

Fat Grafting to Hemifacial Microsomia

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ABSTRACT

Background: Hemifacialmicrosomia patients usually complain from facial lower two thirds hypotrophies more than they do from their dental malocclusion. Over the past few years with the widespread of facial fat grafting, they have been barely accepting treatment with the heavy-to-patient conventional orthognathic surgery that combines Le Fort I, Bilateral Sagittal Split Osteotomy (BSSO) and genioplasty.

Aim of Work: This presentation aims to support fat grafting for facial contouring as an alternative or supplement to maxillofacial osteotomies in patients suffering first and second brancheal arch syndrome.

Case Presentation: Nine adult patients with hemifacial-microsomia underwent fat grafting to the face; 5 patients without any maxillofacial osteotomy, 3 patients in combination with the anterior segmental tilting osteotomy and one patient after the traditional interruptive bi-maxillary surgery. Grafted fat alone or combined with maxillofacial osteotomies improved facial contours and symmetry. After few years and on gaining extra body weight, three patients were retouched through liposuction of the bulging recipient areas and the aspirated fat was re-grafted to other areas [1].

Conclusion: Fat grafting to the face treating defective contours of hemifacialmicrosomia cases may represent the acceptable alternative to the interruptive bimaxillary osteotomies. Its association with the malocclusion-corrective simpler segmental or genioplasty osteotomies adds to facial contouring and symmetry.

Key Words: Fat grafting – Hemifacialmicrosomia – Maxillofacial osteotomies

INTRODUCTION

Le Fort I osteotomy, Bilateral Sagittal Split Osteotomy (BSSO) and genioplasty have been traditionally combined for treating hemifacialmicrosomia cases. While correction of the lower two thirds of the face contour asymmetry is achievable through simple fat grafting, correction of the slanting anterior occlusal plane and lips is attainable through the relatively less aggressive segmental osteotomy.

CASE PRESENTATION

Nine patients with hemifacialmicrosomia had fat grafting for treating their facial lower 2/3 defective contours. Five of them refused any maxillofacial osteotomy (Figs. 1,2), two had fat transfer associated with segmental anterior maxillary occlusal-corrective osteotomy (Fig. 3) and one had it combined with reduction tilting symmetry-ameliorative genioplasty. One patient had the facial fat grafting for reinforcing lower facial contours after she had had the traditional osteotomies combining Le Fort I and BSSO.

Fat was collected with a 50 cc syringe and a 2 or 3mm diameter liposuction blunt cannula from the submental and neck areas and 4mm from trunk or limbs. Aspirate was left to sediment for 10 minutes and or centrifuged at the lowest rotation speed for 10-20 seconds. Fat cells were injected through blunt 2mm cannulas. The amount of transferred fat was predetermined for each recipient face side and site according to the magnitude of its contour deficiency; it measured 15 to 80ml for each face side. At least half of the amount was put in dissected subperiosteal pockets and or deeply under the muscles whenever possible and the remaining was injected in rows intra-muscularly and subcutaneously. Minced bone grafts (when available from contemporary osteotomies) were mixed with the subperiosteally transferred fat graft.

Follow-up ranged between 2 months and 8 years and structural results were satisfactory with maintained volume in all cases. Grafted face areas showed bulging few years later concomitant with body weight over-gain in three patients. These were retouched through liposuction of the overstuffed recipient areas and the suctioned previously grafted fat was recycled in the temporal areas and retained volume there as followed-up to 30 months [1].

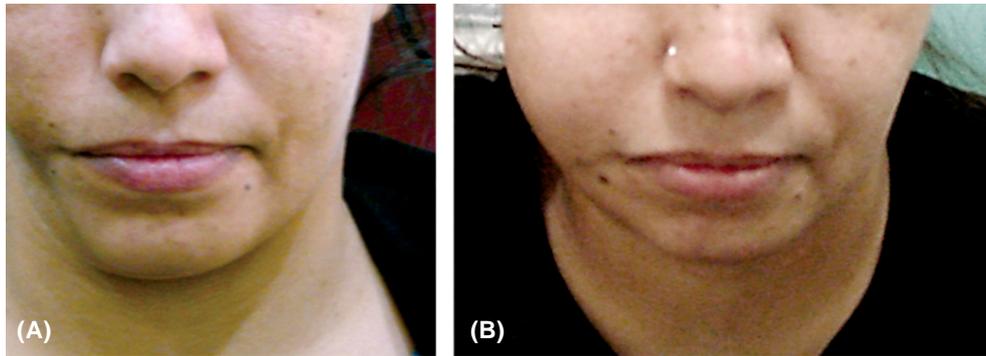


Fig. (1): Right hemifacialmicrosomia (A) Preoperative and (B) 8 years post- 80ml centrifuged fat grafting to the right mandibular side: 35ml injected supra-periosteal via an intra-oral approach and 45ml injected both subcutaneous and intra-muscular through a tiny skin port below ear-lobule.



Fig. (2): Macrostomia and bilateral hemifacialmicrosomia (A) Preoperative and (B) 2 years aftermaxilla-mandibular clefts closure in 3 layers, central upper lip vermilion muscle re-arrangement and a mucosal V-Y advancement and 50ml fat grafting to each side of the face: 40ml to the mandibular angle and 10 to the maxillary regions.

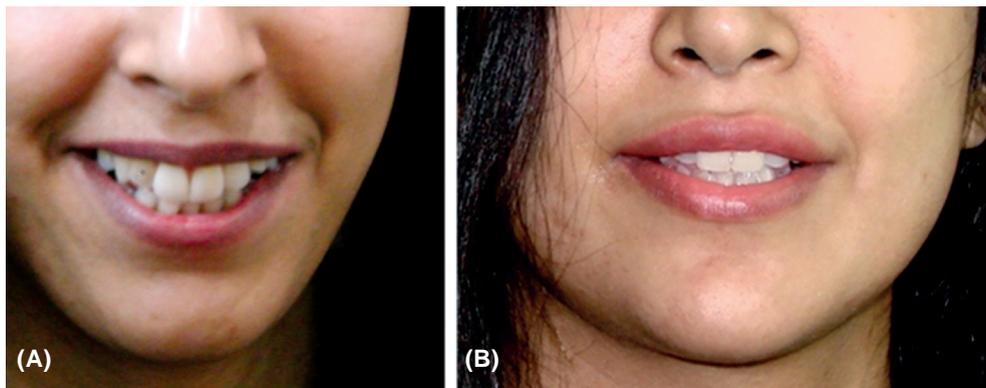


Fig. (3): Bilateral hemifacial atrophy more manifest on the left side (A) Preoperative and (B) 6 months post incisive-canine tilting osteotomy with left first premolar extraction and fat grafting to the mandibular angle regions 20ml on the left and 30ml on the right side.

DISCUSSION

The term HemifacialMicrosomia is synonymous to the older terms Oto-Mandibular Syndrome, OtomandibularDysostosis or First and Second Branchial Arch Syndrome. The combination of Le Fort I, BSSO and genioplasty used to be the classic justifiable approach to correct patients' malocclusion and hemifacial atrophy. In its mild form, the

real main complaint of the patients is usually the defective asymmetric contours of the lower two thirds of the face and this is adequately answerable with a simple fat grafting procedure. The slanting occlusion and chin are correctable with a segmental bone move.

The need for bone or cartilage grafts and muscle flaps or prosthetic materials for treatment of facial

defective contours in orthognathic surgery cases has not ever been infrequent. Fat transfer may efficiently enhance aesthetic facial osteotomy results and may be as predictable and durable as the older skeletal grafts and flaps. Fat grafting to the maxillary areas in the case where the maxillary sinus has been opened, should be deferred to a secondary operation. When patients with acceptable dental occlusion do not agree on cosmetically intended facial osteotomy, fat transfer may be a good alternative proposal. Fat grafts to the face usually hypertrophy on subsequent overall body weight gain. Facial grafted adipocytes match volume changes that may happen to those in the original donor site. Transplanted fat cells seem to conserve genetic donor-site codes and hence volume regulations equal to the donor site cells [2]. Facial fat grafting in orthognathic-surgery patients has been shown over the past few years [3-7] as an effective reliable tool.

In conclusion, fat grafting to the face treating defective contours of hemifacialmicrosomia adult cases may represent a satisfactory alternative to the interruptive maxilla-mandibular osteotomies when patient occlusion is acceptable. Combining fat grafting with segmental osteotomies can effectively address both contour deficiency and malocclusion.

REFERENCES

- 1- El Danaf A.A.H. and Rabie A.A.: Fat Re-Grafting in Facial Asymmetry: A 2-Case Report. *Modern Plastic Surgery*, 6, 1-4. <http://dx.doi.org/10.4236/mps.2016.61001>, 2016.
- 2- Pasquale Piombino, Gaetano Marenzi, Giovanni Dell'Aversana Orabona, Luigi Califano and Gilberto Sammartino: Autologous fat grafting in facial volumetric restoration. *Journal of Craniofacial Surgery*, 26 (3): 756-759 doi: 10.1097/SCS.0000000000001663, 2015.
- 3- Agostini Tommaso, Spinelli Giuseppe, Marino Gaetano, et al.: Esthetic restoration in progressive hemifacial atrophy (Romberg disease): Structural fat grafting versus local/free flaps. *Journal of Craniofacial Surgery*, 25 (3): 783-787, 2014.
- 4- Guijarro-Martínez R., Miragall Alba L., Marqués Mateo M., Puche Torres M. and Pascual Gil J.V.: Autologous fat transfer to the cranio-maxillofacial region: updates and controversies. *J. Craniomaxillofac. Surg.*, 39 (5): 359-63 doi: 10.1016/j.jcms.2010.07.004, 2011.
- 5- Mojallal A.1., Shipkov C., Braye F., et al.: Influence of the recipient site on the outcomes of fat grafting in facial reconstructive surgery. *Plast. Reconstr. Surg.*, 124: 471-483, 2009.
- 6- El-Danaf A.: Fat transfer to the face in maxillofacial osteotomy patients. 45th congress of the "Societe Francaise de Stomatologie et Churgie Maxillo-Faciale", Sep. 10-12, Nancy, France, 2009.
- 7- Xie Y., Li Q., Zheng D., Lei H. and Pu L.L.: Correction of hemifacial atrophy with autologous fat transplantation. *Ann. Plast. Surg.*, 59 (6): 645-53, 2007.