The Journal of Korean Academy of Maxillofacial
Plastic and Reconstructive Surgery
Vol. 13, No1 : 88-94, 1991

A CASE REPORT OF SURGICAL CORRECTION OF NASOMAXILLARY HYPOPLASIA DUE TO CONGENITAL SYPHILIS BY LE FORT II OSTEOTOMY WITH CORONAL APPROACH

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Maxillofacial deformities are not considered to be a trouble in social life but function. So many maxillofacial plastc surgeons has made efforts to overcome these troubles and bring out more positive life.

The proper proportion and shape decide esthetic quality. Lower third of face was consist with lip, cheek, mandibular lower border and mandibular angle. Widening lower third of face give a impression with muscular and recklessness. And lower and wide mandibular angle makes face square shape. Unilateral involvement cause asymmestric face. These face is considered unfavorable, especially in Korea or Japan.

We prevent a number of with mandibular angle Bulging which was corrected with mandibular osteotomy or masseter myotomy.

I. Introduction

The Le Fort II maxillary osteotomy is a well established procedure in the treatment of midface hypoplasia and yet relatively few cases have been reported about the technique and the variations in Korea[1,2].

For patients with extensive midfacial hypoplasia, Henderson and Jackson introduced a Le Fort II procedure utilizing bilateral medial canthal incisions and an intraoral approach. Converse and others had earlier introduced a modified Le Fort II operation but this was not as comprehensive a solution to the problem as that provided by Henderson and Jackson [3].

The clinical criteria for diagnosis of midfacial hypoplasia, which should be corrected by a Le Fort II procedure rather than Le Fort II, are summed up by Obwegeser as the dish face deformity. This term encompasses retruded nasal base, hypoplasia of malar eminence and medial infraorbital areas, and concavity of the midface[4,5].

In Le Fort II osteotomies the choice and variations of osteotomy line is between a bone cut in front or behind the canthal ligament and the lacrimal system for mobilization of the nose. According to Steinhauser, three different types of osteotomies are presented, i.e, the anterior, pyramidal and quadrangular Le Fort II type osteotomies[6].

This case report represents a nasomaxillary midface hypoplasia with relative mandibular prognathism associated with confirmed congenital syphilis.

I decided to make a coronal and intraoral approach to maxillary Le Fort II osteotomy and bilateral sagittal split osteotomy to mandibular set back.

The Le Fort II midfacial osteotomies and advancement may be considered in instances when the patients assessment reveals that the nasomaxillary complex is retropositioned, the nose is short, and there is a class III malocclusion.

There are two basic approaches utilized to gain access to the nasomaxillary complex when performing Le Fort II midfacial advancement; the bicoronal flap

and paranasal incision.

Because the bicoronal flap is useful for direct skull bone graft and gives good visualization without facial scars the bicoronal flap approach is utilised in this case.

With this case report we discuss the indication, surgical technique with modification, and diagnostic evaluation with reference review.

The 22-year-old female patient was suffered from her esthetic, phonetic and masticatory problems for several years due to her malformed and malpositioned tooth, nasomaxillary retusion with dish face and relative mandibular prognathism(Fig. 1, 2)

The panoramic view and cephalogram revealed nasomaxillary hypoplasia, and relative mandibular prognathism with shortened nasal bridge(Fig. 3).

Routine laboratory results are within normal limits except confirmed congenital syphilis. But narrowing of marrow and thinning of cortex was seen in skull and mandible with involution of frontal and midsagittal sinus(Fig. 4).

Other abnormalities related to the congenital syphilis or syphilitic connective tissue disease were absent. The dorsum of the nose is short and poorly projected relative to the globes, the paranasal areas are recessive and the upper lip is retrusive.

The final clinical diagnosis was retruded maxilla with nasomxillary hypoplasia associated with shortened nasal bridge and relative mandibular prognathism.

The treatment of choice were a Le Fort II osteotomsy for advancing maxilla and lengthening of nasal bridge by rotating the maxilla anteriorly, bilateral sagittal split osteotomy for mandibular set back.

Rhinoplasty seemed to be necessary but I found that it is preferable to build up the nasal dorsum in a second stage procedure, because due to the underdevelopment of the nasal soft tissue structures the skin might already be very tight and unpreictable in this area after the advancement. Donor site of

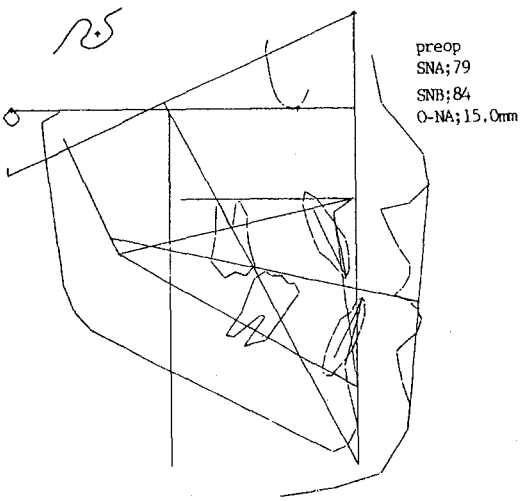

Fig. 3. Preoperative cephalograph.

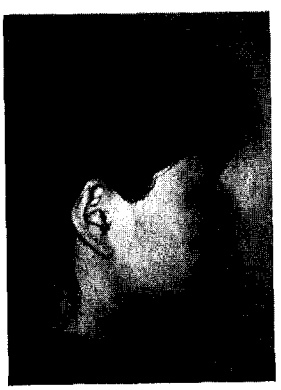

Fig. 1. Preoperative facial view.

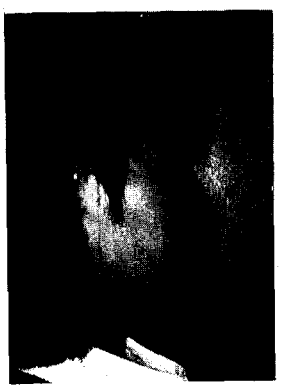

Fig. 2. Postoperative facial view.

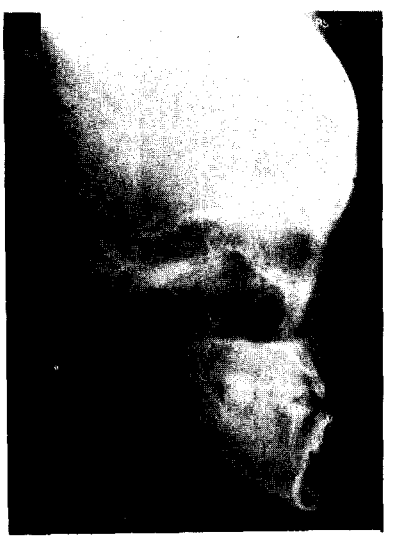

Fig. 4. Lateral cephalognoph Showing involution of frontal sinus and midsagittal sinus.

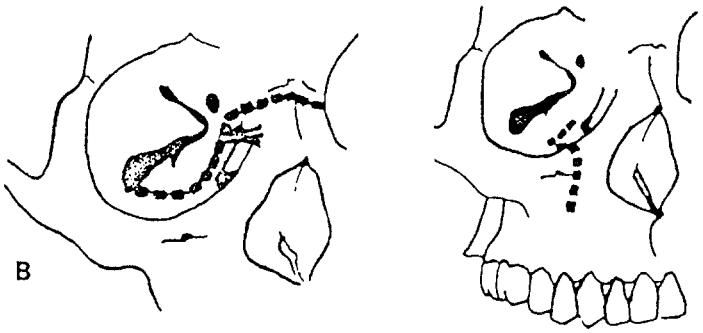

Fig. 5. Outlined bone cuts on the nasoorbital area and anterior sinus wall.

bone graft was chosen on the skull, and so doing, the coronal approach was to be appropriate. So the approach was designed as bicoronal flap for Le Fort I level osteotomy and skull bone graft donor site, intraoral approach for Le Fort II osteotomy and bilateral sagittal split osteotomy.

The horizontal glabellar osteotomy line was made just below the nasofrontal suture line and attention is then turn to the glabella osteotomy and a osteotomy through the perpendicular plate of the ethmoid bone and vomer is completed. This cut is made on about a line from the glabella and to the posterior maxillary spine.

The nasoorbital osteotomy line was made posterior to the medial canthal ligament and lacrimal apparatus without jeopardizing the lacrimal sac and canthal ligament. The maxillary vertical cut was made between the lacrimal sac and infraorbital foramen with the remained osteotomy, same as Le Fort I osteotomy line(Fig. 5).

Autogenous blocks of cortico-cancelous bone from skull outer table were inserted in the nasofrontal area, lateral maxillary wall, and bilateral pterygomaxillary area and wired into position(Fig. 6).

Operation was performed uneventfully without any other difficulties but severe hemorrhage was occurred intraoperatively due to blind malleting of the posterior maxillary spine, and then two pints of packed cell and six pints of whole blood were transfused.

Le Fort II osteotomized maxillary segments was 5㎜, 7㎜, moved anteriorly and inferiorly, and the mandible was set back 4㎜, posteriorly. Bone graft was done from the skull outer table to the glabella gap, sinus anterior wall, and pterygomaxillary area (Fig. 7).

Fig. 6. Skull Bone graft on the glabella osteotomy site.

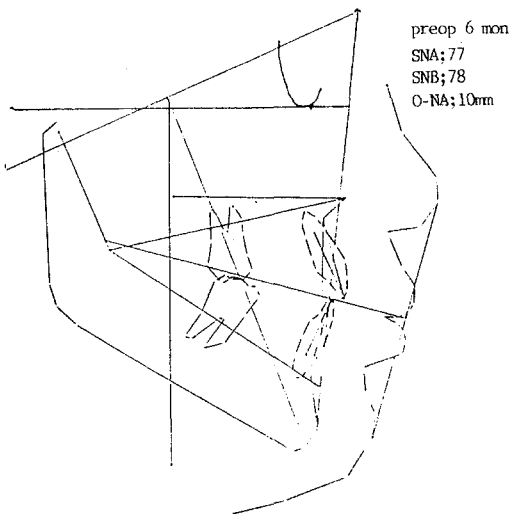

Fig. 7. Postoperative cephalograph.

II. Discussion

The etiology of underdevelopment of the midface can be either genetic or congenital, or the deformity is an acquired one due to inflammation or trauma[6].

In this case the patient had a congenital syphlis confirmed by hematologic examination four years ago and showed Hutchinson's incisors and congenital missing of permanent tooth germ. Binders syndrome is another genetic disorder related to the midfacial hypoplasia[7].

Before correcting midfacial hypoplasia the exact nature of the deformity should be determined with clinical and cephalomentric evaluation because the surgical indication of the Le Fort II osteotomy might be subtle and somewhat difficult to make a accurate diagnosis among the authors[4,5,6].

According to Steinhauser, usually there is a class III type malocclusion, which in combination with a small SNA angle and normal mandibular measurements indicates a pseudoprognthism[6]. And he presented three different types of Le Fort II osteotomies, i.e, the anterior, pyramidal, and quadrangular types (Fig. 8, 9, 10).

Naso-maxillary hypoplasia is the typical deformity where an anterior osteotomy of the midface is indicated. Pyramidal Le Fort II osteotomy is advocated in patients with nasomaxillary hypoplasia complicating other facial disharmonies. Particularly when a recession of the nasal base with a flattened nasal profile in combination with a class III malocclusion and mandibular protrusion is present.

Quadrangular type is used in such a case that the shape and position of the nose is fairly good and the malar eminences are not extremely flat.

Leonard said that the orbitale-NA distance is important in a patient with a SNA of less than 79 degree for the Le Fort II procedure[4]. His study revealed that a normal range could be assessed as between 10 and 16㎜; the patients with an O-NA distance greater than 16㎜ could be said to have a malar and orbital retrusion greater than usual. Such a patient possibly would be a candidate for advancement of

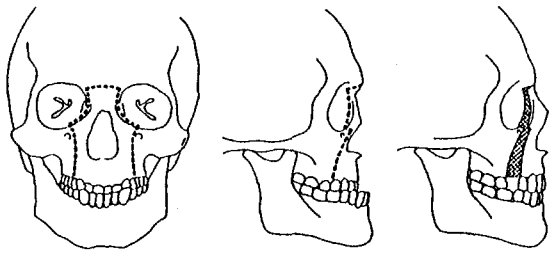

Fig. 8. Outlined bone cuts in an Anterior Le Fort II osteotomy. The shaded area on the right indicates the bone implants.

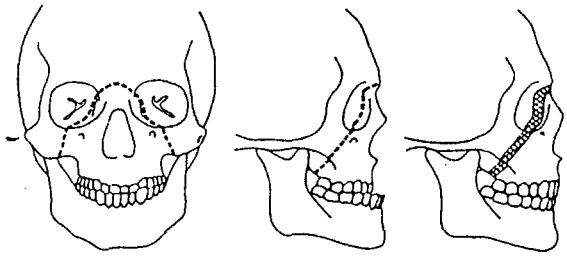

Fig. 9. Outlined bone cuts according to a Le Fort II type fracture.

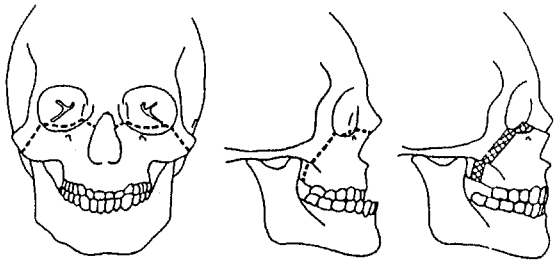

Fig. 10. outlined bone cuts in a Quadrangular Le Fort II osteotomy.

midface as well as the palate with a Le Fort II type of operation[4].

However, according to Epker, cephalometric analysis and dental study model analysis are of little benefit in determining the existing deformity when nasomaxillary deficiency is present. Because nasion is retruded as is the maxillla, SNA may be normal and SNB relatively large, misleading the surgeon into thinking that mandibular prognathism is present when in fact the deformity exists in the midfacial structures[4]. In this case the patient showed a normal

SNA and relatively large SNB, 79.0 and 84.0 degree respectively. But the O-NA distance was 15.0㎜ fall in the normal range(10 to 16㎜) with the clinical signs of retropositioned nasomaxillary complex, short nose, and class III malocclusion(Fig. 3).

As a rule, general planning and the decision of surgical technique are based mainly on evaluation of esthetics and depends, therefore, to a great extent on personal in clination.

Quite often there may be no outstanding objective reason to decide for or against one of these procedure. If then position of the nose as a whole has to be improved we have to opt for a Le Fort II osteotomy.

But it has to be born in mind also that not only must planning be performed in the postero-anterior direction, but also in the vertical and in the transverse directions. Both anteroposterior and vertical(that is, inferior positioning) movement of the complex must be carefully planned and performed to achieve the desired results. The inferior repositioning of the complex autorotate the mandible doownward and backward, correcting much of the existing class III malocclusion, therefore requiring minimal anterior repositioning of the nasomaxillary complex. The amount of inferior repositioning indicated for the nasomaxillary complex is dependent on the upper-tooth to-lip relationship not on the cephalometric analysis only.

Transconjunctival incision and subciliary incision were introduced in 1973, 1977 respectively. The scalp incision gives more latittude because the approach on the medial orbital wall limited since the medial orbital wall is difficult of access and direct canthopexy is impossible by the paranasal approach.

Horizontal displacement of the canthus may be accepted if the movement is not extreme and/or the canthal attachments are in a relatively deep-set position. Marked vertical displacement of the canthus is, however, ugly.

A cephalometric analysis of 13 adult cleft patients who had undergone Le Fort II osteotomies has been found a high rate of relapse in this group postoperatively with 38.5% of the patients relapsing more than 30%[8].

They attributed this to inadequate mobilization of the maxilla, too brief a period of skeletal fixation as well as to an unsatisfactory postoperative occlusion.

Another cephalometric analysis of the Le Fort II osteotomy in the noncleft patient has been found that the Le Fort II osteotomy in the noncleft case appears to be a relatively stable procedure wheresas that in the cleft case has a high relapse rate[9].

And according to Steinhauser, Henderson and Jackson, pyramidal Le Fort II osteotomies used in this case showed a strong tendency to relapse and this tendency seems to be the main problem of attached musculature[6]. So as to prevent relapse, we grafted corticocancellous sheet(10 by 10㎜) to the glabella osteotomy site without relapse for 6 months after operation(Fig. 7).

One of the intraoperative problems in this patient was that the vestibular mucosa of the mobilized maxilla became discolored blue. In such a case there is always a little bleeding to be seen from the in cision or from a small puncture which is made deliberately therefore no serious problems are to be expected compared with the greyish-white color change[10].

Another intraoperative problems in this patient was hemorrhage. Bleeding seems almost always to originate from one of the sinus, and most probably from the maxillary artery at the time of blind malleting of posterior maxillary spine but uneventful healing occurred afterwards. The major complications of damaging to the lacrimal duct, infraorbital nerve, and medial canthal ligament were not observed.

The possible main limitation are as follows in midfacial movements.

Planning is limited in so far as the reaction of the soft tissues to the bone movement is not completely predictable. So we decided the dorsonasal augmentation at second stage due to the skin tension and unpredictability after nasomaxillary advancement. But Kinnebrew et al advocated the one stage correction of midfacial skeleton and nasal deformities

via intraoral degloving technique[11].

There is further limitation by the fact that relatively little information is avalilable about the long-term results of some of these osteotomies, while for others, this information is practically non-existent.

III. Result

We have performed Le Fort II osteotomy advancement in maxilla and bilateral sagittal split osteotomy for set back of mandible in case of nasomaxillary hypoplasia and relative mandibular prognathism associated with confirmed congenital syphilis.

Bicoronal approach used in this case has several advantages in itself, first, glabella osteotomy and posterolateral osteotomy on lacrimal sac was very easy, second, no secondary operation was necessary for cortico-cancellous bone graft because split skull bone graft are not only much enough to recipient site but also easily approached by bicoronal flap, third, the danger of displacement of medial canthal ligament was lessened and the possibilities of rupturing lacrimal sac was lowered, fourth, residual scarring was not remained in paranasal area.

Intraoperative hemorrhage are covered by transfusion of packed RBC two pints and whole blood six pints. The long term follow up result may be necessary for the relapse and occlusal stability. Finally, when these clinical conditions exist the decision as to the preferable operative approach must be carefully evaluated on the basis not only of the existing esthetics and functional deformity but of alternative such as a high Le Fort I advancement and dorsonasal augmentation.

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선천성 매독에의한 비상악골 부전증환자의 관상두피 접근법에 의한 Le Fort II 골절단술을 이용한 치험례

충남대학교 의과대학 악안면외과학교실
엄인웅 · 김창수

Le Fort II 골절단술 및 전방 이동술은 비상악골의 형성 부전증이나 짧은 코, 또는 상악골에 대비하여 상대적인 하악 전돌증 환자에 있어 고려 대상이 되어 왔다.

이러한 비상악골 형성 부전증의 원인으로는 외상, 토순 또는 구개열로 인한 발육부전, 선천성 매독증과 같은 감염 증상 등을 들 수 있다. Le Fort II 골절단술 및 전방 이동술은 1973년 Henderson과 Jackson에 의해 처음으로 보고되었고, 그 후 1980년 Steinhauser, Kinnebrew 등에 의해 변화되어 왔다.

Le Fort II 골절단술에 있어서의 관상 절개술은 paranasal incision에 비해 안면부 술후 반흔이 남지 않아 심미적으로 우수하며, 두부의 상부 1/2까지 노출이 가능하여 수술시야가 좋으며, 안면 신경 손상 및 lacrimal apparatus 손상의 위험이 적다는 장점 이 외에도 nasofronatal osteotomy site와 pterygo-maxiliary osteotomy site를 위한 bone graft의 donor site로서 skull bone을 immediate로 사용할 수 있다는 장점이 있다.

본 교실에서는 선천성 매독의 후유증의 하나인 비상악골 형성부전증을 가진 23세의 여자 환자에 있어서 관상 절개술을 통한 Le Fort II 골절단술을 통한 전하방 이동 및 하악지의 시상골 절단술을 시행하여 양호한 결과를 얻었기에 이에 보고하는 바이다.