

Research Article

Management of scarred palatal fistula using buccal myomucosal flap: Our Experience

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ABSTRACT:

This study evaluates the use of buccal myomucosal flap in the management of scarred palatal fistula. 10 patients with palatal fistula of age 5 to 20 years of either gender were included. Palatal fistulas were repaired with posteriorly based buccal myomucosal flap. Outcome was measured in terms of successful closure of the fistula, with cessation of symptoms (major nasal air emission, hypernasal speech, and nasal regurgitation of fluid and food) and absence of flap necrosis. We found wound dehiscence was the major post-palatoplasty complication. Hyper nasality and regurgitation were the major presenting symptom. Complete closure at the first attempt was obtained in 90% of the cases, in one case we faced tip necrosis where fistulae was large and extended to the anterior hard palate. Almost no detrimental after-effects occurred at the donor site, with no trismus due to donor site scarring. Success rate of our procedure was 90%. In our experience, the repair of severely scarred large palatal fistula repair with the buccal myomucosal flap has been an extremely safe, easy and successful operation.

Keywords: Palatal Fistula, palatoplasty and buccal myomucosal flap

INTRODUCTION:

The term, palatal fistula is defined as a failure of healing or a breakdown in the primary surgical repair of the palate. Palatal fistula is a common complication of cleft palate repair. The incidence varies greatly among centers and surgeons and has been reported to be between 5% and 29%.¹ Palatal fistula has been associated with severity and type of cleft, repair technique, timing of

repair and the experience level of the operating surgeon.² Their clinical presentation vary from asymptomatic to symptomatic (nasal air emission, hypernasal speech, and nasal regurgitation of fluid and food). Complex anatomy and confined intra oral space make closure of large fistulae a formidable undertaking. With the reported overall success

rate of palatal fistula repair approaching 85% and a recurrence rate of 25%, it remains a challenging problem.³

Although local flaps around a fistula are used in the repair of relatively small fistulas, they can be difficult to use in the repair of a large fistula especially when palatal tissue surrounding the fistula is severely scarred.⁴

Tongue flap and free tissue transfer is an option to repair of large fistulas, with severely scarred palate. To solve the problems of distant donor sites, multi-staged procedures, and the sequelae of failed cleft-palate repairs, a well-vascularized, single-staged, buccal myomucosal flap was developed.⁵ It is effective, with the advantages of palatal closure without tension, good muscular reconstruction, lengthening of the nasal layer, and palatal closure without raw areas.⁵ The aim of this study is to review our experience with the buccal myomucosal flap, for clinical application in the secondary cleft cases with palatal fistula.

Patients and methods:

This experimental study was conducted from January 2012 to March 2015 in the Department of Plastic Surgery, Bahawal Victoria Hospital, Bahawalpur. 10 patients with palatal fistula of age 5 to 20 years of either gender were included. 4 patients were males and 6 were females.

Inclusion criteria: Large fistula size more than 5 mm with severely scarred palate

Exclusion criteria: We excluded syndromic cleft lip and palate patients having associated with cardiac anomalies, ectodermal dysplasia and Pierre Robin sequence with compromised airway. The study was approved by the ethical review committee of Bahawal-Victoria Hospital Bahawalpur and a written informed consent was obtained from all patients before inclusion.

All clinical data were gathered including gender, type of cleft, age at primary palate repair. Symptoms, size, location of palatal fistula were documented. Severity of palatal tissue scarring was also obtained. Severely scarred tissue was defined as multiple irregular scars on

the palate with hard mucosal consistency and dense fibrotic tissue surrounding the fistula. Preoperative photographs were captured, along with measurement of defect size and definitive location of fistula.

Surgical technique:

Fistula repair should be performed in a two-layered fashion, forming a nasal and oral layer. We used Buccal mucosal flap for closure of fistula which is posteriorly based, random pattern flap with its base situated near the retromolar trigone.

The recipient site is created and closure of nasal layer was done with turnover flaps from the mucosa lining the fistula. If that was inadequate, additional tissue were retrieved from mucoperiosteal vomer flaps. We used Dingman cleft palate gag for good retraction. The buccal flap was drawn with methylene blue. The flap measuring between 1.5 and 2 cm wide by 2.5 cm long was raised, leaving buccal fat pad and parotid duct undisturbed. The upper margin of the flap is inferior to the parotid duct, and the lower margin approaches the mandibulobuccal sulcus. The flap is elevated together with a thin layer of the buccinator muscle, which improves its blood supply. The dissection proceeds posteriorly until just anterior to the pterygomandibular raphe where the main neurovascular bundle enters the flap. Flap was simply rotated into the defect taking care not to twist the pedicle and pedicle was secured with vicryl so that it does not interpose between the molar teeth to interfere mastication. The donor side closed primarily with 4-0 vicryl.

Assessment and follow up:

Patients were discharged on 2nd post operative day and were followed up fortnightly till 2 months and then monthly for further six months.

Outcome was measured in terms of successful closure of the fistula, with cessation of symptoms (major nasal air emission, hypernasal speech, and

nasal regurgitation of fluid and food) and absence of flap necrosis.

RESULTS:

We enrolled 10 patients with palatal fistula of age 5 to 20 years (Table 1). 4 patients were males and 6 were females (Table 2).

Bilateral cleft lip and palate (BCLP) was the major type, found in 7(70%) patients. 3(30%) patients had unilateral cleft lip and palate (UCLP) (Table 3). All of the clefts were non-syndromic: The mean age of initial palate repair was 3 years.

Regarding the surgical methods for initial palate repair, all patients received the two-flap palatoplasty. We found wound dehiscence was the major post-palatoplasty complication. Hypernasality and regurgitation were the major presenting symptom.

The fistulas were mostly located in the hard palate (4 cases), followed by the junctional area of the hard and soft palate (2 cases) and 1 reaching primary palate. Multiple fistulas of the hard and soft palate were found in 3 cases (Table 4). All the patients included in the study had fistula size large than 5 mm. all these patients had severely scarred palate, which is defined by multiple irregular scars on the palate with hard mucosal consistency and dense fibrotic tissue surrounding the fistula.

The mean age of closure of fistula was 12 years ranged from 5-20.

Complete closure at the first attempt was obtained in 90% of the cases, in one case we faced tip necrosis where fistulae was large and extended to the anterior hard palate (Table 5). Almost no detrimental after-effects occurred at the donor site, with no trismus due to donor site scarring.

DISCUSSION:

Palatal fistula is a common sequela of cleft palate repair. The incidence varies between 4% and 29%.⁶ This condition has functional consequences because of fluid and air leakage.⁶ Air leakage may cause speech impairments due to nasal

escape very small fistulas, measuring 1 to 2 mm, can cause VP disturbance. Leakage of fluids and lodging of food particles can be troublesome for patients. Most of our patients came with speech-related problems such as hypernasality and nasal emission.

Surgical management is a popular and effective method to close ONFs. The principle of surgery is to perform two layer, tension free closures in all cases. when a fistula would occur in the hard palate, the tight mucosa around the fistula might make the closure of the cleft palate difficult, even if it seemed small. Generally, surgical repair of palatal fistulas can be technically difficult, most often due to the paucity of local tissue for closure or excessive scarring

Many techniques have been employed to fulfill this objective, from local flap to free tissue transfer. From the literature it is known that a surgeon can make a regional flap by utilizing adjacent tissue, depending on the location. A turn over flap and transposition flap using mucoperiosteal tissue of palate to replace the defect, based on the principle of replacing tissue with like tissue. The simplest way to close a fistula is by raising a mucoperiosteal flap, as in primary cleft palate repair; but it is not the most successful one due to variable local causes e.g. scarring, inadequate palatal tissue and/or local ischemia.⁷

A Furlow palatoplasty with double opposing z-plasty can be performed for an ONF in the hard and soft palate junctional area. It has the benefits of closing the fistula, reducing the wound tension in the fistula area and also lengthening the soft palate.⁸ But it is ineffective in hard palate fistula.

For large fistulas, where it is judged impossible or difficult to use local tissue, a tongue flap may be employed. THE drawback are risk of flap separation due to tongue movement, the necessity of a second operation to remove the flap, grafting different tongue tissue from the oral mucosa onto the hard palate and unpleasant bulky tissue.⁹

For multiple fistulas, a redo palatoplasty, i.e. two-flap palatoplasty, is carried out to achieve a two

layer tension free closure. The success rate was relatively high when compared to other series.¹⁰ With an extremely large fistula, heavily scarred palate and contracted dento alveolar arch, orthodontic palatal expansion may be required followed by a free tissue transfer.¹¹

A buccal musculomucosal flap (BMMF) is effective for the repair of large fistula. This is a most useful flap for the repair of multiply recurrent palatal fistulas when one is faced with a paucity of tissue that is usually much scarred. It is flexible and versatile and unlike most free flaps, provides mucosal, as opposed to skin, cover.¹² In our study we offered 10 patient of palatal fistula BMMF where fistula were scared and surrounded by severely scarred tissue. We raised flaps of about 5 mm thick comprised buccal mucosa, submucosa, and buccinator muscle, with the feeding vessels and vascular plexus. We secured the pedicle in retromolar trigone so that teeth didn't bite the pedicle and by doing this we did not need 2nd surgery for pedicle division so we offered single stage closure of severely scarred palatal fistula.

Success rate of our procedure is 90% which is comparable to done by von Iierop AC and Abdel

Aziz.¹³ The study did by Medhat E. Habib et al. showed failure rate of 24% it is due to the selection of patients.¹⁴ He included patients in whom fistulas extended to anterior hard palate. We also noticed distal tip necrosis only one of our patient where fistula was anteriorly placed. So the only disadvantage of this flap is that it is not feasible in ant palate beyond incisive foramen.

We closed donor site primarily as buccal mucosa is available in an adequate amount, and there is no significant danger of airway obstruction or hemorrhage. We noticed no deformity or scarring till follow up, neither of the complications described in the literature, such as swelling of the face, impossibility of hard palate donor site closure, infection, or stenosis of the parotid duct¹⁵. The study done Ferrari S et al. showed similar results with no donor site morbidity and optimal functional and cosmetic results¹⁶. In our experience, the repair of severely scared large palatal fistula repair with the buccal myomucosal flap has been an extremely safe and easy operation.

Table 1: Distribution of patients according to age

Serial No.	Age (5-10 years)	Age (11-15 years)	Age (16-20 years)	Total
No. of patients	3	4	3	10
Percentage	30	40	30	100

Table 2: Distribution of patients according to gender:

Serial No.	Male	Female	Total
Number of patients	4	6	10
Percentage	40	60	100

Table 3: Distribution of patients according to type of cleft:

Serial No.	UCLP	BCLP	Total
Number of patients	3	7	10
Percentage	30	70	100

KEY: UCLP= Unilateral Cleft Lip & Palate BCLP= Bilateral Cleft Lip & Palate

Table 4: Distribution of patients according to location of cleft:

Serial No.	Primary palate	Hard palate	Junction of hard & soft palate	Multiple fistulas of hard & soft palate	Total
No of patients	1	4	2	3	10
Percentage	10	40	20	30	100

Table 5: Results

Serial No.	Successful cases	Complicated cases	Total
No. of patients	9	1	10
Percentage	90	10	100

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