



Pediatric nasal valve surgery: Short-term outcomes and complications



Victor Chung^a, Arnold S. Lee^b, Andrew R. Scott^{b,c,*}

^a Department of Otolaryngology – Head & Neck Surgery, Tufts Medical Center, Boston, MA, United States

^b Division of Facial Plastic and Reconstructive Surgery, Department of Otolaryngology – Head & Neck Surgery, Tufts Medical Center, Boston, MA, United States

^c Division of Pediatric Otolaryngology, Department of Otolaryngology – Head & Neck Surgery, Floating Hospital for Children – Tufts Medical Center, Boston, MA, United States

ARTICLE INFO

Article history:

Received 8 May 2014

Received in revised form 30 June 2014

Accepted 2 July 2014

Available online 11 July 2014

Keywords:

Pediatric septoplasty

Nasal valve

Spreader graft

Batten graft

Nasal vestibular stenosis

ABSTRACT

Objectives: To examine the short-term outcomes and complications of open nasal valve surgery in children under 16 years of age. **Study design:** case series and chart review study setting: an urban, tertiary, pediatric otolaryngology practice.

Methods: Children under 16 years of age who had undergone nasal valve surgery with cartilage grafting for functional indications were identified. Patients with cleft-related nasal deformities were excluded. Charts were reviewed for indications and short-term outcomes (patient satisfaction and postoperative complications within the first 90 days). A literature review assessed prior outcomes in adult nasal valve patients.

Results: Fifteen pediatric patients, 15 years old or younger, were identified as having undergone open nasal valve repair utilizing septal or auricular cartilage grafts. Patient age ranged from 6 to 15 years. Surgical indications were nasal obstruction with nasal valve stenosis related to either previous trauma ($n = 10$), congenital deformity ($n = 3$), iatrogenic injury ($n = 1$) or hemangioma of infancy ($n = 1$). All patients noted improvement of symptoms at the 90 day interval or later. There was one episode of self-limited epistaxis, which occurred on postoperative day 7 following splint removal.

Conclusions: In children, an obstructive nasal breathing pattern may be caused by nasal valve collapse, which can be addressed with nasal valve surgery. This small series suggests that short-term results in children may be similar to those observed in the adult population. Pediatric nasal valve surgery outcomes have not been described previously; studies focused on long-term outcomes following pediatric nasal valve surgery are needed.

Level of evidence: 4.

© 2014 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Nasal obstruction is a common complaint in children and adolescents. Common barriers to normal nasal airflow in the pediatric population include chronic rhinitis, turbinate hypertrophy, adenoid hypertrophy, and nasal septal deviation [1]. In addition to nasal septal deviation, nasal valve collapse is a well understood mechanism of nasal obstruction in adults, however the prevalence of nasal valve dysfunction in children has not been examined.

Nasal valve stenosis may occur when malpositioning or intrinsic weakness of nasal cartilages lead to increasing resistance with increased flow in one of two critical areas within the nasal cavity. The external nasal valve is composed of the nasal septum and the medial and lateral crura of the lower lateral cartilages. The internal nasal valve is defined as the area between the superior nasal septum, the upper lateral cartilage, and the inferior turbinate. Surgical correction of nasal airflow-limiting pathophysiology has been shown to relieve obstructive symptoms in the adult population; such procedures usually involve septoplasty for correction of nasal septal deviation and harvesting of cartilage grafting material [2]. Multiple techniques for septoplasty and nasal valve reconstruction have been described in adults, however pediatric septal surgery remains a controversial topic.

Prior animal studies have identified the quadrilateral cartilage as a keystone area in the development of the cartilaginous nasal vault [3,4]. Based on concerns for disruption of nasal and facial

* Corresponding author at: Department of Otolaryngology, Divisions of Pediatric Otolaryngology and Facial Plastic Surgery, Floating Hospital for Children at Tufts Medical Center, Box #850, 800 Washington Street, Boston, MA 02111, United States. Tel.: +1 617 636 2820; fax: +1 617 636 1479.

E-mail addresses: vchung@tuftsmedicalcenter.org (V. Chung), alee2@tuftsmedicalcenter.org (A.S. Lee), ascott@tuftsmedicalcenter.org (A.R. Scott).

growth, it was recommended that nasal septal surgery should be delayed until the growth process had ceased [5–7]. Recently, Lawrence et al. reported conflicting data that in fact supports addressing the pediatric nasal septum [1]. While that publication suggests that pediatric septoplasty is a safe procedure in regards to midface development; the literature still remains divided on the safety and advisability of pediatric septoplasty.

In regards to adult nasal valve surgery, cartilage grafting (including spreader grafts, alar batten grafts, and alar rim grafts, among others) has been shown to improve airflow through the nasal valves by either increasing cross-sectional area or supporting the integrity of the lateral nasal wall [8]. Currently, there are no published data pertaining to the indications, safety, or feasibility of pediatric nasal valve surgery.

The first aim of this study was to report a cohort of pediatric patients (under age 16 years) with symptomatic nasal valve collapse who were treated with open nasal valve reconstructive surgery with cartilage grafting by one of two surgeons. The second aim of this study was to examine short-term outcomes and complications following these surgeries and compare these outcomes to those reported for adult patients in the literature. Formal outcome measures of the subjective efficacy of nasal valve surgery in children were not obtained, as the use of preoperative and postoperative Nasal Obstructive Symptom Evaluation (NOSE questionnaire) has not been validated in the pediatric population and was felt to be beyond the scope of this study [11].

2. Methods and materials

A database of pediatric patients at a single, urban tertiary pediatric referral center was queried. Patients who were under the age of 16 years and had undergone open nasal valve reconstructive surgery with cartilage grafting by one of two surgeons were included in the analysis. Children who had undergone open septorhinoplasty with cartilage grafting for cleft-related nasal deformities were excluded. Charts were reviewed for surgical indications and short-term outcomes including patient satisfaction and postoperative complications within the first 90 days following the procedure.

A literature review, using search terms “nasal valve surgery” and “pediatric nasal surgery,” was performed to assess similar

outcome measures in adult nasal valve surgery patients and to identify additional series of pediatric nasal valve surgery that have been reported.

3. Results

During the time period between 2006 and 2012, 15 pediatric patients, 15 years old or younger, with nasal valve collapse underwent open nasal valve repair utilizing septal or auricular cartilage grafts. The average and median age in this series was 14 years, and ranged from 6 years to 15 years, with a male to female ratio of 2:3. Surgical indications were symptomatic nasal obstruction with external or internal nasal valve collapse as determined by office examination (Fig. 1), or for intraoperative reconstruction following resection of extensive scarring or nasal mass. This obstruction was related to either previous nasal trauma ($n = 10$), congenital nasal deformity ($n = 3$), iatrogenic nasal stenosis ($n = 1$) or hemangioma of infancy ($n = 1$). Approximately 60% (9/15) of patients' nasal valve dysfunction had a traumatic etiology.

3.1. Brief description of procedure

Patients were taken to the operating room where each nasal procedure was performed through an open approach under general anesthesia. A transcolumellar approach with vertical columellar and marginal incisions was utilized in the majority of cases, with the exception of one reconstruction, which occurred following nasal subunit resection of an alar hemangioma of infancy. In this case, the alotomy incision utilized in the ablation was exploited for more direct access to the lower lateral cartilage.

The decision of whether or not to use septal cartilage was made based on the surgeon's assessment of the child's stage of midface development. In 87% (13/15) of cases nasal septal cartilage was utilized as the source for grafting material. When necessary, auricular cartilage was harvested through a postauricular approach.

Spreader grafts were utilized in nearly all patients (13/15) (Figs. 2 and 3). These grafts were carved into matchstick-shaped pieces of cartilage, which were inset flush with the dorsal cartilaginous septum using clear 5-0 PDS. The previously divided upper lateral cartilage was then resuspended to the lateral aspect



Fig. 1. Dynamic external nasal valve collapse and caudal septal deviation; exhalation and inhalation.

Download English Version:

<https://daneshyari.com/en/article/6213734>

Download Persian Version:

<https://daneshyari.com/article/6213734>

[Daneshyari.com](https://daneshyari.com)