

Novel Technique to Increase the PMMC Flap Pedicle Length by Coplanar Rotation Along the Pedicle Axis

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Abstract Pectoralis major myocutaneous flap (PMMC) continues to be a prime tool in the armamentarium for the reconstruction of head and neck malignancies even though free flaps have proved their versatility in functional and cosmetic outcomes. It still holds significance in both primary reconstruction and salvage procedures in head and neck malignancies. Inadequate infrastructure and resources make PMMC a preferred choice in many high-volume centres of developing countries. However, the length of the PMMC flap becomes a limiting factor for the distance that flap can be transferred when extensive reconstructions are being planned (Kudva et al. in *J Maxillofac Oral Surg* 14:481–483, 2015). We propose a modification in the conventional technique that maximises the length of the pedicle in orofacial reconstruction. Our technique allows the rotation of skin paddle along the longitudinal axis of the pedicle at the distal end along the same plane. This technique provides an easily reproducible and reliable technique that enables the surgeon to enhance the reach of the skin paddle and flexibility considerably.

Keywords Head and neck cancer · PMMC flap · Pectoralis myocutaneous flap · PMMC flap pedicle length · Oral cancer reconstruction · Oral cancer

Pectoralis major myocutaneous flap (PMMC) is a prime tool for the reconstruction of head and neck malignancies.

However, its length becomes a limiting factor in extensive reconstructions [1]. We propose a modification in the conventional technique that maximises its pedicle length, achieved by rotating the skin paddle along the pedicle axis in the same plane. Compared to techniques described previously [1, 2], this approach has a short learning curve and is easily reproducible, reliable and safe.

The skin paddle is marked medial to or including the nipple. A curvilinear skin incision extends from the anterior axillary line laterally and travels obliquely downwards to the superomedial border of the skin paddle (Fig. 1). The pectoralis major is separated from the pectoralis minor, and the flap pedicle is identified and traced till the medial border of pectoralis minor. The pectoralis major is dissected from chest wall, and the skin paddle is elevated along with muscle inferiorly and then medially up to its superomedial border. A horizontal incision is taken on the muscle along the direction of muscle fibres, medially to laterally, up to a point 1 cm from the pedicle, thus defining the superior border of the skin paddle. This incision is continued on the muscle vertically, medial and parallel to the pedicle, creating an obtuse angle between the superior border of the skin paddle and medial border of the muscle (Fig. 2). Similarly, the lateral border of the muscle flap is defined, parallel to the pedicle. Introducing this obtuse angle allows up to 180° rotation of the skin paddle along the pedicle axis in the same plane. This increases flap length by 7–8 cm and also the arc of rotation (Figs. 3, 4).

This modification transcends the limiting factor—the flap length. There were no instances of flap necrosis in our experience with 40 patients where PMMC flap was used in this manner for extensive maxillofacial reconstructions.

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Fig. 1 Preoperative planning for PMMC showing the skin incision

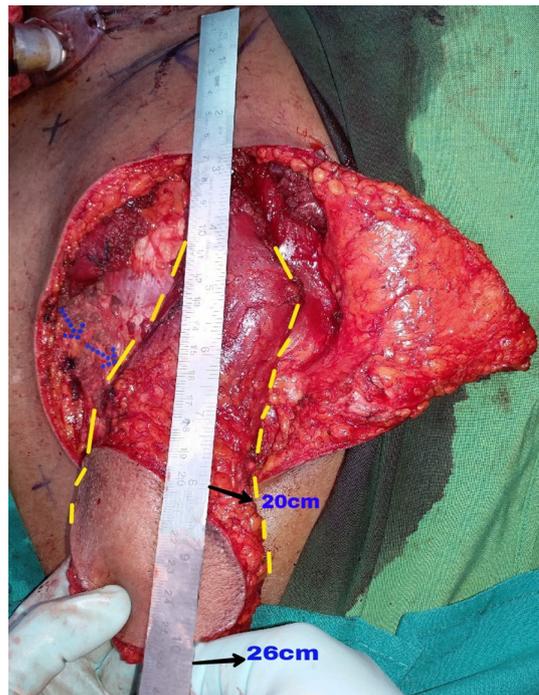


Fig. 3 Coplanar rotation resulting in increase in the length of the flap

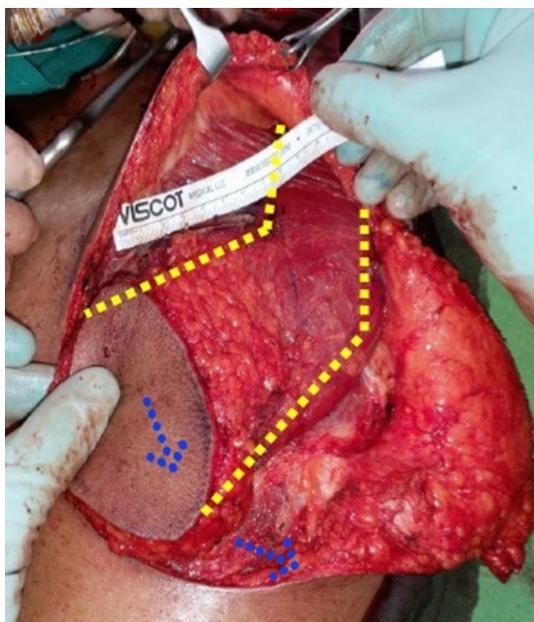


Fig. 2 Borders of PMMC flap is defined, obtuse angle formed on the medial border

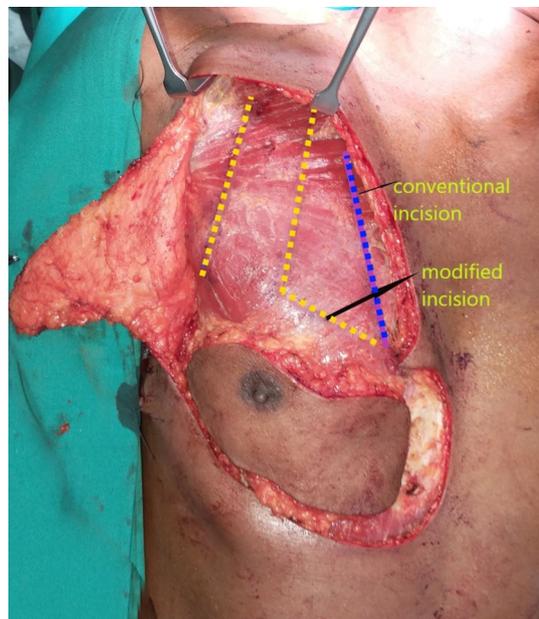


Fig. 4 Modified incision for medial border of muscle flap

Compliance with Ethical Standards

Conflict of interest The authors have declared that they have no conflict of interest.

Ethical Approval All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors. Ethical approval from Institutional Review Board approval was sought for and has been advised that the same is not required as it is a retrospective article.

Informed Consent Informed consent was obtained from all individual participants for using the photographs and data included in the study.

References

1. Kudva A, Patil R, Patil BR (2015) A Technique to maximise length of pectoralis major muscle myocutaneous flap pedicle in orofacial reconstruction. *J Maxillofac Oral Surg* 14(2):481–483
2. Liu M, Liu W, Yang X, Guo H, Peng H (2017) Pectoralis major myocutaneous flap for head and neck defects in the era of free flaps: harvesting technique and indications. *Sci Rep* 7(December 2016):1–9

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