en bloc*. Deformed and/or traumatic tissues are removed and replaced by intact tissues that match colour, texture, anatomy and function. Previous experiences on facial transplantation have provided the knowledge that facial tissues receive robust vascularisation from the facial and temporal vessels.⁸ Bone segments have proved efficient vascular supply from superficial vessels in the absence of a patent maxillary artery, including transplantation of the mandible, maxillary bones, nasal bones and zygoma. Under these circumstances, reconstructive surgery should be safe and feasible. In the present report, bone osteotomies and skin and soft tissue reconstructive surgery could be performed safely. Excellent blood supply could be observed to soft tissues and bone, even after a LeFort I osteotomy.

We may conclude that secondary revisions and elective reconstructive surgery can be performed safely in facial allotransplantation patients. It is not necessary to modify the background immunosuppression protocol, and infection prophylaxis should follow standard guidelines for transplant patients.

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Conflict of interest

None.

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