International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 06, 2020
ISSN: 1475-7192

PALATOPLASTY PROCEDURE WITHOUT LATERAL RELAXING INCISION- AN INNOVATIVE APPROACH

[1]Dr. Biswajit Mishra, [2]Dr.Sonika Dash, *[3]Dr. Diplina Barman, [4]Dr. Chhaya, [5]Dr. R Padmini Rani, [6]Dr. Shruti Banerjee

Abstract

Aims and objectives: Aim of palatoplasty is to optimize the speech and feeding, closure of the oronasal passage without having any adverse effect on maxillary growth. Scar produced after palatoplasty is a well known risk factor for adverse maxillary growth. Methods: Between July 2016 and September 2018, palatoplasty was performed in 22 patients with cleft palate of varying grade (median age 47 month; range, 10 month -8 year). Entire palate was closed in a single setting. Nasal layer closure, intravelar veloplasty and oral layer closure was done in succession. A straight line closure was performed on both the nasal and oral sides. The incision on the soft palate was given at the junction of nasal mucosa and oral mucosa. It was extended anteriorly to the hard palate beyond posterior nasal spine. Mucoperiosteal flap was elevated by subperiosteal undermining in the entire palatine bone. No relaxing incision was given on the lateral side. Oral layer closure started from posterior portion and entire palate was closed in the midline without any lateral relaxing incision. Patients were followed up for 6 months to 1.2 years. Results: There was no incidence of flap necrosis. All palate had good healing. There was no other complications such as bleeding, wound dehiscence, fistula or hanging palate . Conclusions: Though this procedure has a learning curve it is a useful technique for preventing adverse maxillary growth.

Keywords: *Palatoplasty, orofacial cleft, intraveolar veloplasty.*

[1] Assistant Professor, Department of Plastic Surgery, MKCG Medical College, Berhampur, Odisha, India
[2] Post graduate student, Department of Orthodontics and dentofacial orthopaedics, Kalinga Institute of Dental Sciences, KIIT University, BBSR, India
[3] Post graduate student, Department of Public health Dentistry, Kalinga Institute of Dental Sciences, KIIT University, BBSR, India
[4] Post graduate student, Department of Oral and Maxillofacial Surgery, Kalinga Institute of Dental Sciences, KIIT University, BBSR, India
[5] Post graduate student, Department of Prosthodontics and crown and bridge, Kalinga Institute of Dental Sciences, KIIT University, BBSR, India
[6] Post Graduate, Department of Oral and Maxillofacial Surgery, Sardar Patel Post Graduate Institute of Dental & Medical Sciences, Lucknow, Uttar Pradesh, India

Received: 05 Feb 2020 | Revised: 21 Mar 2020 | Accepted: 05 Apr 2020

I. INTRODUCTION

Globally incidence of orofacial cleft is 1.5 per 1000 population [1].The aim of the palatoplasty is to lengthen the palate to optimize the speech without compromising the maxillary growth. Although many methods have been described, intraveolar veloplasty has been proven to be effective for achieving velopharyngeal competence. Functional outcome after palatoplasty is improved after creation of levator sling [2,3,4]. Growth disturbances of maxilla and teeth malposition after palatoplasty are due to scar formation in previously denuded bone [5]. However, methods to decrease the adverse effect of surgical manuevers on the growth of the hard palate and alveolar process not been described effectively compared with methods to address velopharyngeal incompetence [6]. In this study, we performed palatoplasty without any lateral incision. The details of the surgical procedure and its advantages and disadvantages has been described. Purpose of the method is to decrease the scar formation which will decrease the growth retardation.

II. MATERIALS AND METHODS

The protocol mentioned in the Declaration of Helsinki were followed. Informed consent of all patients was obtained before the study. Between July 2016 and September 2018, the procedure was performed in 22 patients (14 male and 8 female) with a median age of 30.5 months (range, 10 month –8 year). Of the 22 patients, 14 patients had Veau 1 cleft palate, 6 patients had Veau 2 and 2 patients had Veau 3 cleft palate. The patients were followed up for 6 month –1.2 year.

III. SURGICAL TECHNIQUE

Routine investigations included Complete blood count, Serological test for HIV, HBS Ag. Throat swab culture was not done in some of the cases. In syndromic patients Echocardiography was done to rule out any congenital anomaly. All patients were intubated with RAE Tube. To get bloodless field during surgery, a mixture of solution containing lidocaine with epinephrine was infiltrated in the palate. The incision began from the uvula extending anteriorly to the posterior nasal spine at the junction of oral and nasal mucosa along the cleft margin. Next, the mucosa along the edges of the cleft in the hard palate was incised. However, relaxing incisions were not made along the lateral edges of the palate. Undermining was then performed, with the oral mucoperiosteal flaps and nasal flaps elevated (figure 1). Then the greater palatine neurovascular bundles were identified (figure 2) and skeletonised so that oral layer can be approximated in the midline without tension. Nasal layer was closed first (figure 3), this acted as a platform for muscle dissection. Abnormally attached muscles were freed from edge of cleft and posterior boarders of hard palate were detached by sharp dissection with No 15 blade. Then muscles were separated from nasal mucosa as well. Small perforation in the nasal mucosa were not repaired. As they are believed to drain any collection. Levator muscle was retro positioned (figure 4) and levator sling was created. Oral layer closure was done (figure 5, figure 6).

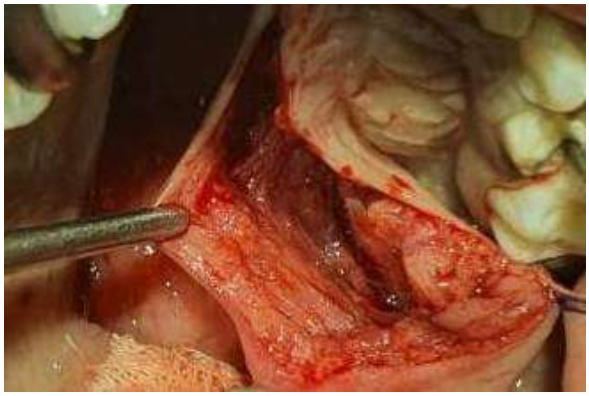

Figure-1: oral mucoperiosteal flaps and nasal flaps elevated

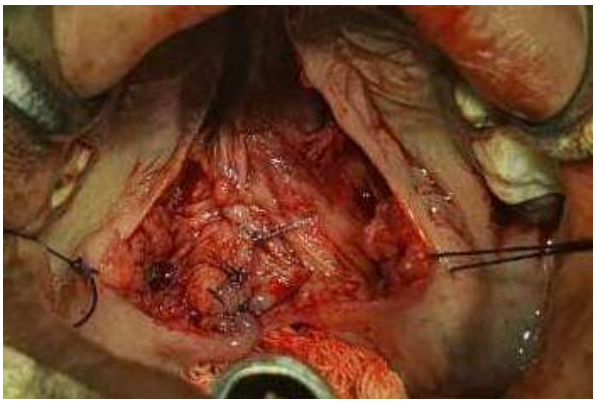

Figure-2: Greater palatine neurovascular bundles identified

Figure 3: Nasal layer closed

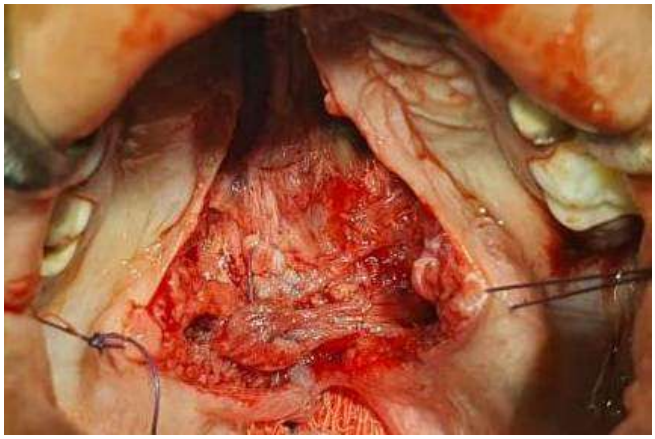

Figure 4: Levator muscle retro positioned

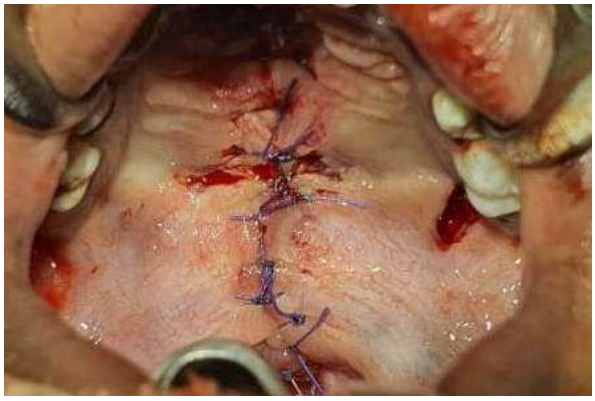

Figure 5: Oral layer closure done

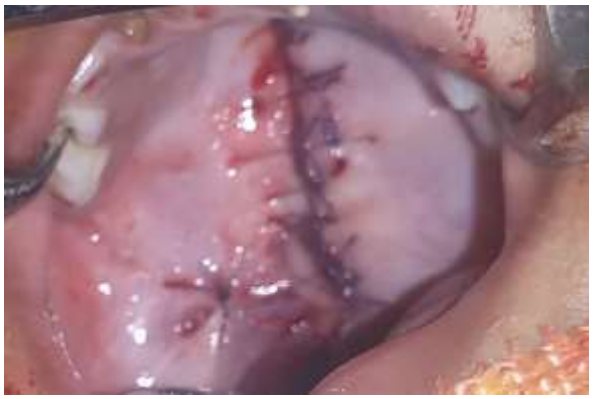

Figure 6: Oral layer closure done

Figure 7: Post-operative-I

Figure 8: Post-operative-II

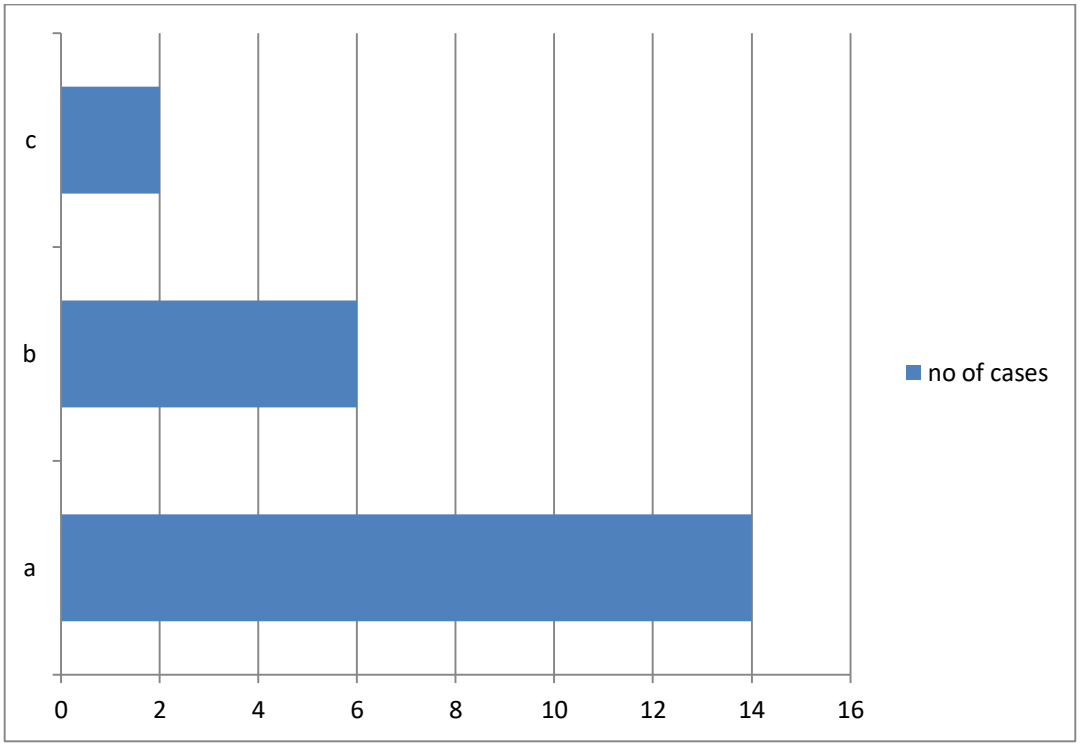

Figure 9: a- veau group 1 cleft palate, b-veau group 2 palate, c- group 3 palate

IV. RESULTS

Out of the 78 palate surgeries performed by the author during the above said period, only 22 palates were repaired without relaxing incision. Initially two flap palatoplasty was done along with intravelar veloplasty. After expertising this method non relaxing method was performed.

Initially all veau class 1 were operated by non relaxing technique. Later on veau 2 and veau 3 were also operated by this method. Intra operatively the mucosa of the hard palate appears to be under tension. This can be explained by the fact that due to application of the mouth gag the mucosa appears to be stretched .The tension at the margin got relieved after the mouth gag was removed. After 7 -10 days, the oral mucoperiosteum was firmly attached to the hard palate when the dead space gets obliterated. Average duration of the surgery ranged from 60 minutes to 90 minutes. Age of patients ranged from 10 month to 8 year. All cases were taken up after confirmation of haemoglobin to be minimum of 10 gm% .None of the patients required blood transfusion during intra operative or postoperative period. All patients received single dose of antibiotics (ceftriaxone) according to the body weight. Post operatively they were kept on soft purred diet for two week. Cleaning of oral cavity was encouraged in all. Most critical area of dissection where difficulty was encountered was beyond the area of posterior nasal spine. It can be observed clinically by a small depression on the oral mucosa. There was no problem in healing of the palate. Postoperative outcomes were satisfactory, with no complications such as bleeding, dehiscence, palatal fistula or hanging palate. No speech evaluation was performed in these patients because they were not old enough to be tested. Post operative results of prototype cases are shown here (figure7, figure 8, figure 9).

V. DISCUSSION

The age of the patients in our series varied from 10 month to 8 year. This is because of certain factors. First the area where the author works is situated in the southern part of odisha, where population mainly consists of tribal and hilly people with low socioeconomic status and low level of education. Inspite of widespread activities of various voluntary organisations for operation of cleft lip and palate, people don't come for operation till the age of the 8 years or more because of superstitions and fear. Second there as lack of neonatal care, pediatric anaesthetist and safe post operative care units. Third is the competence of the surgeon. Fourth is the difference in opinion among the surgeon regarding the age of palatoplasty. Previously some surgeons did not advocate early repair since it resulted in growth retardation.[5] In an attempt to avoid maxillary growth retardation palatoplasty had been done in two stages. In first stage soft palate was repaired and later on hard palate was repaired.[12] But it is now proved beyond doubt that early repair of palate at around 6 month to 1 year of age gives satisfactory speech outcome. [8]

Fourteen out of 22 palates , were Veau class1 (cleft of soft palate**) .**[9] This itself explains the fact that isolated palates particularly on the posterior palate were not screened properly by the health workers and even parents did not notice till patient gets older and the defect size becomes well appreciated by the patient and their relatives as well. Use of anaesthetist with sound training in our centre has made the procedure safe without any mortality. Cleft palates arise because of the failure of fusion of the lateral palatine processes, the nasal septum, and/or the median palatine processes and are usually not congenital defects.[10] Hence, they can be reconstructed by repositioning existing tissue anatomically without compensation. Various surgical methods have been described for palatoplasty. Surgical success for palatoplasty has been assessed by speech evaluation and assessment of craniofacial growth. These two outcomes, determine the preference of one technique over the other. There are many techniques described for closure of hard palate. Among them Von Langenbeck [12] Veau–Wardill Kilner [13] method and Bardachs two flap palatoplasty[14] methods are most commonly followed.

However, all these methods employ a lateral relaxing incisions , which leaves a raw area. They heal by secondary intention and theoretically associated with the risk of maxillary growth retardation.

VWK method in particular leaves extensive raw area in lateral as well as anterior region. So this method has been not widely practised now a days.[12,13,14]

Sommerlad [3] initially described a single layer closure in the area of anterior hard palate without lateral relaxing incisions. A superior based vomer flap was used for closure of hard palate region. But this has some shortcomings, (1) vomerine flap being not a palatal tissue is not physiologic. Further single layer closure using the vomerine flap without oral layer closure can create a sulcus, so closure of hard palate by palatal flap is preferred,(2)fistula rate associated with single layer closure has been 15%, which seems to be higher than that for standard procedures.

Many centres follow technique of double opposing z plasty described by Furlow.[15] However this has some disadvantages. The gain in length along the cleft margin is at the cost of tightening of lateral margin. It is also not a physiologic one.

Lengthening of palate is best achieved by retro positioning of levator muscle and creation of levator sling.[2,4] If this can be achieved without relaxing incision purpose of lengthening of palate and problem of

maxillary growth retardation can be addressed simultaneously. However adequate haemostasis is an important factor for dissection. It makes the field bloodless and dissection becomes easier. Use of far near suture is another method employed by author to relieve the tension at the cleft margin during oral layer closure.

Disadvantage of the technique is that it has a learning curve.

There are several advantage of the technique - incisions, bleeding and the amount of general anesthesia administered are minimized. As there is no raw area, the theoretical chance of scar formation is reduced. Thus the chances of growth retardation is reduced. Elimination of raw area leads to rapid healing with less pain. Feeding can be started as soon as the patient recovers from anesthesia.

VI. CONCLUSION

Palatoplasty without relaxing incision was a useful method for palate closure without scar formation .It leaves no raw area on the lateral margin or in the anterior portion. No area is allowed to heal secondarily, thereby minimising scar contraction and avoiding maxillary growth disturbance. Though this procedure has a learning curve it is a useful technique for preventing adverse maxillary growth. However, long term studies need to confirm the benefits of the procedure.

REFERENCES

1. Mossey PA, Shaw WC, Munger RG, Murray JC, Murthy J, Little J, *et al.* Global oral health inequalities: Challenges in the prevention and management of orofacial clefts and potential solutions. Adv Dent Res 2011; 23: 247-58.
2. Cutting C, Rosenbaum J, Rovati L. The technique of muscle repair in soft palate. Operat Tech Plast Reconstr Surg. 1995;2 : 215–222.
3. Sommerlad BC. A technique for cleft palate repair. Plast Reconstr Surg. 2003;112:1542– 548.
4. Hassan ME, Askar S. Does palatal muscle reconstruction affect the functional outcome of cleft palate surgery? Plast Reconstr Surg. 2007;119: 1859–1865.
5. Ross RB, Johnston MC, Ross RB. Facial growth in surgically repaired cleft lip and palate. In: Cleft Lip and Palate. 1972:Baltimore, Md: Williams & Wilkins; 158–205..
6. Perko MA. Primary closure of the cleft palate using a palatal mucosal flap: an attempt to prevent growth impairment. J Maxillofac Surg. 1974;2: 40–43.
7. Schweckendiek W, Doz P. Primary veloplasty; long term results without maxillary deformity- a 25 year report. Cleft Palate J. 1978;15:268–74.
8. Agrawal k. Cleft palate repair and variations . Indian J Plast Surg. 2009 Oct; 42(Suppl): 102–109.
9. Veau V. Paris: Masson & Cie; 1931. Division Palatine.
10. Marazita M L, Mooney M P. Current concepts in the embryology and genetics of cleft lip and cleft palate. Clin Plast Surg. 2004;31(2):125–140.
11. Mulliken JB, Burvin R, Padwa BL, Binderoid complete cleft lip/palate .Plast Reconstr Surg. 2003;111:1000-1010.

12. Von Langenbeck B. Die Uranoplastik mittelst Ablosung des mucoes-periostalen Gaumenuberzuges. Arch Klin Chir. 1861;2: 205–287..
13. Wardell WEM. The technique of operation for cleft palate. Brit J Surg. 1937;25 :117–1304.
14. Bardach J. Two-flap palatoplasty: Bardach's techinique. Operat Tech Plast Reconstr Surg. 1995;2:211 214.
15. Furlow LT, Jr. Cleft palate repair by double opposing Z pasty . Plast Reconstr Surg .1986;78:724-738..