

Oropharyngeal reconstruction with a pedicled submandibular gland flap[☆]

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Abstract

Locoregional flaps are widely used for reconstruction of small and medium defects in the oral cavity. The submandibular gland flap is a pedicled flap, which derives its blood supply from the facial artery, based on the submandibular gland. We describe the use of the flap in 20 patients who required oropharyngeal reconstruction with a pedicled submandibular gland flap after resection of a tumour between July 2012 and October 2014. Patients with squamous cell carcinoma were excluded. All flaps were pedicled on the facial vessels (inferiorly in 17 patients and superiorly in 3). The indications were: reconstruction of intraoral mucosal defects (n=13), filling the parapharyngeal dead space (n=6), and obliteration of the mastoid (n=1). All the flaps atrophied, but with no clinical effect. One patient developed partial loss of the flap, and one early leakage. There were no cases of xerostomia, and no signs of recurrence during the postoperative follow-up period of 3–26 months.

The flap is useful, as it is simple and reliable for reconstruction of small to medium oropharyngeal defects in carefully selected cases, and gives good cosmetic and functional results.

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Introduction

The reconstruction of the oropharynx after the resection of a malignant tumour can be achieved using different surgical

techniques such as primary closure, skin grafting, locoregional flaps, and microvascular free flaps.

Recently, several authors have described the use of locoregional flaps with little donor site morbidity and good functional and aesthetic outcomes. Flaps based on the facial artery are locoregional flaps that have been used for the reconstruction of defects in the oral cavity after resection of tumours. These include the submental,¹ platysma muscle,² nasolabial,³ buccinator myomucosal,⁴ and facial artery musculomucosal flaps,⁵ most of which are not suitable if the nodes in the neck contain metastases.

Ideally, tissues used for the reconstruction of oropharyngeal defects should be reliable, functional, cosmetically acceptable, have sufficient size and minimal donor site

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morbidity, and match the recipient site in colour, texture, and thickness.⁶

We have successfully used a pedicled flap that takes its blood supply from the facial artery based on the submandibular gland to reconstruct small and medium defects in the oropharyngeal region, and here we present our experience. It is associated with better cosmesis, less scarring, reduced blood loss, shorter duration of stay in hospital, lower morbidity, and technical simplicity.

Patients and methods

We studied 20 patients who were admitted to the Department of Oral and Maxillofacial–Head and Neck Oncology, from July 2012 to October 2014, for reconstruction using the submandibular gland flap for defects after resection of intraoral and parapharyngeal tumours. There were 9 men and 11 women with a mean age of 38 (range 3 to 69) years. Patients with squamous cell carcinoma (SCC) or those with palpable or radiologically apparent neck nodes were excluded.

Patients were included if they had small or medium defects after resection of oropharyngeal and parapharyngeal masses (less than 5 cm in size), and tumours that are rarely reported to metastasise to the neck (clinically, radiographically, and pathologically thought to be N0 necks).

All patients had the reconstruction at the same time as the resection of the tumour. Their details are shown in Table 1. A nasogastric tube was inserted during the operation, and remained in place for 7–10 days to reduce the risk of early leakage. Postoperatively patients were evaluated to assess reliability of the flap, and aesthetic and functional outcomes (swallowing and speech). A questionnaire that used a visual

analogue scale helped to evaluate the patients' satisfaction with their scars.

Approval was obtained from the Shanghai Medical ethics board and the Ninth People's Hospital ethics board. Informed consent was obtained from all patients.

Surgical technique

Under general anaesthesia the patient is placed supine with slight extension of the neck and the chin rotated to the opposite side. Harvesting of the flap resembles conventional resection of the submandibular gland, with the exception that the facial artery with its accompanying venae comitantes and the anterior facial vein are preserved. The flap can be pedicled inferiorly or superiorly on the facial artery.

A skin incision 7 cm long is made in the neck crease about 3 cm (or 2 finger-breadths) below the lower border of the mandible. A subplatysmal skin flap is raised, and the marginal mandibular nerve identified and preserved. The facial artery and vein are identified and ligated at the superior border of the gland, and then reflected superiorly to ensure the protection of the marginal mandibular nerve. At this point a lymph node is biopsied for frozen section examination.

An extracapsular approach is used to preserve the vascular supply. Wharton's duct and the lingual nerve with its attachment to the submandibular ganglion are identified, and the submandibular duct is then ligated and divided. When the flap is lifted upwards, the posterior belly of the digastric muscle can be seen and is gently retracted downwards, after which the facial artery is exposed as it emerges from behind the stylohyoid muscle and passes upwards and forward to enter the deep surface of the submandibular gland. Harvesting is continued around the facial artery. To increase the length of

Table 1
Clinical and personal details of patients.

CaseNo.	Sex/ age (years)	Site	Diagnosis	Complications	Adjuvant treatment	Follow-up (months)
1	F/18	Right parapharyngeal space	Schwannoma	None	None	10
2	F/64	Right base of tongue	Schwannoma	None	None	4
3	F/49	Left parapharyngeal region	Vascular malformation	None	None	3
4	M/62	Left base of tongue	Adenoid cystic carcinoma	None	Radiotherapy	26
5	M/51	Right maxilla	Adenoid cystic carcinoma	None	Radiotherapy	14
6	F/52	Left palate	Adenoid cystic carcinoma	None	Radiotherapy	13
7	F/3	Right base of tongue	Alveolar sarcoma	None	None	13
8	F/42	Right retromolar trigone	Synovial sarcoma	None	Chemotherapy	12
9	M/36	Left pharyngeal wall	Ewing sarcoma	Infection	Radiotherapy	11
10	F/19	Right base of tongue	Alveolar sarcoma	None	None	13
11	M/25	Left retromolar region	Rhabdomyosarcoma	None	Chemotherapy	26
12	M/10	Right base of tongue	Haemangiopericytoma	None	Radiotherapy	6
13	F/25	Left maxillary tuberosity	Osteosarcoma	None	Chemotherapy	7
14	M/40	Right soft palate	Adenoid cystic carcinoma	None	Radiotherapy	14
15	F/69	Left pharyngeal wall	Adenoid cystic carcinoma	Early leakage	Radiotherapy	10
16	M/40	Right floor of mouth	Adenoid cystic carcinoma	Partial loss	Radiotherapy	6
17	F/53	Left parapharyngeal space	Pleomorphic adenoma	None	None	4
18	M/25	Left parapharyngeal space	Pleomorphic adenoma	None	None	8
19	M/35	Left infratemporal fossa	Pseudogout	None	None	3
20	F/62	Right parotid region	Basal cell adenoma	None	None	14

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