The Utility of Concurrent Rhinoplasty and Sinus Surgery

A 2-Team Approach

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Objective: To evaluate the safety and efficiency of and patient satisfaction with a 2-team approach for combined rhinoplasty and sinus surgery.

Methods: We conducted a retrospective medical chart analysis of consecutive patients with sinus disease and functional nasal obstruction. Forty-four patients (29 women and 15 men; age range, 22-75 years) had severe nasal obstruction with chronic sinusitis and were found to have indications for this procedure. All patients were followed up for a minimum of 6 months after surgery. Patients completed a standardized questionnaire at the time of medical chart review, and 36 patients completed a telephone interview.

Results: All 44 patients underwent rhinoplasty with an endoscopic sinus procedure. Twenty-seven procedures (61%) were endonasal, whereas 17 (39%) were open rhinoplasty. Patients with internal nasal valve collapse underwent 28 butterfly grafts, 6 spreader grafts, and 8 batten grafts. The endoscopic sinus procedures consisted of maxillary antrostomy (30/44 [68%]) and ethmoidectomy (28/44 [63%]). Overall, 20 (65%) of 31 patients reported a postsurgical nasal airway that was significantly improved. Most sinus symptoms were resolved postoperatively, with 25 (71%) of 35 patients describing their improvement as significant. Thirty-two (92%) of 36 patients stated that they would recommend the concurrent procedure.

Conclusion: Patients presenting with nasal obstruction and chronic sinusitis tolerated combined rhinoplasty and sinus procedures without added morbidity.

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As our society ages, there is an increasing demand for facial plastic surgery.1 Many patients who seek refinement of their nasal aesthetic also have complaints of nasal obstruction.2 In addition, a significant number of patients seeking revision rhinoplasty have complaints of disordered nasal breathing.3 A complete evaluation of these groups of patients will often reveal a subset of patients who have concurrent chronic sinus disease.4

The utility of functional rhinoplasty in the treatment of the internal nasal valve has been demonstrated by multiple authors. One of us (T.A.C.) has advocated the use of an onlay conchal cartilage graft.3 Others authors have advocated the use of spreader grafts, nasal valve suture suspension, and flaring sutures.6 Endoscopic sinus surgery has also been accepted as an efficient, safe, and successful modality for the treatment of chronic sinus disease. The combination of these 2 procedures would seem to offer great benefit to the proper patient group.

Traditionally surgeons have been wary of combining rhinoplasty and endoscopic sinus surgery procedures. Most surgeons temporally separate these procedures to avoid the possibility of increased postoperative complications. Although there are reports of complications from combined procedures, other authors have had initial success with this technique.10 The desire to increase operative efficiency, decrease patient healing time, and minimize patient cost has increased interest in the combined procedure.

In this study, we present a novel 2-team approach to the combined sinus and rhinoplasty procedure. We evaluate the efficiency, safety, and clinical outcomes in patients undergoing concurrent surgery. In addition, patient satisfaction with the 2-team procedure is evaluated.

METHODS

PATIENTS

All patients were seen at the Oregon Health and Sciences University, Portland. The individuals were primary patients of one of us (P.H.H. or T.A.C.). Patients with primary sinus complaints were cross-referred if nasal valve dysfunction was suspected. Likewise, patients undergoing evaluation for nasal obstruction with concurrent symptoms of sinusitis were re-
ferred for rhinology assessment. All patients who had rhinoplasty and sinus surgery from January 1, 1997, through December 31, 2004, underwent evaluation for the study. Only those patients who underwent concurrent surgery were included in the study. Patients who underwent sinus surgery and rhinoplasty at separate instances were excluded. Included patients were submitted for a retrospective case series analysis.

**EVALUATION**

All patients underwent 2 complete evaluations. The senior facial plastic surgeon (T.A.C.) completed an endonasal examination with evaluation of structural and functional deficiencies. In addition, a full facial analysis including standardized photography was completed for each patient. The senior rhinologist (P.H.H.) performed a complete endonasal assessment, including endoscopy when indicated. All patients underwent computed tomography with axial and coronal views before surgery.

**SURGICAL TECHNIQUE**

Patients underwent concurrent surgery at the study institution. All procedures were performed under general anesthesia. If a single concurrent case was performed on a given day, the surgeries were performed in series, with the sinus procedures usually initiating the surgery. On days with multiple concurrent cases, operating rooms were run in parallel, with the teams switching after their respective portions of the case were completed. The facial plastic surgery team evaluated postoperative nasal function and documented aesthetic alterations with standardized postoperative photography and facial analysis. Postoperative endoscopic debridements and evaluation and management of sinus disease were performed by the rhinology team.

**DATA COLLECTION**

After approval from the internal review board, the medical charts of included patients were retrieved for analysis. Demographic data were obtained. In addition, medical and surgical history, presenting complaints, and elements of the physical and endoscopic examination results were documented. Surgical details were collected, including subtypes of rhinoplasty and sinus procedures. Operative time was documented. Patient follow-up was obtained with a standardized questionnaire completed at the time of medical chart review. The questionnaire documented resolution of presenting complaints, satisfaction with surgical experience, and self-evaluation of aesthetic outcome. The questionnaire was administered by a single interviewer who did not participate in the preoperative or postoperative care of the patient.

**RESULTS**

We identified a total of 89 patients who underwent endoscopic sinus and rhinoplasty surgery from January 1, 1997, through December 31, 2004. Of these, 44 underwent concurrent sinus and rhinoplasty surgery. The patient cohort included 29 women and 15 men. The mean±SD age was 46.0±6.4 years (age range, 22-75 years). Thirty-six patients agreed to or were available for a follow-up telephone interview.

Patients reported a variety of primary symptoms. The most common initial symptom was nasal obstruction or congestion (34/36 [94%]). In addition, 30 (83%) of the 36 patients carried the diagnosis of chronic or recurrent sinusitis. Less commonly, patients reported facial pain or pressure (25/36 [69%]), chronic rhinorrhea (nasal drainage, 22/36 [61%]; postnasal drip, 24/36 [67%]), or headache (26/36 [72%]). A review of all 44 patients’ medical history revealed that 23 (52%) had undergone previous sinus or nasal surgery. The indication given for the previous surgery was functional breathing alone (14/18 [78%]) or in combination with cosmetic indications (4/18 [22%]). Twenty-one (58%) of 36 patients had a history of nasal trauma, and 28 (78%), a history of snoring. A significant number of patients (22/36 [61%]) were diagnosed as having allergic rhinitis. Preoperative medications included nasal steroids (30/36 [83%]), decongestants (30/36 [83%]), and antibiotics (28/36 [78%]).

Physical examination revealed a number of structural deficiencies in the 44 patients. The most common was sepal deformity (42/44 [95%]). Thirty-six patients (81%) demonstrated mucosal edema or mucopurulence. A weakness of the upper lateral cartilage was observed in 35 (80%) of the patients. Sixteen patients (36%) were observed to have a complete detachment of the upper lateral cartilage from the nasal bones. Turbinate deformity was observed in 34 patients (77%).

A summary of the performed surgical procedures is listed in **Table 1**. All 44 patients underwent rhinoplasty with an endoscopic sinus procedure. Twenty-seven procedures (61%) were endonasal, whereas 17 patients (39%) underwent an open rhinoplasty. Adjunctive rhinoplasty procedures included dorsal reduction (32 patients), medial (13 patients) and lateral (19 patients) osteotomies, and septoplasty (40 patients). Patients with internal nasal valve collapse underwent 28 butterfly grafts, 6 spreader grafts, and 8 batten grafts. The endoscopic sinus procedures consisted mainly of maxillary antrostomies (30 patients) and ethmoidectomies (28 patients). Additional sinus procedures included frontal (6 patients) and sphenoïd (6 patients) surgery.

Patients had significant improvements in sinus symptoms and nasal breathing (**Table 2**). Overall, 41 patients (93%) reported some improvement in their nasal obstruction. Twenty (65%) of 31 patients reported a postsurgical nasal airway that was significantly improved. Similarly, most sinus symptoms were resolved postoperatively. Thirty-three (94%) of 35 patients reported overall

| Table 1. Surgical Procedures in 44 Patients |
|-----------------|-----------------|
| Type of Procedure | No. of Patients |
| Open            | 17              |
| Endonasal       | 27              |
| Septoplasty     | 40              |
| Dorsal reduction| 32              |
| Columellar strut | 10              |
| Medial osteotomy| 13              |
| Lateral osteotomy| 19             |
| Butterfly graft  | 28              |
| Batten graft     | 8               |
| Spreader graft   | 6               |
| Maxillary antrostomy | 30         |
| Ethmoidectomy   | 28              |
| Frontal sinusotomy | 6           |
| Sphenoidotomy   | 6               |
| Polypectomy     | 3               |
improvement postoperatively, with 25 (71%) describing their improvement as significant.

The mean operative time was 3 hours 37 minutes (SD, 54 minutes). We observed 2 infectious complications, including 1 case of vestibulitis and 1 superficial staphylococcal infection. Both resolved with oral antibiotic therapy and without further complication. Four patients (9%) developed postoperative synechiae. Thirty-three (92%) of 36 patients stated that they would recommend the concurrent procedure.

Nasal obstruction and chronic sinusitis are common ailments. The incidence of nasal obstruction as a presenting symptom has been estimated to be as high as 33% of patients visiting an otolaryngologist.11 Similarly, the prevalence of chronic sinusitis has been estimated to be nearly 2%.12 A significant subgroup of patients will be affected by sinus disease and functional nasal obstruction. When surgery is indicated, a combined procedure seems to offer the benefit of reduced healing time, decreased cost, and maximum operative efficiency.

The patient group in this study underwent a wide range of rhinoplasty and endoscopic sinus procedures. Both the endonasal and open-structure rhinoplasty approaches were used. Most importantly, patients had significant improvements in sinus symptoms and nasal breathing. Overall, 41 patients (93%) reported some improvement in their nasal obstruction. Twenty patients (65%) reported a postsurgical nasal airway that was significantly improved. Similarly, most sinus symptoms were resolved postoperatively. Thirty-three (94%) of 35 patients reported overall improvement postoperatively, with 25 (71%) describing their improvement as significant. Only 2 patients (4.5%) indicated that there was little or no improvement in nasal obstruction or sinus symptoms.

Operative time is a measure of a procedure's efficiency. On average, an endoscopic sinus procedure is about 150 minutes long.13 The duration of a rhinoplasty is quite variable, but for one of us (T.A.C.) it ranges from 1 to 3 hours depending on case complexity. The combined procedures in this series had a mean length of 207 minutes. Although this constitutes a relatively lengthy single procedure, it is less actual operative time than the combined mean of the separate procedures. Combined with the benefits of use of a single anesthetic and a single recuperation period, we believe that the concurrent procedure provides a clear advantage.

The incidence of complications due to sinus surgery is overall quite low. Minor complications such as postoperative bleeding and synechiae formation have been documented, with an incidence of 2% to 4%.14 More major complications such as cerebrospinal fluid leak and visual compromise are usually reported at a rate of less than 1%.15 Postoperative complications due to rhinoplasty are also infrequently reported. When revision surgeries for aesthetic refinement are included, the incidence is usually reported as being 5% to 10%.16,17 The frequency of complications due to a combined procedure is not well defined. In a limited number of case series reports, several authors18,19 have described complication rates approaching that of sinus surgery or rhinoplasty alone. To be deemed an effective and safe treatment option, the complication rate of the combined procedure should not exceed previously reported norms. In our case series, we report 2 patients with postoperative infectious complications and 4 patients with synechiae formation. This incidence of 4% to 9% falls within the range of accepted norms. No patients suffered major complications.

With any elective surgery, patient satisfaction is the ultimate measure of a procedure’s success. In our cohort, 33 (92%) of the patients stated that they were happy with their procedure and would recommend a concurrent sinus and rhinoplasty procedure. We believe that combining endoscopic sinus and rhinoplasty procedures is a safe, efficient, and effective practice. Using a 2-team approach allows maximum efficiency for the operative surgeons and improves access to surgical care for the patients.

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Table 2. Improvements

<table>
<thead>
<tr>
<th>Symptom</th>
<th>No Change</th>
<th>Slight Improvement</th>
<th>Significant Improvement</th>
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<tbody>
<tr>
<td>Snoring (n = 27)</td>
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<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Breathing (n = 31)</td>
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<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Sinus (n = 35)</td>
<td>2</td>
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REFERENCES