Bilateral complete wide cleft lip with short, protruded or deviated prolabium

Amin M. Saleh, *MD;* ***Mohammad Ahmad Al Ekrashy,*** *MD;*
Hany Mohamed Hassan, *MD*

Pediatric Surgery Unit, Zagazig University, Egypt.

The aim was evaluation of 5 years experience in correction of cases of bilateral wide complete cleft lip with short , deviated or protruded prolabium and promaxilla.

Patients and methods: *20 children with wide complete cleft lip were corrected at the age of 3-6 months. Anterior palate was closed in all corrected children in two layers. The anomalies associate cleft lip as deviated prolabium and promaxilla was centralized by fracturing the vomer, the protruded prolabium and promaxilla were pushed backward after submucous excision of a bony triangle from the vomer and the short prolabium was elongated by tissues transferred from both sides. Facial appearance and complete healing was assessed in all corrected patients.*

Results: *the 20 patients were corrected with excellent cosmetic appearance and no remaining anterior fistulas. The anterior palate was closed easily before lip repair without any remaining fistula, this palatal repair supported lip repair and helped in prevention of lip dehiscence. The function was good in all corrected children.*

Conclusion: *Wide cleft lip with protruded, short prolabium can be safely repaired with good cosmetic and functional outcomes. The anterior palate should be closed with lip correction while it is better to delay closure of the posterior palate to another operation.*

Key words: *Wide cleft lip and palate, protruded prolabium, short prolabium, deviated promaxilla.*

Introduction:

Patients with bilateral complete wide cleft lip with short, protruded or deviated prolabium represent a great challenge for surgeons as this combination of anomalies is difficult to manage in only two operative stages and needs several steps for correction and restoration of shape and function.

Cleft palate is associated with 85% of the bilateral lip defects as compared to 70% of the unilateral cleft population.

Construction of the cleft muscle ring system of the lip as early as possible is the base for normalization of disturbed function in newborn with cleft lip. Repair of cleft lip alone in cases with complete cleft will leave anterior fistula that will be difficult to close and make a problem for most of the surgeons. Repair of anterior palate can be done easily before lip closure and allows correction of associated anomalies as deviated or protruded prolabium and promaxilla.

Timing for surgery also causes a dilemma, where orthodontists prefer delaying surgery not to affect facial skeletal growth while speech therapists prefer early surgery as the development of speech abnormalities is difficult to correct even with speech therapy.

From 2007 to 2012 patients with bilateral wide cleft lip were repaired at the age of 3- 6 months. Closure of anterior palate was done easily before lip closure to support lip repair, the associated lip anomalies were corrected. Construction of the posterior palate was performed at delayed age (9-12 month).

The aim was the improvement of the development of peripheral hearing, speech and growth of bony structures in patients with wide cleft lip and palate with protruded, short or deviated prolabium.

Patients and methods:

From Jan 2007 to Jan 2012 children with wide cleft lip and palate with short, protruded or deviated prolabium had been corrected.

Surgical techniques: During the first part of the operation an endotracheal tube was placed oral and central and fixed to the center of the lower lip, the child's head was positioned on the surgeon's knees, two strips of gauze placed as packs around the tube, opening of the mouth was done by using tongue depressor. The cleft anterior palate was closed in two layers before lip closure. Incision was made in the mucosa over the vomer and two mucosal flaps was designed, deviated prolabium was corrected by fracturing the bony vomer, the protruded prolabium were corrected by excising a wedge from the bones of the long vomer to allow the protruded promaxilla and prolabium to be pushed backwards. Incision was made in the oral mucosa 1-2 ml. medial to the gingival margin in the anterior palate lateral, anterior and then in the medial edge of the cleft. Closure of the anterior palate was performed in two layers, nasal mucosa to nasal mucosa then oral mucosa to oral mucosa before lip repair.

The short prolabium was left adherent to promaxilla and two triangles were elevated from its sides by the covering mucosa and transferred to form the floor of both nostrils. Incision was then made in the red line of the prolabium to separate the mucosa from the skin and prepare a bed for the flaps that were to be transferred to elongate the short prolabium.

Incision was made to separate and mobilize the lip from the maxilla, then lateral incision was done under the ala of the nose, a second incision was designed to prepare a triangular flap that passed to side of the prolabium and labial flap that were to elongate the short prolabium **Figures (2-5)**.

Incision was made in the red line of the remaining part of the prolabium to separate the mucosa of the short prolabium from the skin.

The short prolabium was elongated by transferring two triangular flaps from both sides of the clefts, after incising and mobilizing the remaining mucosa of the prolabium that turned backward to be used as a mesentery for the triangles transferred from both edges.

The short prolabium was kept adherent to the promaxilla and the separated mucosa was used as a mesentery to the transferred labial flaps, by suturing to mucosa of labial flaps that used to elongate the short prolabium. The final step in lip repair was suturing of muscles of transferred labial flaps together in the midline, The lip muscles were dissected, and mucosa sutured to mucosa, skin to skin in the midline then sutured to skin of the free edge of the short prolabium on both sides to elongate it. The floor of both nostrils were covered by the two triangular skin and mucosal flaps.

The anterior palate were closed easily before lip repair with excellent results and without any residual anterior defect.

Results:

The 20 patients with wide complete cleft lip were repaired during the period between 2007 and 2012 and showed excellent cosmetic appearance and no remaining anterior fistulas. The anterior palate was closed easily before lip repair without any remaining fistula, this palatal repair supported lip repair and helped in prevention of lip dehiscence. The function was good in all corrected children.

Discussion:

Controversial issues in correction of cases of cleft lip and palate are more abundant as regard most aspects of treatment , timing of hard palate closure, early or delayed, closure of cleft lip alone, or closure of lip and anterior palate, and delayed closure of the posterior palate in another time, or closure of both lip and palate in one operation.

Louise C.[1] stated that these combined procedures are generally performed at 2.5 to three months of age. In these young babies, airway monitoring is essential. The size of the airway is drastically changed after lip closure and nostril reshaping. There is more resistance to breathing, and the child has to adapt to it. Furthermore, the baby has

Figure (1): Children with wide cleft lip and palate with protruded, deviated prolabium.

Figure (2): The children after repair of the lip and anterior palate.

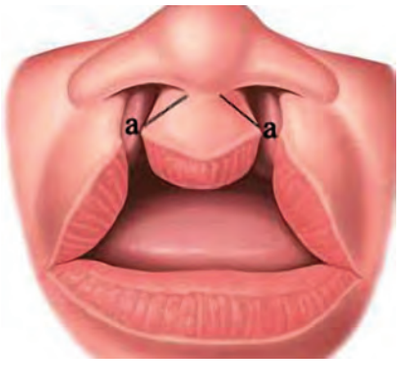

Figure (3): Two triangles elevated from sides of The short prolabium by the covering mucosa and transferred to form the floor of both nostrils.

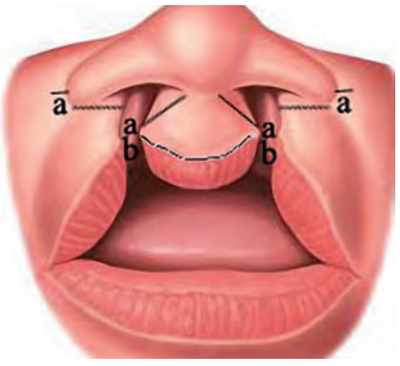

Figure (4): Incision is then made in the red line of the prolabium to separate the mucosa from the skin. Then lateral incision is done under the ala of the nose.

never experienced mouth closure before the procedure and will not spontaneously open his mouth to breathe if the nose is obstructed (obligatory nasal breathing in young children). The developed postoperative edema may reduce the airway; another factor to consider is the partial obstruction of the normal nostril due to the septal cartilage deviation, which is particularly severe in wide clefts. Continuous oxygen saturation monitoring is recommended for at least 24 h, and narcotics should be used sparingly.

Venkatesh M. et al,[2] stated that: timing of cleft palate repair has significant effect

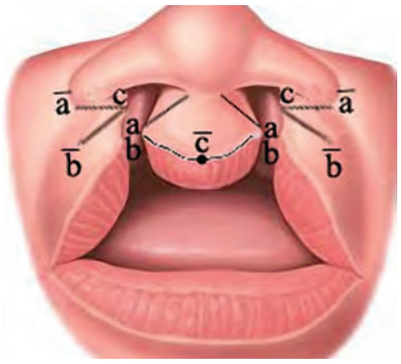

Figure (5): A second incision designed to prepare a triangular flap that will pass to side of the prolabium and labial flap that will be transferred to elongate the short prolabium.

on speech. It has been argued that earlier repair benefits the speech development as the speech process in some children begins at 1 year of age. Conversely, the late repair theoretically allows for a proper maxillo-facial growth because the transverse facial growth is not complete until 5 years of age. This has led to a variety of timing protocols at different institutions and the optimal time of palatoplasty remains scientifically unproven. However, the best speech results are obtained when palate is closed near the time of the infant's initiation of language acquisition; thus, a primary palatoplasty before 2 years of age has become the norm.

Al-Kassaby et al,[3] argued that There is correlation between the highly significant change in anteroposterior projection, observed in presurgical orthodontics and lip repair phases, and reduced time prior to lip repair

We have performed our procedure between 3 to 6 months aged infants to avoid respiratory and cardiovascular hazards of repair in earlier ages and before development of speech abnormalities.

One argument against the complete cleft closure during the first year of life, repeatedly discussed in most meetings of cleft, is the negative effect on maxillary growth which is not noticed or seen.

In a study for Venkatesh M. et al,[2] the postoperative fistula had developed in 31% (4/13) of the patients with bilateral cleft lip and palate.

50% of patients with bilateral cleft lip and palate needed pharyngeoplasty in a study done by Bicknell et al.[4]

Closure of the anterior palate was done easily in all patients before lip closure and without any remaining anterior fistula. Delayed closure of the posterior palate after 3-6months allowed its elongation and excluded the need for pharyngeoplasty.

In cases with protruded or deviated prolabium these abnormalities can be corrected easily after excision of bony triangle from the vomer without any effect on growth of facial bones. In these cases after removal of the bony triangle the vomerian mucosa appears redundant and both nasal cavities can be closed easily.

The results of the current study are relatively better than that showed by a study for Al-Kassaby et al[3] on bilateral complete cleft lip and palate by doing presurgical orthodontics (pso) and only bilateral lip repair by Millard technique, their study showed that patients in group R (rudimentary promaxilla) showed a highly significant reduction in the anteroposterior projection of the premaxilla in all phases of orthodontics and after lip repair. This could be attributed to the small size of the promaxilla and the more flexible attachment between the promaxilla and vomer observed in this group. On the other hand, in the group P (prominent), reduction in the anteroposterior projection was significant only during and after orthodontics and the change was of lower significance after lip repair. This could be attributed to the more firm attachment between the promaxilla and the vomer in this group. They assured that retropositioning of the promaxilla, especially

in the alveolar part, is a desired effect of lip repair, especially in group P.

Holland et al[5] suggested that speech impairment increases with delaying repair of cleft palate for a long time. Fried[9] stated that there is no relationship between timing of hard palate repair and mid facial growth disturbances.

Al-Kassaby et al[3] have recorded the relation between lip repair and the following palatal changes; reduction in the most anterior arch width and intercanine width were only significant in group R after lip repair. This could be explained by the direct transmission of compressive muscular forces exerted by the lip on the lateral sides of the upper arch after lip repair (where the promaxilla is retracted posteriorly in-between the two palatine shelves giving a U-shaped arch). On the other hand, the change in anterior arch width was of lower significance in group P (where change is seen one month after lip repair). This could be attributed to the presence of the prominent promaxilla that is locked infront of the palatal shelves preventing lateral forces from being directly transmitted to palatal shelves. Regarding the changes in the maxillary posterior arch width, there was only low significant change in group R one month after lip repair. There was a highly significant difference at the end of three months after lip repair as compared to M1. Change in posterior arch width was of no significance in group P. This could be attributed to position of the promaxilla in relation to the palatal shelves and transmitted lip pressure after lip repair.

Santdoli and Cordaro[6] stated that there are many reasons, the most important is financial outcome for the application of one stage correction of cleft lip and palate in the first year of life. We found that delaying closure of the soft palate for another operation allows its elongation with better functional outcomes.

Conclusion

The anterior palate should be closed with lip correction during repair of wide complete cleft lip and palate with short protruded prolabium, and it is better to delay closure of the posterior palate to another operation. Excision of bony triangle from the vomer allows pushing back of protruded prolabium and allows centralization of deviated prolabium. Incision done in the red line of the short prolabium allows its elongation by flap formed skin, mucosa and muscles transferred from adjacent lips.

Reference

1- Louise C L: Unilateral cleft lip and palate: Simultaneous early repair of the nose, anterior palate and lip. *Can J Plast Surg.* 2007; 15(1): 13–18.

2- Annigeri VM, Mahajan JK, Nagarkar A, Singh SP: Outcome analysis of palatoplasty in various types of cleft palate. *J Indian Assoc Pediatr Surg* 2012; 17(4): 157–161.

3- El-Kassaby MA, Abdelrahman NI, Abbass IT: Premaxillary characteristics in complete bilateral cleft lip and palate: A predictor for treatment outcome. *Ann Maxillofac Surg* 2013; 3(1): 11–19.

4- Bicknell S, McFadden LR, Curran JB: Frequency of pharyngeoplasty after primary repair of cleft palate. *J Can Dent Assoc.* 2002; 68(11): 688–692.

5- Holland S, Gabbay JS, Heller JB, O'Hara C, Hurwitz D, Ford MD, Saunder AS, Bradly JB: Delayed closure of the hard palate lead to speech problems and deleterious maxillary growth. *Plastic Reconst Surg* 2007; 119: 1302–1310.

6- Santdoli L, Cordaro L: One stage repair of unilateral complete cleft lip, alveolus and palate. 6 years follow up presentation. Nr 308 at the 7th international congress of cleft palate and related craniofacial anomalies. *P Roadbeach Australia* 1993.