



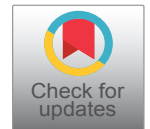
CASE REPORT

Modified Rhinolift: A Minimally Invasive Technique for Age-Related Tip Ptosis

Nikolaus Hjelm, MD*, Peter Ciolek, MD, Ryan Heffelfinger, MD and Howard Krein MD, PhD

Department of Otolaryngology Head & Neck Surgery, Division of Facial Plastic & Reconstructive Surgery, Thomas Jefferson University, Philadelphia, USA

*Corresponding author: Nikolaus Hjelm, MD, Department of Otolaryngology Head & Neck Surgery, Division of Facial Plastic & Reconstructive Surgery, Thomas Jefferson University, 925 Chestnut Street, 7th Floor, Philadelphia, PA 19107, USA, Tel: 215-503-3223, Fax: 215-503-6742



Keywords

Rhinolift, Functional Rhinoplasty, Nasal Tip Ptosis

Introduction

As one ages, the structure of the nose undergoes a number of changes, leading to alterations in form and function. Patients with no previous history of nasal issues may present with age-related nasal obstruction later in life. Tip ptosis is a well-recognized etiology of nasal obstruction in the aging patient [1-7]. The pathogenesis is believed to be due to weakening of several of the tip support mechanisms. Of primary importance, there is age-related degradation of the fibrous union at the cephalic edge of the lower lateral cartilage and the caudal edge of the upper lateral cartilage known as the scroll [1,4-7]. There is also weakening of the fibrous attachments of the medial crura to the posterior septal angle and nasal spine. Loss of tip support mechanisms leads to deprojection, counter rotation of the nasal tip, and retraction of the columella, resulting in both internal and external nasal valve dysfunction [1-7]. These changes can be further exacerbated by age-related nasal muscular atrophy and bony resorption of the premaxilla [1,8].

In the setting of age-related ptosis, traditional septorhinoplasty techniques aim to increase tip support and rotate the nose cephalically. Less invasive, yet effective methods have been described. The Rhinolift involves an excision of the skin and soft tissue envelope (SSTE) over the supratip followed by re-approxi-

mation of the lower and upper lateral cartilage [1,3]. This results in cephalic rotation of the nasal tip. Patients should be made aware that the Rhinolift may result in an unsightly scar in the supratip region. To optimize aesthetic outcomes, we have made modifications to the Rhinolift technique by orienting the incision in a pre-existing rhytid at the sellion.

Methods

A 59-year-old man presented for evaluation of new onset bilateral nasal congestion and reduced nasal airflow. The patient noted that he had never experienced these symptoms before, however it has been progressively worsening over the past year. He had been maximized on over-the-counter antihistamines, nasal decongestants and nasal steroids for greater than four weeks with minimal relief.

External nasal examination revealed a ptotic nasal tip with external nasal collapse on inspiration (Figure 1). The patient experienced relief of his obstructed breathing with cephalic traction of the SSTE over the sellion. It was noted that this maneuver also caused a cephalic rotation of the nasal tip. Cottle maneuver was positive. Palpation of the nasal dorsum and sellion revealed a thick and redundant SSTE. Bilateral nasal endoscopy revealed a high left septal deflection, a low right septal deflection off of the maxillary crest, and a posterior right septal spur. Nasal endoscopy also revealed bilateral turbinate hypertrophy. The remainder of the head and neck exam was within normal limits.

Our impression was consistent with a patient who would benefit from a rhinoplasty, bilateral turbinate reduction and septoplasty. We discussed the procedure and risks at length. In addition, the patient was made aware of the expected scar, but he was comfortable with the cosmetic defect.

Surgical Technique

Step 1

Redundancy of the SSTE was palpated at the sellion. The soft tissue was pulled cephalically over the sellion and resulted in cephalic tip rotation (Figure 1). Once the desired tip rotation was achieved, the redundant soft tissue envelope was marked at its caudal and cephalic edge. The cephalic marking was placed in a horizontal rhytid, as is commonly seen in the aging face from overactivity of the procerus muscle. The SSTE was released and a symmetric elliptical incision was marked.

Step 2

The nose was prepped and draped in sterile fashion and 1% lidocaine with epinephrine was injected along markings. Incision was made along the markings and carried down to the musculature overlaying the nasal bones. The soft tissue was then excised (Figure 2).

Step 3

Using an interrupted 4-0 monocryl stitch, the caudal subcutaneous tissue of the nasal envelope was approximated to the cephalic subcutaneous tissue (Figure 3). The cutaneous layer was then closed, tension-free, with a simple running 5-0 fast absorbable surgical gut suture.

Results

The patient was re-evaluated in clinic on postoperative day 6 (Figure 4). The patient noted significant improvement in his nasal breathing. However he noted tenderness, ecchymosis and swelling along his nasal



Figure 1: Preoperative age-related nasal tip ptosis (Left). Skin and soft tissue envelope pulled cephalically over the sellion causing cephalic tip rotation (Right).



Figure 2: Soft tissue excision over the sellion.



Figure 3: Caudal subcutaneous tissue of the skin and soft tissue envelope re-approximated to the cephalic subcutaneous tissue.



Figure 4: Postoperative day 6 (Left); 3 month postoperative visit (Right).



Figure 5: Modified Rhinolift 3 month postoperative scar.

dorsum. Examination revealed appropriate nasal contour, shape, and symmetry with resolution of his tip ptosis. There was mild swelling and ecchymosis along his sellion. The incision was clean, dry, intact and healing appropriately. One month follow up revealed resolution of the ecchymosis and edema over the sellion with no recurrence of his tip ptosis. The incision was well healed with minimal scarring and was contiguous with a pre-existing rhytid (Figure 5). The patient again noted improved nasal breathing. Exam at 3 months postoperatively again revealed no nasal tip ptosis (Figure 4). As compared to his preoperative baseline, the patient's nasal breathing was again noted to be subjectively improved.

Discussion

Nasal obstruction is a quality of life impairment that affects many people [9]. Oftentimes, nasal obstruction



Figure 6: Preoperative nasal tip ptosis (top); 7 months postoperative (middle); 1.5 years postoperative (bottom).

is multifactorial, but in the aging patient, tip ptosis can play a prominent role [10]. In these patients, a modified rhinoplasty should be considered. It can be performed under local anesthesia in an office-based setting, mitigating the risks of general anesthesia [3]. The ideal candidate for our modified rhinoplasty technique is an elderly patient with an age-related tip ptosis. Exam should demonstrate a thickened SSTE and cephalic rotation of the tip with cephalic traction of the SSTE over the sellion.

The traditional rhinoplasty approach offers access to the scroll region through a direct supratrip incision [1,3]. This allows for potential reapproximation of the scroll region [3]. However, the added benefit of addressing the scroll may not outweigh the risks of

an unsightly scar along the supratrip. Our modified technique orients the scar within a natural crease in the sellion region, leading to superior cosmesis. Furthermore, we have achieved durable results without addressing the scroll region (Figure 6). As consistent with all operations, patients may require a second operation if desired results are not achieved in first operation.

Conclusion

The modified rhinoplasty is an effective intervention for nasal obstruction secondary to age-related nasal tip ptosis. The operation may be performed under local anesthesia, mitigating the risks of general anesthesia in patients with multiple comorbid conditions. Our tech-

nique offers durable results, while offering superior cosmesis over the traditional approach.

Funding

None.

Disclosures

There are no conflicts of interest for any of the authors mentioned above.

References

1. Slavit DH, Lipton RJ, Kern EB, McCaffrey TV (1990) Rhinoplasty operation in the treatment of the aging nose. *Otolaryngol Head Neck Surg* 103: 462-467.
2. Patterson CN (1980) The aging nose: Characteristics and correction. *Otolaryngol Clin North Am* 13: 275-288.
3. Hu M (2016) External approach for the treatment of the aging nasal tip. *International Journal of Head and Neck Surgery* 7: 165-167.
4. Cochran CS, Ducic Y, DeFatta RJ (2007) Restorative rhinoplasty in the aging patient. *Laryngoscope* 117: 803-807.
5. Ries WR, Rathfoot CJ (1996) The aging nose in rhinoplasty for facial rejuvenation. *Facial Plast Surg* 12: 197-203.
6. Kabaker SS (1980) An adjunctive technique to rhinoplasty of the aging nose. *Head Neck Surg* 2: 276-281.
7. Caterson SA, Singh M, Kueckelhaus M, Caterson EJ, Eriksson E (2015) Skin excision as an adjunctive technique to rhinoplasty in middle-aged and elderly patients. *Plast Reconstr Surg Glob Open* 3: e532.
8. Krmpotić-nemanić J, Kostović I, Rudan P, Nemanić G (1971) Morphological and histological changes responsible for the droop of the nasal tip in advanced age. *Acta Otolaryngol* 71: 278-281.
9. Rhee JS, Poetker DM, Smith TL, Bustillo A, Burzynski M, et al. (2005) Nasal valve surgery improves disease-specific quality of life. *Laryngoscope* 115: 437-440.
10. Friedman O, Cekic E, Gunel C (2017) Functional rhinoplasty. *Facial Plast Surg Clin North Am* 25: 195-199.