Use of the Tongue Tip Flap for Lower Lip Reconstruction in Involved Hemangioma

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Abstract: Two young female patients underwent lower lip reconstruction after the loss of tissue secondary to the involution of infantile hemangiomas. A proximally based dorsal tongue flap was raised from the tip of the tongue, including a layer of intrinsic muscle. The second stage of the flap division was performed after 3 weeks. Lip contour was improved in both patients, and oral competence was obtained. The papillary appearance of the tongue mucosa smoothened in approximately 2 weeks. Tongue mobility was not compromised. When the defect involves only the vermilion, reconstruction options must be considered on an individual basis. The dorsal portion of the tongue is thicker than the ventral surface and provides better fullness for the lower lip, with a good color match. The 2-staged tongue tip flap (TTF) surgery is an effective alternative to reconstruct vermilion defects after sequelae from infantile hemangioma.

Keywords: Vascular anomalies, Involved hemangioma, Oral cavity, Nonmicrovascular reconstruction

Introduction

Infantile hemangiomas of the lip are most commonly found in only 1 lip (upper or lower), and usually in the central region, with rare involvement of the labial commissure.1 Progression and involution of infantile hemangiomas of the lip,2 similarly to leukoplakia or carcinoma in situ,3 may cause a particular pattern of vermilion defect that results in extensive loss of mucosa without compromising vertical height. The tongue tissue can mimic the lower vermilion and may be a good alternative for reconstruction of these defects as a 2-staged pedicle flap.4 Early resection of lip hemangioma has been described,5 but no previous studies report the use of tongue flaps for reconstruction of involuted lip hemangiomas at a young age. Here, we present the cases of 2 patients that underwent a successful reconstruction with a tongue tip flap (TTF).

Methods

Under general anesthesia, scar tissue in the area corresponding to the lower lip vermilion is excised. The orbicularis oris muscle is exposed and a 5 mm thick, proximally based dorsal tongue flap is raised from the tip of the tongue (Figure 1). On the dorsal surface, the papillary mucosa is closely adherent to the connective tissue (also called “corium”) and underlying muscle, and a layer of intrinsic muscle is included in the flap. The flap is then sutured in 2 layers. The first suture line is between the posterior margin of the defect and the base of the flap, to maintain the flap in position and reduce tension. Adhesion sutures should be placed between the muscular layer of the tongue and the orbicularis oris muscle, ensuring not to flatten the flap. Finally, the tip of the tongue is sutured to the connective tissue (also called “corium”) and underlying muscle, and a layer of intrinsic muscle is included in the flap. The second stage of the flap division was performed after 3 weeks. Lip contour was improved in both patients, and oral competence was obtained. The papillary appearance of the tongue mucosa smoothened in approximately 2 weeks. Tongue mobility was not compromised. When the defect involves only the vermilion, reconstruction options must be considered on an individual basis. The dorsal portion of the tongue is thicker than the ventral surface and provides better fullness for the lower lip, with a good color match. The 2-staged tongue tip flap (TTF) surgery is an effective alternative to reconstruct vermilion defects after sequelae from infantile hemangioma.

Results

Patient 1 was a 6 years old young girl referred to our hospital with a history of infantile hemangioma compromising both sides of the lower third of the face. She developed lip ulceration during the proliferative phase in the first months of life. Involution occurred with treatment with oral corticosteroids after 1 year, and she developed a lower lip defect that extended into the entire lip vermilion. The surrounding skin was of poor quality, and oral competence was incomplete (Figure 2).

Patient 2 was a 15 years old girl referred to our hospital with a history of extensive segmental hemangioma in the right side of the face, the entire lower lip, and the chin (Figure 3). Treatment with oral corticosteroids resulted in areas of skin atrophy, telangiectasia, and loss of tissue in the lower lip, with dynamic exposure of the lower teeth.
Neither patient had a significant extension of native dry vermillion in the inferior lip, and both accepted well the idea of the TTF. They underwent reconstruction with TTF surgery and follow-up period was 4 years for patient 1 and 6 months for patient 2.

Procedures were followed according to the Declaration of Helsinki and the patient’s parents gave informed consent.

The temporary position of the tongue between the first and second stage of surgery was well-tolerated by both patients, with good food and drink acceptance. Patients maintained good communication condition, although they were told to restrict movement and speech as little as possible. Neither patient reported difficulty in swallowing. The flaps had good perfusion without necrosis after pedicle division. Both patients had improved lip contours and lip volume. Both achieved oral competence with good mobility of the orbicularis oris muscle. The papillary appearance of the tongue mucosa smoothened in approximately 2 weeks. The reconstructed lip was drier than the natural lip, and the patients were instructed to use moisturizers and lip sunscreen. The use of lipstick was well accepted. The remaining tip of the tongue was slightly narrowed in both cases without compromising tongue mobility. For patient 2, the flap inset resulted in coverage of the lower incisors with a good esthetic outcome (see Video, Supplemental Digital Content 1, http://links.lww.com/JV9/A0 and http://links.lww.com/JV9/A1; Figure 4). Neither patient developed dehiscence or infection. No sequelae to periodontal health were found after flap division.

Discussion
This report presents the resolution of lip vermilion defects secondary to involution of infantile hemangiomas. Both
Figure 3. Preoperative photos of patient 2. A, patient 2 with 1 year old, under treatment with corticosteroids; B, patient 2 with 15 years old.

Figure 4. Postoperative photos of patient 2, after a 6-month follow-up. A, B, and C, patient demonstrating oral movement; D, there was good adaptation to the use of lipstick.
patients had lip deformities secondary to a benign lesion that developed since the first months of life. However, the deformities caused a real impact in their appearance at a very sensitive age. TTF surgery was proposed as a definitive solution.

When the lip defect involves only the vermilion, reconstruction options must be considered on a case to case basis: the anatomy of the lip is variable and depends on ethnicity and gender. Mucosal flaps, buccal mucosal grafts, and medical tattooing can be considered if volume enhancement is not required.7–9 Female patients normally tend to have fuller lips. For wide vermilion defects such as those of the patients presented, TTF is a reliable alternative. Although the procedure was performed in 2 staged procedure and involved delayed flap division, it was well tolerated in these 2 young patients and may be performed in children.

McGregor first designed the tongue flap in 1966 for cases of extended lip-shaving.4 Others also used a tongue flap for lip reconstruction with or without the combination of other soft tissue flaps.10,11 Lip shave procedures for leucoplakia or carcinoma in situ are more likely to produce vermilion defects similar to those secondary to infantile hemangioma, and a tongue myomucosal flap was previously described for such cases.12 A tongue flap for an upper lip defect was also already described,13 but in those cases, nutrition is more complicated and patient may suffer from problems of oral intake between the first and second stages. The patients described here, on the other hand, had a good food acceptance without further problems.

In TTF, vascularization is random but reliable due to the tongue tip anastomotic network.14 This allows the use of the dorsal portion of the lip. The dorsal portion is thicker than the ventral surface and provides better fullness for the lower lip, with a good color match. The disadvantage is the papillary appearance of the mucosa, although it smoothens after a few weeks.

In this initial experience with 2 cases, the 2-staged tongue flap was an effective option for reconstruction of lower lip vermilion defects after sequelae from infantile hemangiomas.

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References