Open rhinoplasty for correction of the secondary nasal deformity due to the Marcks triangular flap cleft lip repair

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The Marcks Z-plasty modification of the Tennison triangular flap cleft lip repair results in excellent preservation of the Cupid’s bow, but in more severe clefts this technique is stigmatized by a characteristic V-shaped nasal rim deformity. This has proven extremely difficult to correct secondarily. An open rhinoplasty technique is advocated because superior exposure is essential to visualize deficient components, as well as the malformed lower lateral cartilage, which is a direct result of this lip repair. Nevertheless, typical results remain substandard in terms of achieving nasal symmetry as opposed to routine use of the Millard rotation-advancement repair, with or without primary nasal correction.

Key Words: Cleft lip nasal deformity; Marcks cleft lip repair; Open rhinoplasty

The Marcks and Trevaskis Z-plasty version of the triangular flap cleft lip repair, when correctly performed, results in an exquisite appearance of the lip. Their legacy remains extensive throughout eastern Pennsylvania, with disciples of this technique spread throughout North America, where this method of lip repair often can be instantly discerned due to the characteristic nasal appearance that develops following correction of the more severe unilateral cleft lip. Not unlike other secondary cleft lip nasal deformities, several deficiencies exist, including that of the alar cartilage that is typically malpositioned posteriorly, laterally and inferiorly, but peculiar to this repair is buckling of the alar rim in a V-pattern due to the requisite medial transposition of the superior cleft side Z-plasty flap. Tennison (1) advocated correction of any nasal deformity at the primary operation but never entirely accomplished this. Markes et al (11) recognized the “typical droop of the lower lateral cartilage” after his modified repair...
Figure 1) Top left: Submental vertex view of a Marcks Z-plasty repair of a right unilateral cleft lip, with the typical buckled right alar rim, slumped nasal dome, foreshortened columella on the cleft side and horizontally flared nostril. Bottom left: Frontal view demonstrating the superior displacement of the right alar base and hidden right nostril. Top right: Definite improvement with elevation of right alar dome, but height is still deficient with residual narrowing of the right nares now with a vertical orientation. Bottom right: Improvement confirmed on anteroposterior projection.
but opted for a secondary nasal correction using intranasal incisions, as was common at the time. Many of these patients still desire improvement of their unique nasal deformity, which can be challenging even with direct visualization of the pertinent anatomy as afforded by an open rhinoplasty technique.

PATIENTS AND METHODS
Over the past 16 years, many individuals at the Allentown Cleft Lip and Palate Clinic, Allentown, Pennsylvania, that had been personally treated by Marcks or Trevaskis using their Z-plasty triangular flap modification for unilateral cleft lip repair have been evaluated (5,11,12). Most of these patients have required only minor lip scar or nasal revisions, but over this time period four adolescents specifically requested elimination of the characteristic cleft-side alar rim buckling. In all cases, this was achieved using an open rhinoplasty approach patterned after Rethi described by Cronin and Denkler (10).
An existing columellar scar can be used (13), but a trans-columellar V-shaped incision through the narrowest portion permits subsequent closure in a V–Y fashion to provide some columellar lengthening, which is invariably shortened on the cleft side (10). The ends of this V-shaped incision are extended vertically just inside the vestibule, continuing as alar rim or marginal incisions along the caudal end of the lower lateral cartilage. The mucosa can be left on the undersurface of the cartilage to improve its vascularity and support, especially if scoring for recontouring is necessary, but a parallel intercartilaginous incision is required to allow medial cartilage displacement (10). By blunt dissection, the nasal tip can be retracted up to the nasion for eventual exposure of both upper lateral cartilages and the nasal bones, if desired (14).

Usually, the laterally slumped cleft-side lateral crus must be raised and shifted medially to create an appropriate nasal dome with the two medial crura sutured together after removal of any intervening tissues to define the tip. Permanent sutures to both upper lateral cartilages and/or the septum support this advancement. This recontouring and sculpting, with or without cartilage grafts, must result in symmetry with the non-cleft side as seen directly by this open approach (10). The nasal skin must be constantly redraped to observe the correctness of this reconfiguration. At the time of closure, excessive alar webbing, commonly due to the observed buckling, can be trimmed, and the alar base shifted as needed to match the contralateral side. Splints or external sutures do not need to be routinely employed.

RESULTS

In the four adolescents who had secondary correction of their residual nasal deformity following a Marcks/Trevaskis triangular flap repair of a unilateral cleft lip, the cleft-side lateral crus of the lower lateral cartilage was always difficult to dissect free from the overlying skin and would have been impossible without an open rhinoplasty for direct visualization (Figure 1). Cartilage onlay grafts were used in two patients to augment the cleft-side alar cartilage, and in one patient the non-cleft side as well. The patient who did not have a cartilage graft remained deficient in prominence of the cleft-side nasal dome, but declined reoperation. Some worthwhile improvement was achieved in all patients, but perfect confor-
CONCLUSIONS

The Markes modification of the Tennison triangular flap unilateral cleft lip repair results in a characteristic nasal deformity. An open rhinoplasty approach affords the best method to not only visualize inherent deficiencies, but also correct long-standing malformed and malpositioned nasal components that resulted from this repair. Even with an open rhinoplasty approach, secondary correction of this cleft lip nasal deformity has residual imperfections. These observations suggest that by using primary nasal repair at the time of definitive lip closure these nasal stigmata may be avoided, regardless of what type of lip repair is performed.

REFERENCES