

CASE REPORT

Use of a Buccinator Myomucosal Flap for Wide Recurrent Palatal Fistula Repair

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ABSTRACT

Palatal fistula is a common and challenging complication following cleft palate repair, particularly in recurrent cases with scarred local tissues. The buccinator myomucosal flap (BMMF) provides a well-vascularized regional option for fistula closure. We report a 17-year-old male with a wide recurrent palatal fistula following multiple cleft palate surgeries. The defect, extending from the hard–soft palate junction to the pre-alveolar region, was reconstructed using a posteriorly based unilateral BMMF after nasal layer closure. The flap provided adequate reach and tension-free oral lining. Postoperative recovery was uneventful, with minimal donor-site morbidity. At four-year follow-up, the patient demonstrated stable fistula closure, healthy mucosalization, and no functional complications.

Keywords: Buccinator myomucosal flap; cleft palate; palatal fistula; recurrent fistula

INTRODUCTION

Palatal fistula is one of the most common complications following cleft palate repair, with an incidence ranging from 4% to 45%.¹ Numerous techniques for fistula closure using local tissues or oral cavity flaps have been described; however, successful repair remains technically demanding for the operating surgeon. The buccinator muscle with its overlying mucosa lies in close proximity to the palate and has a rich vascular supply with mobility, making the buccinator myomucosal flap (BMMF) suitable for reconstruction of palatal defects.^{2,3} This study aims to review our experience with the BMMF and highlight its clinical application in recurrent palatal fistula.

CASE REPORT

A 17-year-old male with no significant medical history or syndromic features presented with bilateral complete cleft lip, alveolus, and palate. Primary lip repair was performed at 10 months of age, followed by palatoplasty using the hybrid technique at 1 year and 8 months. An anterior palatal fistula developed within one month postoperatively. At 3 years and 2 months of age, fistula repair using a local palatal rotation flap was attempted; however, flap dehiscence occurred with recurrence.

At 13 years of age, a wide palatal fistula extending from the junction of the hard and soft palate to the pre-alveolar region was noted and classified as Pittsburgh types III–VII (Figure 1). Closure using a posteriorly based buccinator myomucosal flap (BMMF) was planned.

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Figure 1: Wide recurrent palatal fistula.

Surgery was performed under general anesthesia with orotracheal intubation. The palatal region was exposed using a Dingman retractor. The nasal layer was closed using a vomer flap and local turndown flaps around the fistula margins (Figure 2A). A BMMF was designed on the left cheek (Figure 2B). The superior incision was placed 5 mm inferior to the Stensen's duct opening and extended toward the lateral commissure, stopping 1 cm short to prevent distortion. The inferior incision originated at the retromolar trigone and curved toward the commissure. The flap was elevated deep to the buccinator muscle and superficial to the buccopharyngeal fascia, minimizing buccal fat herniation. A near-rectangular flap measuring approximately 4 × 2.5 cm was harvested.

An incision at the hard-soft palate junction was created to facilitate flap transfer to the anterior defect. The flap was inset with the mucosal surface facing the oral cavity, ensuring absence of pedicle torsion, and secured using 4-0 Vicryl sutures (Figure 2C). The donor site was closed primarily with 4-0 Vicryl. A small residual anterior fistula remained and was planned for secondary repair using a tongue flap.

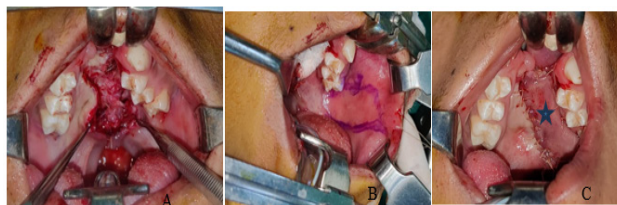


Figure 2: (A) Nasal layer repair, (B) design and marking of buccinator myomucosal flap, (C) flap inset with mucosal surface facing the oral cavity.

Postoperatively, mild cheek edema was noted on the donor side. The patient was discharged on postoperative

day one with analgesics and advised head elevation and a liquid diet for one week. At one-week follow-up, swelling had subsided, with no evidence of flap necrosis or parotid duct dysfunction. A soft diet was advised for an additional week. Follow-up at 1 month, 1 year, and annually for 4 years demonstrated satisfactory healing without complications (Figure 3).



Figure 3: Healthy buccinator myomucosal flap at 4-year follow-up.

DISCUSSION

An intact palate is essential for normal speech, nasal breathing, deglutition, maxillary growth, and dentoalveolar development.⁴ Palatal fistula can significantly impair speech and feeding; therefore, most fistulae require surgical repair, usually at least six months after primary palatoplasty. Repair remains technically demanding because of scarring, altered vascularity, and persistent tissue tension following cleft palate surgery, particularly in recurrent cases.^{2,4}

Several techniques have been described for palatal fistula closure depending on defect size, location, and recurrence, including mucoperiosteal flaps, tongue flaps, buccal fat pad flaps, and acellular dermal matrix grafts.^{4,5} Musculomucosal flaps, such as lip myomucosal flaps and the buccinator myomucosal flap (BMMF), have also been used successfully.² In recurrent fistulae, scarred surrounding tissue and wound contraction limit local palatal tissue availability, making well-vascularized regional flaps advantageous.

The buccinator myomucosal flap, first described by Bozola in 1989, is an established option for reconstruction of intraoral defects.² Its applications include palatal fistula repair, primary palatal reconstruction, and post-oncologic or post-traumatic reconstruction of the tongue, floor of mouth, tonsillar

region, and palate.^{3,6,7} The buccinator muscle originates from the maxillary and mandibular alveolar processes and the pterygomandibular raphe.⁷ Its vascular supply from the buccal, facial, and posterosuperior alveolar arteries ensures reliable perfusion, while sensory innervation via the buccal nerve allows it to function as a sensate flap.^{3,7} Accordingly, anteriorly, posteriorly, and superiorly pedicled BMMF designs are feasible.⁷

The BMMF offers several advantages, including technical simplicity, short operative time, absence of external scarring, minimal donor-site morbidity, and replacement of palatal mucosa with like tissue.^{2,6,7} Unlike tongue flaps, it avoids prolonged oral immobilization and the need for a second-stage division procedure, improving patient comfort. BMMF use has also been associated with a lower risk of snoring and mouth breathing compared with pharyngeal flap procedures.^{8,10} Secondary palatal repair using the BMMF has demonstrated favorable outcomes in speech and velopharyngeal competence by enabling tension-free repair and effective nasal layer reconstruction.⁶

In the present case, a posteriorly based unilateral BMMF was used to repair a wide recurrent palatal fistula extending from the hard-soft palate junction to the pre-alveolar region in a patient with multiple prior surgeries. Previous repair using local palatal tissue had failed, highlighting the limitations of scarred local flaps in revision surgery. The BMMF provided well-vascularized, pliable tissue with adequate reach, allowing stable oral lining after nasal layer closure. Donor-site morbidity was minimal, limited to transient cheek edema, with no flap necrosis or parotid duct dysfunction. Four-year follow-up demonstrated durable closure and healthy mucosalization.

Although limited by its single-case nature, this report supports the buccinator myomucosal flap as a reliable option for managing wide and recurrent palatal fistulae when local palatal tissues are compromised. Larger studies with a greater number of patients are required to validate these findings.

Patient consent: Written informed consent for publication and use of patient images was obtained from the patient and the patient's guardian.

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