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Recommended Citation

Badrawy, Tarek; El-Asfour, Ahmed; and Mokbel, Khaled (2001) "PALATAL MUCOPERIOSTEAL FREE GRAFT FOR CLOSURE OF ANTERIOR PALATAL FISTULA," *Mansoura Medical Journal*: Vol. 30 : Iss. 2 , Article 3.

Available at: <https://doi.org/10.21608/mjmu.2001.127019>

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PALATAL MUCOPERIOSTEAL FREE GRAFT FOR CLOSURE OF ANTERIOR PALATAL FISTULA

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ABSTRACT

Palatal fistula is a common surgical problem after palatoplasty. Different surgical techniques have been adopted for repair of such defect with a great variability of advantages and disadvantages. So, the aim of the present study is to evaluate palatal mucoperiosteal free graft as a new option for repair of anterior palatal defects after palatoplasty. The graft has been utilized for repair of anterior palatal fistula in 13 patients admitted at Pediatric Surgery Unit and E.N.T. Department during the period between 1999 to 2001. Patients were followed up postoperatively for a period up to 31 months. The repair was completely successful in 10 patients (77%) with good take of the graft, excellent tissue matching and without any minimal leak. So, the graft can be utilized successfully for repair of palatal defects

after palatoplasty.

INTRODUCTION

Palatal fistula constitutes a significant problem encountered by all surgeons who operate on the palate. The reported incidence of this problem varies widely from zero to 63 percent and recurrence after repair is not uncommon (1). The cycle of repair followed by breakdown results in increasing scar formation and soft tissue contracture with increase in the fistula size (2). Various factors have been implicated in the development of palatal fistula. They include the type of clefting, the type of repair and the presence of upper respiratory infection at the time of repair. The most common and most difficult site of palatal fistula is the anterior palate (3). A lot of techniques has been adopted for repair of palatal fistula. Although

each technique may have its own success, no one method can be consistently dependent upon to repair different fistulae (4). The traditional methods for repair of oral defects include allowing granulation, primary closure, free skin graft, buccal mucosal graft and conchal cartilage graft. Each of these methods has several disadvantages and all result in significant scar contracture and lack of sufficient bulk (5,6). The tongue flap is another current method to overcome such vixing problem. However, inspite of being bulky and pliable flap, it lacks the proper tissue matching in relation to the palate. Moreover, it needs post-operative restriction of tongue mobility and it is a two stage procedure (7,8,9). The buccal musculomucosal flap is another option for repair of palatal defects. However, it is tiny flap, needs restriction of oral movement and also it is a two stage procedure (10). The free vascular flap transfere as free fore arm flap (11), dorsalis pedis first dorsal metatarsal flap (12) and free peroneal skin flap (13) is a recent technique for repair of palatal defects. However, it is technically difficult, time consuming and needs special operating microscopes in addition to the lack of proper tissue matching in relation to the roof of the mouth.

The palatal mucoperiosteal free graft is a new option to repair palatal fistulae that has been designed to deal with the previously mentioned disadvantages. The palatal blood supply comes predominantly from the greater palatine artery and the ascending palatine artery for the hard palate and soft palate respectively with rich anastomoses in between. The observation of low incidence of loss of hard palatal flaps when the greater palatine artery has been injured has arouse the concept of the random fashion of distribution of the fine anastomotic branches of the palatal mucoperiosteum (14). So, the aim of the present study is to evaluate the free mucoperiosteal graft of the palate as a new option for management of palatal fistulae.

MATERIAL AND METHODS

The present study included 13 patients with anterior palatal fistulae after palatoplasty admitted at Pediatric Surgery Unit and E.N.T Department during the period from 1999 to 2001. They included 8 males and 5 females. Their ages ranged from 19 months to 168 months with a mean age 37.6 ± 14 months. The dimensions of fistula ranged from 14 mm X 6 mm to 26 mm X 14 mm (Table I). Among fistula cases, two patients had recurrent palatal

fistula after primary closure. All patients were subjected to a detailed history taking including the date of previous palatoplasty or fistula closure, general examination and thorough oronasal examination. Complete laboratory investigations have been performed that included culture and sensitivity test of oropharyngeal swab with subsequent antibiotics preparation. Fistula closure has been performed at least 3 months after the previous palatal surgery.

Technique of fistula repair by palatal mucoperiosteal free graft:

The position of the patient was as the same for tonsillectomy, with general nasal endotracheal intubation. The first step was undermining the edges of the fistula. The dimensions of the fistula were accurately measured (Fig. I). The mucoperiosteal graft was then fashioned in dimensions larger 1.25 times more than the original fistula starting from the alveolar ridge at the lateral border of the hard palate. Raising the graft has been performed taking into consideration a deeper elevation of the mucoperiosteum taking the graft as a single bulky layer (Fig. II). The graft has been sutured to the edges of the fistula by 4/0

vicryl sutures in an interrupted simple sutures as a single layer (Fig. III). The bleeding points of the donor site has been secured with diathermy. The preoperative antibiotic regimen has been continued postoperatively for five days. Oral feeding has been started by non residue cold fluids from the first postoperative day. Patients were charged few days after surgery and followed up for a period ranging from 3 months to 31 months for the take of the graft, tissue matching and the presence of any minimal leak.

RESULTS

Palatal mucoperiosteal free graft has been performed for 13 patients having anterior palatal fistula after palatoplasty with 2 cases were having recurrent fistula after primary closure. Fistula repair has been completely successful in 10 patients (77%) with good take of the graft, excellent tissue matching and without any minimal leak. The graft donor site has closed spontaneously without any residual defect (Fig IV and V).

The complicated cases in the present series included 3 cases (23%). One case; aged 19 months developed complete graft failure with complete recurrent fistula that has

been preceded by extensive respiratory tract infection. The other two cases aged 19 months, and 20 months respectively developed partial recurrent fistula. One of these two fistulae was minute fistula that healed spontaneously after 4 months. The other fistula was in need for primary closure

after 3 months. The first case with complete graft failure and recurrent fistula has been repaired 5 months later by another mucoperiosteal free graft from the anterior palate of the contralateral side of the pervious graft with complete success and take of the graft.

Table (I): Patient descriptive data

	Age (months)	Sex	Fistula dimensions (MM.)
1	19	♂	14 X 6
2	30	♀	20 X 9
3	26	♂	15 X 9
4	23	♂	21 X 10
5	25	♀	18 X 7
6	28	♀	17 X 9
7	168	♂	26 X 14
8	19	♂	20 X 9
9	27	♀	17 X 10
10	32	♀	22 X 12 (Recurrent fistula)
11	20	♂	18 X 10
12	30	♂	17 X 10 (Recurrent fistula)
13	42	♂	23 X 11

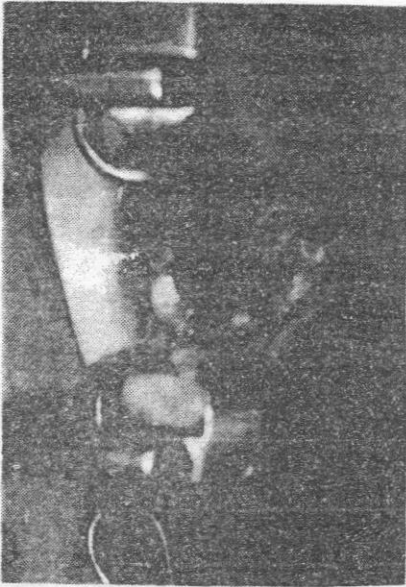


Fig. I : Undermining the edges of the fistula.



Fig. II : Elevation of the mucoeriosteal graft.

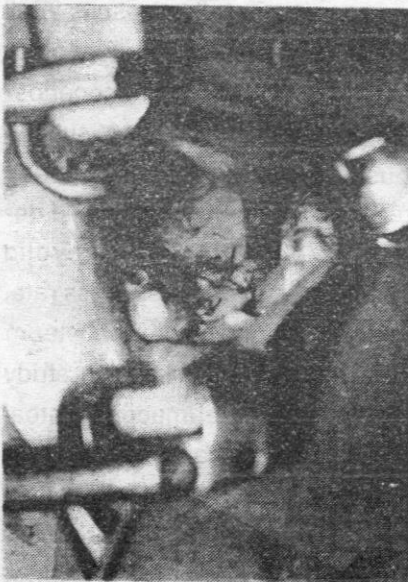


Fig. III : Suturing the graft at the fistula site .



Fig. IV : A patient with anterior palatal fistula.



Fig. V : The same patient after successful repair.

DISCUSSION

Oronasal fistula is a common surgical problem after palatoplasty for which multiple techniques have been utilized that include different flaps and grafts. In the present study, palatal mucoperiosteal free graft has been utilized for repair of palatal fistula after palatoplasty in 13 cases. Patients were followed up postoperatively for a period up to 31 months. The repair was completely successful in 10 patients (77%) with good take of the graft, excellent tissue matching and without any minimal leak. These results are similar to the results of a study (5) in which the same graft has been utilized for closure of palatal de-

fects left by resection of cancer lesions reporting excellent results in all of their patients. Moreover, in another study (15) hard palatal mucoperiosteal graft combined with a V-Y subcutaneously pedicled flap have been utilized for reconstruction of eyelid defects in patients with eyelid malignancies with 100% success rate. The use of palatal mucoperiosteum as a flap has been utilized in study (16) in which a local mucoperiosteal flap lined with buccal mucosal graft have been utilized for repair of palatal fistula with 100% success rate also. So, different surgeons have repaired palatal fistulae in two layers (4) or even in three layers (17). However, in

the present study, a single layer repair was quite enough for successful repair with a very low incidence of recurrent fistula due to a considerable bulky well matched graft. Furthermore, most of the complicated cases of the present series (2 cases) required simple treatment; either conservation or primary closure while one case only was in need for redo taking another palatal mucoperiosteal graft from the contralateral side of the previous one. Subsequently, another advantage of the palatal mucoperiosteal free graft is that it can be repeated for recurrent fistula cases. Interestingly enough, the ages of the complicated cases in our series were exclusively below 2 years meaning that the palatal mucoperiosteal free graft is much preferred to be utilized at a relatively older ages than 2 years. This probably may be due to increased thickness and vascularity of the palatal mucoperiosteum. In addition, the patient who developed complete graft failure and complete recurrent fistula has developed extensive respiratory tract infection in the immediate postoperative period meaning that complete avoidance of respiratory infection has a great value in the success of the repair. Thus in conclusion, the palatal mucoperiosteal free graft can

be utilized with a great success for repair of anterior oronasal fistulae. In our opinion, the following precautions should be strictly adopted for the success of the repair: Firstly the repair is preferred to be performed at ages older than 2 years. Secondly deep elevation of the graft as a single bulky layer should be performed. The third point is that a single layer transverse simple suture repair is quite enough for good repair. In addition, avoidance of respiratory infection in the immediate postoperative period will minimize the complication rate. Lastly, preoperative antibiotic preparation according to throat swab and culture that continued intra and postoperatively is of paramount importance for the success of the repair.

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إستخدام رقعة من الغشاء المخاطى والسحق لسقف الحلق لتصليح ناصور سقف الحلق الأمامى

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تعتبر مشكلة ناصور سقف الحلق الأمامى الناتج بعد عمليات تصليح شق سقف الحلق من المشاكل الشائعة والتي لها العديد من العمليات الجراحية المختلفة والتي تختلف نسب نجاحها مع إختلاف مميزات وعيوب كل عملية. وفى هذه الدراسة تم إستخدام رقعة من الغشاء المخاطى والسحق لسقف الحلق لتصليح هذا الناصور. وقد أجريت هذه الجراحة لثلاثة عشر مريضاً يعانون من هذا الناصور بوحدة جراحة الأطفال وقسم الأذن والأنف والحنجرة بمستشفى المنصورة الجامعى. وقد أمكن إستخدام هذه الرقعة بنجاح تام فى عشرة مرضى بدون حدوث أية مضاعفات بنسبة نجاح سبع وسبعون بالمائة. وبذلك يتضح من هذه الدراسة إمكانية إستخدام هذه الرقعة فى تصليح ناصور سقف الحلق الأمامى الناتج عن عمليات تصليح شق سقف الحلق بنجاح كبير .