Revision Septoplasty: A prospective disease-specific outcome study

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INTRODUCTION

Nasal airway obstruction is among the most common chronic complaints of patients seen in the day-to-day practice of the general otolaryngologist, the rhinologist, the facial plastic surgeon and the allergist. Accordingly, septoplasty has been reported to be one of the most common surgeries performed among otolaryngologists.

Much has been written concerning outcomes of primary septoplasty surgery. Publications in the literature generally cite success/patient satisfaction rates for primary septoplasty ranging from 65-80%. Of the primary surgical failures with a persistently deviated nasal septum, a considerable number of patients may ultimately present for consideration of revision surgery. Yet outcomes of revision septoplasty surgery have never been formally studied or previously reported.

A prospective study was thus designed specifically to examine outcomes in revision septoplasty patients using a validated disease-specific quality-of-life assessment designed for nasal obstruction – the Nasal Obstruction Symptom Evaluation (NOSE) Scale (1). Patient satisfaction, medication usage before and after surgery, and sites of residual deviation in patients undergoing revision septoplasty surgery were studied as secondary outcome measures.

METHODS AND MATERIALS

Our primary hypothesis was that revision septoplasty would improve patients’ disease-specific quality of life (nasal obstruction) at 3 months post-operatively.

Our secondary hypotheses were that a) patients undergoing revision septal surgery would show a sustained and stable benefit to their disease-specific quality of life at 6 months post-operatively, b) a high degree of patient satisfaction could be demonstrated with the outcome of surgery at both 3 and 6 months postoperatively, and c) after revision surgery to correct persistent nasal obstruction patients would be less dependent on medication to treat their nasal symptoms.

In addition, we endeavored to document the sites of residual septal deflections noted at surgery thinking that such insight might provide some guidance to help improve outcomes of primary septoplasty surgery.

At the time of enrollment and at 3 and 6 months postoperatively, all subjects -completed the Nasal Obstruction Symptom Evaluation (NOSE) scale (1), -completed an 11-point Likert scale grading their ease-of-breathing (from 0=strictly a mouth breather to 10=breathing is free and unrestricted) -list all medications (prescription and OTC) used regularly by the patient to control nasal obstruction within the prior month.

At 3 and 6 months postop patients also completed a 5 point Likert scale on satisfaction with surgical outcome (1=dis satisfied to 5=extremely satisfied).

RESULTS

From June 1, 2009 to December 15, 2011 39 consecutive patients met inclusion criteria and were enrolled. Follow-up surveys at both post-operative intervals was 100%.

The subjects’ mean age was 37.0 years (R19.1-70.3). Thirty (76.9%) were male and 9 (23.1%) were female. Thirty-three patients (84.6%) had one prior septoplasty operation while 5 patients (12.8%) had two and one patient (2.6%) had three prior surgeries.

Pre and post-operative NOSE scores and Ease-of-breathing scores are listed in Tables I and II.

<table>
<thead>
<tr>
<th>TABLE I</th>
<th>Nasal Obstruction Symptom Evaluation (NOSE) Scores</th>
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<tbody>
<tr>
<td>BASELINE (n=39)</td>
<td>3 mo. POSTOP (n=39)</td>
</tr>
<tr>
<td>NOSE SCORE</td>
<td>75.0 (17.2)</td>
</tr>
</tbody>
</table>

Scores scaled from 0-100. Higher score = more severe obstruction

Data given as mean NOSE score (std. deviation)

*P < 0.0001 as compared to baseline
†P=0.278, 3 mo vs. 6 mo po

<table>
<thead>
<tr>
<th>TABLE II</th>
<th>Ease-of-Breathing (EOB) Scores</th>
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</thead>
<tbody>
<tr>
<td>BASELINE (n=39)</td>
<td>3 mo. POSTOP (n=39)</td>
</tr>
<tr>
<td>EOB SCORE (0-10)</td>
<td>3 (1.4)</td>
</tr>
</tbody>
</table>

Data given as mean Ease-of-breathing score (std. deviation)

*P < 0.0001 as compared to baseline
†P=0.146, 3 mo vs. 6 mo po

At each of the 3 and 6 month postoperative intervals 97% of patients rated their satisfaction at the 2 highest points on the 5-point Likert scale.

The overwhelming majority of patients (86.4% at 3 months, 90.9% at 6 months) reported using less medication postop and none required more medication than before surgery.

Sites of residual septal deviation are listed in Table III.

<table>
<thead>
<tr>
<th>TABLE III</th>
<th>Frequency (by site) of persistent septal deviation</th>
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<tbody>
<tr>
<td>CAUDAL</td>
<td>ANY DEVIATION</td>
</tr>
<tr>
<td>DORSAL STRUT</td>
<td>36 (92%)</td>
</tr>
<tr>
<td>MED-SEPTAL</td>
<td>22 (56%)</td>
</tr>
<tr>
<td>BONE (ethmoid)</td>
<td>31 (80%)</td>
</tr>
<tr>
<td>INFERIOR/MAX. CREST</td>
<td>5 (13%)</td>
</tr>
</tbody>
</table>

Analysis of multiple demographic and clinical variables using uni- and multi-variable linear regression models showed that only the severity of baseline NOSE score was significantly associated with degree of NOSE score change at 3 and 6 months.

DISCUSSION

Among patients who remain symptomatic after septoplasty, some will inevitably present for another operation yet outcomes of revision septoplasty have never been previously studied or reported. It is important therefore that such outcomes are critically evaluated to assess the benefit or lack thereof for such an intervention.

This prospective study was designed using a validated disease-specific outcome instrument for evaluating the effect of intervention on nasal obstruction – the NOSE scale. Our results show that despite the challenges faced in revision surgery (scar tissue, altered microcirculation, distorted anatomy, indistinct tissue planes) patients with persistent nasal obstruction after previous septoplasty who underwent revision septoplasty had a very statistically significant improvement in NOSE scores at 3 months post-operatively. Those results were stable and sustained at 6 months post-operatively. The results using an “Ease-of-Breathing” Likert scale were similar. Furthermore, patient satisfaction with the surgical outcome was very high.

A significant majority of patients reported using less medication to treat symptoms of nasal congestion after surgery. The potential health benefit of using less medication (side effects, drug interaction, poly-pharmacy) as well the obvious economic benefit to the patient and insurers makes this secondary observation very noteworthy.

Residual deflections were most commonly identified in the dorsal septum (cartilage or bone) and caudal septum. This can disproportionately reduce airflow through the nasal valves (internal or external) – areas where the native cross-sectional area of the nasal cavity is the smallest and resistance to airflow the greatest. At 3 and 6 months postoperatively, all subjects -completed the Nasal Obstruction Symptom Evaluation (NOSE) scale (1), -completed an 11-point Likert scale grading their ease-of-breathing (from 0=strictly a mouth breather to 10=breathing is free and unrestricted) -list all medications (prescription and OTC) used regularly by the patient to control nasal obstruction within the prior month.

At 3 and 6 months postop patients also completed a 5 point Likert scale on satisfaction with surgical outcome (1=dis satisfied to 5=extremely satisfied).

CONCLUSIONS

In patients with a persistent structural deviation after primary septoplasty, revision surgery is justifiable and can result in a very significant improvement in symptomatic nasal obstruction with high patient satisfaction.

In many cases this will accompanied by a decrease in the need for medications used to treat nasal congestion.

Deviations along the dorsal septum and caudal septum were frequently seen at revision surgery. These areas in particular can affect airflow through the nasal valve and thus merit increased scrutiny at the time of primary and revision surgery.

REFERENCES