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CASE REPORT

Inclusion of a skin strip into Goldstein's myomucosal flap for labial reconstruction

Giovanni Verna, Filippo Boriani*, Antonio Taveggia

Department of Plastic and Reconstructive Surgery, Director: Prof. G. Bocchiotti, University of Turin, Turin, Italy

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Summary Traumatic defects of the vermilion are often associated with defects of the adjacent skin. We present a case in which we reconstructed a combined labial defect, both mucosal and cutaneous, by means of a composite advancement flap consisting of orbicularis oris muscle, oral mucosa and underlying skin.

Reconstructing large labial defects of vermilion and orbicularis oris muscle has always been a challenging task for reconstructive surgeons.

Since Goldstein first described his elastic flap in 1990,[1] the authors have successfully experienced further indications and evolutions of the original technique, such as commissure reconstruction.[2] When the wound deeply penetrates the muscular layer and extends to the adjacent skin, the latter has to be repaired as well. With our case report we propose the incorporation of a thin strip of labial skin with the classical elastic flap, for muco-cutaneous combined labial defects.

Historical details

The first description of a technique aimed at repairing vermilion defects dates back to 1892 when von Esmarch and Kowalzich[3] introduced the reconstruction of vermilion by means of lip shave and mucosal advancement. In the original technique the thin flap that was advanced consisted of the only labial mucosal lining. Spira and Hardy[4] modified the technique by adding a strip of vermilion and some underlying glandular and muscular tissue. Another reconstructive option for vermilion is that recommended by Wilson and Walker,[5] who transfer the oral mucosa as a bipedicled flap. Then they let the raw area at the muco-cutaneous margin heal by secondary intention, thereby achieving more bulge at the lip border. A drawback of all quoted techniques is the risk of causing an 'entropion' of the lip, with consequent inward drawing of hair and loss of lip pout.

* Corresponding author. Istituto di Chirurgia Plastica, Università di Torino, Ospedale San Lazzaro, Via Cherasco, 23, 10100 Torino, Italy. Tel.: +39 011 6336991 (work), +39 011 19716218 (home), +39 329 7604660 (mobile); fax: +39 051 581066.
E-mail address: filippo.boriani@fastwebnet.it (F. Boriani).

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In 1990, Goldstein[1,6] described his 'Elastic flap for lip repair'. For vermilion defects he proposed the use of the remaining vermilion as an advancement flap based on the labial artery. Sawada's[7] modification consisted of raising vermilion flaps on either side of the defect and then advancing them towards each other to repair the loss.

Anatomy

The orbicularis oris is a tape-shaped sphincteric muscle, whose function is to control oral competence. The muscle arises bilaterally from the modiolus, at the oral commissure, where cheek and lip muscles come together. Then its fibres head horizontally towards the median plane where they interdigitate with those of the contralateral orbicularis.

Superior and inferior labial arteries run, in a plane between orbicularis and subcutaneous layer, tangentially to muscular fibres, following the circumference of rima oris. This enables a wide mobilisation of the muscle with no sacrifice of vascularity.

Motor innervation is provided segmentally by nerve fibres that radially enter the muscle. They are buccal branches of the facial nerve for superior lip and marginalis mandibulae branch of the facial for the inferior lip.

Sensory innervation derives from the infraorbitary nerve for the superior lip and from the mental nerve for the inferior lip.

Case report

A 41-year-old woman presented to the Emergency Department with a lip wound caused by a dog bite. She presented with a vermilion loss that extended from the labial midpoint up to the commissure (Fig. 1), to both lips, superior and inferior. Skin loss was observed under the mucosal defect of the inferior lip. For the superior lip a Goldstein-like flap was performed according to the originally described method. For the inferior lip the incision line was placed 2 mm lower than the mucosa—skin junction, in order to obtain a vermilion-skin composite flap. By doing this, we were able to repair both the vermilion and the underlying skin defect, by means of just one composite flap. The inferior part of the skin loss was easily closed by direct suture. In either lip the whole residual vermilion was raised along with a layer of orbicularis oris muscle, thick enough to contain the labial artery. Only less than half of the inferior lip was available; therefore, the incision was started as close to the commissure as possible, in order to obtain the longest possible flap (Figs. 2—4).

Figure 1 Preoperative view.

Technique

In the preoperative planning, the dissection starting point is located and marked at about 1 cm from the commissure contralateral to the defect, in order to preserve the labial artery and the nerve fibres entering the muscle. An incision is performed from the defect to the landmark, usually along the epidermal—mucosal margin. If there is skin loss, this incision can be lower, in the labial skin, up to 3 mm from its junction with vermilion (according to the cutaneous defect size), thereby including in the flap a cutaneous strip. The incision is then deepened obliquely in order to include the muscular layer with the labial artery in it. Incision terminates intraorally involving the vestibular

Figure 2 Inferior lip: cutaneousmyomucosal elastic flap.