

Original Article

Assessment of septoplasty patients with the help of CT scan - A clinical study

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ABSTRACT:

Background: Nasal obstruction is the most common symptom leading to the decision to carry out septoplasty procedures. The present study was conducted to assess septoplasty patients with the help of CT scan. **Materials & Methods:** The present study was conducted on 68 patients of both genders. All septoplasty operations were performed under general anesthesia with conventional or endoscopic techniques. All patients underwent computerized tomography (CT). All of the nasal parameters were assessed by an experienced radiologist. **Results:** Age group 10-20 years had 25, 20-30 years had 18, 30-40 years had 15 and >40 years had 10 patients. The difference was significant ($P < 0.05$). Right internal nasal valve angle (RINVA) was 10.81 degree, Left internal nasal valve angle (LINVA) was 9.92 degree, Left external nasal base area (LENBA) was 1.13 degree, right external nasal base area (RENBA) was 1.16 degree, Left internal nasal valve area (LINVAr) was 0.43 degree and Right internal nasal valve area (RINVAr) was 0.45 degree. **Conclusion:** Authors found that CT scan is useful in assessment of cases of septoplasty in adults.

Key words: CT scan, Septoplasty, ENT

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INTRODUCTION

The nose is one of the essential parts of the respiratory system. Nasal obstruction is the most common symptom leading to the decision to carry out septoplasty procedures.¹ Nasal obstruction symptoms can be related to several etiologic factors such as nasal septal deviation, turbinate hypertrophy, and nasal valve incompetence. The internal and the external nasal valve are the two distinct locations which play an essential role in maintaining physiological nasal airflow. The internal nasal valve area (INVAr) is defined by the nasal septum.²

Diagnostic investigations currently used for this pathology are anterior rhinoscopy, endoscopy, multislice CT and MR, which allow a good evaluation of the entity and position of NSD.³ In particular, pre-operative CT scan of the paranasal sinuses is often performed before septoplasty, in order to

evaluate nasal anatomy, to find concomitant sinonasal pathologies and to reduce surgical failure.⁴ Despite the fact that pre-operative CT scan of the paranasal sinuses can be recommended in case of obstructive middle turbinate hypertrophy, impossibility to evaluate the middle meatus and the posterior nasal cavity or in patients with chronic sinusitis, the high radiation dose and costs do not allow its usage routinely in patients undergoing septoplasty.⁵ Diagnosis of nasal septal deviation is clinical, based on anterior rhinoscopy and nasal endoscope. Treatment of nasal obstruction due to a deviated septum may include the use of medication to reduce tissue swelling, yet, surgery is often necessary to correct the deviation to alleviate patient symptoms.⁶ The present study was conducted to assess septoplasty patients with the help of CT scan.

MATERIALS & METHODS

The present study was conducted in the department of ENT and Radiology. It comprised of 68 patients of both genders. All patients were informed regarding the study and written consent was obtained. The study was approved from institutional ethical committee.

Patient data such as name, age, gender etc. was recorded. All septoplasty operations were performed under general

anesthesia with conventional or endoscopic techniques. All patients underwent computerized tomography (CT). All of the nasal parameters were assessed by an experienced radiologist. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Age wise distribution of patients

Age groups (Years)	Number	P value
10-20	25	0.02
20-30	18	
30-40	15	
>40	10	

Table I shows that age group 10-20 years had 25, 20-30 years had 18, 30-40 years had 15 and >40 years had 10 patients. The difference was significant (P < 0.05).

Graph I Age wise distribution of patients

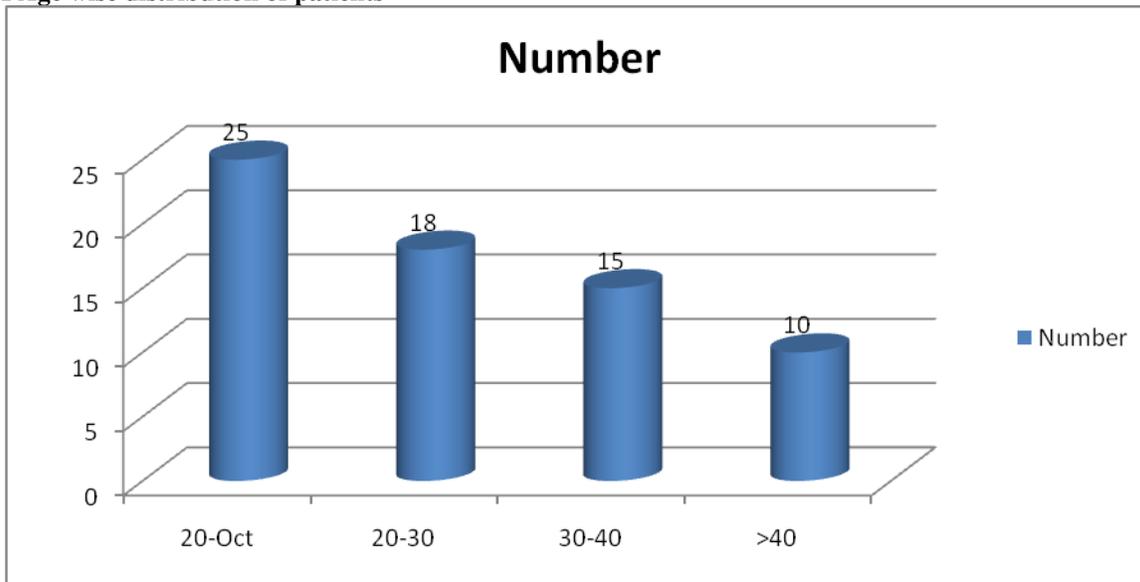
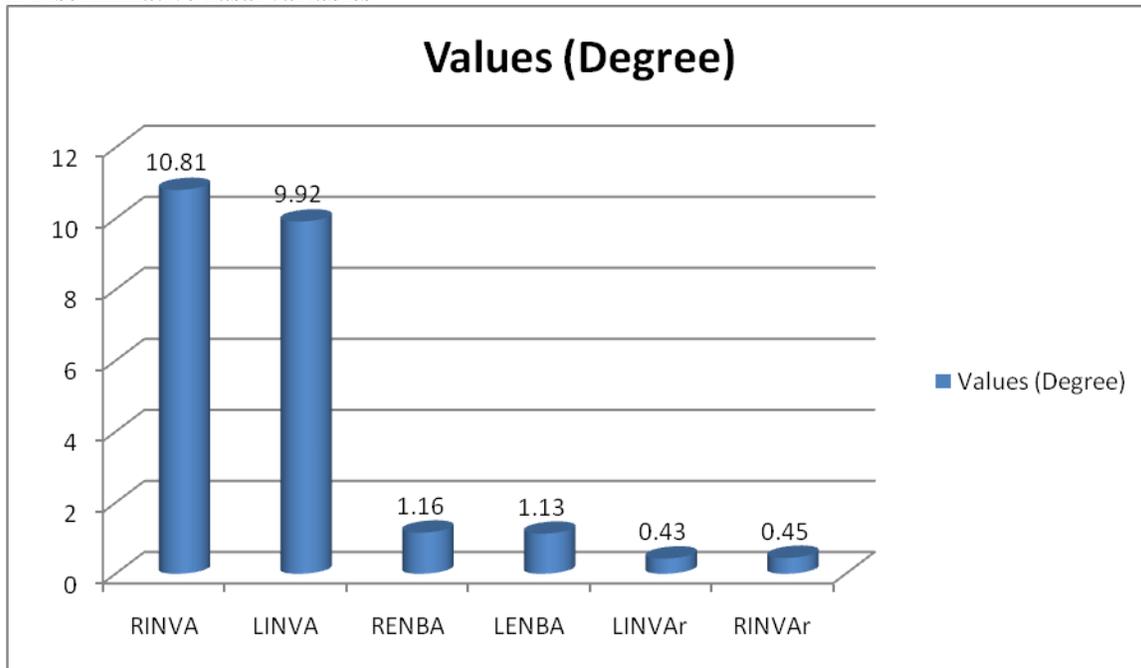


Table II The distribution of discriminative nasal variables

Variables	Values (Degree)
RINVA	10.81
LINVA	9.92
RENBA	1.16
LENBA	1.13
LINVAr	0.43
RINVAr	0.45

Table II, graph II shows that right internal nasal valve angle (RINVA) was 10.81 degree, Left internal nasal valve angle (LINVA) was 9.92 degree, Left external nasal base area (LENBA) was 1.13 degree, right external nasal base area (RENBA) was 1.16 degree, Left internal nasal valve area (LINVAr) was 0.43 degree and Right internal nasal valve area (RINVAr) was 0.45 degree.

Graph II Discriminative nasal variables



DISCUSSION

Imaging is occasionally performed as part of the deviated septum assessment. CT scanning of the nose and paranasal sinuses is one of the common imaging modalities used in otolaryngology.⁷ CT could recognize pathological findings that could not be found on physical examination and is helpful to decide the location and the type of surgery. However, no strict guidelines are available for the diagnostic use of CT scanning in nasal septal deviation.⁸

In otorhinolaryngology, NSD is one of the most frequent diagnoses, and it is generally based on the evaluation of patient symptoms and on anterior rhinoscopic outcomes. This clinical analysis is accompanied by quantitative diagnostic methods used to demonstrate the septal deviation. In particular, cross-sectional images allow the correlation of patient symptoms to the airway anatomy of both the anterior and posterior nasal cavity before surgery.⁹ The present study was conducted to assess septoplasty patients with the help of CT scan.

In present study, age group 10-20 years had 25, 20-30 years had 18, 30-40 years had 15 and >40 years had 10 patients. Right internal nasal valve angle (RINVA) was 10.81 degree, Left internal nasal valve angle (LINVA) was 9.92 degree, Left external nasal base area (LENBA) was 1.13 degree, right external nasal base area (RENBA) was 1.16 degree, Left internal nasal valve area (LINVAr) was 0.43 degree and Right internal nasal valve area (RINVAr) was 0.45 degree.

Cho et al¹⁰ conducted a study to interpret the value of nasal valve areas measured by PNCT for both septoplasty candidates and the control population. There were 192 (64%) patients with left nasal septal deviation and 108

(36%) patients with right nasal septal deviation. The Independent Sample T-Test revealed that the mean internal nasal valve angle in the left septoplasty group was significantly lower than that of the control group ($P < 0.005$). A comparison of the right side nasal values revealed a significant statistical change according to the Independent Sample T-Test between the value of the right septoplasty and the control groups.

Karatas et al¹¹ analyzed images of 46 subjects who underwent CBCT for reasons not related to this study. Two experienced operators divided all the images into healthy and NSD subjects. Differences between the groups were found in SDA, in volume percentage difference and in SDI. PCA showed high correlation between the SDI and the first principal component.

Günbey et al¹² conducted a study in which retrospective review of seventy-two patients booked for corrective septal surgery (septoplasty) was conducted. Each patient’s record was reviewed for CT request prior to surgery. Seventy-two patients were included in the study, 27 (37.5%) females and 45 (62.5%) males. Age ranged from 16 to 72 years (mean of 31.58). Twenty-two (30.5%) patients had CT imaging prior to surgery; two (2.7%) scans were for patients booked for only septoplasty surgery. Twenty-one (29.2%) of the scans reported deviated nasal septum in the report. One (1.4%) report mentioned central nasal septum. Authors concluded that CT imaging is not crucial for the diagnosis of simple deviated nasal septum; its role is more pronounced in complex cases where other pathologies of the nasal tract are suspected to cause the patient symptoms.

CONCLUSION

Authors found that CT scan is useful in assessment of cases of septoplasty in adults.

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