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## Furrow's double opposing Z-plasty: A case report

**C. Hari Prasath, A. Thangavelu, S. Thiruneelakandan, N. Karthikkannan**

### Abstract

Cleft lip and cleft palate has got a high incidence in Asian births. There are different techniques for closure of the cleft. The furrows double opposing Z-plasty repair of cleft palate was first described by Leonard Furrow in 1978. Here we present 2 case of cleft palate treated with Furrows double opposing Z-plasty.

**Keywords:** Cleft palate, double opposing Z plasty.

### 1. Introduction

Cleft lip and Palate with an incidence of 1:700 and cleft palate with an incidence of 1:1600-4200 ratio births in Asian countries and 1:3200 in Tamil nadu. It was not until Veau in 1931 introduced mucoperiosteal flaps<sup>[1]</sup>.

There is a little disagreement that the primary objective for surgical repair of palatal clefts is the subsequent development of normal speech. Thus speech remains the single most important standard by which techniques of palatoplasty was judged<sup>[2]</sup>.

The furrows double opposing Z-plasty repair of cleft palate was first described by Leonard Furrow at the southeastern society of plastic & reconstructive surgery meeting in Boca Raton, Florida in 1978<sup>[3]</sup>.

The furrow technique of palatoplasty by double opposing Z-plasty is based on the hard palate closure in one procedure without push back and closure of soft palate with mirror image Z-plasty which allows a repositioning and an overlap of the palatal muscles to form a palatal muscle sling<sup>[4]</sup>.

At the Rajah Muthiah Dental College and Hospital, Annamalai University, We tried Furrow's double opposing Z-plasty repair for palate in 2 cases. In one case, Primary closure of the defect is done and the result was unsatisfactory. The mean age of the patients was 7 years. The follow up was done for 6 months.

### 2. Procedure

After local infiltration of Lignocaine and adrenaline solution, the first incision is made along the left margin of the cleft. The left lateral limb incision exits at the hamulus. The palatal aponeurosis must be completely divided, freeing the flap to rotate. The tip of the flap is elevated with palate muscle and carefully separated from the nasal mucosa. The nasal mucosal flap is incised from just in front of the uvula to the Eustachian orifice.

On the right side the cleft margin is incised and right lateral limb incision starts in front of the uvula and ends at the hamulus. Only the oral mucosa is elevated and separated from the palatal muscle. After the muscle insertion from the back of the hard palate is detached, the incision of the nasal myomucosal flap is sutured with vicryl 4-0 in the apex of the left lateral limb incision. Then the left mucosal flap is sutured into the apex of the right lateral limb incision.

Using Vicryl 4-0 suture the left oral myomucosal flap is sutured at the level of the hamulus, so that palatal muscle can be overlapped. The right mucosal flap is then inserted. The hard palate closure is completed by bringing the mucoperiosteal flap horizontally and suturing them with mattress suture.

### 3. Discussion

Double opposing Z-plasty is a single stage palatoplasty which reflects the hard and soft palate separately. The soft palate is closed by a Z-plasty of the oral side and a mirror image Z-plasty

of the nasal side. It in fact results in lengthening of the soft palate by the geometry of the Z-plasty, without any additional movement of the tissue from the hard palate. Hard palate can be closed by bringing the mucoperiosteal flaps horizontally without push back and usually without lateral incision. The mucoperiosteum is undermined only in the case of wide cleft gap when lateral releasing incision are performed [4].

There are different types of closure for the cleft palate, but the three major surgical techniques used are the Bipedicle flap (Von Langenback), Opposing Z Plasty (Furlow Z Plasty) and the Two Flap technique (Veau- Wradill- Kilner) [5]. These surgical technique has its own advantages and limitations. The selection of the surgical technique should be done according to individual age and size of the cleft.

Most cleft surgeons agree on the fact that Furlow palatoplasty is a more complicated surgical procedure than other techniques. It is hard to visualize by trainees and requires meticulous technique and needs adequate understanding of the anatomy of the palate as well as the concept of Z-plasty [2].

The main advantage of furlow palatoplasty is the restoration of a functional muscle sling capable of obtaining a competent velopharyngeal valve. Speech is the final outcome by which a procedure can be judged.

There is no doubt that the furlow double opposing Z-plasty results in anatomic changes that are necessary for speech and velopharyngeal function. However our existing post-operative results of furlows palatoplasty are promising, longer follow-up is necessary for serious cephalometric and speech evaluation.

To conclude we would state that the FDOP has got good surgical outcome with better improvement in speech and lower fistula rates. When practiced frequently the limitations in the understanding of the anatomy can be overcome.

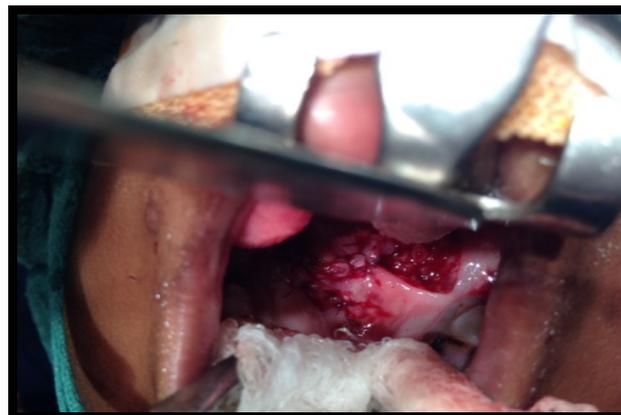
#### 4. Summary

In summary, Furlow double Opposing Z plasty is a sound anatomic and palatoplasty technique for cleft palate repair. Advantages include improved speech results with less hypernasality and lower fistula rates. Disadvantage is related to the surgical aspect of Z plasty with resulting increased operating time initially for young surgeons.

**Case 1 Pre-Operative**



**Intra Operative**



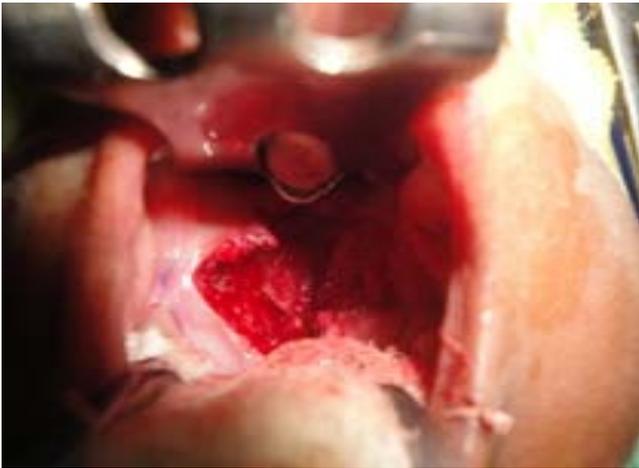
**Immediate Post Op**



**CASE 2  
Pre-Operative**



### Intra Operative



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