

Surgical Management of Anterior Palatal Fistula Post Cleft Palate Repair, Mansoura Experience

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Abstract

Background: After cleft palate surgery, secondary palate fistulas are often seen problems. Anatomically shorter lesser segments, broad palatal cleft defects with thin palatal ledges, inappropriate reflection of subperiosteal flap, and faulty closure are the likely causes of anterior palatal fistulas (APFs). Because of its extreme fibrosis and scarcity of tissue, APFs surgery is among the most difficult.

Aim of Study: The aim of this retrospective study was to evaluate the different surgical treatment for repair of Anterior palatal fistula depending upon their size and age, and also to assess the treatment outcome.

Patients and Methods: In the Pediatric Surgery Department of the Faculty of Medicine, Mansoura University Children Hospital, from April 2019 to December 2021, 55 patients with subsequent anterior palatal fistula following cleft palate surgery are included in this study. Thirty-six patients were addressed by primary repair only, eight individuals by primary repair with unilateral buccinator myomucosal flap, six patients by primary repair with local palatine flap, and thirty-five patients by superiorly based labial flap.

Results: Incidence of fistula recurrence of total 55 cases was 18 cases (32.7%). 28 patients (80%) from 35 patients who were managed by primary repair with superior based labial flap were successfully repaired, 5 cases (62.5%) from 8 patients that were managed by primary repair with unilateral buccinator myomucosal flap were successfully repaired, and 3 cases (50%) with successful repair from 6 patients who were managed by primary repair with local palatine flap, but only one case (16.7%) with successful repair from 6 patients who were managed by primary repair.

Conclusion: Anterior palatal fistula is one of the most challenging surgery due to excessive fibrosis and lack of tissue. Pri-

mary repair with superior based labial flap and primary repair with unilateral buccinator myomucosal flap carry better results than primary repair with local palatine flap or primary repair only. Also, the quality and condition of the adjacent tissue appear to be the major governing factors for selecting treatment modality as well as the surgical consequences.

Key Words: Anterior Palatal Fistula.

Introduction

AFTER cleft palate surgery, secondary palate fistulas are often seen problems. They might arise along the healed cleft at any age or place. The range of reported recurrences following surgical correction of cleft palate varies from 10% to 30%, contingent upon the method employed and the patient's age at the time of original surgery [1]. Although small fistulas may not cause any symptoms, patients frequently report regurgitating liquids into their noses and experiencing an unpleasant odor from impacted food. In a rebuilt palate, palatal fistulas can occur anywhere from the alveolar edge to the anterior, middle, or posterior third of the palate. Anatomically shorter lesser segments, broad palatal cleft defects with thin palatal ledges, inappropriate reflection of subperiosteal flap, and faulty closure are the likely causes of anterior palatal fistulas (APFs) [2].

The separation of the nasal and oral canals is a necessary outcome of first therapy for cleft palate. However, there are a number of factors that can lead to dehiscence in palatoplasty and leave palatal fistulae in the hard or soft palate, including the extent of the deformation, failure to heal, technique errors, flap tension, necrosis, hemorrhage, trauma at the closure site, etc. [3].

Small fistulae are defined as fistulae with a diameter of less than 1.5cm, usually seen in the midline, and often brought on by a tiny necrosis at the flap boundaries or a tiny dehiscence at the union of

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the soft and hard palates. Large fistulae, more than 1.5cm in diameter, are typically brought on by the anterior third of the flap necrotizing, most likely as a result of a palatine artery lesion [4].

Small fistulae measure 1 to 2mm, midrange fistulae measure 3 to 5mm, and giant fistulae measure greater than 5mm, according to Cohen et al. [5].

Palate fistulae resulting from cleft palate repair surgeries might provide a significant problem or be a straightforward treatment for the surgeon. In situations where a direct closure treatment is not feasible, tissue from a nearby anatomical location must be transferred to close the fistula. Muco-periosteal local flaps, Vomer flaps, naso-labial flaps, cheek flaps such as buccinator's myomucosal flaps, or a combination of pharyngeal, tongue, and temporal muscle flaps are a few examples [6,7].

Patients and Methods

55 patients with subsequent anterior palatal fistula following cleft palate repair are included in this study. They were treated at the pediatric surgery department of the Faculty of Medicine, Mansoura University Children Hospital, between April 2019

and December 2021. 35 individuals had superior based labial flap primary repair; 8 patients underwent unilateral buccinator myomucosal flap primary repair; 6 patients underwent local palatine flap primary repair; and the remaining 6 patients underwent primary repair alone.

Preoperative, immediate postoperative, and one-month follow-up images were analyzed using a variety of techniques to compare and assess the outcomes and results, as well as any complications, in order to determine the site of occurrence, type of cleft, size of fistula, assessment of adjacent tissue, and postoperative healing and closure.

Operative details:

Every palatal fistula was examined for its surrounding tissue, determining if it was subsequent granulation tissue following palatoplasty or a normal anatomical tissue. The size of each fistula was also assessed.

Four techniques were evaluated for repair of fistulae. Superiorly based labial flap (Fig. 1A-E), Unilateral buccinator myomucosal flap (Fig. 2A,B,C), local flaps and primary repair.



Fig. (1-A): Anterior palatal fistula.



Fig. (1-B): Making upper lip incision.



Fig. (1-C): Harvesting the flap.



Fig. (1-D): Repair of the fistula.



Fig. (1-E): Post-operative photo.



Fig. (2-A): Making buccinator myomucosal flap incision.



Fig. (2-B): Harvesting buccinator myomucosal flap.



Fig. (2-C): Post-operative photo.

Results

This study included 55 patients who underwent closure of anterior palatal fistula by different techniques. Our study included 29 male and 26 female with their ranging age from 15 till 72 months with a mean age 35.5 months. 27 (49%) patients had tripartite cleft palate, 20 (36.5%) patients had bipartite cleft palate, and 8 patients (14.5%) had complete intermaxillary cleft palate. 42 cases (76.3%) patients underwent multiple surgeries before their presentation to us and 13 cases (23.6%) underwent one previous surgery. The size of the fistula was less than 1cm in 35 cases (63.5%) patients and more than 1cm in 20 (36.5%) patients. Operative time ranged from 56min to 116min.

Incidence of fistula recurrence of total 55 cases was 18 cases (32.7%), total success rate was (67.3%). 28 patients (80%) from 35 patients who were managed by primary repair with superior based labial flap were successfully repaired, 5 cases (62.5%) from 8 patients that were managed by primary repair with unilateral buccinator myomucosal flap were successfully repaired, and 3 cases

(50%) with successful repair from 6 patients who were managed by primary repair with local palatine flap, but only one case (16.7%) with successful repair from 6 patients who were managed by primary repair (Table 1).

Table (1)

Procedure	Total cases	Satisfactory	Reduction in size
- Primary repair with unilateral buccinator myomucosal flap	35 (63.6%)	28 (80%)	2 (5.7%)
- Primary repair with unilateral buccinator myomucosal flap	8 (14.5%)	5 (62.5%)	1 (12.5%)
- Primary repair with local palatine flap	6 (10.9%)	3 (50%)	1 (16.7%)
- Primary repair	6 (10.9%)	1 (16.7%)	0
- Over all	55	37 (67.3%)	4 (7.3%)

Discussion

One of the biggest surgical problems in reconstructive surgery is the surgical correction of cleft palates. Normal speech is anticipated following cleft palate surgery, provided that the maxillofacial development abnormalities do not worsen. These objectives are obviously compromised by the development of a fistula after surgery [8].

The breadth of the palatal cleft, the degree of palatal segment deficit, and the misplacement and distortion of the cleft segment are among the factors that predispose to the development of postoperative dehiscence or fistula [9]. The timing of repairs, surgical techniques, and the operating surgeon are other extrinsic factors taken into account for the creation of fistulas. Technique mistakes, including insufficient mobilization, closure under tension, damage during re-intubation, poor tissue handling, inability to establish a multilayer closure, and postoperative hemorrhage and infection, are the main causes of early dehiscence and fistulas [10].

The individuals' comparatively advanced age is a result of several operations performed to correct the initial cleft and treatments conducted to address its consequences. In this study, there were 27 patients (49%) with tripartite cleft palates, 20 patients (36.5%) with bipartite cleft palates, and only 8 patients (14.5%) with full intermaxillary cleft palates. These results show that the complexity of the main palatal defect increases with the occurrence of fistulas. Similar findings were reported by Zhang et al. [11], whose work is similar here. Just 13 instances (23.6%) of the patients had only had one operation prior, whereas 42 cases (76.3%) of the patients had several procedures prior.

This result was consistent with the observation that every patient (100%) had a palatal scar; 13 patients who underwent a single procedure also had a noticeable palatal scar. According to Bonanthaya et al. [12], there is a correlation between an enlarged palatal scar and the incidence of recurrent fistulas. Thirty-five patients (63.5%) had a fistula larger than 1cm, whereas twenty patients (36.5%) had one smaller than that. The size of the fistula makes the repair challenging and ultimately influences the outcome [13].

Out of the 55 patients, 18 cases (32.7%) had a recurrence of fistula; the overall success rate was 67.3%. The patients that experienced recurrence were discovered to be the oldest and to have the greatest defect following several prior procedures. This is consistent with the findings of Sitzman et al. [14,15], Ogata et al. [16], and Galicia et al. [17], who found that the number of prior palatal repair trials diminishes the likelihood of a successful repair. After the first and third months, it was discovered that the success rate was 70%.

Carstens [18] proposed the sequential treatment of clefts using alveolar extension palatoplasty and the sliding sulcus method. According to him, the anterior (buccolingual) alveolar mucoperiosteum is deprived of blood flow from the facial-internal maxillary arcade by traditional cleft lip repair techniques. After six months, the lingual incisions made during palatoplasty permanently cut off the lingual mucoperiosteum from the greater palatine artery, changing the osteogenic alveolar mucoperiosteum from a richly supplied border zone between the two angiosomes to an isolated tissue that is mainly dependent on osseous backflow for survival. From this angle, cleft-sided growth disruption is taken into consideration. A sequential approach of cleft care takes into account subperiosteal methods that maintain this tissue's blood supply.

Conclusion:

Anterior palatal fistula is one of the most challenging surgery due to excessive fibrosis and lack of tissue. primary repair with superior based labial flap and primary repair with unilateral buccinator myomucosal flap carry better results than primary repair with local palatine flap or primary repair only. also, Both the surgical outcome and the choice of treatment approach seem to be mostly determined by the state and quality of the surrounding tissue.

The outcomes are not adequate and require further assessment in instances with fistulas wider than 1cm or patients with significant tissue scarring from prior numerous procedures that prevent primary closure without the use of these flaps. We therefore draw the conclusion that these methods are workable, but before they can be explored as a treatment option for anterior palatal fistula, their effectiveness has to be evaluated in a greater number of patients.

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المعالجة الجراحية للناصور الحنكى الأمامى بعد إصلاح الحنك المشقوق، تجربة المنصورة

مقدمة: ناسور الحنك الثانوى ليس من المضاعفات غير الشائعة بعد إصلاح الحنك المشقوق. وقد تحدث فى أى نقطة وفى أى عمر على طول خط الشق الذى تم إصلاحه. يتراوح نطاق التكرار المبلغ عنه، بعد التصحيح الجراحى الحنك المشقوق

قد تكون النواسير الصغيرة بدون أعراض ولكن المرضى عادة ما يشكون من ارتجاع السوائل إلى الأنف، وقد يتأثر الطعام مما ينتج عنه رائحة كريهة. عندما لا يكون من الممكن إغلاق الناسور باستخدام الأنسجة المجاورة فى إجراء الإغلاق المباشر، فسوف تحتاج الأنسجة إلى النزوح من منطقة تشريحية مجاورة. على سبيل المثال، اللوحات المحلية المخاطية السمحاقية، اللوحات الميكعية، إعادة جراحة الحنك الكلى، اللوحات اللسانية، اللوحات الأنفية الشفوية، اللوحات من الخدين أو الرقبة، مزيج من اللوحات البلعومية، من اللوحات اللسانية من اللوحات العضلية الصدغية

تشمل الدراسة ٥٥ مريضاً يعانون من ناسور حنكى أمامى ثانوى بعد إصلاح الحنك المشقوق، فى الفترة من أبريل ٢٠١٩ إلى ديسمبر ٢٠٢١ فى قسم جراحة الأطفال بكلية الطب، مستشفى الأطفال الجامعى بالمنصورة. تمت إدارة ٣٥ مريضاً عن طريق الإصلاح الأولى باستخدام السديلة الشفوية العلوية، وتمت إدارة ٨ مرضى عن طريق الإصلاح الأولى باستخدام السديلة العضلية المخاطية المبوقة أحادية الجانب، وتمت إدارة ٦ مرضى عن طريق الإصلاح الأولى باستخدام السديلة الحنكية المحلية وتمت إدارة المرضى الستة المتبقين عن طريق الإصلاح الأولى فقط

الهدف: الهدف من هذه الدراسة بأثر رجعى هو تقييم العلاج الجراحى المختلف لإصلاح الناسور الحنكى الأمامى اعتماداً على حجمه وعمره.