Nasal Surgery for Obstructive Sleep Apnea Syndrome

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Abstract

Objectives: Using evidence-based methodology, we report the literature review findings concerning nasal surgery and OSAS. Methods: The MedLine, EMBRASE, Cochrane databases are searched (1960 - 2008) using subject headings “nasal surgery,” “sleep apnea,” “snoring,” or “sleep disorder.” Letters to editor, case reports, review articles, and non-English publications are excluded. Data extracted from these articles are used for critical appraisal and are analyzed using meta-analysis and data-synthesis technology. Results: Patients pooling revealed gender distribution (90% male), with a mean age of 48 years, and respiratory disturbance index (RDI) ranged from 6.2 to 83.6 event/hr. Baseline BMI spanning from 25.9 to 35.7 kg/m² was recorded in 10 articles. Total nasal resistance from 2.7 to 5.6 cmH2OL/s was measured in 5 articles. In 13 articles, nasal surgery was the only procedure that applied to patients. 5 articles report significant improvement in AHI; 2 of nasal-surgery only and 3 of nasal with oropharyngeal surgery. The success rate was statistically significant between “nasal surgery-only” and “nasal with oropharynx surgeries-together” articles (15.8-57% vs. 40-82%, P=0.03). Although significant improvement in nasal obstruction and concomitant quality of life were mentioned in aforementioned articles, there were no universal measures to present a coherent analysis. Conclusions: Nasal surgery might be efficacious in treating OSAS-related symptoms. However, the meta-analysis does not support the efficacy of exclusive nasal surgery for sleep apnea in regard to the success rate. Heterogeneity in small study population and incoherence of outcomes measures limit the study and arrant further research.

Introduction

The efficacy of nasal surgery in the treatment of OSA, and the relevance of chronically increased nasal resistance in the pathological features of OSA remain obscure. The objective is to use evidence-based methodology to report our literature review findings in regard to the efficacy of nasal surgery in treating OSA.

Method

The MedLine, EMBRASE, COCHRANE databases are searched from 1960 to 2007 with Boolean combinations: (“nasal surgery” and “sleep apnea” or “snoring” or “sleep disorder”). To identify published studies for inclusion in this analysis, study populations include OSA patients requiring nasal surgery; publications have to address outcomes of nasal surgery. We exclude letter to editor, case series (less than 5 cases), review articles and those are available only with abstract format. Study design must be prospective, with or without control group; and researches must be conducted on human subjects. Non-English publications are excluded. Patient characteristics (such as age, gender, BMI), disease severity (such as level of sleepiness, snoring, nasal obstruction), and nasal surgery outcomes are recorded for analysis. We estimate the success rate in percentage (%). Differences in success rates are analyzed using Mantel-Haenszel fixed effect model; and odds ratio (OR) is calculated.

Result

We reviewed 13 prospective, quasi-randomized research articles regarding nasal surgery and OSA. Data extracted from these articles are used for critical appraisal and are analyzed using meta-analysis and data-synthesis technology. (FIGURE 1)

Table 1. Patient Characteristics – Objective Severity

Table 2. Surgical Improvement – Normal or Abnormal Oropharynx

Table 3. Patient Characteristics – Objective Severity

Table 4. Surgical Improvement – Normal or Abnormal Oropharynx

Table 5. Success Rate - Normal or Abnormal Oropharynx

Table 6. Quality of Life Measure - Normal or Abnormal Oropharynx

Conclusion

Nasal surgery might be efficacious in treating simple snoring, normal oropharynx inlet patients with concomitant nasal obstruction. Heterogeneity in small study population, inconcoherence of outcomes measures, and diversified surgical procedures are common research limitations. Proper severity stratification, disease classification, and risk adjustment are anticipated; quality-of-life issue is another potential research perspective.