

Original Research Article

Effect of septoplasty on quality of voice

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ABSTRACT

Background: Septoplasty is one the most commonly performed surgery in ENT. The aim of this study was to evaluate change in voice after septoplasty using voice handicap index (VHI).

Methods: The current study was conducted at Department of ENT, SMGS Hospital, Government Medical College, Jammu, from October 2017 to November 2018. The study population was the patients who had come to the department with deviated nasal septum admitted for septoplasty. Voice assessment was done by Subjective Voice evaluation using VHI. It was done at three times i.e. preoperatively, postoperatively at 1 week and then postoperatively at 1 month.

Results: Out of 50 cases operated, 84% patients of present study were in the age group of 18-30 years. The mean age was 25 years. The eldest patient in our study was 55 years old. 40 patients were males and 10 were females with male: female ratio of 4:1. Mean VHI score at preoperative, postoperative 1 week and postoperative 1 month were 23.2, 22 and 21.5 respectively. No statistical difference was obtained while comparing the mean VHI score at different time intervals. The scores between 0-30 are in the mild category i.e. minimal amount of handicap.

Conclusions: According to our experience a widened nasal cavity has no effect on voice quality and procedures about nasal obstruction like septoplasty can be performed safely. However, professional voice users, in particular, should be informed about the possible minor postoperative changes, before the septoplasty procedure.

Keywords: Nasal obstruction, Septoplasty, Voice handicap index

INTRODUCTION

Nasal obstruction is one of the most common complaint of patients visiting Otorhinolaryngology clinic and one of the main reason of nasal obstruction is nasal septal deviation. Males are affected more than females.¹

Nasal resonance can play an important role in determining the quality of voice.² The nose adds quality by allowing some air to escape through it during speech. In normal speech, nasality is referred as nasalization and is a linguistic category that can apply to vowels or consonants in a specific language. Sound resonates within

the nose and mouth, if too little air escapes from the nose then rhinolalia clausa occurs, if too much then rhinolalia aperta occurs.³

Nasal sound is defined as the resonance sound generated within the nasal cavity by some or all of the energy in the sound produced from the vocal cords to nasal cavity. Nasal sound is heavily influenced by length and structure of nasal cavity and pneumatization of the sinuses connected to nasal cavity.⁴

The nasal sound is composed of a nasal consonant and a nasalized vowel. Therefore when measuring the change

in nasal consonant and nasalized vowel we are able to predict that sound change occurs due to disturbance in the connection between the oral cavity and the nasal cavity.⁵

Deviated nasal septum is a common disorder which alters the nasal cavity anatomically and physiologically and results in nasal obstruction from breathing. It can arise due to an external trauma or can be caused by the compression of the nose during birth. The degree of septal deviation from the centre determines the severity of the disorder.⁶

Septal deviations affect the free aeration and cause nasal obstruction, blockage, allergic rhinitis and dryness of throat and hence influence the person's quality of life. DNS can lead to sinusitis, affect the sinus drainage and also influence the resonance and voice characteristics of speech. It can have a significant impact on the quality of the nasal phenomes as well as on nasal airflow.⁷

METHODS

The current study was conducted at Department of ENT, SMGS Hospital, Government Medical College, Jammu, from October 2017 to November 2018. The study population was the patients who had come to the department with deviated nasal septum admitted for septoplasty fulfilling the inclusion criteria. On total 50 patients were included in the study.

Inclusion criteria

Inclusion criteria were patients with different types of deviated nasal septum who will undergo septoplasty; patients both male and female between age group 18-60 years.

Exclusion criteria

Exclusion criteria were patients who previously underwent septoplasty; patients with known dysphonia, vocal cord paralysis, or a history of speech disorder; patients with hearing impairment; patients with any kind of nasal mass; in patients with contraindications of surgery or patients not fit for surgery; patients with allergic rhinitis; patients with craniofacial anomaly; patients with neurological disease; patients with laryngeal pathology; postoperatively, the patients who had septal perforation were also excluded from the study.

Procedure

Before beginning the study, written and informed consent was taken from all the patients. Detailed history was taken. Clinical examination was done in all the patients. DNS was diagnosed by anterior rhinoscopy and nasal endoscopy.

Patients fit for surgery underwent septoplasty by standard technique. Voice assessment was done by subjective voice evaluation using voice handicap index (VHI).⁸

The VHI is a self administered questionnaire consisting of questions under physical, functional and emotional domains.⁸ The patients were instructed that these statements are how most people describe their voices and the effects of their voices on their lives. It was done at three times i.e. preoperatively, postoperatively at 1 week and then postoperatively at 1 month.

The patients marked their response that indicates how frequently they have the same experience.

- 0=never
- 1= almost never
- 2=sometimes
- 3=almost always
- 4= always.

0-30= these are low scores, and indicate that most likely there is a minimal amount of handicap associated with voice disorder.

31-60= denotes a moderate amount of handicap due to voice problem.

60-120= these scores represent a significant and serious amount of handicap due to voice problem. A higher score indicates a more severe subjective voice disorder.

All the results were summarized and analysed by SPSS software. Chi square test and Mann Whitney test was used for assessment of level of significance. P value of less than 0.05 was taken as significant.

RESULTS

The present study was carried out in 50 patients upto the age of 60 years. The aim was to assess the voice quality in patients with DNS undergoing septoplasty using VHI. The following observations were made.

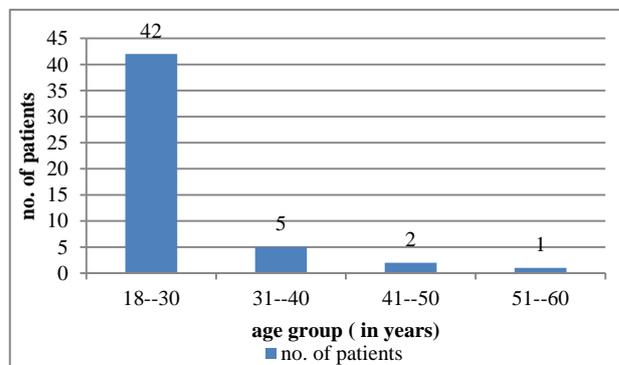


Figure 1: Age distribution of patients.

Age distribution of patients

84% patients of present study were in the age group of 18-30 years. The mean age was 25 years. The eldest patient in our study was 55 years old (Figure 1).

Sex distribution of patients

Out of 50 patients, 40 patients were males and 10 were females with male: female ratio of 4:1 (Figure 2).

Voice handicap index (VHI) scores

All the patients of DNS were subjectively assessed by VHI three times, once before septoplasty (preoperative), then one week after septoplasty (postoperative 1 week) and then one month after the surgery (postoperative 1 month).

The self assessment was done by the patients using VHI which is a subjective voice analysis. The scores obtained in three groups are shown in Table 1. Mean VHI score at

preoperative, postoperative 1 week and postoperative 1 month were 23.2, 22 and 21.5 respectively. No statistical difference was obtained while comparing the mean VHI score at different time intervals. The scores between 0-30 are in the mild category i.e. minimal amount of handicap. The scores of all the patients were less than 30 at all times of assessment.

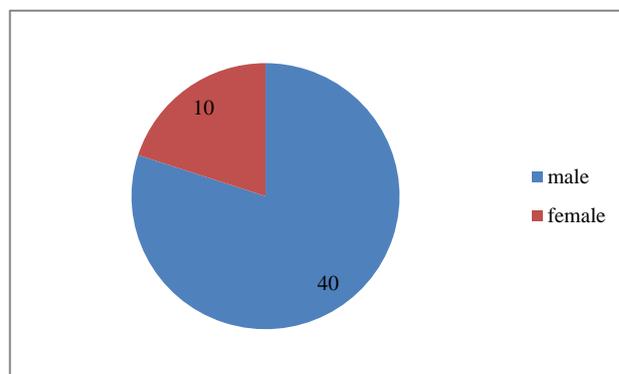


Figure 2: Sex distribution of patients.

Table 1: Mean VHI scores.

Parameter	Preoperative	Postoperative 1 week	Postoperative 1 month	P value
Mean VHI score	23.2	22	21.5	0.40

DISCUSSION

Septoplasty is among the most common surgical intervention performed in ENT clinics at present. Patients complain of nasal obstruction can be solved through septoplasty. This management is thought to be effective on the nasal airflow, nasal resistance and nasal resonance which form the nasal voice. Subjective evaluations performed on the basis of whether the patients feel the change or not are dissatisfying toward investigating and revealing these effects.⁹

According to a study by Behlau et al, patients with unnatural speech are evaluated as less attractive and less intelligent than people with normal speech and this apprehension can affect social life and life quality of these patients nasal obstruction may play a role in the feature of voice.¹⁰ There are not many reports on acoustic features of the voice after septoplasty procedures. Normality of voice, grade and cause of voice disorders and effect of treatment especially in clinical trials can be evaluated by voice analysis methods.

The current study was conducted at Department of ENT, SMGS Hospital, Government Medical College, Jammu, from October 2017 to November 2018. The study population was the patients who had come to the department with deviated nasal septum admitted for septoplasty were analysed. 84% patients of present study were in the age group of 18-30 years. The mean age was 25 years. Our results were in correlation with the results

by Yegin et al and Koc et al who observed similar findings in their study.^{11,12} Mean age in their study was 32.13 years and 28 years respectively.

In our study 80% patients were males and 20% were females with male: female ratio of 4:1. Our results were in concordance with the results obtained by Yegin et al and Ozbal Koc et al, who observed that 69.9% and 75% of the patients were males.^{11,12}

VHI is a common questionnaire used in a wide range of voice disorders and it is the most applicable subjective self rating questionnaire in patients who have perceived voice disability. It shows the effect of disabilities resulting from voice handicap on quality of life. VHI is a perceptual analysis tool of voice quality that shows us the influence of voice problems and their treatment on patient’s quality of life.¹³

Mean VHI score at preoperative, postoperative 1 week and postoperative 1 month were 23.2, 22 and 21.5 respectively. No statistical difference was obtained while comparing the mean VHI score at different time intervals. The scores between 0-30 are in the mild category i.e. minimal amount of handicap. The scores of all the patients were less than 30 at all times of assessment.

Atan et al in their study analysed the effect of septoplasty performed in 2 groups with different grades of nasal septal deviatins (NSD) on noise performance.¹⁴ They assessed a total of 43 patients who had undergone

septoplasty due to NSD and divided them into two groups as group A and group B. the patients in group A had severe NSD and 1 of the nasal cavity was obstructed totally or near totally. In group B, the NSD narrowed the nasal passage, and the deviation was not severe. Voice Handicap Index (VHI) improved after surgery in their study without any statistical significant difference. In group B, preoperative and postoperative VHI scores showed a significant improvement postoperatively. They concluded that septoplasty performed for severe NSD obstructing nasal lumen totally or near totally, results in significant improvement in voice performance.

Since there is paucity of data in literature in relation to effect of septoplasty on different acoustic voice parameters, further studies are recommended for better exploration of this field.

CONCLUSION

According to our experience a widened nasal cavity has no effect on voice quality and procedures about nasal obstruction like septoplasty can be performed safely. However, professional voice users, in particular, should be informed about the possible minor postoperative changes, before the septoplasty procedure. Further, studies are recommended for better exploration of this field of nasal surgery.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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