The Inguinal Adipodermal Graft: a Single-Stage Technique for Cranial Linear Grove-like Defects Correction

Zlatko Vlajcic1, and Rado Zic2

1Faculty of Medicine, Josip Juraj Strossmayer University of Osijek, Croatia
2Department of Plastic, Reconstructive and Aesthetic Surgery, University Hospital “Dubrava”, Zagreb, Croatia

Corresponding author: Prim. Zoran Vlajcic, MD, PhD. University Clinical hospital “Dubrava”. Av. Gojka Suska 6. 10000 Zagreb. Croatia. MD, PhD. ORCID ID: broj: orcid.org/0000-0002-2683-1852 E-mail: zvlajcic@kbd.hr

ABSTRACT
Introduction: In reconstruction of post-traumatic craniofacial defects Palacos R-40 is mostly used by neurosurgeons and by maxillofacial surgeons after tumor removal with consequently noticeable irregularities on the shape of the cranial region and face. We harvested customized adipodermal (AD) graft in low inguinal region and use it as an inlay autologous graft for surface irregularities correction with a 100% survival and without noticeable reduction of the graft volume.

Material and Methods: Between 2009 and 2015, an adipodermal graft was used in 5 cases of craniofacial post-traumatic defects, 3 of which were due to Palacos R-40 cranial reconstruction and 2 connected to maxillofacial tumor removal and post-traumatic reconstruction.

Results: There were no complications and a satisfactory aesthetic result was achieved in all cases.

Conclusion: The inguinal inlay autologous AD graft is, due to our best knowledge, an original single-stage procedure for those typical cranial groove-like defects correction. It gives a wide option of different shapes with relatively easy to proceed and predictable result.

Key words: autologous, adipodermal, graft, craniofacial, defects.

1. INTRODUCTION
In recent years autologous fat transplantation employing liposuction has become an established method for correction of small soft tissue defects and irregularities of skin contour. But in the case of a large cranial and craniofacial superficial linear defects fat transplantation alone, especially under a tight skin region, will result in fat necrosis. So, only a small amount of fat may be used because fat cells will be nourished by perfusion alone (1). Facing the inappropriate correction of the tight linear superficial cranial linear defects at the border of Palacos R-40 used for reconstruction of post-traumatic cranial defects with fat transplantation alone we decided to try autologous free adipodermal (AD) graft instead of fat alone, already described in reconstruction of facial contour defects resulted from tumor extirpation, congenital deformity, trauma, or degenerative disease (2).

2. MATERIAL AND METHODS
The first two of five cases were patients with a recess or hollow at the temporal region after maxillofacial tumor removal and post-traumatic reconstruction respectively. We draw a custom made pattern in inguinal region due to dimensions and shape of the hollow, deepithelialize it in situ with a scissors, excise a dermal graft with attached subcutaneous fat (Figure 1) and close the donor site directly. Then we made a separate incision above the temporal hollow in the hairline, dissect the pocket and insert the AD graft as an inlay patch. The most important surgical detail is the dissection plane at the level of deep dermis without a fat tissue and putting the graft on the way to keep in close touch the deep dermis of the temporal skin and deep epithelialized
site of the AD graft. The idea is to enable a rapid vascular in-growth throw the dermis-dermis contact and indirectly to the fat tissue bellow. We decided to try the same method for long linear grove like defect in a parietal region after unsatisfied attempt to correct it with lipofilling. The next three patients suffered from post-traumatic linear defects, 14, 15 and 17 cm long respectively, after neurosurgical cranial post-traumatic reconstruction with Palacos R-40. One of them was a policeman demanding for surgical cranial post-traumatic reconstruction with Palacos R-40. One of them was a policeman demanding for correction because of profession, the rest because of cosmetic. We did the harvesting from the same region with appropriate length and width of the graft, dissecting the tunnel bellow the defect at the level of deep dermis and pulling through the linear inlay AD graft with the help of plastic tube as a probe through the tunnel (Figure 1). We tailored the harvested AD graft on the way to make the 10% overcorrection of the defect (Figure 2). The care was taken again to have a good dermis-to-dermis contact of the defect.

5. CONCLUSION
The inguinal autologous free inlay AD graft is, due to our best knowledge, an original single-stage procedure for purpose of cranial groove-like linear defects correction. It gives a wide range of different shapes with relatively easy to proceed and predictable 1-5 years result. For really long lasting results we need a 10 years follow up.

- Conflict of interest. None declared.

REFERENCES
1. Hörl HW, Feller AM, Steinau HU, Biemer E. Autologous injection of fatty tissue following liposuction - not a method for breast augmentation. Handchirurgie, Mikrochirurgie, plastische Chirurgie: Organ der Deutschsprachigen Arbeitsgemeinschaft für Handchirurgie; Organ der Deutschsprachigen Arbeitsgemeinschaft für Mikrochirurgie der Peripheren Nerven und Gefässe: Organ der Vereinigung der Deutschen Plastischen Chirurgen. 1989 Mar; 21(2): 59-61.
2. Davis RE, Guida RA, Cook TA. Autologous free dermal fat graft. Reconstruction of facial contour defects. Archives of Otolaryngology - Head and Neck Surgery. 1995 Jan; 121(1): 95-100.
3. Sokolova LA. Free adipodermal grafts in the surgical treatment of progressive lipodystrophy. Acta Chir Plast. 1972; 14(3): 157-64.
4. Brückner H, Lenz P. Plasty of hypo- and aplastic breasts using adipodermal grafts. Acta Chirurgiae Plasticae. 1974; 16(4): 216-21.
5. Polh P, Uebel CO. Complications with homologous fat grafts in breast augmentation surgery. Aesthetic Plastic Surgery. 1985; 9(2): 87-9.
6. de Pedroza LV. Fat transplantation to the buttocks and legs for aesthetic enhancement or correction of deformities: long-term results of large volumes of fat transplant. Dermatologic Surgery. 2000 Dec; 26(12): 1145-9.