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A Study to Compare the Subjective Improvement in Patients with Different Types of Deviated Nasal Septum Following Submucosal Resection Using Sinonasal Outcome Test (Snot-22)

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Abstract: *This study aims to assess the overall symptomatic improvement and well being in patients with deviated nasal septum following submucosal resection surgery and compare the outcome for the various types of deviated nasal septum.A total 70 patients were studied for a period of 1 year. Mladina staging system was used to classify the type of deviated nasal septum and SNOT-22 scale was used for patient selection and assessing the severity of the disease preoperatively and postoperatively. The patients who did not respond to 2months of medical therap;y or had SNOT 22 score more than 15 on presentation were included in the study group and were posted for surgery.Type 6 DNS had maximum improvement with preoperative mean SNOT22 score 32.25 and postoperative mean SNOT-22 score 14.The study allowed to know the surgical outcome regarding the different type of DNS and improvement with respect to the symptoms of DNS. Therefore, helped in decision making during and before surgery and patient counselling regarding the outcome prior to surgery.*

Keywords*: Deviated nasal septum, Submucosal resection*

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I. Introduction

Deviated nasal septum is a commonly encountered entity in the outdoor setting with most of the patients presenting with various symptoms, some hampering the day to day activities of the patient and affecting their well being while some not contributing to patient complaints. Patients with deviated nasal septum commonly present with nasal obstruction, headache, nasal discharge, facial pain, hyposmia[1]. There are many scoring systems like NOSE, SNOT-20, SNOT-22, Visual analogue scale (VAS) to evaluate the severity of the symptoms in DNS patients[2,5]. The main goal of the study is to assess the overall quality of life of the patients with deviated nasal septum both preoperatively and postoperatively , to evaluate the symptomatic improvement following surgery and compare the benefits for the different types of deviated nasal septum.There are ways of objective assessment of the postoperative outcome like Rhinomanometry , Peak Nasal Inspiratory Flow and Acoustic manometry[3,5].While, our study dealt with subjective assessment.Mladina system (Fig.1)[4]was used to classify the deviations and SNOT-22 score (Table1) [6] was used for preoperative and postoperative symptomatic assessment.

II. Aims and objectives

- Assessment of improvement of symptoms associated with deviated nasal septum following Submucosal Resection surgery.
- For evaluating the type of Deviated nasal septum with better prognosis following Submucosal Resection operation.
- For assessing the symptom that responds most to the procedure of Submucosal Resection surgery.

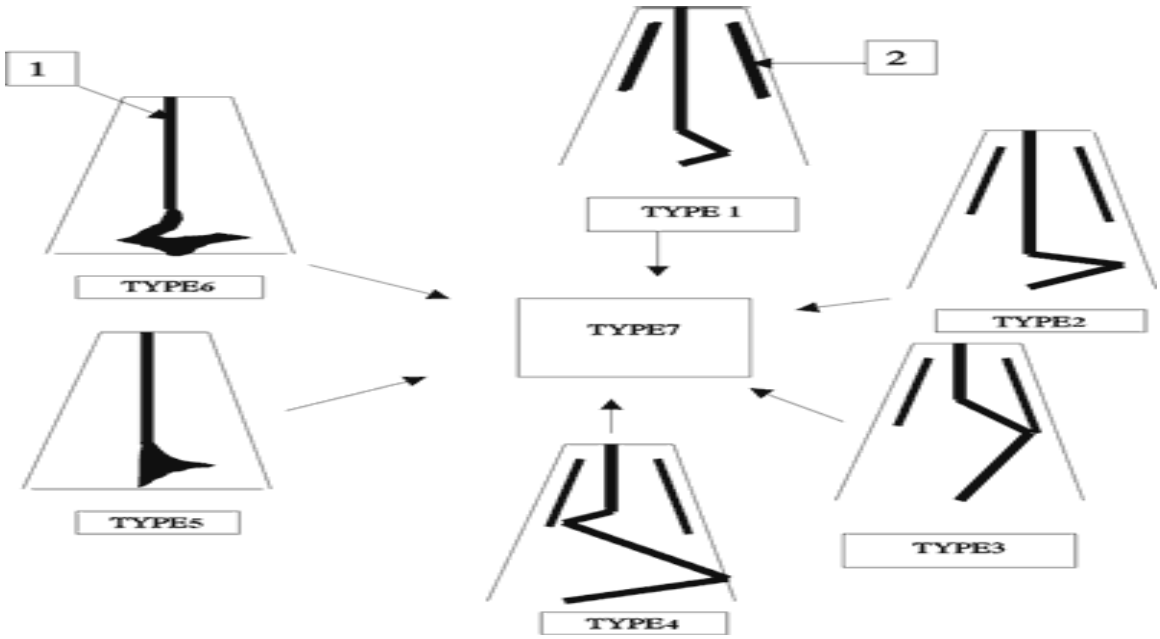

Fig 1 : Mladina classification showing the types of deviated nasal septum

III. Materials and Methods

A total 70 patients were included in the study group.
Study Design: Prospective type, observational study
Study Location: ENT OPD, R.G Kar Medical College, Kolkata, India
Study Duration: 14 months
Study Size: 70 patients

Subject and selection method: The patients with deviated nasal septum who attended the ENT OPD of RG Kar Medical College and Hospital during the study period of August 2017 to September 2018 were assessed. Mladina system was used to classify the types of deviated nasal septum. The type of DNS was studied initially by Diagnostic nasal endoscopy using 0 degree Hopkins nasal endoscope. These patients were evaluated for the severity of the disease using SNOT-22 (Sinonasal Outcome Test). Patients with SNOT-22 score more than 15 were posted for surgery whereas, those with SNOT-22 score less than 15 were put on 2 months medical therapy with steroid nasal spray. Those not responding to medical treatment were posted for surgery. These patients who were posted for surgery were included in the study. Sinonasal Outcome Test (SNOT-22) was used as a scoring system to assess the severity of the disease preoperatively and symptomatic improvement postoperatively on the 6^{th} postoperative week.

Inclusion criteria:
1. Patients with SNOT-22 more than 15.
2. Patients with SNOT-22 less than 15, not responding to steroid nasal spray.

Exclusion criteria:
1. Patients with previous history of septoplasty.
2. History of nasal fracture.
3. History of other nasal surgery.
4. Type 1 DNS.

Procedure Methodology: An informed consent was obtained and a Diagnostic nasal endoscopy using 0 degree Hopkins nasal endoscope was performed to study the type of deviated nasal septum. Mladina system was used to classify the types of deviated nasal septum.
SNOT-22 (Sinonasal Outcome Test) was used to determine the severity of the disease using a questionnaire both preoperatively and postoperatively.

Fig 2: Sinonasal outcome test -22

12. Decreased sense of smell or taste	0	1	2	3	4	5
13. Difficulty falling asleep	0	1	2	3	4	5
14. Wake up at night	0	1	2	3	4	5
15. Lack of a good night's sleep	0	1	2	3	4	5
16. Wake up tired	0	1	2	3	4	5
17. Fatigue	0	1	2	3	4	5
18. Reduced productivity	0	1	2	3	4	5
19. Reduced concentration	0	1	2	3	4	5
20. Frustrated/restless/irritable	0	1	2	3	4	5
21. Sad	0	1	2	3	4	5
22. Embarrassed	0	1	2	3	4	5

Considering how severe the problem is when you experience it and how frequently it happens, please rate each item below on how "bad" it is by *CIRCLING* the number that corresponds with how you feel using this scale:	No problem	Very mild problem	Mild or slight problem	Moderate problem	Severe problem	Problem is as bad as it can be
1. Need to blow nose	0	1	2	3	4	5
2. Nasal obstruction (blockage)	0	1	2	3	4	5
3. Sneezing	0	1	2	3	4	5
4. Runny nose	0	1	2	3	4	5
5. Cough	0	1	2	3	4	5
6. Post-nasal discharge	0	1	2	3	4	5
7. Thick nasal discharge	0	1	2	3	4	5
8. Ear fullness	0	1	2	3	4	5
9. Dizziness	0	1	2	3	4	5
10. Ear pain	0	1	2	3	4	5
11. Facial pain/pressure	0	1	2	3	4	5

IV. Result

Most common type of Deviated Nasal Septum has been found to be Type 2 with 24 patients followed by Type 3 with 18 patients, Type 4 with 12 patients, Type 6 with 8 patients, Type 5 with 6 patients and Type 7 with 2 patients. Males were 46 and females were 24 out of 70 patients with M:F – 1.9:1. Males presented more with Type 2 DNS (16) followed by Type 3 and Type 4.Whereas, females presented more with Type 2 (8) and Type 4 (8) followed by Type 6.Type 6 had maximum improvement following SMR with preoperative mean score -32.25 and postoperative mean score – 14 on SNOT-22; followed by Type 2 DNS with preoperative mean score- 27 and postoperative mean score- 10.6. Nasal obstruction responded most to SMR, with preoperative mean – 2.8 and postoperative mean – 1.2, followed by postnasal discharge with preoperative mean -2.3 and postoperative mean -1.2. For Type 2, Type 3 and Type 4 DNS, nasal obstruction was the symptom that improved the most. Whereas, for Type 5, postnasal discharge responded the most and for Type 6 nasal obstruction, facial pain, need to blow nose, postnasal discharge and thick nasal discharge had similar outcome following surgery.

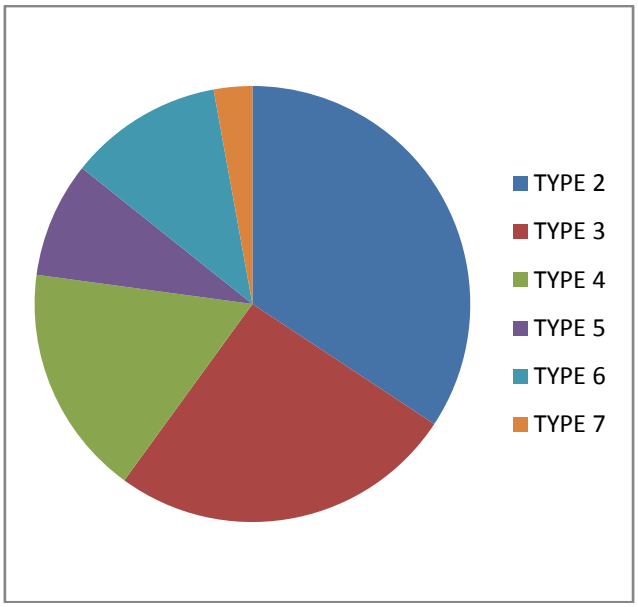

Fig.3 : Distribution of type of Deviated Nasal Septum

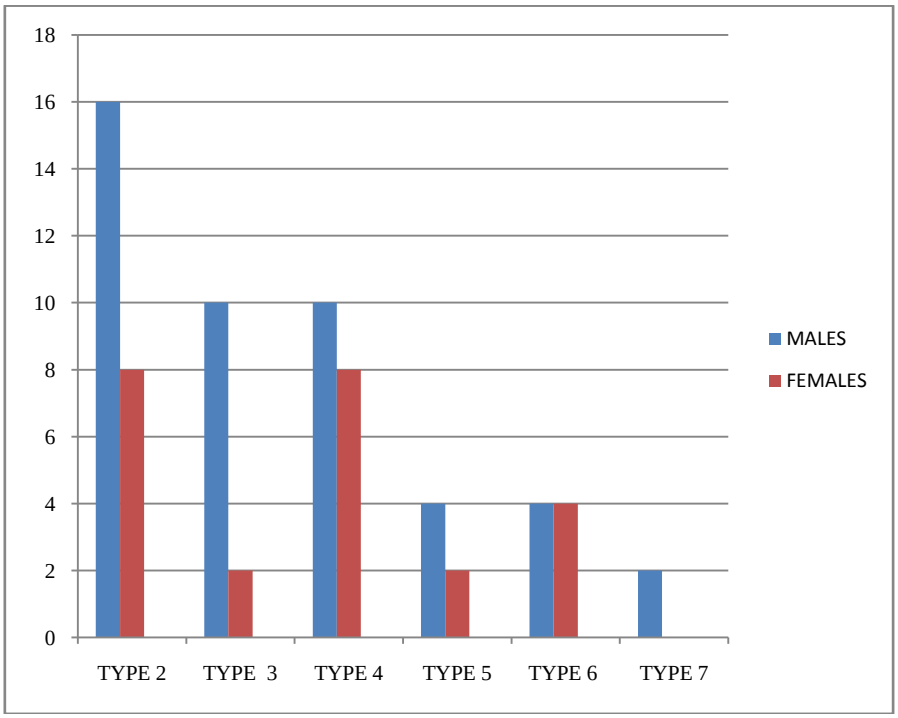

Fig 3: Sex distribution

	TYPE 2 DNS	TYPE 3 DNS	TYPE 4 DNS	TYPE 5 DNS	TYPE 6 DNS	TYPE 7 DNS
PREOPERATIVE MEAN SNOT-22 SCORE	27	31.6	25.6	13.3	32.25	41
POSTOPERATIVE (6th week)MEAN SNOT -22 SCORE	10.6	21.3	15	7	14	30

Table 2: SNOT -22 Mean score for different types of deviated nasal septum

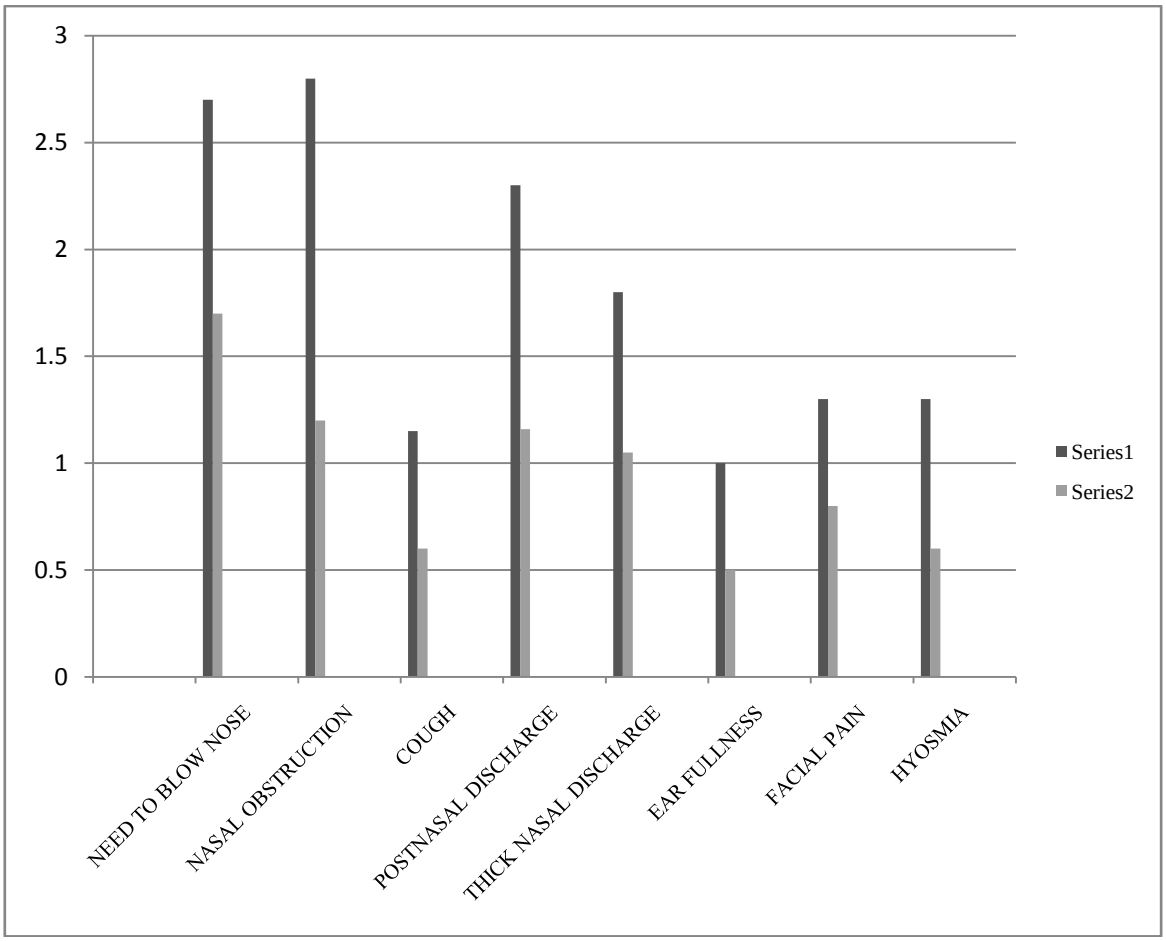

Fig 4: Bar diagram showing preoperative and postoperative mean for the common symptoms associated with deviated nasal septum

Series 1: Preoperative mean on SNOT-22, Series 2: Postoperative mean on SNOT-22

V. Discussion

Submucosal resection surgery for the nasal septal deviation has therefore been found beneficial for all types of deviated nasal septum. An improvement in SNOT-22 score has been seen all 6 types of deviated nasal septum studied (Type 2- Type 7).Type 6 showed maximum improvement followed by Type 2.Nasal obstruction has been found to be the symptom that responded most to the procedure of Submucosal resection of deviated nasal septum. According to a study by Bugten V et al. that used mainly VAS also showed the maximum improvement in nasal blockage following septoplasty[6]. Eren SB et al. in their study concluded that DNS type 2, 4 and 6 were most benifitted from septal surgery where they used both subjective as well as objective parameters[7]. But most of the study in the past concentrates on either only the overall improvement of quality of life following septoplasty or comparison between the various scoring systems like Visual analogue scale, SNOT- 22, NOSE Score. Only a few studies unlike our study is concerned with comparison of the outcome of surgery for the different types of deviated nasal septum.Though most of the studies have been found to employ the use of more the one scoring system for subjective assessment or include both subjective and objective assessment unlike our study that uses only SNOT -22 for subjective assessment of symptoms.

VI. Conclusion

This study with the use of SNOT 22 scoring helped in the knowledge of the type of DNS that would benefit most and the one that would benefit least from SMR that is important for the decision making to proceed with a surgery. The idea regarding which symptoms respond the most and with respect to the various type of DNS allowed in counselling the patient regarding the outcomes of surgery.

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