Evidence supporting functional rhinoplasty or nasal valve repair: a 25-year systematic review

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CRD summary
The authors concluded that there was substantial support from case series that modern-day rhinoplasty techniques were effective for nasal obstruction due to nasal valve collapse. Evidence appeared to support the authors’ conclusions, but the limited search and reliance upon diverse and potentially biased observational studies that predominantly evaluated combinations of interventions undermined the strength of the evidence.

Authors’ objectives
To evaluate the efficacy of modern-day rhinoplasty techniques for treating nasal obstruction due to nasal valve compromise.

Searching
PubMed was searched for studies published in English from 1982 to August 2007. Search terms were reported. In addition, reference lists were screened.

Study selection
Studies that evaluated functional rhinoplasty techniques for treating nasal obstruction in adults were eligible for inclusion.

Prospective and retrospective case series and individual cohort studies were included in the review. The studies evaluated a variety of functional rhinoplasty techniques including batten grafts, spreader grafts, butterfly onlay grafts, structural bone grafts and suture suspension. In 75 per cent of studies rhinoplasty was combined with other interventions, the most common of which were septoplasty and turbinate reduction. Studies assessed efficacy and adverse events/complications using a variety of outcome measures including subjective gross patient reports, validated patient reported measures, non-validated questionnaires and objective measures including rhinomanometry, acoustic rhinometry and nasal airflow. The duration of follow-up ranged from one month to 13 years.

Two reviewers independently selected studies.

Assessment of study quality
Study validity was not assessed. Four reviewers independently classified study design using the classification system described by the Oxford Centre for Evidence–Based Medicine (OCEMB). Discrepancies were resolved through consensus.

Data extraction
Four reviewers independently extracted data and resolved discrepancies through consensus. For each study, findings were reported in terms of percentage or numbers of patients with outcomes of interest.

Methods of synthesis
The studies were combined in narrative synthesis. A summary rates measure was presented for adverse events.

Results of the review
Forty-four studies were included (n=2,995). Sample size ranged from seven to 312. Twenty-two studies were prospective and 22 were retrospective. Forty-two studies were graded as level 4 evidence (case series) and two studies were graded as level 2b evidence (cohort studies).

The authors stated that all studies generally reported that rhinoplasty techniques were effective. Effectiveness rates ranged from 100 per cent to 65 per cent. No studies reported that rhinoplasty techniques were ineffective.
The most common adverse event was failure to improve nasal airway patency. Revision surgery was performed in four per cent to nine per cent of patients (four studies). Postoperative complications were reported in 18 studies. The most common complications included intranasal synechiae (14 per cent, six studies), infection (nine per cent, four studies), graft reabsorption (seven per cent, three studies) and residual septal deviation (seven per cent, three studies).

Authors’ conclusions
There was substantial support from case series that modern-day rhinoplasty techniques were effective for nasal obstruction due to nasal valve collapse.

CRD commentary
The review question was clearly stated and inclusion criteria broadly defined. Limiting the search to English-language reports listed in one database may have resulted in the omission of other relevant studies and raised the potential for publication and language bias. Appropriate methods were used to minimise reviewer error and bias during the review process. In view of the diversity among studies, a narrative synthesis was appropriate. However, there was no adequate systematic assessment of study quality. Evidence appeared to support the authors’ conclusions, but the limited search and reliance upon diverse and potentially biased observational studies that predominantly evaluated combinations of interventions undermined the strength of the evidence.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that future research should include comparative studies that use standardised and objective methods to assess outcomes.

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