Correction of Cleft Lip Nasal Deformity: A Comparison of Techniques

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Abstract

Objectives: Patients born with unilateral cleft lip and palate have secondary deformities of the nasal lobule and functional airway compromise. A number of techniques have been described for correction without consistent results. We have obtained a large patient base concentrated through an associated craniofacial clinic. A great experience with secondary cleft lip rhinoplasty has facilitated improved evaluation of treatment techniques.

Study Design: Over a period of 4 years, 19 patients with unilateral cleft lip nasal deformity had corrective surgery. All patients were approached via open rhinoplasty. Four patients initially underwent correction of the lower lateral cartilage to correct asymmetry. Fifteen further patients were approached via a medially-based chondrocutaneous flap. Inspection of the nasal vestibule and subjective patient feedback regarding nasal airway allowed comparison of functional outcomes.

Results: Initially, the surgical approach for aesthetic correction was via a medially-based chondrocutaneous flap of the vertically divided lower lateral cartilage. Although some aesthetic improvement was noted, residual asymmetry and incomplete correction of nasal vestibular stenosis was observed. The most recent 15 patients were approached via the Vissarionov-Wang laterally-based lower lateral cartilage flap. Superior long term and functional outcomes were consistently observed.

Conclusions: The Wang modification of the Vissarionov technique allows for correction of the asymmetrical lower lateral cartilage with two point fixation while facilitating primary intention healing of the nasal vestibule allowing for a more stable reconstruction resulting in superior aesthetic and functional outcomes.

Introduction

Secondary rhinoplasty for the cleft lip nasal deformity is a complicated problem with a myriad of surgical treatments. Patients born with unilateral cleft lip and palate have secondary deformities of the nasal lobule due to the distractive forces of the lefthand orbicularis oris muscle. Patients often note dissatisfaction with the aesthetic appearance of the asymmetric lobule with a bifid tip and the decreased ability to breathe on the cleft side. In 1964, Converse described a marginal incision which rotated the lower lateral cartilage from medial-to-lateral (1). Vissarionov later combined several techniques with a sliding flap chondrocutaneous which used a laterally-based chondrocutaneous flap incorporating incisions of the lip scar and alar rim web (2). Wang further improved upon this technique by combining it with an external rhinoplasty incision that allowed for greater exposure (3). Here, we describe our experience with secondary cleft lip rhinoplasty. We compare a medially-based chondrocutaneous flap versus a laterally-based chondrocutaneous flap approach to the corrective surgery.

Results

We have two subgroups of patients in this series. Group 1 (n=4) patients were approached with a medially-based chondrocutaneous flap of the lower lateral cartilage in conjunction with a vertical division of the lower lateral crus. Group 2 (n=15) patients were addressed using a surgical approach described by Wang as a modification of the Vissarionov technique. In this approach, a laterally-based chondrocutaneous flap is incorporated into an incision involving the alar rim and the existing lip scar. Post-operative outcomes were evaluated through patient survey and surgeon evaluation. Patients were questioned for satisfaction with cosmetic appearance and function of nasal airway. Two surgeons evaluated and scored post-operative symmetry independently. All questions were scored using a five-point scale.

Characteristics of the Unilateral Cleft Deformity

• The dome on the cleft side is retrodisplaced and less well projected.
• The columna on the non-cleft side is foreshortened.
• The medial crus slumps laterally.
• The inferior crus is larger on the cleft side.
• The nasal tip is asymmetrical, inferior, and posteriorly.
• The nasal vestibule is distorted and the non-cleft side.

Case Examples

Patient 1 - Medially-based chondrocutaneous flap
This patient had vertical division of the lower crus to allow placement of each dome in a symmetrical manner. Patient was pleased with the improved symmetry and definition of her columna, however the alar-columellar web and stenotic nasal vestibule were minimally corrected.

Patient 2 - Laterally-based chondrocutaneous flap
This patient had significant tip deformity in conjunction with a functional deficit due to the depressed nasal ala. With the laterally-based flap, the nasal ala is able to be repositioned anteromedially. On frontal view, the tip symmetry is markedly improved as well.

Patient 3 - Laterally-based chondrocutaneous flap
This patient had a severely depressed nasal ala and resulting vestibular stenosis. Although complete symmetry was not achieved, these deficits were greatly improved with superior rotation of the laterally-based flap and inclusion of the vestibular skin in the incision.

Patient 4 - Revision laterally-based chondrocutaneous flap
This patient had previous open rhinoplasty procedure performed with auricular cartilage grafts to the depressed dome on the cleft side. Patient was displeased with the resulting bulbous nasal lobule and underwent revision with a laterally-based chondrocutaneous flap.

Discussion

Discussion

Group 2: Patients born with unilateral cleft lip and palate have secondary cleft lip rhinoplasty has challenged facial plastic surgeons for decades. While many approaches have been described, few techniques have been able to address the multitude of issues facing these patients. Initially, a medially-based chondrocutaneous flap with a division of the lower lateral cartilage was advocated to improve tip symmetry and attempt to improve vestibular stenosis (5). However, without the ability to rotate skin into the vestibule or remove skin from the alar web, an optimal symmetric result and relief of the tip asymmetry was not achieved.

Tajima initially described a technique to fully address the nasal alar webbing by incising the skin across the alar-columellar web (6). This technique allows two-point fixation of the dome allowing for a more stable reconstruction. Vissarionov was the first to suggest that the excess skin could also be transposed into the atretic nasal vestibule from the lip scar (2). This technique allows two-point fixation of the dome allowing for a more stable reconstruction. Vissarionov was the first to suggest that the excess skin could also be transposed into the atretic nasal vestibule from the lip scar (2). However, this incision enables removal of the alar web with the resulting ability to rotate the skin into the deficient vestibule. Vissarionov was the first to suggest that the excess skin could also be transposed into the atretic nasal vestibule from the lip scar (2). However, this incision enables removal of the alar web with the resulting ability to rotate the skin into the deficient vestibule. Vissarionov was the first to suggest that the excess skin could also be transposed into the atretic nasal vestibule from the lip scar (2). However, this incision enables removal of the alar web with the resulting ability to rotate the skin into the deficient vestibule. Vissarionov was the first to suggest that the excess skin could also be transposed into the atretic nasal vestibule from the lip scar (2). However, this incision enables removal of the alar web with the resulting ability to rotate the skin into the deficient vestibule.

The work of Vissarionov and Wang have elucidated a major advance in the systematic surgical approach to secondary cleft lip rhinoplasty. The ability to obtain a symmetrical reconstruction of the domes and reconstruct the nasal vestibule simultaneously is incomparable. The nasal soft triangle is often ill-advised. However, this incision enables removal of the alar web with the resulting ability to rotate the skin into the deficient vestibule. Vissarionov was the first to suggest that the excess skin could also be transposed into the atretic nasal vestibule from the lip scar (2). However, this incision enables removal of the alar web with the resulting ability to rotate the skin into the deficient vestibule.

Patient 2 - Laterally-based chondrocutaneous flap
Case Examples

Patient 3 - Laterally-based chondrocutaneous flap
Case Examples

Patient 4 - Revision laterally-based chondrocutaneous flap
Case Examples

References