

# Simultaneous use of two pectoralis flaps after total laryngopharyngectomy and total glossectomy – A case report study

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## ABSTRACT

The defects of the head and neck region present major challenges, but successful cosmetic and functional results have been achieved with both local and free tissue flaps. We report a case of advanced laryngopharyngeal carcinoma with extension to tongue and cervical esophagus. The subject had a history of previous radiotherapy, so he underwent salvage surgery. Reconstruction surgery for total laryngopharyngectomy and total glossectomy with total esophagectomy was performed using gastric pull up and two pectoralis major flaps.

## Introduction

Squamous cell carcinoma of the hypopharynx is associated with the worst prognosis of any squamous cell cancer of the head and neck [1]. Involvement of adjacent structures such as the larynx and esophagus or the base of tongue is seen among patients with advanced stages of the disease. The goals of reconstruction are healed wound along with the protection of the great vessels, restoration of a pharyngeal conduit, protection of the airway, and rehabilitation of the voice. For hypopharyngeal reconstruction, many options are available: local and regional cervical skin flaps and deltopectoral, pectoralis, and latissimus flaps; gastric and colonic interpositions; and revascularized fascial and gastrointestinal autogenous transplants (free flap) [1].

The pectoralis major myocutaneous flap (PMMF) has been used over three decades as a workhorse flap to reconstruct the head and neck defects [2–6]. Plentiful soft tissue volume, easy harvesting, relative adaptability, large skin paddle, short operating time, and significant consistency are the main advantages of this kind of flap. PMMF is still more useful in developing countries where medical resources are limited [6–8] while in developed countries, it is less used with the expansion in the use of microsurgical techniques [4,9,10].

For instance, in the cases of fistula which is one of the most common immediate postoperative complications after laryngeal surgery [11] PMMF can be safely used as both a “salvage flap” and a principle method in patients who are probably high risk nominees for a free flap.

The pectoralis major flap is based on the thoracoacromial artery which originates from the second part of the axillary artery. It passes from the medial to the pectoralis minor and courses on the undersurface

of the pectoralis major muscle [1].

Poor vascular status, such as systemic vascular sclerosis, poorly controlled diabetes, and/or previous high dose radiation to the neck, compromised general status due to old age, and vessel depleted neck caused by former surgery, increase the risk of free flap failure and indicate the use of pectoralis major flap [12–15].

## Case report

A 45-year-old male with recurrent laryngeal squamous cell carcinoma two years after chemoradiotherapy referred to our center. Upon arrival, the patient underwent urgent tracheotomy due to respiratory distress and airway obstruction. He had severe dysphagia because of tumor extension. Physical examination and imaging demonstrated the tumor to be extra laryngeal involving strap muscles, thyroid and subcutaneous fat. The tumor had extended to hypopharynx, the base of the tongue, oral tongue, mouth floor, and cervical esophagus. Metastatic workup was done according to the protocol. The patient underwent total laryngopharyngectomy up to uvula. Total glossectomy and resection of mouth floor were performed via midline mandibulotomy (Fig. 1). Thyroidectomy and comprehensive level I through VI neck dissection were performed on the right and radical neck dissection was done on the left. Total esophagectomy was performed by another surgery team. All margins were checked by frozen section and were free of tumor (Fig. 2). In this surgery, two pectoralis major flaps were used; one flap was employed for mouth floor reconstruction (Fig. 3). Briefly, the pectoral flap was harvested and sutured to the remaining part of the mouth floor, buccal mucosa and pharynx. To elongate the vascular pedicle to 8–10

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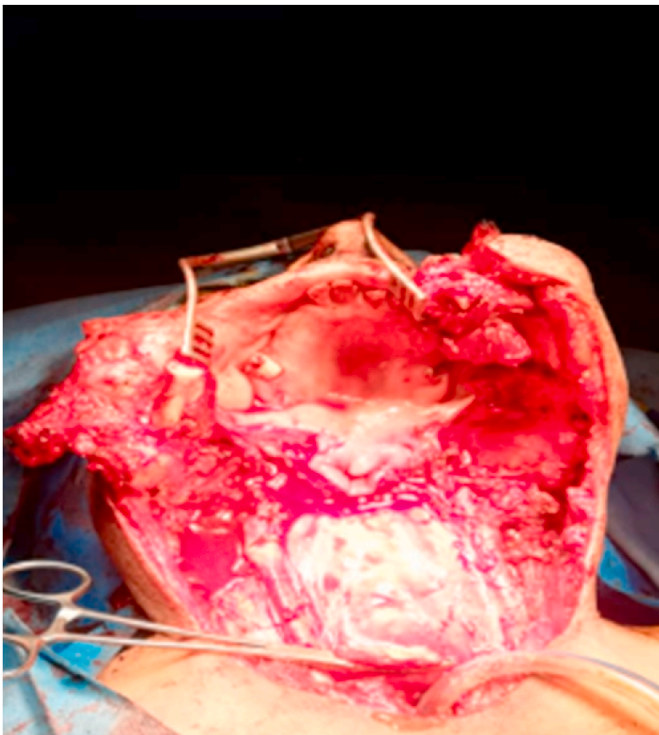
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**Fig. 1.** Resection of mouth floor and anterior neck skin after midline mandibulotomy.



**Fig. 2.** All margins were checked by frozen section after tumor resection.



**Fig. 3.** Pectoral flap used for mouth floor.

cm, we horizontally transected the pectoralis major along the muscular fiber axis at a level where the end of the pectoral branch could be detected, and we skeletonized the vascular pedicle to its origin.

After gastric pull-up, the gastric fundus area was cut in full thickness with a length of 3 cm. The posterior part of the incision was sutured into the posterior wall of pharynx and the remaining nasopharynx mucus with 3-0 vicryl suture. The anterior part of the incision was sutured to the posterior part of pectoral flap which was used to reconstruct the mouth floor.

To reduce the tension on the anastomosis, the lower parts of the stomach were also sutured to the posterior pharyngeal wall.

The second pectoralis major flap was utilized for reconstruction of the anterior skin defect of the neck (Fig. 4). Following total laryngectomy, the remaining trachea was sutured to the anterior skin of the neck.

After 5 days, the patient was transferred from ICU to ENT ward. During this period, flaps were in good condition in terms of color and temperature, and no dehiscence was observed.

The patient was discharged from the hospital without major complication 20 days later. Two month later, after barium swallow and ensuring the absence of leakage, the subject started oral intake with liquid by help of gravity.

### Discussion

There are various methods for reconstruction of hypopharyngeal and esophageal defects, including regional flaps and free flaps [1].

Over the recent two decades, the extensive use of free flaps has diminished the primary role of PMMF in the head and neck defect coverage. Nevertheless, it is impossible to use free flaps as a compact method for head and neck reconstruction in any condition [2,16].

In the present study, given the high-dose of radiotherapy and vascular damage, the patient was not a good candidate for free flap reconstruction.

Schneider et al. used the 53 pectoralis major flap as primary





Fig. 4. Pectoralis major flap for reconstruction of anterior neck skin.

reconstruction for the defect of cervical skin, infection, pharyngocutaneous fistula, and as a secondary option for complications caused by fistula, soft tissue loss or necrosis of flap, and wound breakdown with vessel exposure combined with a free flap for defects of large tissue [4].

Avery et al. used PMMF predominantly to control progressive diseases combined with considerable co-morbidity and conditions after free flap failure [9,10].

### Conclusion

We preferred to use PMMF as a more reliable reconstructive method for our case who had a history of severe radiotherapy in the neck as a primary treatment that had led to the damage of vessels and needed free flap anastomosis to avoid free flap failure.

### Ethical Statement for Solid State Ionics

Hereby, I/Pegah Alizadeh Pahlavan/consciously assure that for the manuscript/Simultaneous use of two pectoralis flaps after total laryngopharyngectomy and total glossectomy – A case report study/the following is fulfilled:

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### Declaration of competing interest

The Authors state that No conflict of Interest.

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