Auris Nasus Larynx 41 (2014) 273–277

Contents lists available at ScienceDirect

Auris Nasus Larynx

journal homepage: www.elsevier.com/locate/anl

Endoscopic microdebrider-assisted inferior turbinoplasty with and without posterior nasal neurectomy

Silviu Albu *, Veronica Trombitas, Alina Nagy

II-nd Department of Otolaryngology, Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca, Romania

ARTICLE INFO

Article history:
Received 27 May 2013
Accepted 22 November 2013
Available online 17 December 2013

Keywords:
Endoscopic surgery
Turbinoplasty
Posterior nasal neurectomy
Microdebrider
Symptom score
Quality of life
Acoustic rhinometry
Rhinomanometry

ABSTRACT

Objective: Endoscopic microdebrider-assisted inferior turbinoplasty (EMAIT) has been recognized as an efficient surgical technique in the management of hypertrophied inferior turbinate. In an attempt to further increase surgical successful outcomes, posterior nasal neurectomy (PNN) was developed. The aim of this retrospective case–control study was to assess the position of PNN in the surgery of hypertrophied turbinate.

Methods: Seventy patients were assigned to the two treatment groups: Group A (EMAIT) and Group B (EMAIT and PNN). Subjective outcomes were represented by symptom score and quality of life scores (Rhinoconjunctivitis Quality of Life Questionnaire – RQLQ). Objective outcomes were nasal resistance, saccharin transit time and acoustic rhinometry parameters.

Results: The survey demonstrated that symptoms and objective parameters improved postoperatively in both groups, with no statistical significant differences in objective and subjective outcomes between the surgical groups.

Conclusion: The addition of PNN appears to offer no additional benefit in the subjective and objective outcome related with surgery of hypertrophied inferior turbinate. However, longer follow-up studies and larger number of patients are required in order to validate our results.

1. Introduction

Nasal obstruction is caused mainly by inferior turbinate hypertrophy. One of the most common causes of inferior turbinate hypertrophy is allergic rhinitis (AR). Medical treatment such as antihistamines and topical corticosteroids are commonly prescribed in order to alleviate the symptoms. However, in patients refractory to medical treatments, surgical reduction of the inferior turbinate should be attempted [1].

Endoscopic microdebrider-assisted inferior turbinoplasty (EMAIT) has been recognized as an efficient surgical technique in the management of inferior turbinate hypertrophy associated with intractable AR unresponsive to medical therapy [1–5]. Nevertheless, it is claimed that this technique is associated with limited success in improvement of AR symptoms [6]. In an attempt to further increase successful outcomes, posterior nasal neurectomy (PNN) was developed by Kawamura et al. [7]. This technique, extensively described by Ogawa et al. [8], entails selective posterior nasal nerve cautery or incision at the level of sphenopalatine foramen. Parasympathetic nerve fibers pass through that foramen and branch into the mucosa of the inferior turbinate. Thus, it is hypothesized that PNN could significantly decrease nasal hypersecretion and simultaneously avoid complications related to Vidian nerve transection, such as decreased lacrimation and numbness of the upper lip [7,8].

In order to critically assess the place of turbinoplasty with associated PNN in the treatment of AR, we planned a retrospective case–control study comparing microdebrider-assisted inferior turbinoplasty with and without PNN. The aim of this study was to compare the objective and subjective outcomes in these two groups of treatment.

2. Materials and methods

2.1. Patients

Informed consent was obtained from all patients and the study was approved by the Institutional Review Board of the Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca. Between January 2008 and December 2011 seventy consecutive patients with AR underwent EMAIT. Surgery was offered to patients with severe turbinate hypertrophy unresponsive to

* Corresponding author at: II-nd Department of Otolaryngology, Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca, Str. Republicii nr. 18, 3400 Cluj-Napoca, Romania. Tel.: +40 741 217301; fax: +40 264 598278.
E-mail address: silviualbu63@gmail.com (S. Albu).

0385-8146/$ – see front matter © 2013 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.anl.2013.10.018

medical therapy, which included topical corticosteroids and/or oral antihistamines for at least 6 months. Inclusion criteria were documented clinical history and allergy tests suggestive of perennial AR. The CAP-RAST assay was used for the detection of allergen-specific Ig E in serum. High titer of anti-*Dermatophagoides farinae*-specific (48.5 ± 35.4 KUA/L) and anti-*Dermatophagoides pteryronyssinus*-specific (50.5 ± 37.4 KUA/L) Ig E antibodies were recorded in our population. Nasal scraping was performed with a disposable Rhinoprobe, which has been passed along the inferior turbinate. Eosinophilia of $22.5 \pm 18.3\%$ was recorded in nasal smears of our patients. Excluded from the study were patients with previous nasal surgery, septum deviations, nasal valve collapse, nasal polyps, sinusitis, tumors and vasomotor rhinitis. We assessed also the result of topical decongestion on nasal resistance. According to well-accepted recommendations [9], excluded were also patients with less than 35% decrease in unilateral nasal resistance on rhinomanometry, representing a structural abnormality such as bony hypertrophy of the inferior turbinate or concha bullosa. Patients did not receive any AR treatment within 4 weeks preoperatively and 1-year postoperatively. According to the surgical procedure performed, the 70 patients were separated into two groups (Groups A and B) of 35 patients each. Average follow-up period was 15.6 months ranging from 12 to 19 months.

2.2. Surgery

All surgical procedures were performed under general anesthesia by the same surgeon (SA). EMAIT was performed in Group A patients (see Fig. 1a): firstly, an incision of the inferior turbinate head was made and sharp dissection on the internal face of the bony turbinate were performed. Afterwards, the trimming of the hypertrophic submucous vascular erectile tissue was carried out with the straight microdebrider blade (2.0 mm) incorporated with an elevator (Medtronic Xomed, Inc., Jacksonville, FL), inserted into the submucosal compartment. The turbinate bone has not been removed and this technique permitted for safeguarding of the epithelial layer. Following surgery, the nose was packed with Vaseline-coated gauze for 1 day. An additional procedure was performed in Group B patients (PNN – see Fig. 1b): a vertical incision at the level of the posterior fontanelle was made and mucosa was elevated off the lateral bony wall. Advancing toward the posterior end of the middle meatus, the sphenopalatine foramen was identified and the neurovascular bundle including the posterior nasal nerve was visualized. If the posterior nasal nerve and sphenopalatine artery could be separated, only the nerve was cauterized. Care was taken not to injure the sphenopalatine artery and vein. When the nerve and artery could not be separated, the whole bundle including the artery was cauterized. Sufficient coagulation was done to circumvent postoperative bleeding. Postoperatively, all patients received analgesics and antibiotics for 5 days.

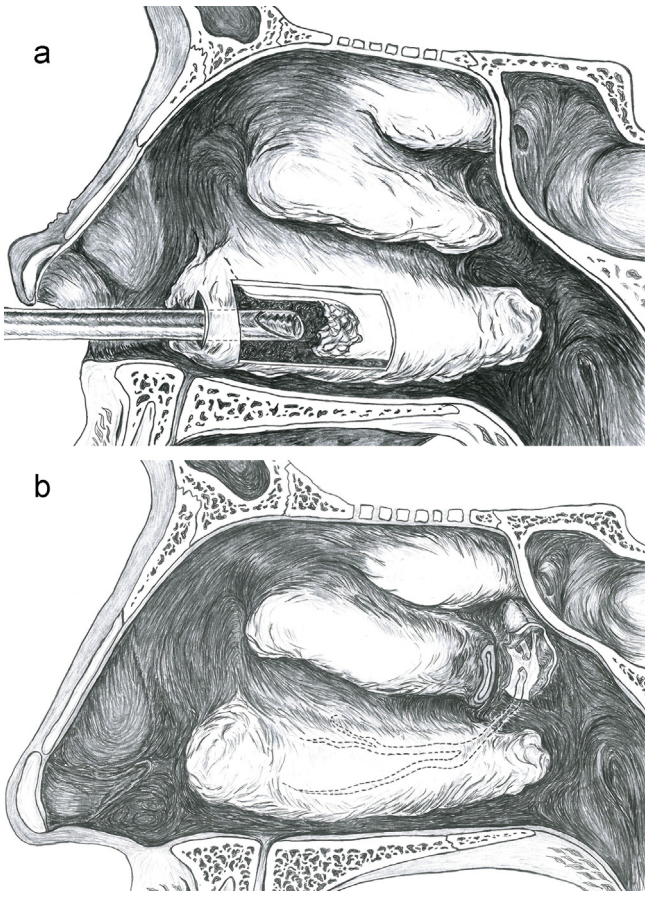

Fig. 1. (a) Endoscopic microdebrider-assisted inferior turbinoplasty: trimming of the hypertrophic submucosal tissue on the medial surface of the turbinate bone. (b) Posterior nasal neurectomy: selective posterior nasal nerve cautery or incision at the level of sphenopalatine foramen.

2.3. Subjective and objective evaluation

Both subjective and objective evaluations were performed before surgery and 12 months after surgery. Symptoms assessed in our study included nasal obstruction, rhinorrhea, sneezing, and snoring. The patient's bed-partner was questioned as to the loudness of snoring. A standard visual analog scale ranging from 0 (no symptoms) to 10 (the most-severe, unremitting symptoms) was used to assess subjective patient complaints. The sound level of snoring was also assessed on the same VAS scale. Occurrence of postnasal drip compared with preoperative status was also recorded at the last follow-up visit. Bleeding was defined as a postoperative circumstance that involved temporary nasal packing with gauze or Merocel.

Quality of life was investigated using the Romanian validated form of Rhinoconjunctivitis Quality of Life Questionnaire – RQLQ. The RQLQ has 28 questions in 7 domains (activity limitation, sleep problems, nose symptoms, eye symptoms, non-nose/eye symptoms, practical problems and emotional function). There are three "patient-specific" questions in the activity domain that allow patients to select three activities in which they are most limited by AR. Each item is rated on a seven-point scale (0 = not impaired at all; 6 = severely impaired). The overall RQLQ score is the mean of all 28 responses [10].

Nasal mucociliary transport was evaluated in all patients before and postoperatively using the standardized saccharin test [11]. Nasal airflow was objectively measured by active anterior rhinomanometry. The investigation was performed with the aid of the Rhinomanometer 300 (ATMOS MedezinTechnik, Lenzkirch, Germany) in a standard manner as previously described [12]. Using a value of 150 Pa as the reference point, the total nasal resistance was estimated both before and after surgery in both groups. Acoustic rhinometry was performed preoperatively and 12 months after operation. We compared the increase of a cross-sectional area of second notch (CSA-2) and volume of nasal cavity (up to 7 cm posteriorly from the nostril) in each group and between two groups [13].

2.4. Statistical analysis

We used SPSS software 20.0 (SPSS Inc., Chicago, IL) for statistical analysis. All data are presented as means $\pm$ SD. Postoperative improvement in each group was evaluated with Wilcoxon signed