



SEPTOPLASTY: COMPARISON OF COMPLICATION RATES IN CONVENTIONAL AND ENDOSCOPIC METHODS

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ABSTRACT

Septoplasty is a common procedure performed by ENT surgeon. And it aims on the alleviation of nasal obstruction due to deviated nasal septum, used as an adjunct in endonasal DCR, inferior turbinate reduction, Functional endoscopic sinus surgery and trans nasal hypophysectomy and even done for graft harvesting. This study aims to compare the complications rates that occur intraoperatively and postoperatively in conventional and endoscopic methods of septoplasty. It includes 36 patients studied prospectively who underwent septoplasty at our institute, and were followed up to 6 months postoperatively. They were divided into groups of 18 patients each and named as group A consisting of patients who underwent conventional septoplasty and group B consisting of those who underwent endoscopic septoplasty. The intraoperative and postoperative complications were higher in case of conventional as compared to endoscopic. But functionally both the procedure had similar results with no statistical difference.

KEYWORDS

septoplasty, complication, complication rates, conventional, endoscopic.

INTRODUCTION:

History of surgery for nasal diseases dates back to 600 BC described by Sushruta^[1]. The Babylonian Hammurabi Legal Code, Egyptian Edwin Smith Surgical Papyrus and the Roman text of Celsus are some of the early texts that have also described surgeries for nasal trauma^[2]. The treatment for nasal trauma dates back to 3000 BC in the texts of 'Egyptian Edwin Smith surgical papyrus' where in nasal fractures were treated with nasal manipulation and then plugging the nostrils with lint, swabs and linen as absorbents. Wooden splints were applied externally which were padded with linen, grease and honey were applied on fresh wounds^[3].

Adams proposed the fracturing of nasal septum followed by the splinting. He also named the procedure septoplasty^[4].

During the 20th century, the popular technique of Submucosal Resection (SMR) was introduced, which is still practiced to date as the conventional technique of septoplasty. **Gustav Killian of Germany** and **Otto Tiger Freer of United States of America** was the one who laid down the foundation of SMR, where in Killian devised the incision, that was 1-2cm posterior to the anterior edge of septum on the respiratory epithelium with the elevation of sub-perichondral flaps^[5]. Quadrangular cartilage freed from its bony attachments and the chiselling out of the obstructing bony structures. But with SMR was associated with columellar retraction and supra-tip depression. Due to the unequal scarring of the septal flaps^[6].

20th century showed a great deal of improvements regarding the minimal resection of septal cartilage in order to treat deviated nasal septum and thus not compromising with the functionality and reducing the associated complications.

In 1991 Lanza et. al. and Stammberger introduced the use of endoscope in correction of the deviated septum. The accurate exposure of the anatomy of the septum significantly reduced failure and led to increased quality of life. Septal spurs, posterior septal deviation and even septal perforation were treated effectively. This led to the immense popularity of the procedure^[7].

The procedure of septoplasty has seen many improvements through the years and now is mostly performed using conventional or endoscopic methods according to the requirement of the disease. An ideal surgical procedure for the correction of nasal septum should satisfy the following criteria^[8]:

- Should relieve the nasal obstruction.
- Should be conservative.
- Should not produce iatrogenic deformity
- Should not compromise the osteo-meatal complex
- Must have the scope of revision surgery.

Yet, none of the traditional methods have fulfilled the above criteria^[8]. It is difficult to attain an idealistic approach as each procedure has its

own complications and limitations. Here in this study, we will focus on comparison of both intraoperative and postoperative complication rates of conventional septoplasty and endoscopic septoplasty.

Aims and Objective:

To comparatively assess the rates of complications in the intraoperative and postoperative periods of patients undergoing conventional and endoscopic septoplasty.

MATERIAL AND METHODS:

This is a prospective study of 36 patients who reported in the ENT out patient department of Rajendra Institute of Medical sciences. The patients were divided into 2 groups A & B consisting of 18 patients each and undergoing conventional septoplasty and endoscopic septoplasty respectively. The study was conducted for 1 year and 3 months from December 2019 to March 2021. The sample is small and the study was long in view of the ongoing nCov-19 pandemic. Permission was taken from the Institutional ethical committee for the conducting of the study. Written and informed consent was taken from all the participants. The benefits to be obtained, the aims and objectives of the study, the voluntary nature of the participation and free will to withdraw from the study without any penalty, the confidentiality and results were clearly spell out to the patients.

Inclusion Criteria:

1. Age more than 18 years
2. Complaints of nasal obstruction due to deviated septum only

Exclusion Criteria:

1. Age less than 18 years
2. History of previous surgery,
3. History of allergic rhinitis or upper respiratory tract infection
4. Patients with sinusitis, headache, epistaxis or postnasal drip
5. Patients with synechia or septal perforation

Parameters to be studied:

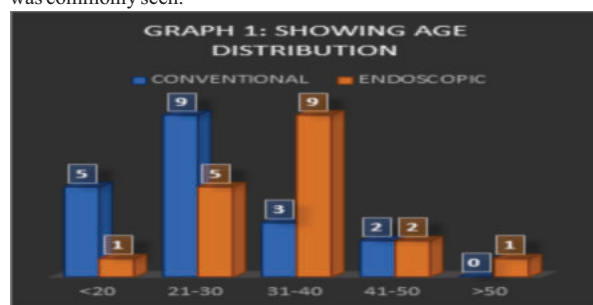
1. Rates of Intraoperative complications both group A & B
2. Rates of postoperative complications both group A & B up to 6 months of follow up.

RESULT:

36 patients who agreed and gave consent were enrolled in the study. All the cases were performed under general anaesthesia. Data was collected, tabulated and studied. Out of the 36 patients, the study showed a higher occurrence of the disease in the age group of 21-30 (38.9%) mostly among the males.

In the conventional group the complication rate was high with 6/18(33.3%), out of which 3(16.7%) patients had primary hemorrhage while rest had mucosal tears (16.7%) intraoperatively. While in the endoscopic group the complication rates were lower as compared to the conventional group only 3/18 patients, out of which mucosal tear

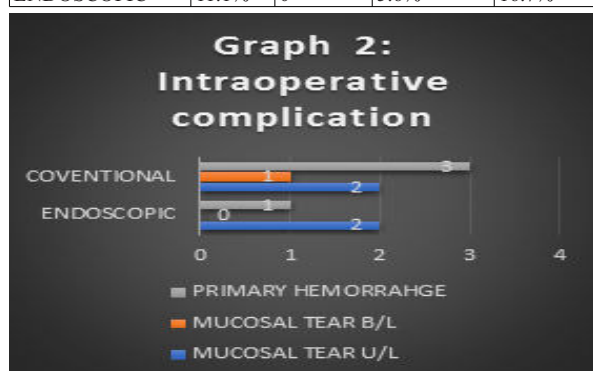
was commonly seen.



Graph 1: showing the age distribution

Table 2: showing the percentage intraoperative of conventional and endoscopic septoplasty

PROCEDURE	Mucosal tear U/L	Mucosal tear B/L	Primary haemorrhage	percentage
CONVENTIONAL	11.1%	5.6%	16.7%	33.3%
ENDOSCOPIC	11.1%	0	5.6%	16.7%

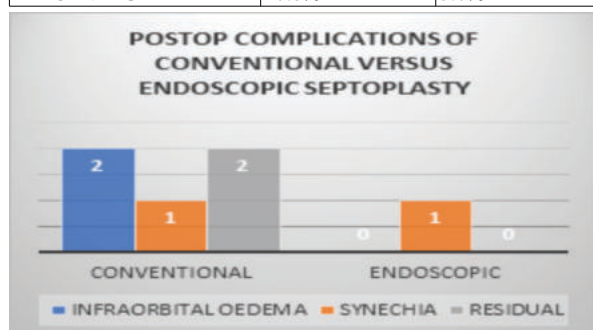


Graph 2: showing the comparison of intraoperative complications

On the 3rd postop day, 7th postop day, 1st month, 3rd month and 6th month the patients were assessed for postoperative complications like infraorbital oedema, septal hematoma, septal abscess, synechia formation, septal perforation, saddle tip deformity, and residual deviation. They were also assessed for any untoward complication other than the above mentioned. In the conventional group, 5/18 (27.8%) patients had complications out of which the both infraorbital oedema and residual deviation. Infraorbital oedema was seen in the immediate postoperative period and which lasted for 3-5 days postoperatively and subsided thereafter. While in the endoscopic group, the only 1/18 had complication of synechia formation

Table 2: showing the comparison of postoperative complications of conventional and endoscopic septoplasty

COMPLICATIONS	CONVENTIONAL	ENDOSCOPIC
INFRAORBITAL OEDEMA	2(11.1%)	0
SYNECHIA	1(5.6%)	1(5.6%)
RESIDUAL DISEASE	2(11.1%)	0
TOTAL	5	1
PERCENTAGE	27.8%	5.6%



Graph 3: showing the comparison of postoperative complications

There was no statistical significance in the study of both the parameters (p value >0.05).

DISCUSSION:

Intraoperatively, complications were more in patients who underwent conventional septoplasty 33.3% while in endoscopic group the prevalence of complication was 16.7%. Mucosal tear unilaterally was seen in 2 patients (11.1%), mucosal tear bilaterally in 1 patient (5.6%) and primary haemorrhage in 3 patients (16.7%) in the conventional group. And in the endoscopic group mucosal tear unilaterally was seen in 2 patient (11.1%) and primary haemorrhage seen in 1 patient (5.6%). The data obtained was comparable to study done by **R Bothra et al**^[9] and **Sathyaki et al**^[10]. But no statistical significance was noted.

Thus, we see in the following data that primary haemorrhage was most common complication in the conventional group, possibly due to the inadequate exposure of the surgical field that hampers the vision of the surgeon and thereby causing trauma to the mucosal flaps. This occurred in one case of spur and one case of S DNS. The prevalence of complication was twice as much of the endoscopic group. In the endoscopic group the commonest complication seen intraoperatively was unilateral mucosal tear. Unilateral mucosal tear was seen only in 2 cases of the endoscopic group, both occurred in cases of spurs.

The small sample might cause some variation in the data obtained, if the sample size was adequate this error could have been eliminated.

In postoperative period, the patients were followed through the 3rd day, 7th day, 1st month, 3rd month and 6th month postoperatively and complications noted. The complication rate was higher in the conventional group 27.8% and comparatively lower in the endoscopic group 5.6% which was comparable to study done by **Prakash et al**^[11], **Hwang et al**^[12] and **Jain L et al**^[8] but the result was insignificant. Higher incidence of residual disease was seen in conventional group again which is attributable to the poor visibility of the surgical field. Both infraorbital oedema and residual disease had equal prevalence rate i.e., 11.1%, while in the endoscopic group only synechia was noted in one patient (5.6%).

CONCLUSION:

From the study we can infer that both intraoperative and postoperative complications occurred more in the group A who underwent conventional septoplasty as compared to group B who underwent endoscopic septoplasty. But there was no statistical significance, therefore we can conclude that the complication rates in conventional septoplasty and endoscopic septoplasty are comparable to each other.

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