

Original Article

The Effects of Partial Turbinectomy on Patients Undergoing Rhinoplasty

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Abstract

Introduction:

A reduction or cessation of the ability to breathe through the nose can affect a person's overall health. Nasal passage blockage can also result in snoring. Difficulty in breathing through the nose after rhinoplasty is a serious problem and patient dissatisfaction can be significant even when cosmetic results are excellent. Long-term impacts on the quality of life and contributions to the pathophysiology of sleep-related breathing disorders have both been documented. This study compares nasal obstruction and other prevalent respiratory side effects of rhinoplasty in the presence and absence of partial turbinectomy.

Methods and Materials:

This is an experimental case study conducted in 2007 on patients undergoing rhinoplastic surgery in Shahid Dastgheyb Hospital of Shiraz, Iran. Sampling was done on all admitted patients during this year in the mentioned hospital. For the first group, rhinoplasty plus partial turbinectomy was performed while taking into consideration the Helsinki criteria septorhinoplasty without partial turbinectomy was performed on the second group. P-value less than 0.05 was considered as statistically significant.

Results:

There was no significant difference between the case and control group in terms of their mean age and gender distribution. Respiratory mean scores before and after rhinoplasty in both groups were significantly different in some issues of Nasal Scale (i.e.: Nasal blockage or obstruction, trouble sleeping, inability to get enough air through the nose during exercise or exertion, trouble breathing through nose).

Conclusion:

Achieving cosmetic goals while preserving such necessary functions is a great concern for rhinologists and this makes different complexes. To create a balance between the maximum physiologic function and the best cosmetic feature is an art.

Keywords:

Nasal obstruction, Partial inferior turbinectomy, Septorhinoplasty

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Introduction

A nasal airway obstruction such as enlarged turbinates due to allergic rhinitis can reduce or eliminate one's ability to breathe through the nose, and thus expose the individual to increased particulates and compromise his or her overall health (1-3). Nasal airway obstruction is a very common condition that can be either temporary or chronic. The condition can be caused by a number of anatomic and non-anatomic factors, including: deviated septum, turbinate hypertrophy, inflammation and swelling due to allergies or sinus problems, nasal polyps, nasal tissue enlargement such as adenoid, foreign bodies, medications such as nasal decongestant sprays and drops if overused (4-8).

A very important consequence of a poorly planned rhinoplasty is nasal obstruction; when the nose is altered and is made smaller the air passage maybe disturbed. For many years, nasal obstruction has been equated with nasal septal deformity and therefore led to septal surgery. Nasal obstruction is a symptom, not a diagnosis, and there is a plethora of medical and structural conditions that can cause such symptoms (7,9-11).

The classic septal surgery or submucous resection involves removal of all obstructing bones and cartilages while preserving adequate caudal and dorsal margins of the quadrangular cartilage to prevent saddle nose deformity (12,13). This procedure definitely widens the nasal airway and has been shown to be one of the most effective procedures in achieving long-term nasal patency. In a retrospective study researchers showed that 80% of the 150 studied patients had subjectively improved nasal breathing and 91% had widely patent nasal airways at an average follow-up time of 2.5 years (range 1 to 7). The most common complication of total inferior turbinectomy appears to be hemorrhage (14-18) and the procedure often requires nasal packing after

completion. Also, nasal crusting, synechiae, and discomfort are frequent side effects for several months after surgery because of the exposed bone at the lateral nasal wall (16,19-23). A 1985 retrospective study by Moore et al condemned total inferior turbinectomy, reporting that 66 percent of their 18 patients had ozena or advanced atrophic rhinitis characterized by chronic crusting and dysosmia even resulting in anosmia due to the destruction of olfactory cells. Others have refuted this notion and report that atrophic rhinitis is a rare and even insignificant complication of total turbinectomy. However, many otolaryngologists today have abandoned this procedure (24-29).

Today, a more conservative approach referred to as septoplasty has become popular. After removing the deviated cartilage and bone, it is morselized and then reinserted. Neither technique, however, guarantees relief of obstructive symptoms (31,32). The literature suggest that obstructive symptoms continue in up to 20-30 % of these operations for one of the two following reasons; The first reason is that there can be persistent septal deformity whereas secondly, other valve areas might have been involved but were not addressed at the time of the septal surgery (27,34-37). A less radical procedure, partial resection of the inferior turbinate (PRITs), is the procedure of choice. It addresses only the area of the inferior turbinate that is anatomically important in the pathogenesis of nasal obstruction, the anterior two centimeters of the inferior turbinate. It is directed at relieving obstruction at the nasal valve, while leaving a portion of the turbinate to continue its function of air conditioning (19-22,36-39). Nasal patency rates show great subjective improvement immediately after surgery, with one retrospective study reporting that 70 out of the 76 patients having shown improvement at about 8 years.

However, other studies have suggested decreased effectiveness with time, similar to non-resection procedures (13-15,39-42). Complications are similar to those for total turbinectomy, though the crusting is usually less severe, as is the risk of hemorrhage. Atrophic Rhinitis with this procedure is rare (25,31-33). This article focuses on the effects of partial turbinectomy in patients undergoing septorhinoplasty in comparison to patients going through septorhinoplasty alone.

Materials and Methods

This is a prospective single-blinded randomized observational study performed in Dastgheyb Hospital, Shiraz, Iran on rhinoplastic candidate patients for septorhinoplasty from September to..... 2007. Those with no history of nasal obstruction before surgery but with enlarged turbinates on physical examination after performing partial turbinectomy considering the Helsinki criteria were excluded from the study (as the goal of this study was to see whether partial turbinectomy can prevent nasal obstruction or not, we included patients with normal size turbinates to prevent bias in the study). Other exclusion criteria were as follows: patients having undergone other ear, nose or throat procedures such as previous rhinoplasty, septoplasty, sinus surgery and turbinate surgery, patients with septal deformity, nasal polyps, sinusitis, allergic or non allergic rhinitis, acute nasal trauma, history of nasal bone fracture, benign or malignant tumor of the nasal cavity, nasal radiotherapy, nasal valve collapse, adenoid hypertrophy, sarcoidosis, wegner granulomatosis, uncontrolled asthma, pregnancy, septal perforation, patients with coagulopathies, those who took any kind of medication or herbs affecting the coagulation cascade and patients with a history of nasal dryness and crusting. Each group consisted of 50 patients

assigned with simple randomized sampling. The first group (study group) underwent rhinoplasty and partial inferior turbinectomy while the second one (control group) went through rhinoplasty alone by a single surgeon. Partial turbinectomy was performed by removing a small amount of the anterior part of the inferior turbinates by punch. Demographic data and Nasal Scale questionnaires were filled in once before the surgery and also 6 months after it; they consisted of 4 items: Nasal blockage or obstruction, trouble sleeping, inability to get enough air through the nose during exercise or exertion and trouble breathing through the nose. Answers were separately measured on a scale of zero to four based on quality (higher scores showing higher severity) and then totaled for a percentage of 100. Because the two terms "nasal congestion" and "nasal obstruction" have close and similar meanings in Persian culture, nasal congestion was omitted from the survey. SPSS version 18 was applied and t-student, t-paired sample, Chi square, exact fisher and non-parametric Wilcoxon tests were used to analyze the data and a P-value less than 0.05 was considered as statistically significant.

(This work is approved by the Local Research Ethics Committee, Medical Research Ethics Committee of Shiraz University of Medical Sciences)

Results

Among the initial 120 patients, 20 were excluded due to having one of the exclusion criteria or an incomplete follow up. The mean age of the studied patients was 23.9 ± 4.6 years. There was no significant difference between the study and control group in terms of their mean age (23.8 ± 4.4 vs. 24 ± 4.8 respectively, $P=0.78$). Male to female ratio was also statistically similar between the two groups ($P=0.65$). In both groups nasal

obstruction had less severity after surgery based on Wilcoxon test ($P < 0.001$), whereas Fisher's exact test showed no significant difference in terms of nasal obstruction between the two groups after surgery ($P = 0.14$). Trouble sleeping relieved significantly in the control group ($P = 0.01$) while when turbinectomy was performed this relief was not statistically significant ($P = 0.09$). Ability to get enough air through the nose during exercise or exertion improved ($P = 0.04$), while trouble breathing through the nose decreased in both groups after surgery ($P = 0.006$). Respiratory mean scores before and after rhinoplasty in both groups are summarized in table 1.

Table 1: Respiratory mean scores before and after surgery in both groups

Group	Control		Case	
	Mean	SD	Mean	SD
Before surgery	0.4	0.73	0.5	1.25
After surgery	1.84	1.7	0.96	1.56
P	<0.001		0.07	

Overall, in 40% of the studied patients no change took place in respiratory function, 14 cases from the study group and 26 from the control group. In 50% of all patients, respiratory function worsened considering Nasal Scale scores consisting of 16 and 34 patients in the study and control groups, respectively.

Total respiratory score was significantly better in 8 patient's undergone rhinoplasty with partial turbinectomy and 2 cases from the control group. As demonstrated in figure-1,

Chi-square test showed statistically significant differences between the two groups after surgery ($P = 0.001$).

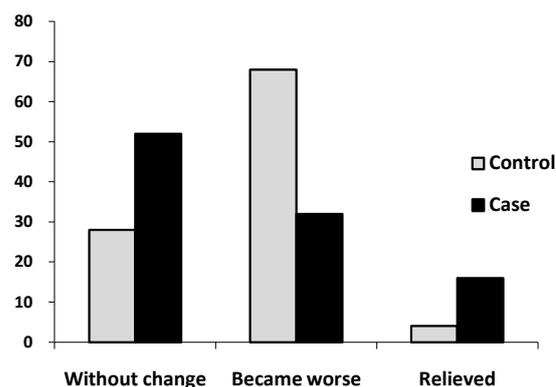


Fig 1: Distribution of different outcomes after surgery in both groups

Discussion

It is standard practice for most rhinoplasty surgeons to assess what they perceive to be the cosmetic outcome of their surgery (8-12,40-43). Achieving cosmetic aims while preserving these necessary functions is a great concern for rhinologists and this makes different complexes (44). To create a balance between the maximum physiologic function and the best cosmetic feature is an art. From a purely aesthetic and artistic perspective, a perfect nose is not necessarily a small one, but rather one that looks natural and fits the person's face, and most importantly is not the center of attention. The attention should always be directed towards the more dynamic portions of the face including the expressions and the beauty of the eyes, lips and the smile. A small nose that is not appropriate to a face will bring the focus back to the nose, this is truly a failed result and all measures should be taken to avoid it (45-50).

Total inferior turbinectomy has been condemned for many years because some authors believe that it has long term sequelae such as rhinitis sicca, atrophic rhinitis, and ozena (47,48). These terms are often used interchangeably in our literature to describe a dry, crusting nose. This association dates from the 1930's

when total inferior turbinectomy was performed as a part of a drainage procedure for chronic maxillary sinusitis (33-36).

Many cases during that era developed atrophic rhinitis because almost the entire lateral nasal wall was removed. Very few studies in the antibiotic era have documented atrophic rhinitis after total inferior turbinectomy (50-52), whereas the reverse is actually true. Three separate, large studies involving a total of over 400 patients failed to document a case of atrophic rhinitis after total inferior turbinectomy. Tarabichi and coworker, in a study involving over 200 patients, indicated that it is only this anterior region that causes the obstructive symptoms. Tarabichi found that the removal of the anterior two centimeters of the inferior turbinate relieved the obstructive symptoms in 96% of the cases. Lenders and Persig verified these results using acoustic rhinometry to identify the area of obstruction. They found that only the anterior two centimeters of the inferior turbinate was involved in significant obstructive symptoms (51-56).

Finally, it should be kept in mind that the inferior turbinates are important in the creation of normal turbulent air flow

within the nose. Complete resection risks upsetting the delicate balance between turbulent and laminar air flow without providing better symptomatic relief when compared to more conservative techniques. Difficulty breathing through the nose after rhinoplasty is a serious problem. Patient dissatisfaction can be significant even when cosmetic results are excellent. Long-term impacts on the quality of life and contributions to the pathophysiology of sleep-related breathing disorders have both been documented.

Conclusion

We did not reach a definite conclusion regarding the effect of partial turbinectomy in decreasing the rate of nasal obstruction. In patients undergoing rhinoplasty. Some symptoms improved with partial turbinectomy and some did not. Because nasal obstruction is a significant complication of cosmetic nasal surgery and we found no significant complication attributable to partial turbinectomy, more studies including a greater number of patients to help reach a conclusion regarding the effect of partial turbinectomy on post-rhinoplasty nasal obstruction are recommended.

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