

# Lower Lip Reconstruction With the New Ascending Mental Artery Perforator Flap

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Full-thickness defects of the lower lip pose a considerable challenge for reconstructive surgeons. The primary objective should be the restoration of oral sphincter competence, achieving both functionally and aesthetically favorable outcomes. For defects involving more than one-third of the lower lip, multiple locoregional flaps have been described as the optimal solution due to their color and texture match. Unfortunately, complications such as reduction of buccal circumference or microstomia have been reported, impacting patients' quality of life. For defects exceeding 80% of the lower lip, free flaps are required. In this study, we propose the new ascending mental artery perforator flap, based on the superficial perforating branches of the ascending mental artery. We applied this technique to 11 patients undergoing lower lip cancer excisions with defects involving 30%–70%. Our primary objective was to maintain oral continence, avoiding reduction of mouth circumference or various grades of buccal microstomia. All patients were satisfied with the functional and aesthetic final outcomes checked by long-term follow-up through clinical examination and photographs/videos (from 14 to 50 mo, with an average follow-up of 26.2 mo). This surgical procedure allows us to raise a safe and easy-to-harvest locoregional flap within a relatively short operative time, bringing a great amount of similar tissue to what is required for reconstruction. Finally, the AMAP flap has been demonstrated to fulfill the main goals of lower lip reconstruction, avoiding the most frequent complications described in the literature, especially the reduction of the circumference of the mouth. (*Plast Reconstr Surg Glob Open* 2025;13:e6599; doi: 10.1097/GOX.00000000000006599; Published online 12 March 2025.)

Reconstructing the lower lip after a full-thickness cancer excision posed significant challenges due to its complex structure and the poor soft tissues composing this area. Distortion of the lower lip could affect oral continence, facial expressions, and speech, and for this reason, defects exceeding 30% require a local or distal flap for reconstruction. Many locoregional flaps have been described for defects involving from 30% to 70%, such as Estlander and Karapandzic flaps, with good results in terms of oral continence and cosmetic appearance, but with some reduction of buccal circumference

or various grades of microstomia and aberrant scars. Existing cadaveric studies have described the submental artery course to prevent vascular injury during chin augmentation using filler injections.<sup>1</sup> Among its branches, authors have identified the ascending mental artery.<sup>1,2</sup> Several anatomical variations have been described concerning its origin, course, and caliber.<sup>1,2</sup> The ascending mental artery could be unilateral, bilateral, or absent, and it is responsible for the vascular supply of the chin.<sup>1,2</sup> This artery typically enters the chin region paracentrally within the muscular plane,<sup>1,2</sup> turning superiorly, and pierces the submental triangle, the platysma muscle, and its facial system to pass over the mandible. It ascends deep to the depressor labii inferioris muscle. Near the inferior edge of the orbicularis oris muscle, it bifurcates into superficial and deep branches. In particular, the superficial branches reach the subcutaneous tissues perforating the fascial septum between the depressor labii inferioris and orbicularis oris muscles.<sup>1–4</sup>

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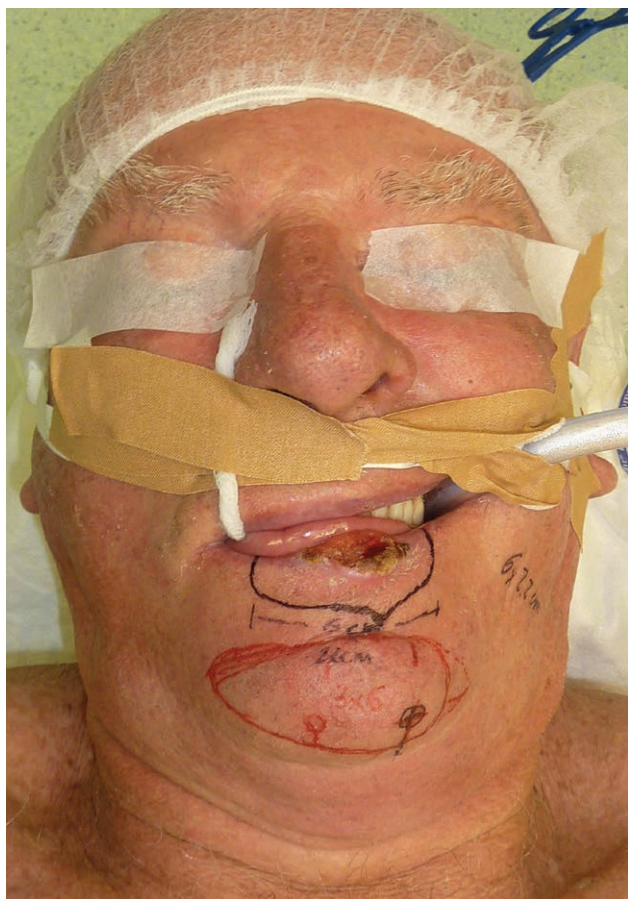
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Based on these anatomical insights, we developed a novel surgical approach involving a local flap based on the superficial branches of the ascending mental artery for 11 consecutive patients who underwent cancer excision of the lower lip. We named this flap the ascending mental artery perforator flap (AMAP flap) due to its association with the ascending mental artery, also known as the labiomental artery,<sup>5</sup> and according to the definition of “perforator.”<sup>6</sup>

The AMAP flap aims to restore form and function, providing sufficient oral competence and avoiding microstomia and important donor-site morbidity. (See **Video [online]**, which displays the AMAP flap in lower lip reconstruction: technique and results.) All patients underwent a full-thickness resection of up to 70% of the lower lip (the length of the defects of the lower lip in our series ranged from 3.5 to 8 cm, with an average of 4.8 cm, and the height ranged from 2 to 3 cm with an average of 2.6 cm, with defects involving 40%–75% of the length of the lower lip), excluding the commissures. (See **table, Supplemental Digital Content 1**, which displays the lower lip



**Fig. 1.** In May 2022, an 82-year-old man underwent a full-thickness excision of a relapsed squamous cell carcinoma at the level of the lower lip. We planned the new AMAP flap by preoperative Doppler ultrasound evaluation of the ascending mental artery and its superficial perforating branches. Curvilinear upper and lower incisions for the flap were planned along the labiomental crease and the mandibular border, respectively.

### Takeaways

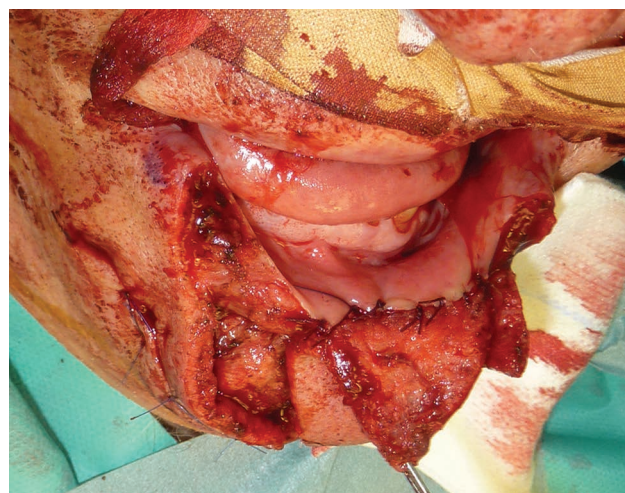
**Question:** Is it possible to avoid any reduction in circumference of the mouth and fulfill the main goals of lower lip reconstruction for full-thickness defects involving from 30% to 70% in the minimally invasive way?

**Findings:** The ascending mental artery perforator flap allows us to raise a safe and easy-to-harvest locoregional flap within a relatively short operative time, bringing a great amount of similar tissue to what is required for lower lip reconstruction.

**Meaning:** “Yes we can!” The ascending mental artery perforator flap allows us to avoid almost any kind of reduction of the circumference of the mouth in full-thickness lower lip reconstruction.

reconstruction with the new AMAP flap, <http://links.lww.com/PRSGO/D894>.) In all cases, the perforating superficial branches of the ascending mental artery were preoperatively identified by the Doppler probe and became the pivot point of our AMAP flap. According to the previous study, we identified this artery on a vertical line on the chin at 6 mm ( $5.64 \pm 4.34$  mm) from the midline.<sup>2</sup> Curvilinear upper and lower incisions of the flap were planned along the labiomental crease and the mandibular border, respectively (Fig. 1).

The flap width was equal to the defect width with a 3:1 length-to-width ratio. The flap was raised from cranial to



**Fig. 2.** The new AMAP flap is based on the superficial perforating branches of the ascending mental artery, emerging deep from the depressor labii inferioris muscle near the inferior edge of the orbicularis oris muscle, piercing and perforating the fascial septum between these muscles (see **Video [online]**). According to the definition of perforator artery defined in the Gent consensus, we called it the AMAP flap. The flap is raised from cranial to caudal down to the superficial muscular aponeurotic system at the myofascial plane (mentalis/orbicularis oris muscle in the median region and depressor labii inferioris/orbicularis oris muscle in the paramedian region); then, the flap is transposed. Care in setting the tension of the flap is required, and a 3-layer closure should be planned to ensure oral competence and good aesthetic results, avoiding microstomia.



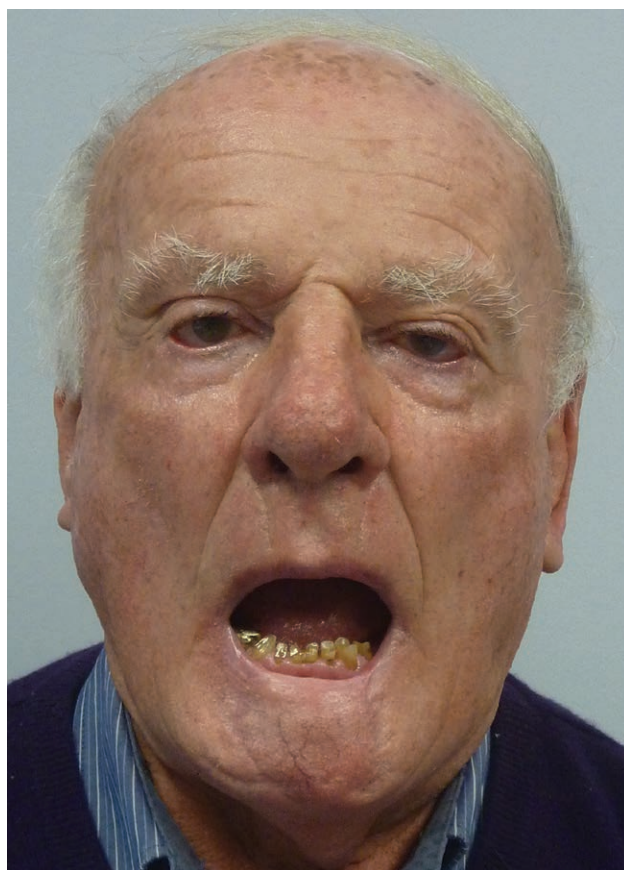


**Fig. 3.** Immediate postoperative result of the lower lip reconstruction with the new AMAP flap. This procedure has allowed us to bring a great amount of well-vascularized tissue, avoiding microstomia. The AMAP flap has been demonstrated to be a safe and easily raised locoregional flap, requiring a relatively short operative time, which is important to perform low invasive sophisticated reconstructions.

caudal down to the superficial muscular aponeurotic system at the myofascial plane, reaching the pivot point previously identified by ultrasound. Attention was paid not to skeletonize the pedicle, avoiding damage to arterial and venous drainage. Then, the flap was transposed by 60–90 degrees according to the location of the lip defect, and a 3-layer closure was planned (Fig. 2). Simultaneous vermilion reconstruction was accomplished by de-epithelialization of the distal margin of the flap, which turned into mucosa within a few months. The mean follow-up period was 26.2 months (from 14 to 50 mo). There were no flap losses or partial necrosis in any of the cases. All patients were satisfied with the final outcome, achieving good oral competence and avoiding reduction of the buccal circumference or various grades of microstomia, checked by long-term follow-up through clinical examination and photographs/videos (from 14 to 50 mo, with an average follow-up of 26.2 mo).

### DISCUSSION

The lower lip structure consists of skin, muscle, and mucosa, and its function is essential to retaining saliva and food during swallowing. It also plays an important role in



**Fig. 4.** Two-year follow-up evaluation: a complete oral opening has been successfully obtained, demonstrating the avoidance of reduction in buccal circumference or various grades of microstomia.

phonation and facial expression. For defects involving more than one-third of the lower lip, local flaps are the main reconstructive option, providing a good color and texture match. Multiple locoregional flaps have been reported,<sup>7</sup> but several disadvantages have been identified, such as microstomia or significant perioral scar. Free flaps are adequate for larger defects, but results are less satisfactory for the absence of oral continence and tissue mismatch. Furthermore, they required longer operative time and recovery, as well as exhibiting greater donor-site morbidity. To provide the best solution for lower lip reconstruction for our patient, we planned a local perforator flap, taking advantage of tissue closeness and similarity.<sup>8,9</sup> Previous studies have demonstrated that the superficial branches of the ascending mental artery enter the superficial plane through a defined fenestration in the deep fascia, according to the notorious definition of “perforator.”<sup>6,9–11</sup> Hence, we called this flap the AMAP flap. By harvesting the AMAP flap, based on superficial branches of the ascending mental artery, we achieved the main goal of lower lip reconstruction, the restoration of oral competence. In fact, for defects encompassing up to 70% of the lower lip, excluding commissures, oral competence and sphincter function have been maintained (Figs. 3, 4). Postoperative follow-ups revealed hypesthesia of the reconstructed lower lip in the absence of evident

fluid leakage while drinking. Patients were able to clearly speak, mimic facial expressions, and maintain normal eating and drinking patterns without spillage (see **Video [online]**). Furthermore, this procedure allows us to bring a great amount of well-vascularized tissue, avoiding the reduction of the buccal circumference or various grades of microstomia. The AMAP flap has been demonstrated to be a safe and easy-to-raise locoregional flap, requiring a relatively short operative time. In conclusion, we strongly believe the surgical technique described herein could be a suitable option for reconstructing extensive defects involving up to 70% of the lower lip surface, avoiding the most frequent complications described in the literature, especially the reduction of the circumference of the mouth.

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#### DISCLOSURE

*The authors have no financial interest to declare in relation to the content of this article.*

#### PATIENT CONSENT

*The patient provided written consent for the use of his image.*

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