

Role of Septoplasty/SMR in Patients of Allergic Rhinitis with Deviated Nasal Septum in a Tertiary Care Hospital

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Abstract:

Objective: To know the effect of septoplasty in the patients of allergic rhinitis by comparing (1) symptom change using the Visual Analogue Scale (VAS), (2) change of the medication score, and (3) improvement of the quality of life using a questionnaire.

Study Design: Pilot prospective study conducted in a medical college department of otorhinolaryngology and orthopaedics.

Materials and Methods: 70 patients who had undergone septoplasty and turbinoplasty for septal deviation and allergic rhinitis were enrolled in group X. 30 patients who had undergone only turbinoplasty for allergic rhinitis were enrolled in group Y. The VAS score, the Average Rescue Medication Score (ARMS), and the Rhinasthma Questionnaire for the quality of life were all obtained from each patient. These parameters were compared before and after the surgery and between the groups.

Results: Both groups showed significant improvement of the VAS score ($P < .001$). When the change of VAS was compared between groups, there was a significant difference in group A only for nasal obstruction ($P = .047$). Comparison of the ARMS between groups showed significant improvement in both groups after the surgery ($P < .01$). However, there were no differences between the groups. The Rhinasthma score of group A was significantly lowered after the surgery. The Rhinasthma score of group A was significantly lower than that of group B after the surgery ($P = .004$).

Conclusions: There is very good effect of septoplasty on the patients of allergic rhinitis clinical features. There is need for further studies also in role of septoplasty in patients with allergic rhinitis with deviated nasal septates.

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Introduction

Hilberg et al² suggested that patients who underwent septoplasty and turbinoplasty were more satisfied with the results. Grymer et al¹ also suggested that volume reduction of the turbinate was necessary for achieving symptomatic improvement in patients with severe septal deviation. For patients with septal deviation and compensatory turbinate hypertrophy, septoplasty combined with turbinate surgery is more effective in alleviating nasal obstruction than septoplasty alone. However, there is still much controversy about the cases with septal deviation and turbinate hypertrophy due to allergic rhinitis. In one study, the patients with septal deviation and concomitant allergic rhinitis reported less symptom improvement after septoplasty.³ Therefore, it was suggested that patients with septal deviation and allergic rhinitis should be considered as a less favorable group to undergo septoplasty than those patients with septal deviation alone.³ Stewart

et al⁴ suggested that allergic rhinitis had no effect on the symptom improvement and subjective satisfaction of patients after septoplasty. Those previous studies were all about the effect of allergic rhinitis on septoplasty. But there is still no study about the reverse, in other words, the effect of septoplasty on allergic rhinitis. We have observed that patients with septal deviation and allergic rhinitis reported improvement of their allergic symptoms after septoplasty in our clinic. So we aimed to evaluate the effect of septoplasty on the clinical course of allergic rhinitis by comparing (1) the change of symptoms using the Visual Analogue Scale (VAS), (2) the change of the medication score, and (3) the improvement of life quality using a questionnaire in patients who have undergone septoplasty and turbinoplasty and compared with those patients who have undergone turbinoplasty alone.

Materials and Methods

100 patients from attending out patient department of ENT in the medical college with history of allergic rhinitis and also patients from department of orthopaedics with nasal bone fracture with un displaced distal radius fracture which was managed conservatively by below pop cast application associated with allergic rhinitis were considered in this study. 70 patients who were undergoing septoplasty and turbinoplasty under the diagnosis of septal deviation and allergic rhinitis (60 females and 10 females) from May 2025 to April 2026 were enrolled in group X. 30 patients who were undergoing only turbinoplasty under the diagnosis of allergic rhinitis (20 males and 10 females) during the same period were enrolled in group Y. The demographic variables such as age and severity of condition according to the ARIA (Allergic Rhinitis and its Impacts on Asthma) 2008 guideline were not significantly different between groups. Septal deviation was diagnosed or ruled out by rigid nasal endoscopy. In group X, the middle turbinate was only partially visible or not visible because of septal deviation.

In group Y, the middle turbinate was totally visible with a straight septum. Allergic rhinitis was diagnosed according to the typical clinical symptoms of more than 1 year and a strongly positive result of more than 3 mm or 31 on a skin prick test (SPT) or a Multiple Allergosorbent Test (MAST) to any provocative antigen. None of the enrolled patients had a history or clinical symptoms of allergic asthma. Patients who had used inhaled or systemic steroid or allergy medication within a month, those with unstable systemic disease, pregnant or lactating women, patients with a history of nasal surgery other than septoplasty and turbinoplasty within the previous 3 months, those with nasal polyp or chronic sinusitis (which was confirmed by typical symptoms of chronic sinusitis such as nasal stuffiness, purulent rhinorrhea, postnasal drip, or facial fullness combined with endoscopic findings and plain radiograph or computed tomography of the paranasal sinuses), and those with chronic exposure to chemical irritants were excluded from this study. All the patients gave us their written informed consent before the initiation of the enrollment, and this study was approved by the INHA University Institutional

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efore the operation, the baseline symptom scores for nasal obstruction, rhinorrhea, sneezing, and itching were obtained using the VAS. The VAS used a 10-cm line with a dot at every centimeter, and the patients marked the severity of their symptoms from 0 to 10 on the line. The medication score for the previous 6 months before the surgery was checked by the Average Rescue Medication Score (ARMS) system.⁵ It uses a 4-point scale for each day during the follow-up period (0, no medications; 1, oral antihistamines; 2, intranasal corticosteroid; and 3, oral corticosteroid). The Rescue Medication Score (RMS) of each day is the highest score of that day (eg, if a patient took oral antihistamine and used intranasal steroid, then the RMS of that day was reviewed).

Results

VAS scores in group X and group Y were not significantly different. Group X and group Y all showed significant improvement of the VAS score for all nasal symptoms of nasal obstruction, rhinorrhea, itching, and sneezing (paired t test, $P < 0.001$ for all), except for the change of itching in group Y. The change of VAS between the groups revealed that there was significantly more improvement in group A only for nasal obstruction (independent t test, $P = .047$). The changes of VAS for the other symptoms were not significantly different between the groups (Figure 2). Comparison of the ARMS before and after the operation revealed that group X and group Y subjects all showed improvement of the medication score after the surgery ($P < .01$). However, there were no differences between the groups. The Rhinasthma score of group X was significantly lowered after the. Although the score of group Y was also decreased after the surgery, that change was not statistically significant. The Rhinasthma

score of group X was significantly lower than that of group Y after the surgical management ($P = .004$, Figure 4). Determining the change of the Rhinasthma score for each question as the preoperative score minus the postoperative score, we found that group X showed more improvement compared with group Y for 9 questions.

Table 1:

	Group X, mean +/-SD	Group Y, mean +/-SD
Difficulty in concentrating on problems	1.4 +/- 1.1	0.4 +/- 1.8
Eye redness Runny nose	1.3 +/-1.5	0.3 +/- 2.3
Sneezing	0.8 +/- 1.8	0.0 +/- 1.6
Always having to carry tissues Necessity of medical controls	1.3 +/- 1.3	0.3 +/- 2.1
Having to take drugs Having to carry drugs Having to clear one's throat	0.9 +/- 1.7	0.0 +/- 1.9
	1.2 +/- 1.7	0.3 +/- 1.8
	1.3 +/- 1.7	0.2 +/- 1.8
	1.4 +/-1.6	0.3 +/- 1.3
	1.1 +/- 1.3	0.0 +/- 1.9

Discussion

In our study, the change of the VAS score for nasal obstruction was greater in group X. This is not surprising and would seem to bear little relation to allergic rhinitis. Surely, surgical correction of the deviated septum will improve the nasal airway and nasal obstruction. This result is also well correlated with the findings of a previous study.⁷ Correction of septal deviation with concomitant volume reduction of the turbinate might be more effective in alleviating nasal obstruction by improving the nasal patency. Although there was no difference between groups, the VAS scores for nasal obstruction, rhinorrhea, and sneezing did significantly improve after surgery for both groups. However, the Rhinasthma Questionnaire revealed that the life quality of group X showed significantly more improvement (a larger decrease of the Rhinasthma score) compared with that of group Y. There are several possible explanations for this phenomenon. The first possible explanation is the restoration of mucociliary transport (MCT). In a previous study, impaired MCT due to septal deviation was normalized 3 months after the septoplasty.⁸ This restoration of MCT could contribute to the early washout of the allergenic materials from the nasal cavity so there was improvement of the symptoms. Another factor is the recovery of normal airflow. According to Jang et al,⁹ the infiltration of inflammatory cells was significantly increased on the concave side of a deviated septum. Those investigators suggested that increased airflow at the concave side could cause an infiltration of inflammatory cells. Therefore, the recovery of normal airflow by septoplasty could contribute to the decrease of the inflammatory cell infiltration. To prove this hypothesis, further research with histological examination is needed in the near future. Another important point to consider is that the topical antiallergy spray medications could reach the nasal mucosa better than before because of the resolution of the mechanical barrier. In fact, several components related to medication showed significant improvement on the Rhinasthma Questionnaire in our study. Therefore, the increased effect of topical steroid could have minimized the need for carrying other medications, and this could have improved the quality of life. As a result of an increased anti-allergy effect, the quality of life related to allergic symptoms such as runny nose, sneezing, and clearing the throat could also be improved. This same tendency was found in the medication score. The medication score of group X tended to be lower after treatment compared with that of group Y. However, there was no statistical significance. It is possible that further studies with more patients could yield more statistically significant results. The Rhinasthma Questionnaire is a reliable and reproducible questionnaire for evaluating the quality of life of patients suffering

from allergic rhinitis or allergic asthma.⁶ In our study, no patients complained of impaired quality of life related to asthmatic symptoms such as wheezing or chest tightness. There was no statistical difference between the groups either (data not shown). As is well illustrated in, significant differences were only found for the items related to the symptoms of allergic rhinitis and their medications. One pitfall of our study is that we evaluated only the subjective symptom scores and quality of life reported by the patients. In fact, patients who had septoplasty might suffer from recall bias and a halo effect, reporting more favorable results because they underwent a more involved surgical procedure and want to feel better, especially when compared with a group with a single turbinate reduction procedure. Therefore, measuring the change of the nasal cavity volume and dimensions after nasal provocation with provocative antigen could better prove the procedures effects. Another flaw in our study is that there was no randomization. All patients with septal deviation and allergic rhinitis received both septoplasty and RFTVR, whereas patients with allergic rhinitis alone received FRTVR alone. However, for randomization, some patients with septal deviation could not receive septoplasty and another patient without septal deviation could receive unnecessary septal surgery. Both of them are ethically not acceptable. Significant overlap exists in reportable symptoms between nasal obstruction secondary to septal deviation versus turbinate hypertrophy. Therefore, the symptom of nasal obstruction is not attributable to the anatomic or allergic component alone. In this aspect, further study with another group composed of patients with nonallergic rhinitis with hypertrophic turbinate could draw another meaningful

Conclusion

In conclusion, this is the first research about the potential effect of septoplasty on the clinical course of allergic rhinitis. Further large population-based studies with histopathological examination are needed to elucidate the mechanisms underlying these effects.

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