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Case Report: A Novel Use of an Externalised Bi-Paddled PMMC Flap in Recurrent Buccal Mucosa Squamous Cell Carcinoma Reconstruction

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ABSTRACT

Reconstruction after wide local excision (WLE) and segmental mandibulectomy in recurrent oral squamous cell carcinoma (SCC) poses distinct challenges in patients with previous surgeries and radiation. This report describes an innovative use of an externalised bi-paddled pectoralis major myocutaneous (PMMC) flap for buccal mucosa reconstruction in a medically and financially constrained patient with prior neck dissection and adjuvant therapy.

Keywords: *Squamous cell carcinoma, buccal mucosa, PMMC flap, externalised reconstruction, segmental mandibulectomy*

1. INTRODUCTION

Reconstructive options following surgical excision for recurrent oral SCC are often limited by local tissue compromise due to previous neck dissection and radiotherapy. Fibrosis, altered vascular anatomy, and exposure of vital structures—particularly the carotid sheath—complicate traditional reconstructive approaches and increase the risk of complications such as carotid blowout syndrome [1,2].

Microvascular free flaps remain the gold standard in many centres due to their versatility and success rates [3]. However, their use may be restricted by patient comorbidities, surgical expertise, or financial limitations. In such scenarios, the pectoralis major myocutaneous (PMMC) flap remains a reliable alternative, especially in resource-limited settings [4]. This report presents a novel technique using an externalised bi-paddled PMMC flap, avoiding high-risk dissection areas and offering a pragmatic solution in a complex reconstructive case.

2. CASE PRESENTATION

A 65-year-old male with a known history of coronary artery disease and prior coronary artery bypass grafting (CABG) presented with recurrence of left buccal mucosa SCC. The patient had previously undergone left-sided composite resection, marginal mandibulectomy, tongue flap reconstruction, and a left supra-omohyoid neck dissection, followed by adjuvant radiotherapy. Staging of the current recurrence was T4aN1M0. Clinical examination revealed recurrent growth with exposure of the left carotid sheath, raising concerns about intraoperative safety and postoperative vascular complications. Given the previous neck dissection and radiation-induced fibrosis, a tunneled PMMC flap was avoided. The patient also refused this due to aesthetic concerns and declined microvascular free flap surgery due to financial constraints.

3. SURGICAL TECHNIQUE

A wide local excision with segmental mandibulectomy was performed. A right-sided bi-paddled PMMC flap was raised and externalised across the neck to reach the intraoral defect. This configuration avoided tunneling through irradiated tissues, preserved flap vascularity, and minimized manipulation near the exposed carotid sheath [5].

The externalised skin bridge was stabilized using bolster dressings, and the flap inset was meticulously performed to reconstruct the buccal mucosa and intraoral lining.

4. POSTOPERATIVE COURSE

The patient had an uneventful postoperative course. Flap viability remained excellent throughout the recovery period. No signs of infection, necrosis, or wound dehiscence were observed. Flap division was performed on postoperative day 16 with healthy flap integration noted.

5. DISCUSSION

The PMMC flap has long been considered a workhorse in head and neck reconstruction, especially in settings with limited access to microsurgical expertise [6]. However, its success can be hindered by prior radiation, scarring, and vessel exposure, particularly in patients with previous surgeries. Literature reports up to 30% complication rates in such cases, including flap necrosis and oro-cutaneous fistula formation [7].

In this patient, the decision to externalise the PMMC flap was made to bypass scarred planes and protect the exposed carotid artery. The technique preserved flap integrity and reduced operative risk. This approach also catered to the patient's preferences and financial limitations, reinforcing its value as a bridging alternative in select cases.

6. CONCLUSION

This case demonstrates that an externalised bi-paddled PMMC flap can be a safe, effective alternative for oral cavity reconstruction in patients with prior neck surgery and radiation. When traditional tunnelling or microvascular reconstruction is not viable, this technique offers a functional, low-risk solution. Further studies could validate its broader applicability in complex oncologic reconstructions.

Author contributions

All authors contributed to the research article. All authors read and approved the final manuscript.

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Declarations

Ethics Approval was granted by Saveetha Medical College and Hospital Institutional Ethics Committee.

Informed Consent report was obtained from the patient involved in this case study.

Competing Interests Authors have declared that no competing interests exist

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