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## Case Report

# Double-Paddled Pectoralis Major Myocutaneous Flap as an Alternative to Microvascularized Free Flaps in Complex Orocervical Defects

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## Abstract

The authors present the double-paddled pectoralis major myocutaneous flap (PMMF) as a successful alternative for reconstructing complex oro-cervical defects when previous micro vascularized free flaps have failed or when ever it is not possible to harvest a free flap. This method was used for the reconstruction a post-ablative defect in a 36-year-old male with a T4 squamous cell carcinoma (SCC) of the base of tongue with laryngeal involvement. The distal paddle was adapted to reconstruct a defect of the floor of the mouth and further sutured in two layers (muscle-basal mandible and skin paddle-oral mucosa) whereas the proximal skin paddle was used to close the cervical skin and the peri tracheostomy defect.

**Keywords:** Double-paddled pectoralis flap; orocervical complex defect; micro vascularized free flaps fail.

## Introduction

Reconstruction of large oral cavity defects after resection for advanced cancer is a challenge for the reconstructive surgeons. In the microsurgical era, microvascular free flaps constitute the main reconstructive option for achieving excellent aesthetic and functional results. However, in cases of failure or inability, pedicled flaps provide a reliable alternative with predictable results. The pectoralis major myocutaneous flap (PMMF), considered the workhorse in head and neck surgery, represent one of them. In the event of major defects requiring a great contribution of cutaneous cover and mucosal lining, a modification of the standard technique is required [1-3].

## Report of Case

We describe a surgical technique for solving a complex orocervical defect after microsurgical reconstruction. A double-paddle PMMF was used for reconstruction of a T4 squamous cell carcinoma (SCC) of the base of tongue with laryngeal involvement in a 36-year-old man. Under general anaesthesia, a tracheostomy was performed. A total laryngectomy and partial glossectomy extended to right base of the tongue were performed by "pull-through" approach to expose entire tongue, oropharynx and suprahyoid space. Bilateral modified type III radical neck dissection was performed. A reconstruction of the intraoral and primary cervical defects with a microsurgical anterolateral thigh (ALT) flap was carried out. In the postoperative period, the remaining tongue underwent total necrosis with a subsequent distal flap dehiscence, cervical fistulae and large defect in the floor of the mouth (Figure 1).

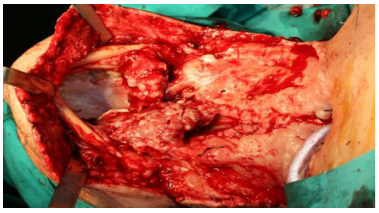

**Figure 1:** Distal flap dehiscence, cervical fistulae and large defect in the floor of the mouth.

In an attempt to solve these complications by providing sufficient tissue for reconstruction of the floor of the mouth while closing the orocervical fistulae, a PMMF with two skin islands was designed. This flap consisted of two vertical separated skin islands over the area of the pectoralis major myocutaneous vascu-

lar territory: one skin island was at the left side and the other skin island at the right side from the nipple-areolar complex. The flap was raised using standard surgical technique leaving its proximal paddle pedicled to the arterial plane (Figure 2).

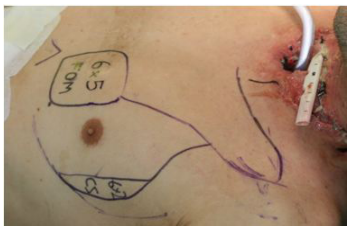

**Figure 2:** A pectoralis major myocutaneous flap design with two skin islands: one skin island was designed for floor of the mouth defect and the another skin island for cervical skin defect.

The distal paddle was adapted to floor of the mouth and sutured in two layers (muscle-basal mandible and skin paddle-oral mucosa) (Figure 3A).

**Figure 3A:** The skin paddle used to close the cervical skin and the peri tracheostomy defect.

The proximal skin paddle was used to close the cervical skin and the peri tracheostomy defect (Figure 3B). Both skin islands remain viable to date.

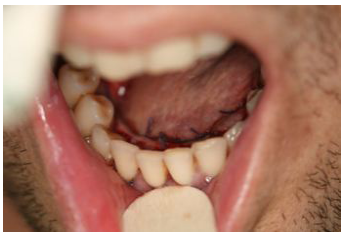

**Figure 3B:** The skin paddle adapted to floor of the mouth.

## Discussion

Reconstruction of complex oral cavity defects following oral cancer surgery is a great challenge to the head and neck surgeon. The evolution of myocutaneous and free flaps has achieved good results in reconstruction of oncological large defects. Currently, microvascular free flaps are considered as the first option in head and neck reconstruction defects. However, in cases of free flap failure or inability, pedicled flaps provide a reliable alternative with predictable results. The bilobular or double-paddled PMMF simplifies the closure of large surgical defects of both the mucosa and skin that could not be successfully closed in a primary approach. Closure of defects using a PMMF was reported in 1979 by Ariyan [4]. This author also described the division of the skin into two parts. Afterwards, Ord & Avery [5] suggested that placing the skin paddles side-by-side horizontally was less risky than placing them one vertically above the other.

In our case, the double-paddled PMMF was used to reconstruct both intraoral and cervical defects. The distal paddle was adapted to floor of the mouth and the proximal skin paddle was used to close the cervical skin and the peri tracheostomy defect. The main advantages [6] of the double-paddle PMMF are: 1) an easy accessibility in the same surgical field; 2) a lesser operating time; 3) it avoids the need for two separated flaps and a second surgical procedure; 4) it is technically simple with a small learning curve; 5) it provides a reliable vascular anatomy; 6) it provides an adequate muscle covering of major cervical vessels, which gives a greater protection during radiotherapy. Besides, its success depends on the arch of rotation and anatomic limitations such as obesity or the combination of a long neck with a short thorax. In summary, the double-paddled PMMF can be successfully used for reconstruction of complex head and neck cancer defects when previous microvascularized free flaps have failed or whenever it was not possible to harvest a free flap.

## Conflict of interest

We have no conflict of interest

## Ethics statement / confirmation of patients' permission

Ethical approval not required

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