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Case Report

Reconstructive Potential Of Facial Adipostructuring In Complex Lower Lip Defects Secondary To Infection: A Case Report.

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Abstract

In this study, facial adipostructuring is presented as a minimally invasive reconstructive alternative for sequelae of lower-lip loss. Unlike classic flaps (Abbe, Karapandzic, Bernard-Burrow, among others), the technique allowed restoration of lip volume and contour while respecting the residual anatomy, without adding new cutaneous scars and with the possibility of serial adjustments according to integration and volumetric response. This strategy suggests that adipostructuring acts not only as a filler, but also as a regenerative tool capable of improving scar quality and the dynamic function of the perioral complex, thereby positioning adipostructuring as a complement or, in selected cases, an alternative to conventional reconstructive techniques for the lower lip.

Keywords: Facial adipostructuring, scar sequelae, lip infection, cannulas, natural volumetry.

The partial or total loss of the lip due to infections is uncommon but associated with high functional and aesthetic morbidity, and is usually related to necrosis secondary to viral or bacterial infections or to complicated aesthetic procedures (1). Cases of extensive necrosis of the lower lip have been reported in association with herpetic vasculitis due to reactivation of varicella-zoster and/or herpes simplex virus, with deep ulcers that involve a large portion of the vermilion and the oral mucosa (2). Other series describe necrosis and necrotizing fasciitis following filler injections or invasive procedures, in which infection is superimposed on ischemia from vascular obstruction or on the presence of biofilms on synthetic materials (3). Aggressive bacterial infections (for example, abscesses or polymicrobial infections following bites or trauma) can rapidly progress to tissue destruction if they are not treated early and vigorously; in all these scenarios, delayed diagnosis or suboptimal management increases the risk of necrosis, tissue loss, and the need for complex reconstruction (2, 3). All studies agree that the initial phase must focus on wide and early surgical debridement of necrotic tissue, associated with targeted antibiotic therapy and, when indicated, antiviral treatment (4). The aim at this stage is to contain the infection, preserve residual vascularization as much as possible, and limit the final defect on which reconstruction will be planned. Once the infection has resolved, many patients are left with lower-lip defects greater than 30–50%, with impairment of oral competence, salivary incontinence, microstomia, difficulty with speech, and significant psychological impact (5). The reconstruction of large labial defects highlights the importance of restoring three key components: cutaneous skin, vermilion/mucosa, and continuity of the orbicularis oris muscle, as well as the need to maintain oral competence and mobility, rather than merely closing the defect (6)

There are conventional reconstructive options that focus on local and free flap techniques. For defects involving up to two thirds of the lower lip, combinations of local flaps (Abbe, staircase, Karapandzic, Bernard-Burrow, and modified nasolabial flaps) are recommended, as they take advantage of adjacent well-vascularized tissue and can restore good functional and aesthetic outcomes (7). When tissue loss exceeds 50–66% of the lip, systematic reviews indicate that free flaps are often required, including fasciocutaneous and even innervated muscular flaps to re-establish orbicularis oris

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function (8). Studies on structural facial fat grafting have shown that autologous fat can integrate stably, improve scar quality, and restore contour with low morbidity, especially when a remnant of orbicularis muscle and labial mucosa is preserved (9). Facial adipostructuring could therefore be used as an alternative tool in the sequelae of these lesions, since it is a technique that specifically targets the adipose tissue and directly improves skin, fasciae, muscles, and, when necessary, mucosa, owing to its capacity for regeneration and promotion of natural collagen synthesis (10).

Facial ultrasound studies suggest that adipostructuring may be a valuable tool for filling and regenerating residual soft-tissue defects, particularly when the muscular and mucosal framework is partially preserved, offering a less invasive alternative or a refining adjunct after primary reconstruction (11). These techniques provide acceptable functional outcomes and do not involve additional surgery or scars, risk of microstomia, or donor-site morbidity, since no fat is transplanted; rather, the existing adipose tissue is reorganized, with parallel improvement of the surrounding structures. Based on these considerations, we present a clinical case of lower-lip loss secondary to postoperative infection, managed using facial adipostructuring as a therapeutic tool.

CASE REPORT

A 14-year-old female patient presented to our clinic with sequelae of lower-lip loss secondary to an infection that occurred at two months of age, which resulted in near-complete loss of the labial component (**Figure 1**).

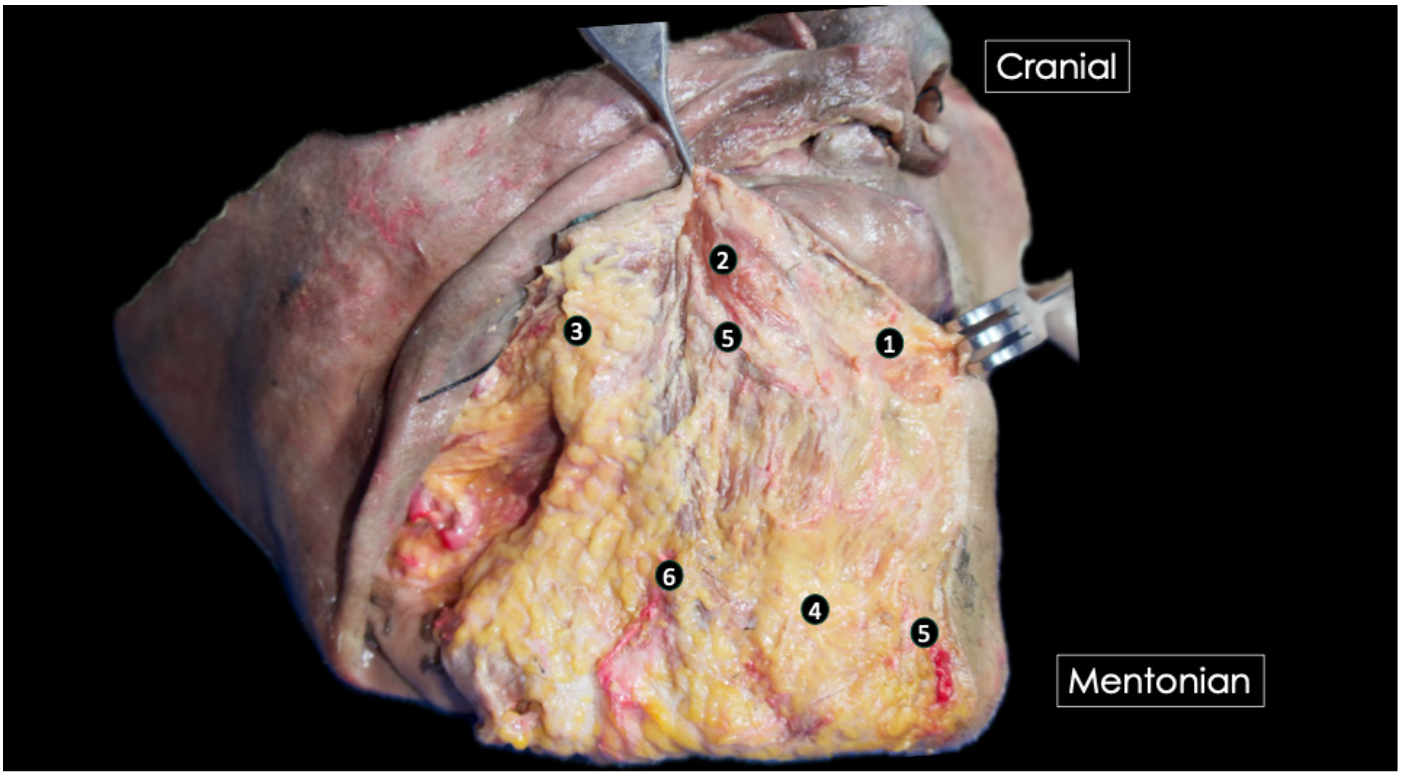
Figure 1. Fourteen-year-old female patient with lip loss secondary to sequelae of lower-lip infection.

An adolescent patient with subtotal loss of the lower lip secondary to severe infection required extensive debridement, which resulted in a soft-tissue defect involving the vermilion and oral seal. In the sequela phase, she presented with salivary incontinence, difficulty articulating labial phonemes, and marked aesthetic alteration of the lower third of the face. A staged reconstructive approach was undertaken based on structural facial adipostructuring in the deep planes of the residual lip, chin, and labiomental region, with the aim of recreating a continuous hypodermal cushion and improving lower-lip projection In **Figure 2**, an anatomical dissection of the lower lip and chin is shown, in which the cutaneous–muscular plane and the underlying adipose compartment have been clearly separated. The flap elevated cranially corresponds to the skin–orbicularis oris muscle complex of the lower lip, retracted to expose the deep planes. Beneath it, a bulky yellow adipose mass can be seen, representing the subcutaneous fat pad of the lower lip and the labiomental/mental region extending toward the chin. This is precisely the compartment that is mobilized and can be modulated with adipostructuring techniques.

Between the elevated muscle and the fat, fibrous bands and septa can be identified, representing the connective septa that anchor the lip to the skin and mandibular periosteum and explaining how traction or filling vectors are transmitted to the lip contour. The dissection demonstrates that the lower lip is not a thin lamella but a three-dimensional unit in which volume and projection depend largely on the deep adipose cushion visible in the specimen. Integrated within the fat pad are arterial and

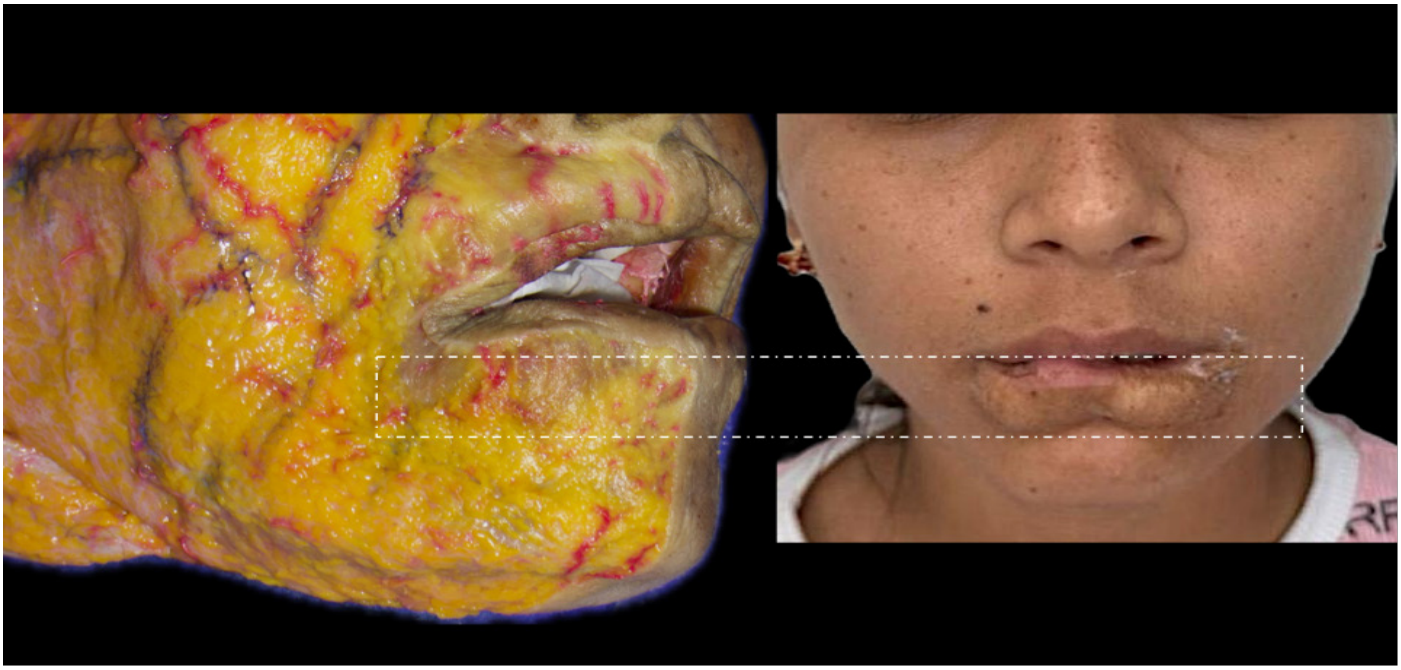
venous branches (arising from the inferior labial and mental arteries) and sensory and motor branches (the mental nerve and the marginal mandibular branch of the facial nerve), which are essential for lip sensitivity and fine motor function.

Figure 2. Anatomical dissection of the lower lip and chin showing: 1. Cutaneous adipose panniculus of the lip; 2. Orbicularis oris muscle; 3. Superficial adipose tissue; 4. Mental adipose tissue; 5. Fibrous bands and septa; 6. Vascular branches of the lower third arising from the inferior labial artery. Dissection performed at the Latin American Center for Medical Training and Research (CLEMI), Bogotá, Colombia.



In the clinical photograph, the region outlined by the dotted rectangle includes the right hemilower lip and part of the left, with partial loss of the vermilion, irregularity of the cutaneous–mucosal border, and an adherent scar that distorts the line of closure. The right labiomental region shows depression and dyschromia, indicative of loss of the adipose panniculus and fibrosis of the subcutaneous plane, with probable involvement of the mentalis muscle. Anatomically, this represents combined damage to: the mucosal and cutaneous components (labial surface); the subcutaneous adipose cushion of the lower lip, where the compartment that appears bulky and well vascularized in dissection is clinically replaced by a flat scar, resulting in loss of projection and collapse of the lip; and the muscular plane, since although part of the orbicularis oris and mentalis muscles are preserved, the scar in the transition zone suggests detachments and adhesions that compromise oral seal and mobility. The partial absence of the adipose cushion and septal fibrosis explains the difficulty of the lower lip in everting and contacting the upper lip adequately, leading to salivary incontinence and altered phonation. From a reconstructive standpoint, the anatomy demonstrated in the dissection makes it clear that the aim of adipostructuring is to recreate this subcutaneous adipose compartment between skin/scar and musculature, restoring volume, releasing adhesions, and improving the labiomental vector. cutaneous–mucosal, adipose, and partially muscular components of the lower lip and labiomental region, whose volumetric and scar-related deficit disrupts the normal three-dimensional architecture observed in the anatomical specimen and justifies the use of adipostructuring as a technique for replacement and reorganization of the fat pad.

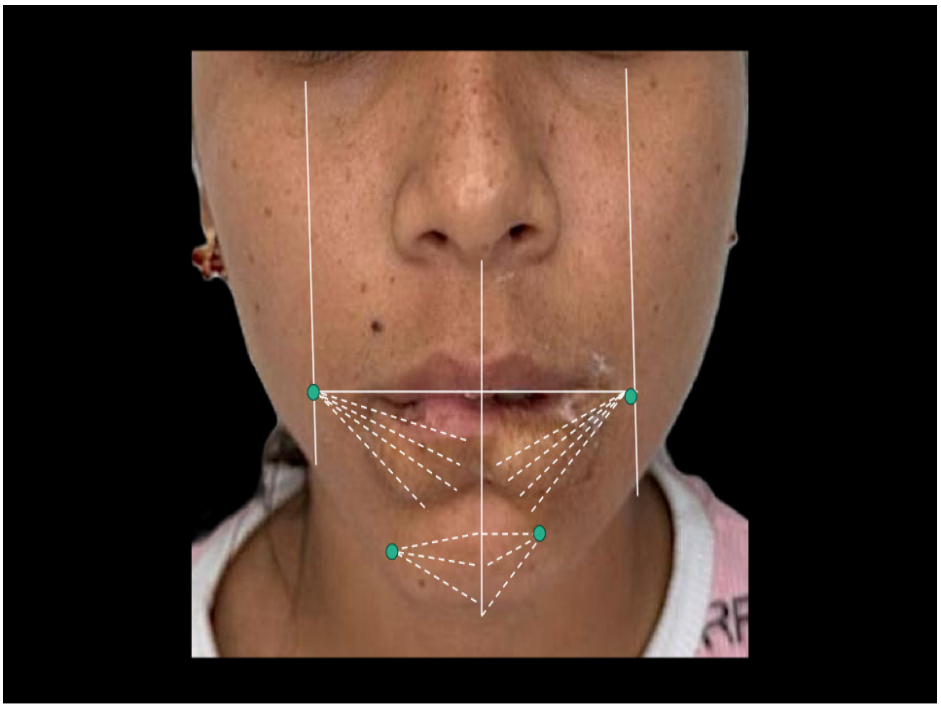
Figure 3. Clinical photograph with comparative anatomical schematic outlining the areas altered by scar sequelae.



Adipostructuring of the lower lip and chin was performed with the aim of releasing fibrosis and improving tissue remodeling. A vector-based plan was designed according to the previously described technique and the position of the anatomical structures. Truncal anesthesia was administered with lidocaine and 1% epinephrine, injecting half a cartridge on each side using a direct mental nerve block, in order to allow precise and painless cannulation given the markedly collapsed planes in the treated area. The treatment area was planned according to the defect by drawing two reference lines projected from the infraorbital point to the inferior mandibular border, intersecting the labial plane. The entry point for the lip was designed at this level and divided by the midline to allow bilateral access, whereas the entry point for the chin was placed just below the mentolabial fold. A 22G × 50-mm cannula was used throughout the system to re-establish the main planes, followed by a 27G × 40-mm cannula to refine the interseptal spaces and contour the labial border.

Six adipostructuring sessions were scheduled at 15-day intervals. In each session, the active pharmacologic component was modified, using caffeine, Centella asiatica, organic silicon, Melilotus, L-carnitine, and dimethylaminoethanol (DMAE) to optimize lipolytic, trophic, and tensor effects in the treated región

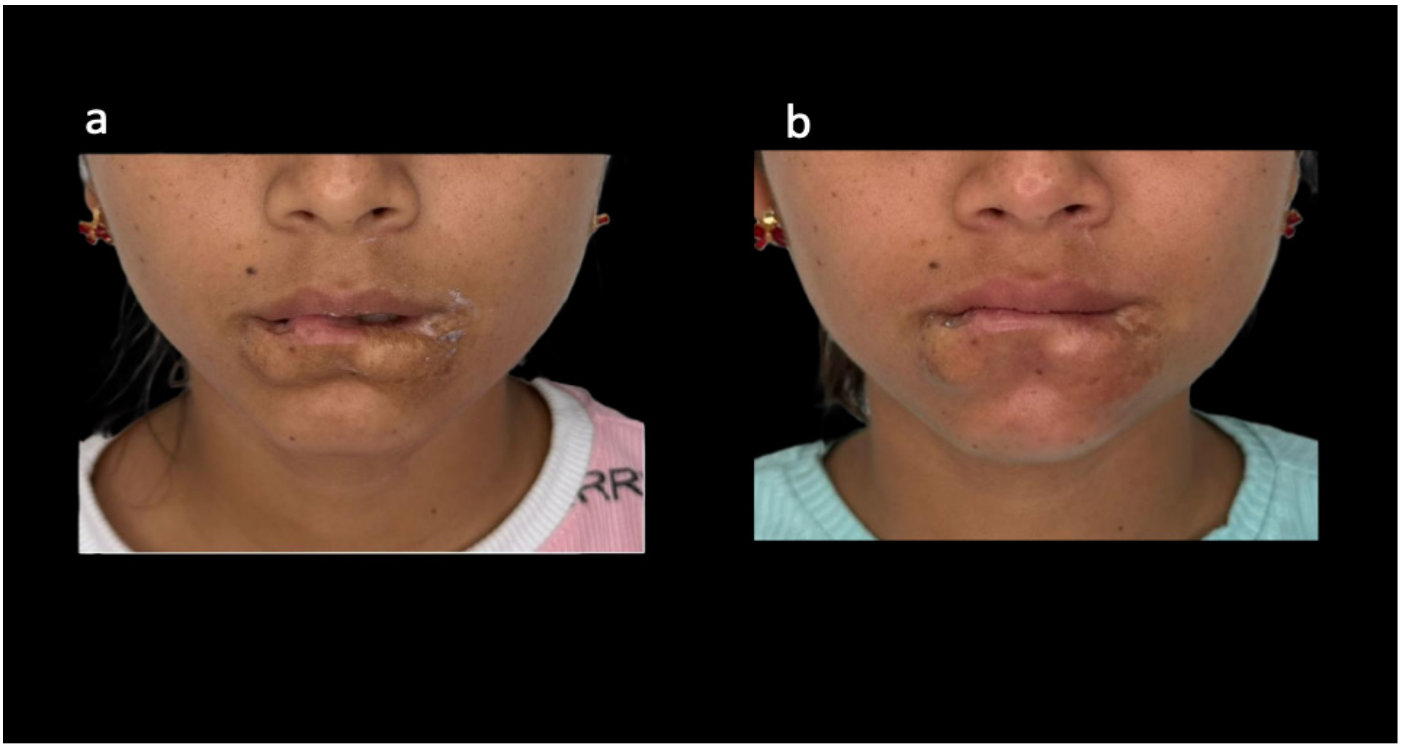
Figure 4. Lip planimetry and marking for the adipostructuring approach.



RESULTS AND DISCUSSION

Volumetric restoration and lip contour. Replacement using adipostructuring made it possible to recreate a continuous hypodermal cushion along the inferior border of the oral cavity, restoring the previous volume and the curvilinear contour of the lip. This behavior is consistent with the pattern observed on ultrasound in your other cases, in which the labial compartment progresses from very low baseline values to thicknesses compatible with a functional and aesthetically acceptable lip (11).

Figure 5. Evolution of the lesion at the third adipostructuring session.



Dynamic function and oral seal

From a functional standpoint, the reconstruction provides not only static volume but also restores a malleable and compressible tissue capable of adapting to the movements of the remaining orbicularis oris muscle. This favors oral seal, salivary continence, and speech articulation, without the rigidity that can be generated by cutaneous flaps or purely passive prosthetic solutions. The relative symmetry achieved with the upper lip suggests a satisfactory rebalancing of the perioral complex, as has been reported in other studies in which adipostructuring has been used to treat difficult-to-manage scars (12).

Tissue integration and scar quality

In a previously fibrotic bed, adipostructuring promoted well-vascularized tissue that helps modulate chronic inflammation, improve scar quality, and reduce contracture. In the photographic outcome, a smoother transition is observed between skin, scar, and mucosa, without marked step-offs or visible contractures, supporting the hypothesis of an additional regenerative effect beyond volume, in line with results reported in the scientific literature (13).

Figure 6. Evolution over the six sessions of facial adipostructuring.

CONCLUSION

Compared with classic options for lower-lip reconstruction (Abbe, Karapandzic, Bernard-Burrow flaps, etc.), adipostructuring in this case offers a minimally invasive alternative that respects the residual anatomy, avoids new external scars, and allows serial refinements according to the volumetric response. Although it does not replace flaps when there is extensive loss of mucosa and muscle, in mixed defects such as this it demonstrates that it is possible to reconstruct a functional and aesthetic lip primarily with structured fat, with low morbidity and high satisfaction. This case provides clinical evidence that facial adipostructuring can be used not only as a rejuvenation tool but also as an advanced reconstructive strategy for severe infectious sequelae of the lower lip, achieving recovery of lip volume and contour, improvement of oral seal and perioral dynamics, and optimization of scar quality, all with harmonious integration into the overall facial architecture.

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