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Effectiveness of Buccal Fat in Closing Residual Midpalatal and Posterior Palatal Fistulas in Patients Previously Treated for Clefts

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Purpose: The present retrospective study assessed the outcome and effectiveness of the buccal fat pad flap for closure of postoperative midpalatal fistulas and fistulas of the posterior palate in patients previously treated for cleft palate.

Patients and Methods: The charts of 29 patients with residual midpalatal and posterior palatal fistulas treated using buccal fat pad flaps were assessed. Of the 29 patients, 18 were males and 11 were females, aged 2.5 to 19 years. The fistula size was 10 to 20 mm.

Results: Full epithelialization of the flap had occurred within 4 weeks in all 29 patients. The fistulas had completely closed in 28 patients. In 1 patient, a 2-mm defect was noted in the anterior part of the fistula repair that had healed after 2 months without intervention.

Conclusion: The buccal fat pad flap can be used to repair any remaining postoperative palatal fistulas that are 10 to 20 mm in size.

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Persisting palatal fistulas after cleft palate surgery represent a particularly problematic issue for both patients and surgeons. The presence of scar tissue, the absence of local tissue, and high rates of recurrence are some of the difficulties surgeons face when treating these patients.¹ After cleft palate surgery, very small fistulas (1 to 2 mm) can close spontaneously.²

Large fistulas (>20 mm) are usually managed with a temporalis muscle flap, facial artery musculomucosal flap, or free flap.³⁻⁵ Medium-size (10 to 20 mm) fistulas are repaired with local palatal, vestibular, and buccal mucosal flaps. These flaps can become ischemic and have an increased rate of failure. The use of the buccal fat pad (BFP) flap for reconstruction of oral defects was first introduced by Egyedi.⁶ Since then, BFP flaps have been used by many surgeons to close maxillary defects.⁶⁻⁹ The BFP flap has very complex 3-dimensional arrangements with neurovascular structures coursing through and around it. It has 4 extensions: the buccal, pterygoid, superficial, and deep temporal processes.^{10,11} The buccal extension, which is the largest and most superficial component, is deep or lateral to the masseter muscle and superficial to the buccinator muscle and buccopharyngeal fascia. It accounts for 30% to 40% of the total weight of the BFP. Its volume and size are usually stable during life and constant among different persons.¹² The buccal extension is free and unfixated and can be easily accessed through an intraoral incision.^{13,14} We used this extension for coverage of the defect. The present study assessed the effectiveness of the BFP flap for closure of palatal fistulas in patients after cleft palate surgery.

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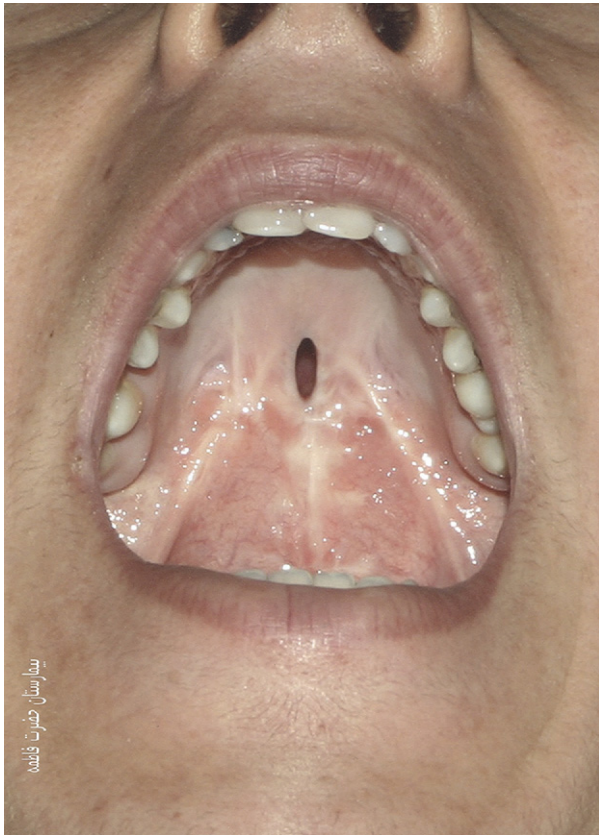


FIGURE 1. A residual midline palatal defect.

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Patients and Methods

In the present retrospective study, the charts of 29 patients who had undergone cleft palate surgery with a palatal fistula repaired using a BFP flap were assessed for outcomes and complications. The present study was exempt from ethical board approval. Of the 29 patients, 18 were male and 11 were female (aged 2.5 to 19 years). The fistula size was 10 to 20 mm. It was the first fistula operation in 23 patients, the second operation in 5, and the third in 1 patient. The patients underwent surgery under general anesthesia. After injection of epinephrine 1:100,000 in the palatal area, mucoperiosteal flaps with sufficient size were designed around the fistula to repair the nasal layer without tension. After closing the nasal layer using turn-down flaps, a 1-cm mucosal incision was made in the superior gingivobuccal vestibule above the second molar. The buccopharyngeal fascia and buccinator muscle fibers were exposed. External digital pressure was placed below the zygomatic arch to help herniation of the BFP. After gentle traction to obtain sufficient length, the flap was advanced to the oral defect and fixed to the mucosal edge with 4-0 polyglycolic sutures. The flap was passed behind the maxillary

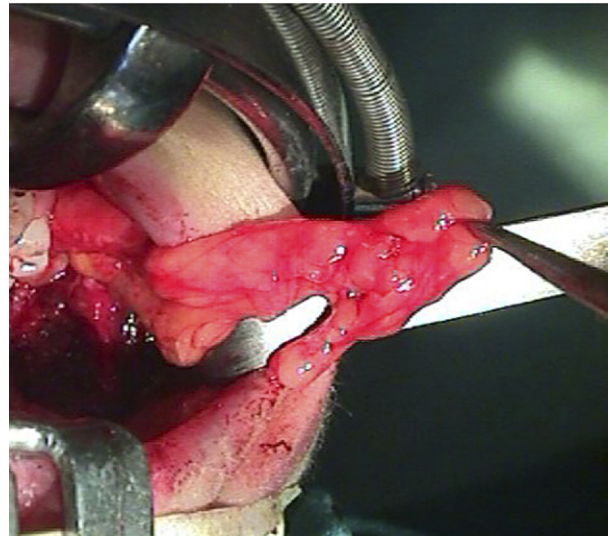


FIGURE 2. BFP was advanced.

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tuberosity but could also be passed over the alveolar ridge, if an extraction site is present (Figs 1, 2). All complications and deformities were recorded, and the patients were followed up for at least 1 year.

Results

The flaps were completely epithelialized after 1 month in all patients. The fistulas were closed completely in 28 patients. In 1 patient, a 2-mm defect was noted in the anterior part of the fistula repair that recovered after 8 weeks. The flap pedicle atrophied in 18 patients. In only 3 cases was division of the pedicle needed after 4 weeks (Figs 3, 4). Mild buccal donor site pain and swelling were observed after surgery in 16



FIGURE 3. BFP fixed in palatal defect.

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FIGURE 4. Full epithelialization and complete fistula closure after 6 weeks.

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patients that had resolved within 8 days. All patients were followed up for 28 months without evidence of recurrence. No noticeable facial deformity or asymmetry was noted after the BFP flap procedure (Table 1).

Discussion

The present study assessed the outcomes of 29 patients with palatal fistulas treated using BFP flaps. Closure of palatal soft tissue defects in cleft patients is a complex procedure influenced by many biological, surgical, and emotional factors.

The development of fistulas after palatoplasty usually relates to the tension closure and surgeon experience.¹⁵ However, other intrinsic factors can affect the results, including the fistula severity, defect site, defect width, and development level of the palate muscles.^{16,17}

Although many techniques have been suggested for closure of palatal defects, none have closed all fistulas universally. Palatal fistula repair using local flaps is limited to small-size fistulas and using these flaps for larger defects is usually inadvisable.² The facial artery musculomucosal flap and temporalis fascia flap, which are recommended for medium and large-size fistulas, require greater surgical experience, have more donor site morbidity, and require a longer operation time.^{4,5,16-21}

Table 1. CLINICAL AND DEMOGRAPHIC DATA OF 29 PATIENTS WITH PALATAL FISTULAS

Pt. No.	Age (yr)	Gender	Position of Fistula in Palate	Fistula Size (mm)	
				Medio-Lateral	Anterio-Posterior
1	9	Male	Posterior hard palate	8	14
2	4	Male	Middle hard palate	8	12
3	16	Male	Middle hard palate	13	10
4	17	Male	Posterior hard palate	9	16
5	19	Female	Posterior hard palate	10	15
6	3	Male	Posterior hard palate	12	17
7	2.5	Male	Soft palate	10	15
8	4	Male	Soft palate	9	13
9	6	Male	Soft palate	7	13
10	14	Male	Soft palate	7	15
11	6	Female	Soft palate	9	15
12	7	Male	Soft palate	11	13
13	9	Male	Soft palate	6	15
14	5	Female	Middle hard palate	14	17
15	13	Female	Middle hard palate	9	20
16	8	Male	Middle hard palate	10	20
17	14	Female	Soft palate	10	20
18	3	Female	Middle hard palate	10	20
19	10	Female	Posterior hard palate	12	12
20	8	Male	Soft palate	11	17
21	15	Male	Middle hard palate	15	10
22	6	Female	Posterior hard palate	10	15
23	12	Female	Soft palate	5	11
24	8	Male	Posterior hard palate	8	12
25	19	Male	Posterior hard palate	11	16
26	9	Male	Soft palate	8	10
27	9	Female	Middle hard palate	7	14
28	5	Male	Soft palate	10	15
29	10	Female	Soft palate	6	14

Abbreviation: Pt. No., patient number.

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We found the pedicled BFP flap to be a good alternative for coverage of palatal defects and repair of small (<20 mm) fistulas. It is easy to use, safe, and requires less surgical experience.

The reported complications of using BFP flaps in oral reconstruction include hematoma, scarring, infection, facial nerve injury, and arterial bleeding.^{20,21} Our patients only experienced pain and swelling that had resolved within 8 days; no changes occurred in the facial contour. In the present study, all repaired defects were in the posterior two thirds of the palate with a maximal size of 20 mm in diameter. Using the BFP flap allows the surgeon to design a turndown flap freely and to close the nasal layer without tension.

Although the number of patients included in the present study was not high enough for significant conclusions to be made, the easy access, rich blood supply, low morbidity, and low failure rate of the BFP flap make it a good choice for palatal fistula repair when the defect is in the middle or posterior palate and less than 20 mm in diameter.

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