Treatment Algoritm of Lip Cancer

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Abstract

More than 20% of all oral cavity carcinomas involve the lips and the first step of treatment requires surgical excision with oncological safety margins. Reconstruction of the lips remains a challenging procedure. A precise analysis of the defect and a preoperative planning is essential. There are a variety of reconstruction procedures depending on the size and the location of the defect and also on tissue elasticity.

For defects that involve less that 30% of the lip, primary suture is recommended in comparison with larger defects where local flaps that use tissue from the opposite lip or adjacent cheek are used. Total lip defects reconstruction is difficult to be realised with local flaps, so distant flaps or free flaps are usually utilised. In order to achieve the best functional and aesthetic results, surgeons should choose the most suitable reconstruction procedure. In this paper we review some of the techniques used for lip reconstruction in our department after surgical excision of cutaneous tumors.

Keywords: Lip tumour, lip reconstruction, local flap

Introduction

Reconstruction of lip defects represents a great challenge for plastic surgeons owing to the fact that lips are the focal point of the lower third of the face being responsible by the verbal and nonverbal communication. Lips have an essential role in daily living, being involved in speech, nutrition and facial expression [1]. These have also an important sensory and aesthetic role providing individualized beauty [2].

Perioral defects may be a consequence of trauma, oncological resections, burn or congenital deformities. The most frequent cause of lip defects is the excision of malignant lesions, squamous cell carcinoma being responsible for the majority of the cases (96%) and Merkel Cell carcinoma for the most aggressive ones [3], especially of the lower lip, in comparison with upper lip where basal cell carcinoma is most common and has a slow development [4, 5].

The management of lip defects needs a complex preoperative planning in order to preserve or to restore the function, the form and the aesthetics [6]. The preservation of the intraoral mucosal lining and the surface area of the oral aperture are the main two functional objectives, but also the orbicularis muscle sphincter must be viable, due to its role in the functional recovery. Moreover, the vermilion-cutaneous junction and lip aesthetic units must be maintained during the reconstruction [2]. The lips have a complex structure, consisting of skin and subcutaneous tissue, muscle, mucosal lining and vermilion. The lip vermilion is composed of keratinized glabrous epithelium with sebaceous glands. The vascularization is ensured by facial artery with its branches that form the superior and the inferior labial arteries. Motor innervation is provided by the buccal and the mandibular branches of the facial nerve [2]. The aim of this paper is to present our surgical experience in choosing the right surgery treatment method for reconstructing lip defects and possible complications.

Material and Methods

We realized a non-comparative retrospective case series study of twenty patients treated in the Plastic Surgery Department of Emergency Clinical Hospital "Prof. Dr. Agrippa Ionescu" for lip defects. Considering the zone of the defect, the dimension, the age and general health status of the patient different methods of reconstruction were approached. Based on defect size the reconstruction methods were grouped for small defects (less than one third of the lip), large defects (more than one third of the lip) and total lip defect (more than 80%).

Results and Discussions

Partial thickness defects

Partial thickness defects involve the cutaneous tissue and depending on their size are closed by primary suture or local flaps, the skin graft having a poor aesthetic outcome.

Nasolabial flap is one of the oldest techniques of reconstruction orofacial defect, being used in India in 600 BC [7]. This flap is based on the perforating branches of the angular artery [4].

Nasolabial flap has been used for the upper lip reconstruction as a rotation flap, for the philtrum as a tunnelled flap, for the commissure and for the lower lip as a transposition flap. In addition, in the majority of cases, it is used as thick as possible, full-thickness nasolabial flap being recommended in through-and-through lip defects [7]. In general, the flap is raised in a plane above the orbicularis muscle and it is sutured into the defect [6]. In our department, nasolabial flap was used in two cases for reconstruction of the upper lip defects (Fig. 1).

Fig. 1. Preoperative and postoperative views of the reconstruction of the upper lip using nasolabial flap

Small full thickness defects

Small full-thickness defects less than 1/3 of the lip may be treated by primary closure. The defects are usually smaller than 2 cm [8]. Local tissue is recommended whenever possible due

to the minimal donor-site morbidity, but also by keeping the sphincter function and by giving the natural colour and texture. Frequently, the excision is done in the shape of a V and the closure is realised in three layers (mucosa, muscle and skin) [6]. In our department six patients underwent this type of reconstruction.

Large full thickness defects

Regarding large full thickness defects, the reconstruction methods were grouped considering the zone of the defect (central or lateral).

The Karapandzic flap is a one-stage reconstruction procedure for central lower lip defects used in four cases [6]. It is considered an advancement-rotation flap, fully innervated that maintains lip mobility and sensation and can be used to reconstruct large defects with similar tissue [9]. The most important step of this procedure is the planning of the incisions [6]. A curvilinear incision parallel to the lip margin and towards the alar base is performed for creating the flap. The width of the flap is equal to the vertical height of the lip defect [8]. The mucosa is used just in case of intraoral defects. The neurovascular structure, the labial arteries and the buccal motor nerve branches, are identified and preserved, the muscle fibers being mobilized by fine dissection. The flaps are rotated and advanced to form the new lower lip (Fig. 2) [8]. It is highly important to preserve the flap thickness [6]. A side effect is the reduction in size of the lip circumference that can determine microstomia. However, the Karapandzic flap leads to an intact oral opening, with good function, sensation and mobility.

Fig. 2. Intraoperative and postoperative views of Karapandzic flap technique

The McGregor flap is a rectangular flap used to reconstruct full thickness lip defects, involving more than 50% of the lower lip (Fig. 3). It is designed by making a horizontal incision from the edge of the defect, equal to the vertical height of the lip defect. The flap length is double in size. Mc Gregor flap was utilised in three of our cases being rotated around the oral commissure without causing microstomia and without changing the position of the mouth corner [10].

Fig. 3. Preoperative, intraoperative and postoperative photos of the reconstruction of the lower lip with McGregor flap

The Gilles fan flap was used for lower lip defects in another three cases. The incision is done from the inferior edge of the defect and it is a full-thickness one. The incision continues laterally around the commissure. The superior part is performed into the melolabial fold. Another

incision is created in the direction of the superior vermilion, paying attention at the superior labial artery. After these steps, the flap is advanced and rotated into the defect. Z-plasty can be used to rotate better the pedicle around the commissure [6] (Fig. 4).

Fig. 4. Preoperative and intraoperative views of the Gillies flap

Total lip defects

Total lip defects are difficult to reconstruct with local flaps due to the poor functional outcome characterised by microstomia and opposite lip protrusion [10-12]. In this case distant pedicled flaps or free flaps can be used.

The deltopectoral flap is a pedicled axial fasciocutaneous flap based on the internal mammary artery perforator [13, 14]. It was used in one case for the reconstruction of a defect that includes the lower lip, the left commissure and a third of the upper lip (Fig. 5). The dissection is done from the anterior axillary line to almost 3 cm from the sternum, usually in the first 5 intercostal spaces. The flap is cut after 4 weeks, allowing the reconstruction of an extended area. The cosmetic results can be further improved.

Fig. 5. Reconstruction of the lower lip using a deltopectoral flap

When distant flaps do not provide sufficient tissue for total lip reconstruction, free flaps can also be used with excellent results even if the donor site tissue has a different texture from the lip and facial skin. The disadvantages include restricted oral function and average aesthetic results [15]. Usually fasciocutaneous flaps are recommended being realised in a single-stage procedure [16]. One of the most common used flaps is the radial forearm flap with good results (Fig. 6). The radial forearm is transferred with the palmaris longus tendon for lip support [3].

Complications are possible and include: hypertrophic scarring, loss of sensation and microstomia [16].

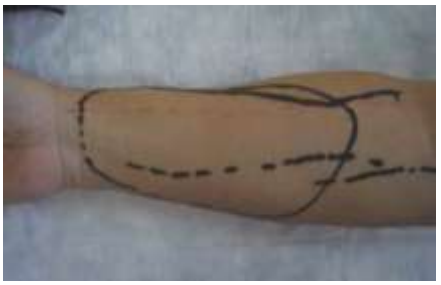

Fig. 6. Preoperative photo, the marking of the flap and postoperative view of lower lip reconstruction with radial forearm flap

After reconstruction surgery, patients were referred to the oncologist and radiotherapy was recommended in 8 out of 20 cases. One-year follow-up revealed good functional and esthetical outcomes with no local recurrences.

Conclusions

Lip reconstruction is challenging because the lips are the dynamic centre of the face.

Planning and choosing the most appropriate procedure for each patient is highly important.

Some patients may refuse different kind of reconstructive techniques due to aesthetic result and that is why the plastic surgeons should involve their opinion in decision making process.

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