Comparison of Inferior Turbinate Reduction Techniques on Postoperative Epistaxis and Nasal Congestion

Emily Sagalow, BS1; Kurren Gill, MD1; Vanessa Christopher, MD1; Raphael Banoub, MD1; Somya Shankar, BS1; Madalyne Sunday, BS1; Tingting Zhan, PhD2; Joel Stanek, MD1; Howard Krein, MD, PhD; Ryan Heffelfinger, MD1
1Department of Otolaryngology—Head and Neck Surgery, Thomas Jefferson University Hospital, Philadelphia, PA
2Division of Biostatistics, Department of Pharmacology and Experimental Therapeutics, Thomas Jefferson University, Philadelphia, PA

Introduction
- Inferior turbinate hypertrophy is commonly found in patients with nasal obstruction and can be managed with antihistamine or nasal decongestant
- If hypertrophied inferior turbinates are refractory to medical therapy, patients can undergo a turbinate reduction to improve nasal obstruction [2,3]
- Techniques for turbinate reduction include: submucous resection, partial excision, total turbinectomy, microdebrider removal, electrocautery, laser cautery, cryotherapy, and radiofrequency ablation [4]
- Turbinate reduction surgery rarely may lead to adverse post-operative outcomes [4-6] such as epistaxis and nasal congestion

Objective:
- To determine the impact of inferior turbinate reduction technique on post-operative epistaxis and recurrent or persistent nasal congestion

Methods

Study Design and Patient Selection
- Retrospective review
- 308 patients who underwent rhinoplasty with inferior turbinate resection at a single academic institution
- Patients underwent inferior turbinate reduction via:
  1. Partial excision with a thru-cut
  2. Submucous resection with an ultrasonic bone aspirator

Outcome Measures
- Postoperative epistaxis, defined as:
  - Notable postoperative bleeding from the nasal cavity either reported by the patient or treated by a clinician
- Postoperative recurrent or persistent nasal congestion, defined as:
  - Excessive nasal congestion lasting longer than expected for the postoperative course as determined by the surgeon

Results
- Patients who underwent inferior turbinate reduction:
  - Partial excision: 195 (63.3%)
  - Submucuous resection: 113 (36.7%)

<table>
<thead>
<tr>
<th></th>
<th>Partial Excision</th>
<th>Submucuous Resection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender: Female</td>
<td>112 (57.4%)</td>
<td>67 (59.3%)</td>
</tr>
<tr>
<td>Average Age</td>
<td>33.6±13.4</td>
<td>33.4±14.2</td>
</tr>
<tr>
<td>Average BMI</td>
<td>24.7±5.0</td>
<td>24.4±4.9</td>
</tr>
<tr>
<td>Smoking Status:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former Current</td>
<td>144 (73.8%)</td>
<td>80 (70.8%)</td>
</tr>
<tr>
<td>Current</td>
<td>29 (14.9%)</td>
<td>22 (19.5%)</td>
</tr>
<tr>
<td>Never</td>
<td>22 (11.3%)</td>
<td>11 (9.7%)</td>
</tr>
<tr>
<td>History of Previous Nasal Surgery</td>
<td>40 (20.5%)</td>
<td>23 (20.4%)</td>
</tr>
<tr>
<td>History of Nasal Trauma</td>
<td>111 (56.9%)</td>
<td>62 (54.9%)</td>
</tr>
<tr>
<td>Rhinoplasty Indication:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>142 (72.8%)</td>
<td>61 (54.0%)</td>
</tr>
<tr>
<td>Cosmetic Both</td>
<td>11 (5.64%)</td>
<td>22 (19.5%)</td>
</tr>
<tr>
<td></td>
<td>42 (21.5%)</td>
<td>30 (26.5%)</td>
</tr>
<tr>
<td>Concurrent Septoplasty</td>
<td>150 (76.9%)</td>
<td>95 (84.1%)</td>
</tr>
</tbody>
</table>

Epistaxis:
- Partial excision: 4.6% experienced postoperative epistaxis
- Submucuous resection: 1.8% experienced postoperative epistaxis
- Never smokers experienced significantly less episodes of epistaxis as compared to current smokers (9 = 0.017)
- All other predictors were not significant

Nasal Congestion:
- Partial excision: 17.4% experienced postoperative congestion
- Submucuous resection: 16.8% experienced postoperative congestion
- All other predictors were not significant

Discussion
- Regardless of technique, never-smokers have a lower probability of epistaxis compared to current smokers
- Post-operative epistaxis and recurrent or persistent nasal congestion were not associated with either technique of inferior turbinate reduction

Limitations:
- Single-center study
- Retrospective data collection
- Subjectivity of perceived nasal congestion
- Confounding factors from concurrent procedures

Future Directions:
- Prospective study
- Rhinomanometry
- Additional outcome measures

Conclusion
- The goal of this study was to evaluate potential postoperative complications after two techniques of inferior turbinate reduction
- These findings demonstrate a high safety profile of these surgical approaches and utility in relief of nasal congestion when identified as a significant contributor to nasal obstruction
- Never-smokers had a decreased rate of epistaxis overall, however there was no statistical difference when comparing epistaxis after partial excision vs. submucous resection techniques
- Recurrent or persistent nasal congestion was not associated with either technique of inferior turbinate reduction

References