

# Cut-edge mucoperiosteal flap for anterior fixation of palatal flap in palatoplasty

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**Introduction** This study was done at Mansoura University Children Hospital, Egypt from the period of June 2013 to June 2015 on 80 patients with incomplete intramaxillary cleft palate.

**Patients and methods** After oral layer closure of the cleft palate, anterior fixation of the flap is obtained by raising the anterior cut-edge of mucoperiosteal flap for about 0.5 cm then suturing the flap to the elevated cut-edge with two stitches. We divided the patients into two groups and evaluated the time needed for fixation the palatal flap and difficulty of fixation and evaluated the incidence of anterior palatal fistula between the two groups.

**Results** The time used for elevation of the flap and taking the two stitches in group A ranged from 2.5 to 6 min. However, the time used for taking the two stitches without elevation of the flap in group B ranged from 2.8 to 9 min.

## Introduction

Incidence of cleft palate is one in 800 in white, which is more than in Asians, but less than in blacks. It is classified into incomplete/complete inter-maxillary, Bi-partite, and isolated cleft soft palate, which is most common in females.

### Hard palate repair

Techniques for hard palate closure include von Langenbeck, Veau–Wardill–Kilner pushback, two-flap (Bardach), hybrid repair (Clarke), and no palatal incisions (Sommerlad). Most techniques have the same principles in raising the oral mucosa then repairing the nasal mucosa, dissecting the muscles, repairing the muscles, and finally closing the oral mucosa [1].

The Veau–Wardill–Kilner pushback procedure was devised with the belief that V-Y pushback of posteriorly based oral mucoperiosteal flaps of the hard palate would result in effective palatal lengthening and improved speech outcome [2]. There is evidence, however, that this did not improve speech outcome. The pushback leaves extensive raw area over bone anteriorly and has several potential consequences such as greater transverse collapse, increased anteroposterior maxillary growth restriction, and large anterior fistulas [3].

The two-flap repair is widely used for unilateral complete clefts. In this technique, the bilateral lateral relaxing incisions are extended anteriorly as far as the cleft margins. This produces two flaps based posteriorly on the greater palatine pedicles. Flaps are elevated both to aid in exposure and to provide closure without tension. There is no attempt to pushback the repair, and flaps returned to their original anterior position [4].

A difficulty was encountered at the end of Veau–Wardill–Kilner and two-flap technique procedure during anterior

**Conclusion** We found that cut-edge mucoperiosteal flap for anterior fixation of two-flap palatoplasty is a simple step at the end of cleft palate repair procedure which allows easy fixation of the palatal flap with short time and good opposition of the tissue edges, allowing better healing. *Ann Pediatr Surg* 14:134–136 © 2018 Annals of Pediatric Surgery.

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fixation of the flap. The fixed mucoperiosteum makes fixation difficult and time consuming. We describe a simple step for anterior fixation by elevation of the anterior cut-edge of mucoperiosteal flap and fixation of the two flaps to it.

### Technique

After oral layer closure of the cleft, anterior fixation of the flap is obtained by the following technique (Figures 1–4).

- (1) Using a right angle elevator to raise the anterior cut-edge of mucoperiosteal flap for about 0.5 cm.
- (2) After elevation, we use vicryl 0.4 or 0.5 to suture the flap to the elevated cut-edge with two stitches.

### Patients and methods

This study was done at Mansoura University children hospital from the period of June 2013 to June 2015. A total of 80 patients with incomplete intramaxillary cleft palate were included during this period. After oral layer closure and at the end of the procedure, we used our technique of elevation of the anterior cut-edge of mucoperiosteal flap and fixation of the two flaps to it in 40 patients (group A) and compared the results with the other 40 patients in group B. We compared between the two steps in the following items (IRB Code number: R/17.06.80):

- (1) The time used for elevation of the flap and taking two stitches in minutes in both groups.
- (2) The difficulty of the technique in both groups. This was classified into two grades (easy and difficult according to the time consumed in suturing):
  - (i) Easy: less than 5 min.
  - (ii) Difficult: more than 5 min.

(3) Postoperative incidence of anterior oronasal fistulas in both groups.

**Results**

The time used for elevation of the flap and taking the two stitches in group A ranged from 2.5 to 6 min with average of 3.46 min. However, the time used for taking the two stitches without elevation of the flap in group B ranged from 2.8 to 9 min, with average of 6.7 min.

The difficulty of doing the technique in group A was easy in 37 (92.5%) patients and difficult in three (7.5%)

patients, whereas in group B, it was easy in 24 (60%) patients and difficult in 16 (40%) patients.

The incidence of anterior oronasal fistulas was seen in two (5%) patients in group A, whereas four (10%) patients in group B.

**Fig. 1**



Incomplete intermaxillary cleft palate.

**Fig. 2**



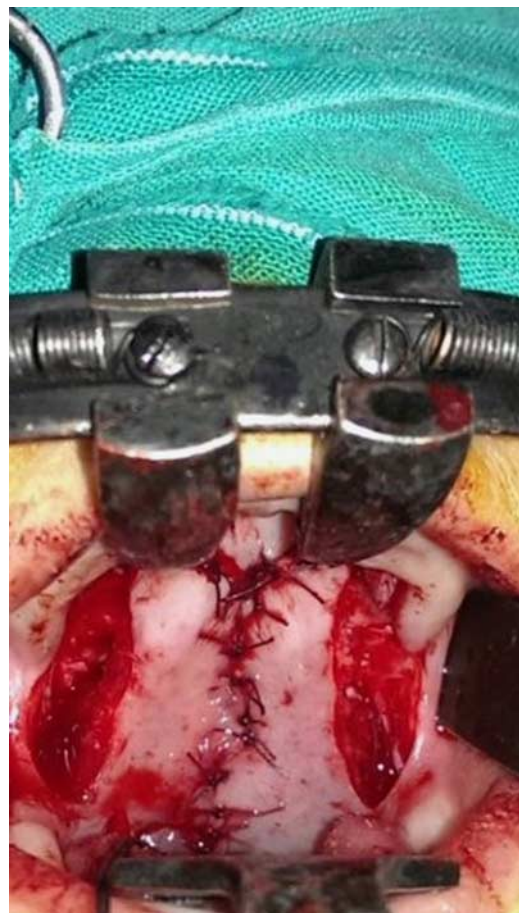
Dissection of the cut-edge mucoperiosteal flap.

**Fig. 3**



The dissected cut-edge mucoperiosteal flap.

**Fig. 4**



Suturing of the cut-edge mucoperiosteal flap to palatal flap.

## Discussion

Fixation of the two flaps to the mucoperiosteum anteriorly is an important step at the end of cleft palate repair. The routine procedure in fixation is having one or two stitches from the flaps to the mucoperiosteum which is fixed to the underlying bone. The technique we describe here is to elevate anterior cut-edge mucoperiosteum and taking the stitches to it. In this study, we compared between the two techniques using two groups with 40 patients in each group. We compared the time used for fixation of the two flaps at the end of the procedure in each group. The time consumed in patients undergoing our technique (group A) was relatively shorter than those who did not (group B). In most of cases, we elevate the anterior cut-edge flap in less than 1 min and taking the two stitches in less than 2 min. Sometimes elevation of the anterior cut-edge mucoperiosteum takes longer time because of adhesion to the underlying bone. It may be so small to take stitches to it or stitches make cut through it, which may prolong the time consumed to fix the palatal flaps. In group B, longer time was taking to fix the stitches because most of the time the needle hit the underlying bone and we usually do many trials to have these stitches.

The incidence of anterior oronasal fistula was low only in group A, with only two (5%) patients in 2 years, because

of good tissue co-aptation which allow good tissue healing. In group B, the incidence of fistula was 10%: four patients in 2 years, which was higher than group A. This may be owing to the lack of tissue co-aptation between the flaps and mucoperiosteum.

## Conclusion

Cut-edge mucoperiosteal flap for anterior fixation of two-flap palatoplasty is a simple step at the end of cleft palate repair procedure which allows easy fixation of the palatal flap with short time and good opposition of the tissue edges, allowing better healing.

## Conflicts of interest

There are no conflicts of interest.

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