INTRODUCTION

Complex facial tissue defects are devastating conditions with functional, aesthetic, and psychosocial implications. The restoration of complex facial expressions and the intricate synergy of facial mimetic muscles are difficult. Facial contour and the dynamic restoration of facial muscles represent a major challenge to plastic surgeons. Thus, the management goal is the reestablishment of facial symmetry, contour, and movement. Facial reanimation surgery mostly involves microsurgical procedures, working on nerves and muscles, or using muscles present in a similar region supplied by other nerves in a single- or multi-stage procedure.1–7

This study presents a new idea for the dynamic reconstruction of complex segmental midfacial defects using a fascial interposition graft to bridge the gap between the proximally innervated remnants of the facial muscle supplied by the facial nerve and the distal paralyzed perioral muscle, which is simultaneously combined with lipofilling to obtain a good contour and functional restoration. (Plast Reconstr Surg Glob Open 2022;10:e4292; doi: 10.1097/GOX.0000000000004292; Published online 6 May 2022.)

METHODS

A 40-year-old woman presented with a complex defect on her right midfacial and cheek areas. The patient had a history of severe infection and abscess drainage since childhood. The defect in the cheek area was accompanied by the loss of muscle bulk, depressed adhesive scar on the underlying remnant structures, deviation of the midface and mouth to the left side both in the resting and dynamic states, drooping of the right oral commissure, and drooling of food and saliva from the right corner of the mouth. The major complaint was that of psychological problems arising due to the loss of facial expression and deviation of the mouth and midface. (Fig. 1). (See Video 1 [online], a preoperative video showing affection of facial muscle on the right side and cheek defect, in resting, smiling, and blowing.)

Preoperative planning for surgery is shown in Fig. 2. The surgical approach was through a previous scar in the cheek. The scar was released from an underlying structure, and the skin flap was elevated proximally, exposing the remnants of the zygomaticus muscle and superficial musculoaponeurotic system (SMAS) for the tensor fasciae latae (TFL) suturing, and distally exposing the muscles of the oral commissure and the modulus. Another skin incision was made medial to the new proposed nasolabial fold. This new crease was located more medially as the present crease would have already laterally drifted due to the loss

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of muscle tone. These incision points were determined before the operation by a preoperative smile analysis.

Two vertical stab incisions were made in the midline of the upper and lower lips at the mucocutaneous junction. The dimension of the harvested TFL graft was 5 × 15 cm and was proximally sutured to the remnants of the zygomaticus muscle and SMAS. The TFL were distally divided into four slips tunneled under the skin flap to be sutured as follows: one to create a nasolabial fold, one for the muscles forming the modulus, and the other two for the upper and lower lips (orbicularis oris muscles) (Fig. 2).

The TFL slips were secured using nonabsorbable sutures (eg, 4-0 Proline) around the orbicularis oris at the modulus and the midline of the upper and lower lips. The nasolabial fold was created by suturing the upper slip of the TFL to the remnant muscle and the dermis at the new crease site, which was determined preoperatively.

Determining an appropriate traction point and vector is imperative for a natural smile because it also elevates the cheek and laterally deviates the nasal ala in the correct manner. The fat graft was obtained from the abdomen through liposuction following tumescent fluid injection, prepared using Coleman’s technique. For cheek lipofilling, 20 mL was injected after the secured closure of the skin incision, in multiplane, in the remnant facial tissue either above or below the fascia lata to increase the survival rate of the injected fat (Figs. 3, 4).

**RESULTS**

Satisfactory results were achieved with long-lasting results, as verified at the 2-year follow-up, with appropriate aesthetic appearance at resting and in a smiling position of the face, good symmetry on both sides of the cheek and mouth when laughing and talking, and a suitable contour to the cheek and face (Figs. 3, 4). (See Video 2 [online], which displays the patient 1 month postoperative, showing facial movement and symmetry on both sides, fat in check still bulging due to overfilling.) (See Video 3 [online], which displays the patient 2 years postoperative, showing good cheek contour and symmetry in facial expression in resting, smiling, and blowing.)

**DISCUSSION**

Loss of facial animation, check depression, and drooling from the oral commissure due to the loss of facial muscle function are the most difficult challenges faced during the reconstruction because compounded reconstruction for facial reanimation and resurfacing of large facial defects are required.
Several techniques regarding facial reanimation with cheek defect involve free vascularized functioning muscle with or without skin or adipofascial tissue to add bulk for both reanimation and filling defects using nerve supply to the muscle, anastomosing it to one branch of the facial nerve (either ipsilateral or contralateral in one or two stages), or using the other donor nerves in one stage (eg, hypoglossal or the nerve to the masseter). These techniques need specialized equipment and involve long operation duration and donor site morbidity in either the donor muscle or nerve. Moreover, the use of ipsilateral facial nerve branches in such cases may worsen the already weakened functioning muscle. Hence, while mainly seeking another nerve donor, which was associated with delayed recovery in nerve repair techniques with unfavorable results in most cases in the form of dyskinesia, other authors used TFL grafts for lengthening the regional muscles supplied by other nerves (eg, temporalis muscle). These techniques have a good similarity in the resting position with many drawbacks. Donor muscle morbidity, also during smiling or laughing, requires the patient to clench their teeth, which leads to a noticeable similarity.

The current case does not necessitate microsurgical free functional muscle transfer or nerve repair (eg, hypoglossal–facial neurorrhaphy or hemihypoglossal nerve transfer) because the proximal portion of the facial nerve and muscles involved in smiling were not injured. The use of TFL for bridging the defect in the facial muscle as the segmental loss in the cheeks, between the remnants of the zygomaticus muscles, which are supplied by the intact proximal ipsilateral parts of the facial nerve (laterally) and the distal denervated perioral muscle (medially) as a continuation of the lost segment of muscle until insertion, with the replacement of the muscle bulkiness by lipofilling, is simple, reliable, requires less surgical time, and shows early functional recovery. In addition, it is an effective method with suitable cosmetic and functional restoration with early postoperative results and low donor site morbidity.

**CONCLUSIONS**

The use of the TFL graft to replace the lost segments in the facial muscle, which are supplied by the ipsilateral facial nerve as a bridge between the proximally innervated and distally denervated muscles as a muscle continuation until its insertion, combined with a fat graft to obtain a good contour, is a simple, reliable, and safe procedure for facial reanimation and contouring with negligible donor site morbidity.

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PATIENT CONSENT

The patient provided written consent for the use of her image.

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