Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/y32fva33

FREQUENCY OF INTRANASAL ADHESIONS IN SEPTOPLASTY WITHOUT NASAL SPLINTS IN CASES OF NASAL SEPTAL DEVIATION

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Abstract

Background: Nasal septal deviations play a critical role in nasal obstruction symptoms, aesthetic appearance of the nose, increased nasal resistance, and sometimes snoring. The purpose of this study is to determine the frequency of intranasal adhesions in septoplasty without nasal splints in cases of nasal septal deviation.

Methods: Present study was descriptive case series availed from the ENT department of Hayatabad Medical Complex, Peshawar. The study duration was six months, from February, 2021 until August, 2021. The data was collected via non-probability consecutive sampling method. All patients were operated under general anesthesia & without nasal splints but with simple nasal packing using vaseline gauze packs under the supervision of ENT consultant having at least seven years post fellowship experience.

Results: Mean age of the patients included in the study was 30.52 ± 6.67 years. Mean duration of the disease was 4.84 ± 2.3 months. In the age range of 15-30 years, 3.3% reported nasal adhesion, while based on gender 3.2% male patients were observed with nasal adhesion. Similarly, based on operative times, no patient reported nasal adhesion < 45 minutes operation time. None of the findings were found statistically significant.

Conclusion: Our study demonstrates that silastic splints cannot prevent intranasal adhesions in case of septoplasty. Furthermore, removal of silastic splints will be painful in such patients.

Keywords: Nasal Septum Deviation, Intranasal Adhesion, Septoplasty

Introduction

Nasal septal deviations significantly contribute to nasal obstruction symptoms, the aesthetic look of the nose, heightened nasal resistance, and sometimes, snoring. Thus, a thorough evaluation of the nasal septum is crucial for preoperative planning, restoring function, and enhancing overall aesthetic appeal. Patients with septal cartilage injury occurring during the neonatal period or at birth may have significant septal deviation without a prior history of nasal trauma. Microfractures incurred during

late intrauterine development and parturition may result in compromised integrity on the affected side of the cartilage. The outcome is an asymmetric bending of the cartilage towards the injured side, whereas the contralateral side gains dominance over time. The septal cartilage offers structural support for the nasal dorsum while preserving significant suppleness. It can withstand substantial forces without incurring permanent deformation. When the force exerted on the cartilage beyond its biomechanical stress threshold, the cartilage fractures. In the absence of damage, septal cartilage often remains linear. Each side of the cartilage has an intrinsic tension that is uniformly equilibrated. Traumatic injury often induces asymmetric cartilage destruction, leading to the predominance of one side over the other. Over time, the predominant side of the septal cartilage demonstrates significant expansion compared to the opposing side. A divergence occurs, with the convex side displaying the predominant development pattern. This is often the side ipsilateral to the injury.

A septoplasty often suffices for substantial nasal septal abnormalities; however, certain cases need a single-stage septorhinoplasty. While a regular, fundamental method is often sufficient for persons with mild to severe mid to posterior septal deviation, distinct obstacles emerge with caudal septal deviation. Adhesions or spikes mostly arise between the septum and inferior turbinate when a rip in the septal mucosa aligns with a mucosal defect in the turbinate, particularly after concurrent procedures on the turbinate. Nevertheless, septal splints may inhibit the development of adhesions. The use of intranasal septal splints after PIT without septal surgery may result in heightened postoperative discomfort during the short-term follow-up, while demonstrating considerable evidence of reduced incidence of intranasal adhesions.

Due to the scarcity of literature regarding the prevalence of intranasal adhesions absent nasal splints following septoplasty, this study aims to establish a comprehensive protocol for local clinicians in Khyber Pukhtunkhwa. This will be based on our findings, ensuring that patients in our region benefit in terms of both morbidity and cost-effectiveness.

Material and Methods

Operational Definitions

Intranasal Adhesion

It was the fused tissue adhesions in the nose following septoplasty when two moist, opposing surfaces inside the nose heal together, causing a scar and subsequently make breathing difficult after three weeks of time confirmed during follow up visit.

Nasal Septal Deviation

It was the patient presented with symptoms of infections of the sinus and sleep apnea, snoring, repetitive sneezing, facial pain, nosebleeds, mouth breathing, difficulty with breathing and mild to severe loss of the ability to smell confirmed through physical examination and clinical examination on MRI showing a congenitally deviated nasal septum.

Study Design and Sampling Technique

Present study was descriptive case series availed from the ENT department of Hayatabad Medical Complex, Peshawar. The study duration was six months, from February, 2021 until August, 2021. The data was collected via non-probability consecutive sampling method. Total sample size was 198, keeping 3.33% proportion intranasal adhesions without nasal splints with 2.5% margin of error, 95% confidence interval calculated on WHO formula for sample[7].

The study included all patients diagnosed with nasal septal deviation, aged 15-50 years. Patients in whom the endoscopic septoplasty, septorhinoplasty and septoplasty with sinus surgery is already carried out, were excluded from the study.

Data Collection

Approval was sought from the Institutional Ethical Committee (IEC) and REU Deptt of CPSP Karachi. Prior to the conduct of the study, written informed consent forms was obtained from the patients. The purpose of this study was also explained to the patients. Meanwhile, patients with

deviated nasal septum were enrolled from ENT OPD of our hospital and was subsequently scheduled for septoplasty in the ENT OT of our hospital. All patients were operated under general anesthesia & without nasal splints but with simple nasal packing using Vaseline gauze packs under the supervision of ENT Consultant having at least seven years post fellowship experience. All patients were given antibiotics & analgesics for 1 week. All patients were also be given liquid paraffin nasal drops for 3 weeks. On first post-operative day, simple nasal packing using vaseline gauze packs was removed and patients was discharged from the hospital. All patients were followed up after 3 weeks of surgery and was re-examined for intra-nasal adhesions. Those patients who are lost to follow-up was excluded from this research study. All information such as age, gender, duration of disease, operative time, length of hospital stays, and frequency of intra-nasal adhesions was noted on a pre-standardized proforma annexed to this synopsis.

Data Analysis

Data was entered and analyzed in SPSS version 20 (IBM). Mean and SDs was calculated for numerical variables like age, duration of disease, operative time and length of hospital stay. Frequencies and percentages were calculated for categorical variables like gender and intra-nasal adhesions. Intra-Nasal Adhesions wascross tabulated with age, gender, and operative time in order to see effect modifiers. Post stratification chi square test was applied keeping
P value < 0.05 as significant. All results were presented in the form of table, graphs, or charts.

Results

The study was conducted at the Department of ENT, MTI-HMC Peshawar. A total of 198 patients were included in this study as per our sample size.
Mean age of the patients included in the study was 30.52 ± 6.67 years. Mean duration of the disease was 4.84 ± 2.3 months. Mean operative time was 55.40 ± 9.73 minutes, while mean length of hospital stay was 19.89 ± 4.48 hours as provided in table 1.

TABLE NO. 1 DESCRIPTIVE STATISTICS OF STUDY (n=198)

Variables	Mean	Std. Deviation
Age (Years)	30.52	6.677
Duration of disease (Months)	4.84	2.309
Operative Time (Minutes)	55.40	9.734
Length of hospital stay (Hours)	19.89	4.485

Based on the age group stratification, 120 (60.6%) patients were of age 15-30 years, while 78 (39.4%) patients were recorded in 31-50 years age group as provided in table 2.

TABLE NO. 2 AGE WISE DISTRIBUTION(n=198)

Age Groups	Frequency	Percent
15-30 Years	120	60.6%
31-50 Years	78	39.4%
Total	198	100.0%

A total of 126 (63.6%) male patients were included in the study while72 (36.4%) female patients were recorded as provided in table 3.

TABLE NO. 3 GENDER WISE DISTRIBUTION (n = 198)

Gender	Frequency	Percent
Male	126	63.6%
Female	72	36.4%
Total	198	100.0%

As per frequencies and percentages for intra-nasal adhesions, 06 (3.0%) patients were recorded with intra-nasal adhesions as shown in table 4.

TABLE NO. 4 FREQUENCIES AND PERCENTAGES FOR INTRA-NASAL ADHESIONS (n=198)

Intra-Nasal Adhesions	Frequency	Percent
Yes	6	3.0%
No	192	97.0%
Total	198	100.0%

Intranasal adhesion was stratified based on age, gender, and operative time. In the age range of 15-30 years, 3.3% reported nasal adhesion, while based on gender 3.2% male patients were observed with nasal adhesion as provided in table 5, and 6. Similarly, based on operative times, no patient reported nasal adhesion $\leq$ 45 minutes operation time, while 6 patients reported nasal adhesion when the operation time was > 45 minutes as shown in table 7. None of the findings were found statistically significant.

TABLE NO. 5 STRATIFICATION OF INTRA-NASAL ADHESIONS WITH AGE GROUPS (n=198)

		Age Groups		Total	P Value
		15-30 Years	31-50 Years		
Intra-Nasal Adhesion	Yes	4	2	6	0.758
		3.3%	2.6%	3.0%	
	No	116	76	192	
		96.7%	97.4%	97.0%	
Total		120	78	198	
		100.0%	100.0%	100.0%	

P Value calculated using chi square test

TABLE NO. 6 STRATIFICATION OF INTRA-NASAL ADHESIONS WITH GENDER GROUPS (n=198)

		Gender Groups		Total	P Value
		Male	Female		
Intra-Nasal Adhesion	Yes	4	2	6	0.875
		3.2%	2.8%	3.0%	
	No	122	70	192	
		96.8%	97.2%	97.0%	
Total		126	72	198	
		100.0%	100.0%	100.0%	

P Value calculated using chi square test

TABLE NO. 7 STRATIFICATION OF INTRA-NASAL ADHESIONS WITH OPERATIVE TIME (n=198)

		Operative Time		Total	P Value
		$\leq$ 45 Minutes	> 45 Minutes		
Intra-Nasal Adhesion	Yes	0	6	6	0.275
		0.0%	3.6%	3.0%	
	No	32	160	192	
		100.0%	96.4%	97.0%	
Total		32	166	198	
		100.0%	100.0%	100.0%	

P Value calculated using chi square test.

Discussion

Septal deviations significantly impact functional nasal respiration. Unidentified internal nasal septal abnormalities are the main cause of unsuccessful rhinoplasty results, since these deviations significantly influence the displacement and further misalignment of nasal bones and lateral cartilage. As a result, about 50% of posttraumatic nasal deformity patients need further revision rhinoplasty or septorhinoplasty [4,6]. Previous studies have highlighted the significance of understanding the anatomical factors contributing to deviation and how preoperative nasal septal analysis informs the assessment and surgical planning, thereby minimising the risk of complications and the necessity for repeat surgeries, which pose their own considerable challenges [6].

Intranasal adhesion formation has long been a significant complication in the postoperative phase of nasal surgery, with a frequency ranging from 10% to 36%[8.9] Nasal splints have been used for 35 years to maintain septal alignment post-surgery. Initially, they were created using various plastic moulds, but they are now manufactured industrially in several shapes and sizes, however a Greek study has suggested the use of a wax envelope containing Fucidin[10]. Synechia refers to the adhesion between the nasal septum and the inferior nasal concha, potentially resulting in nasal blockage. To prevent such adhesions, nasal splints have been developed, increasingly used as shown by a British study indicating that 64% of medical practices in the United Kingdom employ nasal splints to avert the development of synechiae.

In this study, our complete data indicated a mean age of 30.52 years with a standard deviation of 6.67 years. The mean and standard deviation for illness duration were 4.84 ± 2.30 months. The mean and standard deviation for operating time were 55.40 ± 9.73 minutes. The mean and standard deviation for the duration of hospital stay were 19.89 ± 4.48 hours (Table No. 1). 120 (60.6%) patients were documented in the 15-30 years age group, while 78 (39.4%) patients were documented in the 31-50 years age group (Table No. 2). 126 male patients (63.6%) and 72 female patients (36.4%) were documented (Table No. 3). According to the frequencies and percentages, 6 patients (3.0%) were documented having intra-nasal adhesions (Table 4).

In 1988, some authors demonstrated a 36% incidence of synechia in septoplasties when performed in conjunction with turbinectomy [9]. The use of a nasal splint is warranted just when it demonstrably benefits the patient [11]. The current study found that the incidence of intra-nasal adhesion was 3.0% in patients with a deviated nasal septum undergoing septoplasty without intra-nasal splinting. Pringle conducted a survey involving 440 consultants and discovered that 33% of them infrequently or never utilised intranasal splints. The adhesion rates were reported as 5.2% in non-splinted patients compared to 3.9% in splinted patients, with no statistically significant difference observed between the two groups [12]. Our results are consistent with the findings of the aforementioned investigations.

The research conducted by Malki *et al* revealed no statistically significant difference in the incidence of adhesions between splinted and non-splinted individuals [13]. Further research indicated that intranasal splints had little efficacy in avoiding nasal adhesion (10% in the splinted group compared to 21% in the non-splinted group) and suggested that the use of intranasal splints in septal surgery should be tailored to individual cases. Nasal irrigation with saline is essential to avoid crusting and reduce the likelihood of adhesion [14]. Likewise, another research indicated a non-significant occurrence of adhesions (2% in the splinted group vs 10% in the non-splinted group)[15]. The results of previous investigations are comparable to the findings of the present research, which documented intra-nasal adhesions in 3.0% of patients.

It is important to note that adhesions or spikes predominantly develop between the septum and inferior turbinate when a rip in the septal mucosa aligns with a mucosal defect in the turbinate, particularly after concurrent procedures on the turbinate. Nevertheless, septal splints may inhibit the development of adhesions [5]. The use of intranasal septal splints after PIT without septal surgery may lead to heightened postoperative discomfort during the short-term follow-up, while significantly reducing the incidence of intranasal adhesions [6]. In one study, only 3 (3.33%) patients exhibited intra-nasal adhesions after surgery for nasal septal deviation, which aligns with our results of 6 (3.0%) patients documented with intra-nasal adhesions [16].

In a separate study, the efficacy of intranasal splints in preventing nasal adhesion post-septal surgery was documented as 86.32% (n=101) in group A and 96.58% (n=113) in group B, while 13.68% (n=16) in group A (without nasal splints) and 3.42% (n=4) in group B developed nasal adhesion. A p-value of 0.000 was obtained, indicating a significant difference that corroborates our results, whereby 6 (3.0%) individuals had intra-nasal adhesions.

The primary weakness of the study was its limited sample size and its single-center design, rendering its results non-generalizable to the broader population of this region. Consequently, extensive multicenter investigations are necessary.

Conclusion

No study findings were statistically significant, when stratified based on gender, age, and operative times. Present study demonstrates that silastic splints cannot prevent intranasal adhesions in case of septoplasty. Furthermore, removal of silastic splints will be painful in such patients.

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