

The effectiveness of final intraoperative endoscopic control in conventional septoplasty

Cem Bayraktar, Sedat Dogan

Department of Otorhinolaryngology, Adiyaman University School of Medicine, Adiyaman, Turkey

ABSTRACT

Objectives. Septoplasty operation is a very common procedure and can be performed with endoscopic or conventional techniques. In some cases, preoperative nasal endoscopy can not be performed due to severe anterior deviations, and computerized tomography assessment causes to radiation exposure and increased cost. Our aim was to investigate the effectiveness of final endoscopic control in conventional septoplasty operations. **Methods.** Fifty-one subjects who underwent conventional septoplasty with intraoperative endoscopic control and thirty age-sex matched patients who were being performed conventional septoplasty without endoscopic control were enrolled in this prospective study. Surgeon satisfaction intraoperatively and patient satisfaction 3 months later from surgery obtained with using 5 point Likert scale. Additional pathologies which observed by using intraoperative endoscopy and the rate of performed additional surgeries were recorded. **Results.** Using this technique, surgeon satisfaction improved ($p=0.02$), but there was no significant difference on patient satisfaction ($p=0.642$). Additional pathologies were seen in 25% of patients and additional surgeries performed in 21% of patients. All observed additional pathologies were diagnosed and treated with endoscope easily. **Conclusion.** Final intraoperative endoscopic control in conventional septoplasty is an effective method and improves the surgeon satisfaction in surgery.

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Keywords: Endoscopy; septoplasty; conventional

Introduction

Septoplasty is one of the most common rhinologic procedures and is generally performed to treat nasal obstruction caused by nasal septum deviation (NSD) that is resistant to medical therapy (intranasal steroids, decongestants, etc.) [1, 2]. According to the literature, the prevalence of NSD in adults is nearly 90% [3]; however, the majority of these patients do not need any surgical interventions.

Endoscopic septoplasty has gained popularity in recent years due to improvements in visualization technology. Compared to the conventional technique, endoscopic septoplasty offers significant benefits such as low morbidity, limited postoperative mucosal edema due to limited dissection and an improved field of vision, especially posteriorly [4, 5]. Nevertheless, the functional results of endoscopic septoplasty are

Address for correspondence:

Sedat Dogan, MD., Adiyaman University School of Medicine, Department of Otorhinolaryngology, 02200 Adiyaman, Turkey

E-mail: sdtgdn1981@hotmail.com

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identical to conventional septoplasty [2].

Although nasal endoscopy is widely used in the assessment of NSD, in some circumstances, preoperative nasal endoscopy cannot be performed due to severe septal deviations. Our aim was to demonstrate the effectiveness of intraoperative endoscopic assessments immediately following suturing in conventional septoplasty and the outcomes in relation to patient and surgeon satisfaction in such cases.

Methods

This prospective study was approved by Institutional Review Board (2016/3-7). Written informed consent was obtained from each patient, and the study was conducted in accordance with the principles of the Declaration of Helsinki. Fifty-one subjects who underwent conventional septoplasty with intraoperative endoscopic control (CSEC) and 30 age- and sex-matched patients who underwent conventional septoplasty (CS) without endoscopic control were enrolled in this prospective study. The patients' characteristics like age and sex were recorded. Patients under 18 years of age, and those with known sinonasal disease (allergic rhinitis, infection, etc.), nasal surgery history and any other complaints beyond nasal obstruction (like facial pain, anosmia, rhinorrhoea, etc.) were excluded from the study.

All surgeries were performed by the same surgeons (CB, SD) using the same technique. In the CSEC group, both the nasal passage and nasopharynx were assessed with 0° rigid endoscopy immediately following suturing, but in the CS group, no further procedure was done. After the operation, the surgeons were asked if they derived any benefits from the endoscopic control, if they encountered any additional pathology or, if they performed additional surgery, if they observed another pathology with endoscopy. The

surgeons were asked intraoperatively and the patients three months following surgery to rate their satisfaction according to a 5-point Likert scale where 5 indicated very satisfied and 1 denoted very dissatisfied with the procedure.

Conventional septoplasty procedure

All procedures were performed under general anaesthesia using a headlight. Local anaesthetic (Jetocaine® ampules, lidocaine HCl 20 mg/ml and epinephrine HCl 0.0125 mg/ml combination, Adeka, Samsun, Turkey) was infiltrated into the nasal mucosa. During each procedure, a hemitransfixation incision was made, the mucoperichondrial flaps were elevated, the spurs and deviated parts of the nasal septum were excised and, finally, transfixation sutures were applied. After the suturing had been completed, a nasal passage assessment was performed with rigid nasal endoscopy in the CSEC group. Nasal tampons were then placed in the nasal cavity.

Statistical Analysis

Statistical analysis was performed using SPSS 16.0 for Windows (SPSS Inc., Chicago, IL). The satisfaction scores between the groups were compared using a chi-squared test, while age and sex distribution were compared using the Mann-Whitney U test and Fisher's exact test, respectively. The *p* value of <0.05 was considered statistically significant.

Results

The patients' mean age was 27.98±7.83 years (range;18 to 46 years) for the CSEC group and 29.46±6.90 years (range;18 to 42 years) for the CS group (Table 1). There were no observed benefits of endoscopic control in 18 (35%) cases. The surgeons described the method as useful although they could not find any additional pathology and did not perform any other surgeries in 20 (39%) patients. In two cases,

Table 1. Age and sex distribution of groups

Demographic data	CSEC group (n=51)	CS group (n=30)	<i>p</i>
Age (year)	28.00±7.78	29.46±6.90	0.288 [‡]
Female, n (%)	9 (17.6%)	5 (16.7%)	0.910 [§]

Data are shown as mean±standard deviation or number (%). CS=conventional septoplasty, CSEC= conventional septoplasty with intraoperative endoscopic control

‡ Mann Whitney U test, § Fishers exact test

Table 2. Distrubution and comparison of satisfaction scale answers in patients between groups

Patient Satisfaction Scale	CSEC group (n=51)	CS group (n=30)	<i>p</i> ‡
1	1 (1.9%)	2 (6.6%)	0.642
2	1 (1.9%)	1 (3.3%)	
3	6 (11.7%)	5 (16.6%)	
4	26 (50.9%)	11 (36.6%)	
5	17 (33.3%)	11 (36.6%)	

CS=conventional septoplasty, CSEC=conventional septoplasty with intraoperative endoscopic control

‡ Chi square test

Table 3. Distrubution and comparison of satisfaction scale answers in surgeons between groups

Patient Satisfaction Scale	CSEC group (n=51)	CS group (n=30)	<i>p</i> ‡
1	0 (0%)	2 (6.7 %)	0.020
2	0 (0%)	0 (0%)	
3	4 (7.8%)	7 (23.3%)	
4	27(52.9%)	16 (53.3%)	
5	20 (39.2%)	5 (16.7%)	

CS=conventional septoplasty, CSEC=conventional septoplasty with intraoperative endoscopic control

‡ Chi square test

adenoid tissue that obliterated the choana to less than 50% was found, and the surgeons stated that endoscopic control was useful in these cases although no additional surgery was performed. In 13 (25%) patients, additional pathologies were seen, and further surgeries were performed in 11 (21%) of these patients. The observed pathologies were concha bullosa (1 patient, treated with lateral side resection), polypoid degeneration of the posterior portion of the inferior turbinate (3 patients, treated with excision and cauterization), posterior obstruction due to inadequate bony nasal septum excision (2 patients, treated with wider excision), adenoid tissue (1 patient, treated with adenoidectomy) and nasal polyps (3 unilateral and 1 bilateral, all four polyp cases were in the middle meatus and treated with simple polypectomy). There was no difference in patient satisfaction between the two groups ($p=0.642$), but the surgeons' satisfaction was significantly improved in the CSEC group compared to the CS group ($p=0.02$) (Tables 2 and 3).

Discussion

The following were the main findings of this study: 1) Intraoperative endoscopic control of the nasal passage following suturing is an effective method for assessing coexisting pathologies; 2) Using

this method surgeon satisfaction improved, but there was no change in patient satisfaction; 3) The co-existing nasal pathologies were not complex disorders, and all of them could be easily treated with endoscopy. We therefore suggest that there may be no need for preoperative computerized tomography (CT) imaging in NSD patients who have only nasal obstruction complaint.

Traditional septoplasty consists of headlight illumination and limited visualization with a nasal speculum; therefore, surgery may sometimes be quite difficult to perform in circumstances where the patient has a narrow nose or there is posterior deviation [4]. Although the endoscopic technique has gained popularity in recent years, conventional septoplasty is still widely used.

There is no single diagnostic test that can be considered as the gold standard for NSD. Anterior rhinoscopy and nasal endoscopy may be used to diagnose the severity and location of NSD in a decongested nose, but inter-rater variability is a significant problem in these assessments [6]. In a clinical consensus statement, nasal endoscopy was not found to be necessary to make a diagnosis of NSD, and this highlighted the possibility that it may provide useful information about coexisting pathologies such as polyps, rhinosinusitis and tumours. Patient history and physical examination have been mentioned as the gold standard for diagnosing NSD [7]. Chaitanya *et*

al. [8] evaluated 80 patients and divided them into 2 equal groups. Only conventional septoplasty was performed in the first group, while septoplasty with endoscopy was done to observe the remnants of the septum and associated lateral wall pathologies in the second group. The researchers made a few additional observations: 1 polypoid middle turbinate, 2 accessory ostia and 1 nasal polyp. They also compared the nasal symptoms of both groups in the preoperative and postoperative periods, and stated that symptom relief was better in the endoscopically controlled group. Contrarily, there was no improvement in patient satisfaction in our study, but the surgeons were significantly satisfied with the use of endoscopy intraoperatively. We observed additional pathologies in 25% (13/51) of the patients, and the surgical plans had to be altered in 11 (21%) of these cases. Accordingly, we determined that intraoperative endoscopic control following suturing is an effective method in conventional septoplasty.

The preoperative requirement that every patient undergoing septoplasty have a CT scan is a controversial issue. Aziz *et al.* [6] indicated that CT can provide an accurate diagnosis of NSD, but its negative aspects are exposure to radiation and the high cost. In their retrospective study, Karatas *et al.* [9] divided 76 patients into two groups, one for which preoperative CT was performed (40 patients) and the other for which it was not (36 patients). They performed endoscopic sinus surgery for 8 patients and concha bullosa resection for 14 patients. They therefore stressed that preoperative CT is helpful when determining the location and type of surgery. On the other hand, it has been stated that CT may not show the degree of NSD accurately [7]. Vural *et al.* [10] could not find a significant relationship between preoperative nasal obstruction symptom evaluation (NOSE) scores and the severity of NSD using CT, and stated that preoperative CT is unnecessary. Similarly, Sedaghat *et al.* [11] reported that the septoplasty surgery decision should not be based on imaging findings. In their retrospective blinded study, they investigated the correlation between a CT scan and a physical examination (anterior rhinoscopy and nasal endoscopy) on different septal locations but only found a correlation for the osseous septum.

Gunbey *et al.* [12] did not recommend preoperative CT for all patients undergoing septoplasty. Although performing CT preoperatively changed the surgery decision in 8.3% of patients, the researchers reported that CT was highly sensitive but

had low specificity for NSD. They recommended CT in conditions such as deviation in the posterior area cannot be assessed endoscopically if there is severe anterior deviation, chronic rhinosinusitis, osteomeatal complex pathology or a polyp or mass in endoscopy [12]. However, there was no mention about the rate of additional pathologies in the posterior nasal area observed with CT which could not be assessed with endoscopy. In our study, additional pathologies were diagnosed and treated endoscopically. According to the results of this study, intraoperative final endoscopic assessment provides improved surgical satisfaction, and should be performed in patients after conventional septoplasty surgery.

The Limitation of the Study

Small sample size is a limitation of our study.

Conclusions

Intraoperative endoscopic control is an effective method in conventional septoplasty and improves surgeon satisfaction. Additional pathologies can be easily diagnosed and treated using this method. We did not encounter complex disorders when using nasal endoscopy in the final assessment, further studies are needed to clarify the superiority of CT and endoscopy to determine additional nasal pathologies.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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