SURGICAL METHODS OF CLEFT LIP, CLEFT PALATE AND COMBINED CLEFT LIP WITH CLEFT PALATE - OUR EXPERIENCE

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ABSTRACT

INTRODUCTION

Cleft lip and cleft palate is the most common congenital malformation of the face and its pattern varies with geography world wide. This study was done in 67 patients presenting to Department of ENT, Santhiram Medical College, Nandyal with cleft deformities to assess the surgical outcome of cleft lip, cleft palate and combined cleft lip cleft palate cases.

KEYWORDS

(CL)-Cleft Lip, (CP)-Cleft Palate, (CLP)-Cleft Lip Palate, (VL)-Von Langenbeck Method.

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INTRODUCTION: Orofacial clefts are the most prevalent craniofacial birth defects and the second most common birth anomaly, second only to clubfoot. Birth defects are one of the important leading causes of child disability and mortality worldwide. Cleft Lip and/or Palate (CL±P) is the most common facial birth defect which occur in all races, both sexes and all socio-economic groups and their distribution vary from country to country.[1] Cleft Lip-Palate (CLP) is a gap which occurs when the Lip or roof of the mouth does not fuse completely during the first trimester of fetal development. The Lip and Palate develops separately and child may develop Cleft Lip (CL) or Cleft Palate (CP) or both. The cleft may possibly be single-sided (unilateral) or both sided (bilateral). CP may be restricted to the soft palate or may extend to the hard Palate and Lip.[2]

INCIDENCE: In Andhra Pradesh the birth rate of clefts was found to be 1.09 for every 1000 live births. Incidence and prevalence of CL±P are 1 in 600 (1:600) and 9.92 per 10,000 worldwide respectively. The CL and CLP prevalence are 3.28 per 10,000 & 6.64 per 10,000.[3] In India, the number of infants born with CL±P is 28,600 per year (i.e. 78 infant with deformities are born every day or 3 infants every hour). Since India is second highest populated country in the world, it may consist of highest number of cleft cases if no any further steps are taken to control its occurrence.[4] A family history of the CLP has increased risk for development of CLP; while in CP, the risk is the same as a general population.

In the United States of America, it is estimated that $100,000 are spent to rehabilitate a child born with oral cleft.[5] There was significant association between consanguineous marriage and cleft deformities in which cleft lip was more prevalent compared to cleft palate.

The approach of the patient with cleft lip and palate is multidisciplinary, and the cleft team should be ideally composed by craniofacial surgeons, otolaryngologists, geneticists, anesthesiologists, speech-language pathologists, nutritionists, orthodontists, prosthodontics, and psychologists, and to be capable of treating even rare facial clefts with excellence, neurosurgeons, and ophthalmologists.

In this manner, it is possible to provide long-term follow up through the entire child's development and achieve all of the following treatment goals: normalized facial aesthetic, integrity of the primary and secondary palate, normal speech and hearing, airway patency, class I occlusion with normal masticatory function, good dental and periodontal health, and normal psychosocial development.[6]

MATERIALS: We dealt with total 67 cases of cleft lip,cleft palate, combined cleft lip and cleft palate.

Out of these 25 cases are with combined cleft lip and cleft palate.

22 cases were only of cleft lip, 20 cases with only cleft palate.

	Cleft lip	**Cleft palate**	**Combined cleft lip and palate**
Male	17	16	18
Female	5	4	7
Total	**22**	**20**	**25**

Table 1

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CLEFT PALATE: Cleft palate affects almost every function of the face except vision. Today a child born with cleft palate with or without cleft lip should not be considered as unfortunate, because surgical repair of cleft palate has reached a highly satisfactory level. However for an average cleft surgeon palatoplasty remains an enigma. The surgery differs from centre to centre and surgeon to surgeon. However there is general agreement that palatoplasty (soft palate at least) should be performed between 6-12 months of age. Basically there are three groups of palatoplasty techniques. One is for hard palate repair, second for soft palate repair and the third based on the surgical schedule.[7] Hard palate repair techniques are Veau-Wardill-Kilner V-Y, von Langenbeck, Two-flap, Aleveolar extension palatoplasty, Vomer flap, Raw area free palatoplasty etc. The soft palate techniques are Intralveolar veloplasty, Double opposing Z-plasty, Radical muscle dissection, Primary pharyngeal flap etc. and the protocol based techniques are Schweckendiek's, Malek's, whole in one, modified schedule with palatoplasty before lip repair etc. One should also know the effect of each technique on maxillofacial growth and speech.

The ideal technique of palatoplasty is the one which gives perfect speech without affecting the maxillofacial growth and hearing. The techniques are still evolving because we are yet to design an ideal one. It is always good to know all the techniques and variations so that one can choose whichever gives the best result in one's hands. A large number of techniques are available in literature, and also every surgeon incorporates his own modification to make it a variation. However there are some basic techniques, which are described in details which are used in various centres.

Cases:

- Out of twenty cleft palate cases sixteen are male and four are female.
- Out of twenty two cases of cleft lip five are female, seventeen are male.
- Out of 25 cases of combined cleft lip and palate 18 are male and 7 are female.

All were investigated with routine blood investigations and urine examination was done. Patients were prepared for general anaesthesia and pre-anaesthetic check-up was done.

Principles of Palatoplasty:

- Closure of the defect.
- Correction of the abnormal position of the muscles of the soft palate, especially Levator Palati.
- Reconstruction of the muscle sling.
- Retro positioning of the soft palate so much so that during speech the posterior part of the soft palate comes in contact with the posterior pharyngeal wall during speech.
- Minimal or no raw area should be left on the nasal side or the oral surface.
- Tension-free suturing.
- Two-layer closure in the hard palate region and a three-layer closure of the soft palate.

Surgical Procedures: Von Langenbeck Method: In 1861, Bernard von Langenbeck described a method of Uranoplasty (palatoplasty) using mucoperiosteal flaps for the repair of the hard palate region.[8] He maintained the anterior attachment of the mucoperiosteal flap to the alveolar margin to make it a bipedicle flap. Originally only the cleft edges were incised, a lateral incision was made, the flap was elevated from the hard palate, the palatine musculature was divided and finally the sutures were applied.

This technique is still used in isolated cleft palate repair. The muscle dissection and muscle suturing are done as additional procedures to create a muscle sling.[9]

Furlow Double Opposing Z-Plasty: The basic principles for the Furlow's Z-plasties were transposition rather than transection of the palatal muscles.[10,11] The palatal muscle was elevated as part of the posterior based flap of each Z-plasty. The posterior based oral mucomuscular flap was on the left side for a right handed surgeon. The nasal Z-plasty was made as the mirror image of the oral layer. The lateral limbs of the oral Z-plasty ended over the hamuli. The posterior based flap on the left side had an angle of about 60 degrees. The lateral limb of the anteriorly based flap on the right side had an angle of almost 90 degrees. The left cleft margin was incised first and the mucoperiosteal flaps were raised without any lateral relaxing incisions. In one 3 year old child of bilateral cleft with a very wide cleft of the hard palate, the mucoperiosteal flaps could not be approximated without tension. Here the backcut on the right side was converted into a push-back incision and the entire mucoperiosteal flap was elevated on the greater palatine vessel as an island flap. Buccal flaps were used in three cases to close the nasal layer. All flaps were sutured with 3-O Polyglactin. Horizontal mattress sutures were used to close the mucoperiosteal flaps.

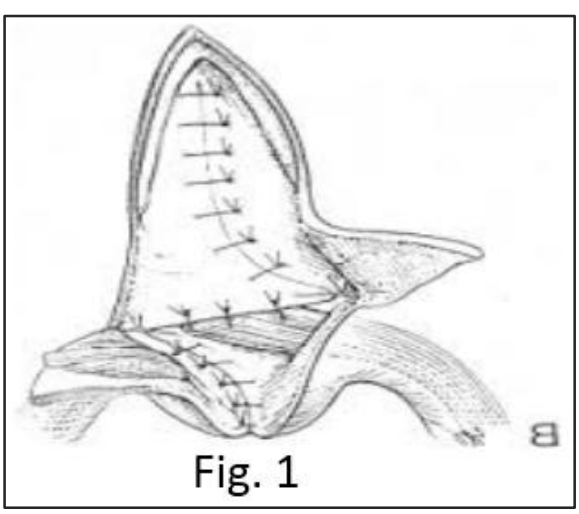

Fig. 1

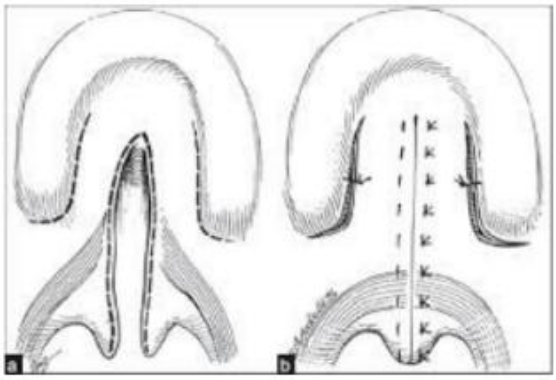

Fig. 2

All cases operated using the VKW procedure were done with the standard push back mucoperiosteal flaps islanded on the greater palatine vessels. The abnormal insertions of the palatal muscle on the posterior margins of the hard palate was completely erased, the muscles aligned and sutured together to form a levator sling. No packs were used to cover the raw mucoperiosteum. In all cases oral fluids were started the same evening after surgery.

Two Stage Palatoplasty: It is a well established fact that unrepaired cleft patients have better maxillary relationship and development. Early palatal surgical intervention causes maxillary hypoplasia. Because of this reason many surgeons used to perform palate repair in two stages. The soft palate was repaired early and later the hard palate was repaired. At the time of introduction of this protocol the soft palate was repaired along with the lip at around four to six months of age and the hard palate was repaired at the age of 10-12 years. This was later reduced to four to five years. This delay significantly reduced the cleft width in the hard palate region and was easy to close without the need for extensive dissection. This reduced the maxillary hypoplasia significantly. However, the speech result was compromised. Hence this technique fell into disrepute. Delaire introduced two-stage functional palatoplasty. A method of cleft palate repair is described, based on a functional repair of the soft palate, followed by closure of the hard palate later taking into account the anatomy and physiology of the palatal mucosa.

Post-Operative Feeding: Post-operative period was uneventful in all cases without any complications. Postoperative oral fluid is given as soon as the child regains full consciousness.

Post-Operative Analgesia: The use of the nonsteroidal anti-inflammatory drug, Diclofenac, in the form of rectal suppository provides effective analgesia. In our centre paracetamol suppository and oral suspension are used with satisfactory result. Injectable Fentanyl with a basal infusion rate of 0.63 microgram/kg/h is effective in post-operative pain management in children undergoing cleft palate repair.

CONCLUSION: Cleft palate surgery has seen major refinements over the past 20-30 years. The attempt to create a normal anatomy has improved the overall outcome of surgery. A team approach has decreased the morbidity and secondary deformities caused by the cleft. The current trend of early palate repair, early assessment with improved instrumentation, early evaluation of Velopharyngeal function and the development of procedures for achieving better bony alignment should result in more predictable end results in terms of speech and maxillofacial growth following cleft palate repair.

Fig. 3 Fig. 4

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