Simultaneous Orthognathic Surgery and Rhinoplasty for the Repaired Unilateral Cleft Lip and Palate Patient: A Case Report

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ABSTRACT

Patients with repaired cleft lip and palate often require orthognathic surgery and rhinoplasty to achieve better aesthetics and function. Conventionally, rhinoplasty is performed as a staged procedure after orthognathic surgery. An online search by the author through PubMed and Google Scholar revealed one article describing simultaneous Lefort I osteotomy and rhinoplasty for a bilateral cleft lip and palate patient. This paper reports on a case of simultaneous Lefort I osteotomy, mandibular bilateral sagittal split, genioplasty and rhinoplasty for a repaired unilateral cleft lip and palate patient. It also touches on certain operative considerations for the surgeon performing this operation.

Keywords: Cleft lip nasal deformity, Nasal reconstruction, Orthognathic surgery

INTRODUCTION

Patients with repaired cleft lip and palate often require orthognathic surgery as well as rhinoplasty to achieve better aesthetics and function. Conventionally, nasal reconstruction is performed as a second stage procedure after orthognathic surgery. An online search by the author using key words such as “cleft lip nasal deformity, orthognathic surgery, Lefort osteotomy, simultaneous, nasal reconstruction, rhinoplasty” through PubMed and Google Scholar revealed one article describing simultaneous Lefort I osteotomy and rhinoplasty for a bilateral cleft lip and palate patient. The patient also had correction of oronasal fistula with iliac bone grafts and paranasal augmentation with autogenous bone grafts with good outcome.

This paper reports on a case of simultaneous Lefort I osteotomy, mandibular bilateral sagittal split, genioplasty and rhinoplasty to correct the dentofacial deformity and improve the cleft lip nasal deformity of the unilateral cleft lip patient.

CASE REPORT

A 22-year old Chinese male with left-sided unilateral cleft lip and palate was referred to the National Dental Centre Singapore for surgical correction of his cleft lip nasal deformity as well as his dentofacial deformities. He has a medical history of left-sided unilateral cleft lip repair at two months old, cleft palate repair at nine months and alveolar bone grafting at 15 years old. Cephalometric tracings and clinical examination showed that he had class III malocclusion on a skeletal III base with severe maxillary hypoplasia, anterior open bite, mandibular asymmetry and microgenia (Fig. 1). He also presented with an asymmetrical nose with slight nasal deviation, prominent dorsal hump, wide asymmetrical nasal tip (Figs. 2 and 3).

The patient was planned for simultaneous rhinoplasty and orthognathic surgery to correct his cleft lip nasal deformity and dentofacial deformities. He underwent nasal endotracheal intubation and the following surgical procedures:

- Maxillary Lefort I advancement and autogenous bone grafts to the paranasal region;
Mandibular autorotation; bilateral sagittal split advancement;

Genioplasty advancement and downgraft and correction of asymmetry.

The maxilla and mandible were fixed with standard 2.0-mm titanium bone plates while the osteotomised genial segment was fixed with 1.5-mm titanium bone plates. Bone grafts harvested from the mandibular osteotomy site were grafted to the paranasal region to bridge the gap following maxillary advancement. Following the completion of the orthognathic surgery, the method of intubation was changed to an oral endotracheal intubation. The patient was recleaned and draped. Open septorhinoplasty was performed with inverted V-incision extended to marginal incisions. Septal graft was harvested from the nasal septum which was reached after separating the medial crus of the lower lateral cartilages. At least 1.5 cm of caudal and superior septal strut was left as a framework for the nose. The dorsal hump was removed via rasping and burring with a diamond bur and nasal bone in-fracture performed after lateral osteotomies performed via percutaneous osteotomy. Interdomal, transdomal and intercrural sutures were placed to address tip asymmetries and a columellar strut and double onlay grafts were fashioned to provide better tip projection. Crushed cartilage was placed at the supratip break. A rim graft was placed at the left alar rim and left alar-transfixion suture was placed at the left alar crease to close dead space as well as to provide support for the left lower lateral cartilage (Figs. 4–6).

Postoperatively, the patient did not have elastic intermaxillary fixation. The patient was seen at 5 days, 7 days, 14 days, 21 days post operation and subsequently reviewed monthly.

**DISCUSSION**

Surgeons performing orthognathic surgery and
rhinoplasty for the repaired cleft lip and palate patient are often faced with:

1. Complex cleft lip nasal deformity;
2. Skeletal discrepancies; often class III skeletal relationship with real or apparent maxillary hypoplasia;
3. Oronasal fistula;
4. Malocclusion;
5. Deficient bone at the paranasal region at the cleft side resulting in a depressed alar base at the cleft side.

Conventionally, surgeons plan to perform nasal surgery as a separate surgery after orthognathic surgery. Some authors recommend rhinoplasty to correct cleft lip nasal deformities to be done three to six months after Lefort I osteotomy. Most patients with repaired cleft lip and palate present with impaired facial growth with maxillary hypoplasia due to palatal scarring and require large advancement of the maxilla. This often results in unwanted sequelae such as alar base widening and cephalic rotation of the nasal tip resulting in increased nostril show. In addition, the cleft lip nose is often asymmetrical with a deformed lower lateral crura at the cleft side, asymmetrical dome shape deviated to the cleft side, a deficient alar base support and widened nostril at the cleft side. Hence, staging the procedures can allow better assessment of the nose symmetry and position after Lefort osteotomy and basal skeletal reconstruction at the deficient maxillary region. Another reason is to monitor for unwanted relapse of the skeletal segments before planning for rhinoplasty.

However, in the study by Matukas and Louis, they felt that although a staged procedure can yield marginally better results, the attractiveness of having a single hospitalisation and anaesthesia as well as the convenience should be considered. Stabilisation of the maxilla with bone grafts or
substitutes can make the procedure comparable to non cleft patients.

If the nasal changes following the maxillary osteotomy can be predicted accurately, it is advantageous to the patient if the surgeon carries out simultaneous nasal and skeletal surgery because this can minimise the unwanted post-Lefort I advancement nasal appearance and improve the patient’s appearance quite dramatically.

Other advantages and disadvantages for performing simultaneous rhinoplasty and orthognathic surgery for the cleft lip and palate patient are similar to performing simultaneous rhinoplasty and orthognathic surgery for the non cleft patient. These have been adequately written about in other papers and will not be covered in this paper.

Some surgical considerations pertaining to simultaneous nasal surgery and orthognathic surgery:

1. After down fracture of the maxilla during Lefort I osteotomy, the nasal septum can be exposed after careful subperichondral elevation of the nasal mucosa. If a small piece of septal graft is needed for columellar strut or onlay grafts, it can be harvested during this time and stored in antibiotic solution for further use later during rhinoplasty.

2. However if a larger piece of graft is needed or an extended spreader graft is needed, it is preferable to harvest the cartilage during open rhinoplasty by separating the medial crus of the lower lateral cartilage.

3. Plating of the mobilised maxilla should be done with the lateral nasal wall osteotomy in mind. Hence the bone plates should be placed more laterally from the piriform rim about 4-5 mm to avoid interfering with later nasal osteotomies.

4. For patients with a dorsal hump that requires dorsal hump reduction, as well as Lefort I advancement and impaction, the nasal tip will rise cephalically and advance anteriorly. This makes the dorsal deformity less prominent; meaning the amount of final dorsal reduction is often less than preoperative estimation. Patients with cleft lip nasal deformity often present with asymmetrical, depressed nasal tip that requires reinforcement and augmentation. The amount of dorsal reduction becomes even less if the surgeon intends to increase the projection of the nasal tip with columellar strut, extended spreader grafts or tip grafts. Hence, the surgeon should guard against over aggressive dorsal reduction to prevent a saddle nose effect.

5. Paranasal defects at the cleft side can be augmented with mandibular bone graft from the bilateral sagittal split site.

6. Nasal mucosa perforations that sometimes occur after Lefort down fracture should be repaired. This reduces the bleeding into the nasal passage and allows the patient to breathe through the nose earlier. This will then allow elastic intermaxillary fixations (IMF) to be placed in earlier.

7. Immediately post operation, the patient should not be placed in elastic IMF as the nasal pack is still present intranasally to control nasal bleeding. Nasal packs in the form of Merocel or paraffin-impregnated gauze can be removed on the first or second post operation day. Following that, the patient should be allowed to acclimatise to breathing though the nose. If all is well, place in the elastic IMF the next day. If the patient is able to tolerate the IMF for a day or overnight, he or she can be discharged. Patients should be reminded that although they are in IMF, they are still able to mouth-breathe through the gaps between the teeth. If they are in any respiratory difficulty, they should be taught to cut the elastics.

CONCLUSION

It is feasible to undertake simultaneous orthognathic surgery and rhinoplasty to correct the dentofacial deformity and cleft lip nasal deformity. Specific operative issues such as those listed above can be considered by the surgeon. Simultaneous rhinoplasty and orthognathic surgery can be performed for the cleft lip and palate patients after detailed discussions about their desires and expectations. The advantages and disadvantages in combining the two surgeries should be explained to the patient.

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