



Surgical Management of Grossly Protruded Bulky Premaxilla : A Case Report

Kumar P, Thomas PC, Bhaskara K G

Department of Plastic Surgery, Kasturba Medical College, Manipal-576 119, Karnataka, India.

Summary

Management of protruding premaxilla is an important aspect of treatment of bilateral cleft lip. Surgical setback, which is considered as the last option in the management of grossly protruded premaxilla has an important role to play in selected cases. The present case had a grossly protruded, bulky premaxilla, which remained protruded even after 3 year following bilateral cleft lip repair. After failure to achieve expansion of maxillary arches by prosthodontic treatment for six month, patient was taken up for surgical setback. In view of the gross disparity between size of the protruding premaxilla and anterior gap between maxillary arches, conventional setback procedure would not have been possible and hence the patient underwent a bulk reduction procedure of premaxilla followed by the setback procedure. At the end of 6 weeks after surgery the premaxilla was stable.

Key words: Premaxilla, Maxillary arch, Setback

Introduction

There have been widely varied views about the cause and management of premaxillary protrusion¹.

Protrusion of the premaxilla varies from mild to gross and is often associated with deviation. Muscle closure across the cleft is an acceptable method of achieving gradual set back due to normal orbicularis muscle tone, but this may not produce desired result. Excision of the protruding premaxilla has not gained acceptance because of the undesirable concave deformity of face it produces later on in majority of cases. Antia² noted that in bilateral clefts of the lip and alveolus without cleft palate, the development of the alveolar arch is not affected by paring of the excessive

premaxillary element due to normal fusion of the hard palate behind the incisive foramen.

Several appliances have been advocated for arch expansion and applying traction on the premaxilla¹, best exemplified by the mark III co-axial arch alignment appliance of Georgiade and Latham.

Cronin's surgical set back³ and its modification are usually considered as a last resort. It has its own disadvantage of growth inhibition and distortion of the nose. In 1957 Gillies suggested, "peeling back the mucous membrane from the premaxilla and rongeur the anterior bone and tooth buds. This leaves a posterior strip of bone sandwiched between two layers of mucosa. If this bone strip is now moved back and introduced

snugly into the cleft the edges of which have been freshened to bone, there is a better chance of bony union”.

We report surgical management of a case of bilateral cleft lip in which the bulky premaxilla remained grossly protruded even after almost 3 years after lip repair, which was done at the age of 3 months.

Case Report

A 3-year-old boy with bilateral cleft lip and palate with grossly protruded premaxilla (Fig 1) underwent bilateral cleft lip repair (elsewhere) at the age of 3 months and cleft palate repair at 18 months at our hospital. During follow up after 3 months dental cast study revealed bilateral maxillary arch collapse with grossly protruding premaxilla (Fig 2). The relevant measurements by vernier caliper on a dental model were as follows (Fig 3):

- *Gap between anterior ends of maxillary arches (A) 0.96 cm
- *Width of the premaxilla (B) 2.16cm
- *Anteroposterior width of premaxilla (C) 1.87cm
- *Amount of premaxillary protrusion (D) 2.30cm
- *Height of premaxilla from base to teeth 1.80cm
- *Height of alveolus with teeth 1.07cm

A removable slow expansion device using screw was used to correct maxillary arches. After 6 months only 3mm anterior expansion could be achieved and the same time due to expansion patient started developing posterior cross bite. At this stage, because of the severe unacceptable facial deformity, malocclusion and no reduction in premaxillary protrusion for years after definitive lip repair, we decided to set back the premaxilla surgically without waiting for the permanent dentition.

Bone removal after splitting the premaxilla vertically in the center did the reduction in size of the bulky premaxilla to fit in the gap in alveolar arch

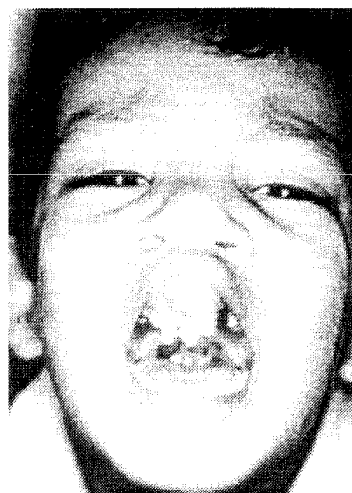


Fig 1a. Photograph of the patient showing grossly protruded premaxilla (front view)



Fig 1b. Photograph of the patient (lateral view)

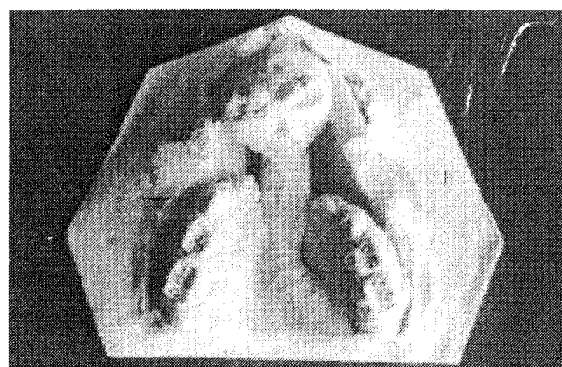


Fig 2. Photograph of the upper dental cast showing bulky premaxilla, amount of protrusion and gap in anterior maxillary arches

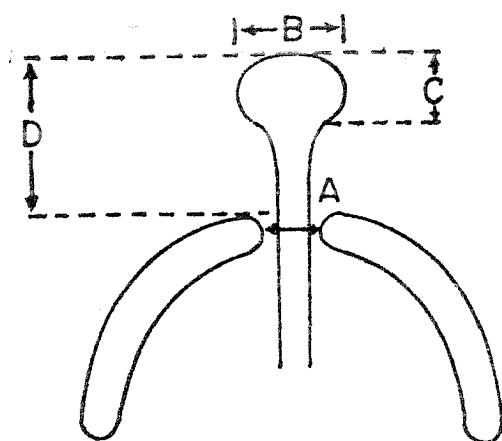


Fig 3a. Diagrammatic representation of the deformity (sec. Text for details)

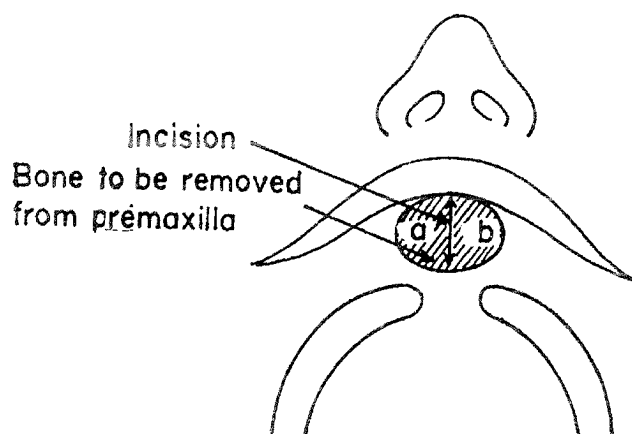


Fig 3b. Diagram showing incision over premaxilla and amount of bone to be removed

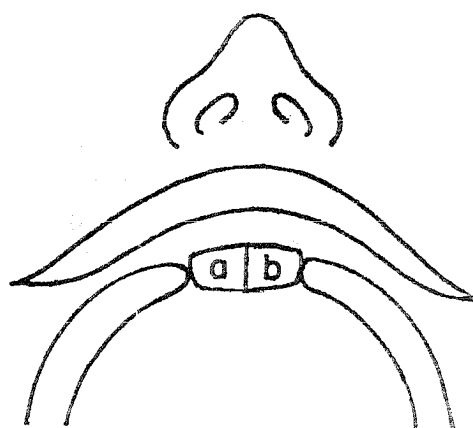


Fig 3c. Diagram showing reduced premaxilla after been fixed into anterior maxillary arch gap

(Fig 3a-c). The set back was achieved by excising vomer stalk as in Cronin's technique. Post-operative period was uneventful. Initial results were satisfactory.

Operative Steps

Incision was made on the vomer starting from the vomer-premaxillary suture line cutting mucosa and periosteum. The muco-periosteal flap was raised and approximately 2 cm of vomer was removed as rectangle behind the suture line using sharp fine osteotome. The premaxilla was freed from the septal cartilage and then slid backwards. Since both the vertical and horizontal dimension of the premaxilla were larger than the space available (by 0.73 cm and 1.1cm respectively) the premaxilla was reduced in both direc-

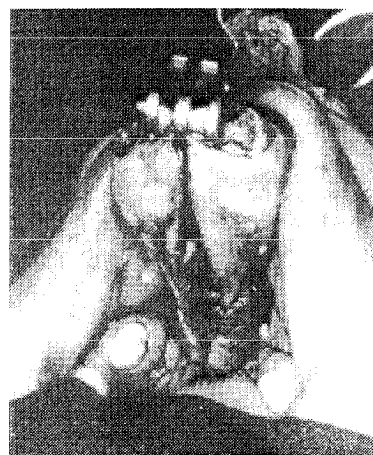


Fig 4. Photograph showing midline incision over premaxilla

tion making a vertical midline incision (Fig 3a-c) over anterior surface of premaxilla splitting it into two pieces (Fig 3 & 4). The excess bone from premaxilla was removed from the medial side, the upper and lower part of both the segment of the split premaxilla. (Fig 4). The premaxilla was pushed back into the gap in maxillary arch and fixed with two K-wires. Mucosa was closed with vicryl.

Six weeks later 'K' wires were removed under ketamine anesthesia. The premaxilla was stable after removal of 'K' wires (Fig 5).

Discussion

The problem of the protruding premaxilla and its management is incompletely understood and there is no consensus on its management. Con-

servative measures are usually tried initially and when they fail, surgical procedures are undertaken.

Surgical setback as described by Cronin³ often achieves the objective of taking the premaxilla back, though its long-term effects on growth remain unclear. Such setback of the premaxilla may not always be possible if there is not enough space posteriorly for the premaxilla to move into. There may also be distortion of the nostril floor if the bulky premaxilla is pushed upwards and back-

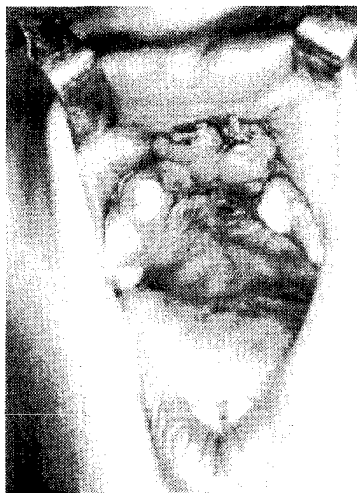


Fig 5. Photograph showing the position of premaxilla 6 weeks after the set back procedure

wards. Thus there is need for additional surgical procedures to circumvent these problems. Partial and complete excision of the premaxilla has been suggested for selected cases, but long term result of such procedures are often not satisfactory.

Since three years after lip repair and six months trial of maxillary arch expansion failed to achieve satisfactory goal (Fig 1), surgical set back and a modified partial excision to reduce the size of premaxilla were undertaken at the age of 4 year.

The use of Cronin's surgical set back was limited in this case by the bulk of protruding premaxilla and the available space between maxillary arches. The upward movement of the premaxilla after mobilization was distorting the nose intra-operatively.

As a means of debulking the premaxilla and maintaining vascularized bone in it to maintain continuity of the maxillary arch, we split it vertically in to two and removed the bone from its medial, upper and lower aspects. This allowed the protruding premaxilla to fit into the available space with its content of vascularized bone.

The early cosmetic result was excellent as far as patient acceptability is concerned (Fig 6). How-



Fig 6. Six weeks follow up photograph of the patient (front view)



Fib 6b. Six week follow up photograph of the patient (lateral view)

ever long term follow up is required before forming a definitive opinion about the procedure.

References

1. Millard DR, Jr. Cleft Craft II. Boston: little, Brown and company 1976.p 41-80.
2. Antia NH, Primary Abbe flap in bilateral cleft lip Br J Plast Surg 1996; 19: 215-219.
3. Cronin TD. The bilateral cleft lip with bilateral cleft of the primary palate. In converse, JM (ED). Reconstructive Plastic Surgery. Philadelphia: Saunders, 1977.2nd Edition, p 2048-2089.
4. Gillies HD and Millard DR Jr. The Principles and art of Plastic Surgery. Boston: Little, Brown and company 1957,P 319-357.

Authors

Pramod Kumar MS, MCh, DNB, Prof. and Head

Paul C Thomas MS, FRCS, MCh, Assist Prof
Bhaskara K G MS, MCh, DNB, Assist Prof

Corresponding Author

Dr Pramod Kumar, MS, MCh, DNB

Professor and Head,

Department of Plastic Surgery

Kasturba Medical College

Manipal 576 119

Karnataka, India

Tel : (+91) (0) (8252) 71201 Extn 22135 (R)
22286 (0)

Fax : (+91) (0) (8252) 70062

E-mail: pkumar12-vip@zetainfotech.com

pkumar 86@hotmail.com

“...In a few cases, even with the lip closed over premaxilla, the projection will continue to be too much, necessitating a resection of the vomer at 5 to 6 years for set back of the premaxilla in undercorrected position”. (Millard DR Jr. Cleft Craft III. Alveolar and palatal deformities; p222. Boston : Little, Brown and Company 1980).

The above statement becomes more relevant in the era of modern Plastic Surgery with major advances in the field of craniofacial osteotomy techniques and improved results with multidisciplinary approach to the problem. Why any one should live with unacceptable grossly protruded premaxilla not at all responding (or with unsatisfactory response) during formative years of life, especially when the deformity is not acceptable to all i.e. patient, parents, friends and surgeon (even after knowing the problems of surgery) ?

Considering that the management of the protruding premaxilla is a key step in the reconstruction of the bilateral cleft lip, it is a matter of concern that there is no consensus on its management.

EDITOR