**Objective:** To measure the efficacy of a specific midvault reconstruction technique (the autospreader flap) in dorsal reductive rhinoplasty with a validated quality-of-life instrument.

**Design:** A prospective observational outcomes study of patients desiring reduction of the nasal dorsum who either (1) had no breathing obstruction, who underwent purely aesthetic rhinoplasty, or (2) had concomitant severe nasal obstruction due to septal deviation, internal valve narrowing, and/or turbinate hypertrophy, who subsequently underwent combined functional and aesthetic rhinoplasty. Preoperative and postoperative evaluation was performed using the Nasal Obstruction Symptoms Evaluation (NOSE) scale.

**Results:** Thirty-eight patients completed preoperative and postoperative evaluation. No complications occurred. Patients in the purely aesthetic group were noted to have low preoperative NOSE scores, with no change postoperatively. There was a significant improvement in mean NOSE score postoperatively for the combined functional and aesthetic group ($P < .001$).

**Conclusions:** Midvault reconstruction using the autospreader graft may help prevent postoperative nasal obstruction due to midvault collapse. Combining this procedure with dorsal reduction in functional rhinoplasty patients with traditional airway reconstruction techniques is effective in improving nasal airway function as measured by a patient-based, disease-specific quality-of-life instrument.


**METHODS**

**STUDY DESIGN AND PATIENT SELECTION**

The study was conducted at Stanford University Medical Center, Palo Alto, California, with the approval of the human subjects commit-
The study hypothesis was that patients undergoing cosmetic rhinoplasty with dorsal hump takedown and autospreader grafting, without pre-existing nasal obstruction, would not exhibit worsening of nasal obstruction. We also hypothesized that the use of autospreader grafts in patients undergoing combined aesthetic dorsal hump takedown and functional rhinoplasty would not diminish the benefits of other conventional airway augmentation maneuvers.

Outcomes were measured preoperatively and postoperatively with the NOSE questionnaire to determine the disease-specific QOL (eg, nasal obstruction symptoms). The NOSE scale is used to assess disease-specific QOL and is scaled from 0 to 100, with higher scores meaning more severe nasal obstruction. Preoperative NOSE scores were obtained at a preoperative visit, and follow-up NOSE scores were obtained at postoperative visits.

Subjects included in the study were adult patients seen by a single surgeon for cosmetic rhinoplasty with dorsal hump takedown or a combination of both functional and cosmetic concerns.

**RESULTS**

Thirty-eight patients completed preoperative and postoperative questionnaires. All patients underwent upper lateral spread grafts as described in the “Methods” section. The mean follow-up was 150 days (range, 30-619 days). Twenty-one patients underwent aesthetic rhinoplasty only, with no pre-existing history of nasal obstruction. Five of these patients had a septal cartilage graft harvested from the septum, though a functional septoplasty was not performed. Preoperative mean (SD) NOSE and visual analog scale (VAS) scores were low (13 [16] and 1.2 [1.6], respectively). Postoperatively, these patients exhibited a slight reduction in their mean (SD) NOSE and VAS scores, reflecting improved status, though this was not statistically significant (10.5 [12] and 0.95 [1.2]; \( P = .40 \) for both comparisons to preoperative values).

Seventeen patients who underwent functional rhinoplasty with concomitant aesthetic dorsal reduction submitted preoperative and postoperative surveys. All of these patients had adjunctive procedures performed such as septoplasty, inferior turbinate reduction, and/or bone anchored suture technique. Preoperative NOSE scores for these patients was comparable to that of prior studies and were significantly higher than the cosmetic-only group (57.4 [21]; \( P < .001 \) compared with the preoperative scores of the cosmetic-only patients [Figure 2A]). This was also true of the patients’ VAS scores (5.7 [2.2]; \( P < .001 \) compared with the preoperative scores of the cosmetic-only patients [Figure 2B]). Postoperatively, the combined functional and cosmetic surgery patients showed significant reductions in mean (SD) NOSE and VAS scores (17.3 [12.6] and 1.8 [1.4]; \( P < .001 \) for each compared with preoperative values [Figure 3]).

**COMMENT**

Reconstruction of the nasal midvault has long been understood to be an important aspect of functional and aesthetic rhinoplasty. Spreader grafts have been used by rhinoplasty surgeons since they were introduced by Sheen. Autospreader grafts are a useful, cartilage-sparing technique that allows...
While functional rhinoplasty is a heterogeneous group of procedures such as septoplasty, bone-anchored sutures, and various grafting techniques to the lateral nasal wall, our study indicates that the use of autospreader grafts does not, at the very least, interfere with other functional rhinoplasty maneuvers. One drawback of this study is that it was not designed as a prospective, randomized trial. This, however, would have required some patients to undergo nasal reduction without midvault reconstruction. Given the aesthetic and functional consequences of failure to reconstruct the midvault, we elected to design a prospective observational outcomes study. Our study indicates that autospreader grafts are a safe and effective approach to prevent or treat midvault overnarrowing. Future studies of aesthetic or reconstructive nasal maneuvers should also be accompanied by outcomes measures.

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