Platysma Flap: An Alternative to Free Flaps

Mònica Lafont Rufat · Bartolomé Nadal Cristobal ·
Esther Saura Fillat · Domingo Ruiz de la Cuesta Martín

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Abstract

Objective The objective of this paper is to show that platysma flaps have good results and should be an alternative in reconstructive surgery for oral tumors when microsurgery is not possible. It is a versatile, portable, and thin flap, is easy to perform, and can be obtained during neck dissection, with a primary closure of the donor site.

Methods Five cases are presented, three men and two women, 51 and 71 years old, with medium size (2–4 cm) defects of oral cavity after the excision of squamous cell carcinomas. All of them were reconstructed with a platysma flap after neck dissection. This reconstruction technique was chosen because of the poor conditions of these patients to allow a microsurgical reconstruction.

Results Non-local complications occurred with this technique. Overall aesthetic results were acceptable in all the patients. There were no cases of total necrosis flap, dehiscence, fistula or fibrosis. Only one case of partial necrosis occurred in one end of the flap, which was resolved with excision of necrotic tissue and closure by secondary intention.

Conclusion The platysma flap is a good method to reconstruct small and medium sized defects of oral cavity,

especially in patients where a microsurgery reconstruction is not possible.

Keywords Surgical procedure · Pedicled flap · Oral cavity · Neck muscle

Introduction

After the resection of head and neck tumors, we face the problem of reconstruction, which should be functional but also aesthetic. The reconstruction technique is decided according to the size of the defect and the nature of the tissue to reconstruct [1]. Currently, the most commonly used reconstruction technique is microvascular free flaps. In reconstruction of soft tissue defects, the fascio-cutaneous flap of radial is most widely used, due to its thinness and malleability, as it is able to provide tissue that is sufficiently sizeable for big intraoral reconstructions [2, 3]. We can also use flaps dependent on musculocutaneous perforating arteries as the sural flap, like the evolution of the radial flap or the anterolateral flap of thigh. However, these flaps require lengthy surgery, by experienced surgeons in microsurgery, microsurgery equipment, and a second donor site [4]. Small and medium size defects can be assessed by the realization of the platysma flap [2]. We report five cases of small and medium-sized defects reconstructed in oral cavity, with good aesthetic and functional results.

The platysma flap was described in 1970 by Paul Tessier, but was immediately eclipsed by other techniques such as the myocutaneous pectoralis flap or the microsurgical temporary flap [5–7]. However, the platysma flap remains an alternative for reconstruction of the oral cavity because it is versatile, portable, and thin. It is fast and easy to perform [7–9]. The irrigation of this flap is randomized,

M. Lafont Rufat (✉) · B. Nadal Cristobal · E. Saura Fillat ·
D. Ruiz de la Cuesta Martín
Hospital Universitario Miguel Servet, Zaragoza, Spain
e-mail: monica_lafont24@yahoo.es

B. Nadal Cristobal
e-mail: bnadalc@gmail.com

E. Saura Fillat
e-mail: esauraf@salud.aragon.es

D. Ruiz de la Cuesta Martín
e-mail: domingorc@hotmail.com

that is to say, comes from more than one artery, through the muscle and reaches the cervical skin. The major blood supply comes from the submental artery, a branch of the facial artery [10]. The submental artery has many anastomoses with the arteries of chin, lip and sublingual, so it must be preserved to the height of the facial artery in the submandibular gland in the neck dissection [7]. Other studies link the platysma irrigation area with the superior thyroid artery, the cervical transverse artery, the occipital artery and the auricular posterior artery, all branches of the external carotid artery. In cervical dissections, high cervical incisions should be avoided, in order to prevent severing these arteries, which are important to the vitality of the flap. The risk of venous congestion is higher than the risk of arterial insufficiency. This is due to the venous drainage pattern which is vertical and superficial, mainly through the facial vein, the external jugular vein and the anterior jugular vein [11]. So the flap must be cut with a wide base of implantation, avoiding some tension and twisting of the flap during the lifting and positioning in the defect area [6, 12–15].

This flap can be used in small and medium tissue defects in the front of the mouth [16].

Materials and Methods

We present five cases, three men and two women, with squamous cell carcinoma of the oral cavity. Two of them had tumors in the front and lateral border of tongue (T2N0M0 y T3N2aM0), one in jugal mucosa (T3N1M0), and two in the front of the mouth floor (T2N2aM0, T3N2bM0). The age ranged between 51 and 77 years.

During the operation, excision of the tumor and a functional cervical dissection of lymph nodes was performed in four of them. In the other one, a supraomohyoid neck dissection was performed.

In two of the patients reconstruction with platysma flap was done due to poor peripheral circulation. In the remaining three the generally poor condition disavise their prolonged surgery, which is why we chose this reconstruction technique. In all cases we used ipsilateral platysma. Obtaining the flap was performed prior to neck dissection, and the design of the flap was broad-based implantation and elliptical shaped in supraclavicular skin.

The lower incision was made deep into the platysma muscle and the superior incision was just upto the subdermal plane, superficial to the platysma. In order to preserve the venous drainage desperiostization of infrahyoid muscles of the hyoid bone was necessary. Subsequently, the flap was rotated superiorly to reconstruct the intraoral defect, avoiding the twists and strains of the same. The control of flap viability was clinical, with monitoring of

color of the skin paddle. Following surgery, two of the patients received chemotherapy and a third one received both chemotherapy and radiotherapy.

Results

None of the patients had major local complications. There were no cases of total flap necrosis. In one case there was partial necrosis in one end of the flap, which was resolved with excision of necrotic tissue and closure by secondary intention, without further surgery.

There were no dehiscences, fistulas or orocervical fibrosis, and good aesthetic and functional results were obtained. The donor site was sutured by direct closure. Nasogastric tube feeding was maintained during the first week after surgery. Speech was restored without significant deficits in all cases, a month after surgery.

Discussion

The results published about experience with the platysma flap are very different according to the authors.

Some publishers claim excellent results, while others warn of poor results [1]. Today, in reconstructive surgery of oral cavity defects after cancer resection, microvascular flaps are the first choice in most cases, but it has some drawbacks, such as [1] needing major surgical time with two surgical teams of expert surgeons in microsurgery, microsurgical equipment, and careful monitoring during the first few days after surgery to control the viability of the flap [13].

In addition, there is the consequent donor site morbidity [1, 4]. Myocutaneous flaps, such as pectoral [17], temporary or trapezium, have the disadvantage of being too thick for the reconstruction defects in the oral cavity, being less aesthetic and functional and carrying the risk of dehiscence by the weight of the flap. Although the platysma flap has not been widely used, we have shown that it is an alternative that would have to be assessed when surgeons are looking for solutions in reconstructive surgery of oral tumors. The main advantages are that this flap is readily available, quick to cut and place, can be obtained during neck dissection and the donor site can be closed in a primary way [3, 18]. Relative contraindications are previous neck surgery and radiotherapy, due to a likely decline in muscle vascularity [4, 9].

It is not a contraindication in the existence of metastatic lymph nodes on the side where the flap is obtained, but when it is necessary to clip the facial artery due to tumor infiltration it is not desirable to use this flap, since it will then have a significant risk of necrosis.

The limitations of this flap are the defects of the back of the mouth because of the limited length of its pedicle, or when the platysma is too thin, especially in women, who do not provide adequate vascular support for the flap [12].

Conclusions

In the search for the best reconstruction of head and neck, it is crucial to examine the therapeutic weapons we have, looking for functional parameters, esthetic and economy [4]. The platysma flap is simple, versatile and should be valued as a reconstructive option, with interesting visual qualities [1, 19–21]. It is a good therapeutic tool for craniofacial reconstruction, especially for small and medium-sized defects of the oral cavity and lower mid face [15, 20], ideal for patients with difficulty to withstand long surgeries or with failure of peripheral vessels.

In our experience, the platysma flap is a good reconstructive option in cases in which microsurgical reconstruction is not possible.

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