

Unilateral Cleft Lip Repair

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There are three key points for unilateral cleft lip/nose repair:

1. Presurgical Nasoalveolar molding,
2. Surgical techniques and Post-operative care and maintenance.

In general, wider clefts tend to be associated with more significant nasolabial deformities, and reconstruction of the more severe nasolabial deformities tends to yield suboptimal outcomes. The presurgical NAM is used in an attempt to reduce cleft severity, narrowing cleft lip gap, improve nasal form in order to ease and improve the results of the primary operation.

The lip was repaired using a modified rotation advancement cheiloplasty with a Mohler incision. The incision for the advancement flap was along the cleft margin, with no horizontal incision on the nasal floor or perialar extension. An L flap was developed based on the alveolus on cleft margin. The incision was extended along the piriform aperture to mobilize the alar base on the cleft side. The nasal floor was reconstructed with the combination of an inferior turbinate flap, an L flap, and a CM flap on the noncleft side. The columella was lengthened with the C flap. The orbicularis muscle on both medial and lateral lips were adequately released and repositioned. The alar base on the cleft side was advanced medially and superiorly. The vermilion was reconstructed with Noordhoff's vermilion flap. Semi-open rhinoplasty, via a Tajima inverse U incision on the cleft side and rim incision on the non-cleft side, was performed at the same time as primary cheiloplasty. The fibrofatty tissue was dissected off the alar cartilage and interdomal suture was placed with the cleft side cartilage slightly higher than the non-cleft side cartilage. The Tajima incision was used to resect nasal webbing at the soft triangle.

Post-Op care consisted with Nasal stents (Sunder Nasal Stent) were worn by all patients for six months. Parents or guardians were instructed how to place Micropore tapes across the upper lip wound and both cheeks to reduce wound tension caused by the adjacent risorius, zygomaticus major and zygomaticus minor muscles. Taping remained in place throughout the day and silicone sheeting or self-drying silicone gel was added during sleep.

The present presentation includes one retrospective and three prospective studies to compare the outcome of lip scar and nasal shapes.

Conclusion: The combination of pre-surgical NAM, current technique of cheiloplasty and rhinoplasty, post-op new nasal stent can achieve best outcome.

Bilateral Cleft Lip Repair

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Bilateral cleft lip nose repair is more difficult than unilateral cleft lip nose repair. In patients with bilateral complete cleft lip, the midline structure is deficient which is characterized by a small and deviated prolabium, small premaxilla with deficient columella and deformed lower lateral cartilage. With the introduction of modern techniques of presurgical orthopedics and nasoalveolar molding, a better skeletal foundation and nasal shape for the repair of the bilateral cleft lip-nasal deformity was achieved. This will allow surgeon performed surgical correction with better result.

The surgical techniques are described as follow: the markings of bilateral cheiloplasty were done. The width of the central lip at the bottom was maintained at 4 mm. The central segment was gradually narrow down to 3 mm at the base of columella. The philtral flap and forked flap was elevated. This forked flap incision was extended behind the columella up to just 1/3 of the columella. L-flap, PM flap and inferior turbinate flap were elevated as well for nasal floor reconstruction. Bilateral Tajima incisions were made on both alar rims to expose the LLCs. LLCs were approximated by mattress suture. And central segment was drawn back and sutured to lateral lip segments.

Post op care consisted with nasal conformer (Sunder nasal conformer) for 6 months. Tight 3 M microporous types and silicone gel is advised for 6 months.

This integrated approach for bilateral cleft lip / nose repair of Chang Gung Craniofacial Center can achieve a good lip and nose reconstruction results.

Combined Furlow and Pharyngeal Flap for VPI

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The functional goals of cleft palate repair are to facilitate normal speech without interfering with the facial growth of a child. Unfortunately, some patients have unsatisfactory speech results and require second management because of insufficient velopharyngeal function. Most frequent surgical modalities used for treating velopharyngeal incompetence (VPI) including (1) Furlow palatoplasty, (2) Pharyngeal flap and (3) Sphincter Pharyngoplasty.

Pharyngeal flap for treatment of VPI in patients with a combination of large velopharyngeal gap and poor lateral wall motion necessitates such a wide flap that nasal airway obstruction is likely. To overcome the nasal airway obstruction, the combination of pharyngeal flap with a Furlow palatoplasty is a good option.

Surgical techniques:

The double z plasty combined with a narrow width superior based pharyngeal flap oral mucosa marking is the same as the initial Furlow palatoplasty. The central incision of the z-plasty carried anteriorly to the junction of soft/hard palate and posteriorly to the free border of uvula. An anterior based oral mucosa flap is created on the right side and a posterior based oral myomucosa flap is created on the left side. A 80 degree angle is used for lateral limb of the z-plasty. A diamond shape of nasal mucosa defect is created on the junction of soft/hard palate by resection of part of nasal mucosa on left side and creates a posterior based nasal musculo-mucosa flap on right side. A narrow width superior based pharyngeal flap is designed as elevated as usual manner. The pharyngeal flap is sutured anteriorly to the diamond shape defect in the junction of hard/soft palate. The lateral border of pharyngeal flap is sutured to the nasal mucosa laterally. Part of the nasal mucosa of posterior based nasal musculo-mucosa flap is resected and the muscle flap is turned and sutured to the left side. The oral mucosa closing is the same as the initial Furlow palatoplasty

Combine Furlow palatoplasty with superior pharyngeal flap has good palatal lengthening effect and offered good coverage of base of pharyngeal flap. This is an effective treatment to correct VPI especially in the short palate.

Secondary Cleft Nasal Revision

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Grafts have been used with increasing frequency for reconstruction of cleft nasal deformity. Cartilage graft is widely used among other graft in rhinoplasty.

Late warping of the dorsal cartilage onlay graft is a problematic complication of current secondary rhinoplasty techniques in cleft lip patients. Diced cartilage for cosmetic rhinoplasty has enjoyed increased popularity lately. Since 2005, the diced cartilage rhinoplasty has been introduced to our craniofacial center.

Surgical procedures: A columellar v-shaped incision, rim incisions on non-cleft side, Tajima incision on cleft side are used. A midline pocket is dissected from the nasal tip to the glabella, taking care to remain supra-perichondrally and subperiosteally.

A columellar strut is inserted. Both alar cartilage was approximated medially to the columella struct. The cleft-side alar graft is placed so that its curve is symmetrical to the contralateral alar rim. An alar tunnel is made and the alar graft is inserted. Sutures from the cartilage to the mucosa are sufficient to hold it in place. Interdomal sutures and sutures between the lower lateral cartilage and the columellar strut can be done if necessary. The remaining rib cartilage is cut into 1 mm cubes and soaked in a solution of 500mg of cefazoline diluted in 500mL of NaCl 0.9%. A gauze-covered suction tip is used to fill 1 mL syringes with cartilage. The glabella, dorsum, tip and infra-tip lobule are filled with diced cartilage. Two to four c.c. of diced cartilage are usually necessary for the procedure.

The infection rate was 7.7%. 5.7% of patients complained of a bulbous tip. Cartilage warping, as seen with classic en bloc grafting of the dorsum, did not occur. Dorsal irregularity was seen in 8.5% of cases and grafts were visible in 1.2% of cases. The re-operation rate was 8.1%. This technique has greatly reduced late cartilage warping as seen with the classical cartilage bloc dorsal augmentation. Complications are low, comparable in occurrence to other techniques, and are easily manageable, making it our technique of choice.