The Role of the Upper Lateral Cartilages in Aesthetic Rhinoplasty

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BACKGROUND: Reducing lateral nasal tip width in order to optimize shape while still maintaining function presents a challenge to the operating surgeon. Techniques for the reduction of tip width are typically limited to resection, plication, or medial augmentation of the lower lateral cartilages (LLC).

OBJECTIVE: This study describes a reduction of both the length and width of the lateral half of the upper lateral cartilages (ULC) to effect a change in nasal tip shape in selected individuals.

METHODS: Between January 2003 and February 2005, we reviewed the records of 217 patients undergoing primary rhinoplasty; of these, 43 patients underwent partial resection of the ULC to alter nasal tip shape. In this selected group of patients, resection of a portion of the ULC infralaterally was performed, along with partial resection of the LLC.

RESULTS: No patients noted increased difficulty breathing postoperatively, so nasal valve function was maintained. Reduction of superior lateral tip width was observed in all patients.

CONCLUSIONS: Judicious modification of the lateral portion of the ULC — taking care to maintain adequate length and breadth of the medial portion of the cartilage in selected individuals — results in significant improvement in nasal tip width. A specific subset of our patients, approximately 20%, benefited from this approach. Conservative resection of the ULC can enhance nasal tip shape. While clearly not applicable in the majority of patients, the described technique represents a useful addition to the algorithm we may employ in determining the surgical approach in patients seeking aesthetic rhinoplasty. (Aesthetic Surg J 2009;29:290–294.)

Rhinoplasty

The reduction of lateral nasal tip width to optimize shape while still maintaining function presents a challenge in patients who have wide middle and lower thirds of the nose.

The nose is composed of seven primary anatomic components, including the paired nasal bones, upper lateral cartilages (ULC), lower lateral cartilages (LLC), and the septum. Traditionally, five of the seven primary anatomic components of the nose have been addressed to optimize nasal appearance. Traditional techniques have included reduction of both the height and width of the nasal bone, resection of the septum, and modification of the LLC. The techniques that have been employed for reduction of nasal tip widths may be summed up as resection, plication, or augmentation of the LLC.1-4

While resection, plication, and/or medial augmentation of the LLC (separately or in combination) can effect changes in the tip–lobular complex, the author has identified a specific subset of patients whose results were not altered to the extent they (and the author) would have preferred. In these patients, excess width at the junction of the lower third and upper two-thirds of the nose is present.

Reduction of the lateral nasal tip width in such cases poses a significant challenge for the surgeon. In an effort to further enhance the shape of this region, the author has begun performing a reduction in the length and width in the lateral half of the ULC. Judicious removal of a portion of the ULC has effectively enhanced the nasal tip shape in the subset of patients described above.

METHODS

Between January 2003 and February 2005, the author reviewed the records of 217 patients undergoing primary rhinoplasty. Of these, 43 patients underwent partial resection of the ULCs to help control tip width. In this selected group of patients, a 3-mm × 6-mm inferolateral strip of the ULC was typically excised (Figure 1). The resection was performed under direct vision. All rhinoplasties were performed by a single surgeon (JMP) using a closed approach with an intercartilaginous incision for exposure of the nasal dorsum, including the septum, ULC, and nasal bones. The LLC were delivered using an eversion technique and trimmed in all cases. The resection of the LLC varied from 2 mm to 8 mm at the cephalic end of cartilage. Following modification of the nasal bone and septum, a low-to-low osteotomy was performed in all cases, the ULC were trimmed medially, and a nasal splint was applied.
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RESULTS

No patients noted a significant increase in difficulty of breathing postoperatively. Nasal valve function was maintained in all cases and reduction of the superior lateral tip width was also noted in all cases (Figure 2). After retrospective evaluation, it was determined that 43 of 217 patients (20% of the total number of patients undergoing rhinoplasty during the specified time period) were treated using the author’s described technique.

DISCUSSION

Resection of various aspects of the LLC to improve nasal tip shape has been advocated by a number of physicians performing rhinoplasty. Complete transection of the LLC has been combined with reattachment of the lateral component to the medial component. In addition, a large number of suturing techniques have been proposed to plicate the LLC in an effort to decrease the tip width. In cases where resection and/or plication have been unsuccessful, numerous authors have advocated a variety of nasal tip grafts in an effort to enhance projection and provide the appearance of a narrowed tip. The choices of graft materials for nasal tip augmentation include septum, ear, rib, ethmoid, vomer, and cranial bone, to name a few. The aforementioned techniques are designed to refine the width of the nasal tip by focusing on altering the LLC, while not effecting a change in the width of the caudal portion of the ULC. The author likens this approach to raising a central pole in a tent, hoping to significantly change the shape of a square roof while two of the four corners remain fixed. Some change will obviously be achieved with augmentation of the LLC, particularly when the lateral aspects of the LLC are reduced, but the alteration may fall short of what the surgeon (and the patient) would have liked. This is particularly true in patients with increased nasal width at the junction of the middle and lower third of the nose, for whom the author has found standard rhinoplasty techniques to be less effective (Figure 3).

Resection of the ULC obviously carries a risk of disruption of the internal nasal valve. Aggressive resection of the ULC coupled with prodigious resection of the LLC could also impact the function of the external nasal valve. Courtiss et al stated that “Unless the internal or external valves are adversely affected or unless a simultaneous septal operation results in septal perforation, aesthetic rhinoplasty does not affect air flow.” This would tend to indicate that rather aggressive treatment of the nose during rhinoplasty may have a minimal effect. This approach is contrasted with that of Guyuron, who stated that “The length of the nasal bones, extent of the nasal bone repositioning, position of the inferior terminates, and type of osteotomy are factors which all influence postoperative narrowing and air flow.” Smaller anatomic changes may cause minimal to marginal changes that do not adversely affect function, but the author would tend to agree with Guyuron’s observation that any change in the structural integrity of the nose essentially has physiologic sequelae. Constantin and/or resection of the cartilaginous dorsal roof, or alar cartilage, is undoubtedly the most common cause of acquired incompetence of the internal and external valves”; the author wholeheartedly agrees. Therefore, once a decision has been made to modify the ULC, a small resection of the lateral and inferior component should be performed in order to minimize the risk of functional sequelae. To achieve these aims, the author prefers to resect the cartilages under direct vision. A closed approach is used in the majority of rhinoplasties performed by the author, but excision of the lateral aspects of the inferior portion of the ULC can also be easily accomplished with an open approach. Prudent modification of the ULC in approximately 20% of his patients enabled the author to achieve effective narrowing of the nasal tip and the illusion of increased nasal length, which heretofore had proved elusive.

Figure 1. A 3-mm × 6-mm strip from the lower portion of the upper lateral cartilages (ULC) is excised (shown in red) under direct vision, along with standard cartilaginous trimming of the ULC medially and cephalic rotation of the lower lateral cartilages (LLC). The traditional resection of the dorsum (both bone and cartilage) and adjustment of the LLC, as shown, precedes modification of the lateral aspect of the ULC. The final result of all cartilage and bone correction is illustrated.
Figure 2. A, C, E. Preoperative views of a 41-year-old female with a wide tip and dorsum. Note the excess width at the junction of the upper two-thirds and lower third of the nose. B, D, F, Nineteen months after dorsal reduction and reduction of nasal width by infracture, resection of the LLC, and caudal resection of the ULC. Note the improvement in the tip width compared to preoperative views.
Figure 3. A, C, E. Preoperative views of an 23-year-old female with thick skin. Note the increased width at the junction of the middle and lower third of the nose. B, D, F. One year after cephalic rotation of the nasal tip. The consequent reduction in nasal length is not apparent in the anteroposterior views where, because of the reduction of the lateral portion of the ULC, the nose has the illusion of increased length. The width of the nose at the junction of the middle and lower third of the nose has been successfully reduced in this challenging patient.
CONCLUSIONS

Conservative surgical alteration of the lateral aspects of the ULC can enhance the final result of rhinoplasty in selected individuals for whom traditional techniques have previously proven ineffective. While clearly not applicable in the majority of patients, resection of the caudal lateral portion of the ULC represents a useful addition in the surgical algorithm for aesthetic rhinoplasty when substantial reduction in width at the junction of the upper two-thirds and lower third of the nose is desirable.

DISCLOSURES

The author has no disclosures with respect to the contents of this article.

REFERENCES

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