

Microsurgical SCIA/SIEA flap for facial contour correction in patient with hemifacial microsomia



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Andrea Battisti, Andrea Cassoni, Davina Bartoli, Marco Della Monaca, Giorgio Barbera, Edoardo Cerbelli, Valentino Valentini

Department of Oral and Maxillo-Facial Sciences, Policlinico Umberto I, "Sapienza" University of Rome, Rome, Italy

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AIM: We propose our experience in soft tissue reconstruction in Hemifacial microsomia using a free fascioadiposal flap.

MATERIAL OF STUDY: Hemifacial microsomia (HFM) is a congenital disorder characterized by craniofacial malformation of one or both sides of the lower face. A 18-year-old female presented with hemifacial microsomia involving the left side. A free SCIA/SIEA fascioadiposal flap was transferred to the left face for soft tissue augmentation.

RESULTS: The immediate postoperative course of the patient was uneventful, with no complication and adequate augmentation in contour deformity was achieved. One year after the procedure, the patient presented a good resolution of the deformity with improved facial symmetry

DISCUSSION: Reconstruction for facial contour deformities is still a challenging process and treatment for most cases is achieved only by soft tissue augmentation. Several microsurgical flaps have been proposed for restoration of facial asymmetry and improvement of facial volume and contour in these patients: deltopectoral, parascapular, anterolateral thigh, groin and deep inferior epigastric. This article reports our experience in facial soft tissue reconstruction with microsurgical superficial circumflex iliac artery/superficial inferior epigastric artery (SCIA/SIEA) fascioadiposal flap transfer in patient with HFM. This flap, which has a dual blood vascularization and pliant soft tissue, can provide an ideal treatment for soft tissue augmentation in hemifacial microsomia with optimal aesthetic results both in the face and at the donor site.

CONCLUSION: The free SCIA/SIEA fascioadiposal flap is a optimal choice option for soft tissue reconstruction with good esthetical outcome both in the face and at the donor site.

KEY WORDS: Facial augmentation, Free flaps, Free SCIA/SIEA flap, Hemifacial microsomia

Introduction

Hemifacial microsomia is the second most common craniofacial malformation after cleft lip-cleft palate¹. The craniofacial anomalies involve the skeletal (temporal, frontal, maxillary, malar, mandibular bone and orbit) and soft tissue of the face in its three dimensions, resulting in facial asymmetry. The restoration of facial soft-tissue

deficiency in mild and severe hemifacial microsomia represents a challenge for the surgeon.

The advent of microsurgical technique have revolutionized the therapeutic approach in cases of HFM with severe soft tissue loss, giving many advantages and successful outcomes for the facial augmentation over other procedures such as biomaterials², free fat injections³, autologous fat grafts⁴ and pedicle flaps⁵.

Different microsurgical flaps were proposed for improvement of the atrophic region and facial symmetry: cutaneous, fasciocutaneous, fat and muscle flaps⁶.

This article reports our experience in facial soft tissue reconstruction with microsurgical de-epithelialized superficial circumflex iliac artery/superficial inferior epigastric artery (SCIA/SIEA) fascioadiposal flap transfer in patient

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Correspondence to: Davina Bartoli, Viale del Policlinico 155, 00161 Rome, Italy (e-mail: davina.bartoli@libero.it)

with HFM. This flap has a dual blood vascularization and pliant soft tissue, can provide an ideal treatment for soft tissue augmentation in hemifacial microsomia.

Material and Method

A 5-year-old female presented with hemifacial microsomia involving the left side.

At the age of 6, she underwent mandibular osteotomy and distraction osteogenesis. At the age of 15 orthognathic surgery was performed. After correction of the skeletal deformity, a soft tissue defect in the cheek area remained (Fig. 1). Three years after the last surgery, free SCIA/SIEA fascioadiposal flap was transferred to the left face for soft tissue augmentation.

The deficient area of the face was compared with the contralateral side using a template prepared for flap design. The cheek region was approached through a preauricular facelift incision extended into the retroauricular region and the recipient vessels were isolated. Simultaneously, an abdominoplasty incision was used to harvest the flap from the left lower abdomen. The SCIA flap pedicle and vein were chosen and they were anastomosed with the facial artery, the comitant vein and superficial temporal vein. The SIEA and vein of the flap were anastomosed to the thyro-lingual-facial trunk. Donor arteries and veins were not ligated until the recipient site and vessel dissections were done. All anastomoses were performed using end-to-end technique. The free SCIA/SIEA fascioadiposal flap was designed on a custom template and elevated. The skin was separated and the flap was trimmed and inserted into a subcutaneous pocket, previously dissected between the superficial muscular aponeurotic system and the overlying tissue. The flap was fixed to the periosteum of the zygomatic bone and to the periauricular soft tissue and skin

to prevent downfalling. The donor site defect was closed directly.

Results

The immediate postoperative course of the patient was uneventful, with no complication and adequate augmentation in contour deformity was achieved. The postoperative swelling resolved progressively 8 weeks after surgery. No nerve injury, damage to the underlying structures or hematoma were present. One year after the procedure, the patient presented a good resolution of the deformity with improved facial symmetry (Fig. 2). Flap thinning and secondary debulking was performed to increase facial symmetry (Fig. 3).



Fig. 2: Post operative frontal and lateral view of the patient. The free SCIA/SIEA fascioadiposal flap was transferred to the left face for soft tissue augmentation. One year after the procedure, the patient presented a good resolution of the deformity with improved facial symmetry.



Fig. 1: Pre operative frontal and lateral view of the patient. After correction of skeletal anomalies, a soft tissue defect in the left cheek area remained.



Fig. 3: Post operative frontal and lateral view of the patient. Six month after flap thinning and secondary debulking procedure, suitable facial symmetry was achieved.

Discussion and Comments

The rehabilitation of facial symmetry in mild and severe hemifacial microsomia represents a challenge for the surgeon because the skeletal malformation is associated with soft-tissue deficiency. Many surgical options are available to correct facial contour defects in HFM: biomaterials², free fat injections³, autologous fat grafts⁴ and pedicle flaps⁵.

Microvascular free flaps may be used for soft tissue augmentation to correct the soft tissue deficiency after secondary skeletal reconstruction⁷.

Several types of free flap have been proposed for reconstruction of hemifacial microsomia including parascapular osteocutaneous and fasciocutaneous free flaps⁸, groin flaps⁹, the rectus abdominis muscle flap, anterolateral thigh flap¹⁰, serratus and latissimus muscle flaps¹¹. However, these techniques often result in excessive bulk, morbidity at the donor site, and poor aesthetic donor site outcome.

The free SCIA/SIEA fascioadiposal flap is a suitable option for soft tissue augmentation in face contour reconstruction. This flap has the following advantages: (1) It has a dual blood vascularization, (2) The flap has minimal recipient and donor site morbidity, (3) Two surgical teams may work at the same time preparing the donor and recipient regions, (4) It allows wide flap harvesting for large contour deformity of the face, (5) When a mild defect need correction, in a single-stage surgery the fat of the SCIA/SIEP flap can be trimmed without disturbing distal flap circulation thank to the course of the pedicle^{6,12}.

Conclusions

The free flap is a safe, effective procedure for soft tissue reconstruction in patients with mild and severe hemifacial microsomia. The free SCIA/SIEA fascioadiposal flap is the best choice option for soft tissue reconstruction with good esthetical outcome both in the face and at the donor site.

Riassunto

Il trattamento chirurgico delle gravi atrofie dei tessuti molli caratterizzanti la microsomia emifacciale rappresenta attualmente una ardua impresa. In questo articolo riportiamo la nostra esperienza mediante ricostruzione con lembo libero fascio-adiposo basato su doppio peduncolo vascolare (SCIA/SIEA) in una paziente affetta da microsomia emifacciale sinistra.

Molteplici opzioni terapeutiche sono disponibili al fine di correggere il deficit dei tessuti molli in tale patologia: biomateriali, lipostruttura, trapianto di tessuto adiposo autologo, lembi peduncolati e lembi liberi.

In letteratura sono descritti diversi lembi microchirurgici impiegati per la ricostruzione dei tessuti molli caratterizzati spesso da risultati insoddisfacenti e gravati da complicanze locoregionali.

Il lembo microchirurgico fascio-adiposo basato su SCIA e SIEA presenta svariati vantaggi tra cui la doppia vascularizzazione e la possibilità di rimodellamento differito del suddetto.

A nostro giudizio dunque il lembo fascio-adiposo SCIA/SIEA rappresenta una valida opzione chirurgica nella ricostruzione dei deficit moderati e severi dei tessuti molli nei pazienti affetti da microsomia emifacciale con ridotta morbilità a livello del sito donatore e ricevente, unitamente ad un buon risultato estetico.

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