



Management of Complications of Septoplasty; a Cross-sectional Comparative Study between Silicon Nasal Splints, Plastic Splints and without Splints for the Correction of the Deviated Nasal Septum

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ABSTRACT

Introduction: In otorhinolaryngology practice deviated nasal septum is a very common issue. Multiple theories demonstrated that deviated nasal septum started from birth moulding to the trauma to the nose. Sometimes surgery is performed to the approach of paranasal sinuses but the most common indication for septoplasty is nasal obstruction.

Aim/Objectives: To compare the management of complications after septoplasty in different groups by using nasal splints, plastic splints and without a splint.

Methodology: One hundred and fifty patients were selected randomly having deviated nasal septum (DNS) for septoplasty. We divided all patients into three different groups i.e., Group I (without splints), Group II (silicon splints), and Group III (plastic splints). Fifty patients were enrolled on each group. We measured the severity of pain by using a visual analogue scale, post-operated bleeding, post-operated septal hematoma, post-operated nasal adhesion, saddle nose deformity, and septal perforations. Data was entered in SPSS software by using version 20.

Results: Among 150 patients, ninety-five were male and 55 were female. Pain score (severe pain) in Group I was 0%, in Group II, it was 20% and in Group III, it was 30%, showing the severity of pain was less in Group I. Moderate pain was more (30%) in patients of Group III. Nasal bleeding was noted in 16% in Group I, 18% in Group II, and 80% in Group III. Nasal adhesions were more in Group I, i.e., 24 patients (48%), in Group II and in group III, it was 8%. The hematoma was more in Group III. Saddle nose deformity was seen in 2 patients in group III. Septal perforations were seen in 6 patients in Group I and 1 patient in group III.

Conclusion: Silicon nasal splints are good and effective; patients were more comfortable and have fewer complications when compared to plastic splints and without splints.

Key Words: Septoplasty, Silicone nasal splints, Septal perforation, Nasal adhesion, Saddle deformity of nose, Otorhinolaryngology practice

INTRODUCTION

In otorhinolaryngology practice deviated nasal septum is a very common issue. Multiple theories demonstrated that deviated nasal septum started from birth moulding to the trauma to the nose. Sometimes surgery is performed to the approach of paranasal sinuses but the most common indication for septoplasty is nasal obstruction.¹

Septoplasty is the treatment of choice for correction of the deviated nasal septum. This operative procedure encountered fewer chances of complications as compared with the

traditional method i.e., submucosal resection of the septum (SMR) for example septal perforation, septal adhesion formation, saddle nose deformity and hematoma formation were most common. The incidence of postoperative adhesion is 10-30%. Adhesion occurs after septoplasty between the lateral and medial walls of the nose and produces nasal obstruction.²

Man is the only animal having deviated nasal septum which is essential for septoplasty. At the end of the nasal septal surgery, intra nasal pack was inserted bilaterally in both the na-

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sal cavity and this closed nose causing different issues for the anaesthesiologist and as well as for the patients.³

The development of intra-nasal adhesion is an important complication in the post-operative stage of nasal septal surgeries. The incidence increases by 10%-36%. Many otorhinolaryngologists conducted different studies for minimizing such complications and they have analysed the advantages of nasal tampons after surgery for the prevention of undesirable effects i.e., epistaxis and nasal adhesion.⁴

Nasal bleeding is encountered in nasal surgeries during the surgical procedures and post-operatively and nasal packs are used for preventing nasal bleeding, and as well as these nasal packs, have supported the mucoperichondrial flap and structure of the septum and decreased many complications like post-op septal hematoma and post-op adhesions. Different nasal packing materials are existing in the market, i.e., ribbon gauze, absorbable material, cellulose foam, Merocel absorbable dressing, and silicon-made nasal splints.⁵

Now a day's pain and adhesion formation after septal surgery decrease. Some authors mentioned that post-operative pain was increasing with the use of a splint and no significant reduction in the formation of adhesion and some other studies revealed the reduction of adhesion (synechiae) formation with the use of splints and produces pain and discomfort in the patients. Current studies showed decreased pain, decreased mucosal ulceration and decreased adhesion (synechiae) formation due to the usage of a nasal splint.⁶

Intra nasal splints have been used traditionally for a long time for preventing adhesion and hematoma formation. Splints have been used in the management of epistaxis and as an alternative to nasal packing.⁷ Many patients reported nasal discomfort and pain in the presence of nasal splints. Low risk for aspiration and ingestion is present in splints.⁸

The present study is conducted to compare the management of complications after septoplasty in different groups by using nasal splints, plastic splints and without a splint.

Study design: A Cross-sectional comparative study

Place and Duration: Social Security Landhi Hospital Karachi, and in Kulsumbai Valika Social Security SITE Hospital, Karachi, from December 2019 to May 2021

METHODOLOGY

One hundred and fifty (150) patients were selected randomly, who were having deviated nasal septum with nasal obstruction and were willing to correct their septum by a septoplasty. Ninety-five patients were male and fifty-five were female. Age ranges were 20 years to 44 years. Informed written consent was taken prior to surgery on a pre-op day. Ethical approval was also taken. Septoplasty was planned for

correction of their septum. We divided all patients into three different groups randomly. Group I (without nasal splints), Group II (silicon nasal splints) and Group III (plastic splint). Fifty patients were enrolled on each group. We measured the severity of the pain (felt by the patients) by using a VAS (visual analogue scale), a scale set from no pain to mild, moderate and severe pain, post-operative bleeding, septal hematoma, and post-operated nasal adhesion (synechiae), saddle nose deformity and septal perforations. All data was entered and analysed in SPSS by using version 20.

All patients with co-morbidities like diabetes, hypertension and chronic liver diseases were excluded from this study. The patients who were not followed up for 8 weeks were also excluded from this study. In Group I, no splint was used, and directly packed the nose with ribbon gauze soaked in antibiotic cream. In group II, silicon nasal splints were used after septoplasty and stitched with Vicryl 3/0 suture material, and pack the nasal cavities with ribbon gauze soaked in liquid paraffin and *Fucidin* antibiotic cream. In group III patients, inserted appropriate size plastic nasal splint and stitched with Vicryl 3/0. After 2 days pack was removed from the nostrils and the splint remained for 2 weeks and was then removed splints. We observed and recorded the complications after septoplasties like pain using a visual analogue scale (VAS), postoperative nasal bleeding, septal hematoma, synechiae (adhesion), saddle nose deformity and septal perforations. Division of synechiae was done under local anesthesia for those patients who developed synechia and a silicon nasal splint were inserted to the prevention of recurrence for two weeks. In cases of septal hematoma, re-opened stitches and drainage done and a silicon nasal splint was inserted and stitches for two weeks packed in the nose with ribbon gauze soaked in antibiotic cream for 2 days then the pack was removed. In the septal perforation cases, repaired the perforation by a mucosal turbinate flap. Data was analysed by entering all data in SPSS version 20 software. For mean, standard deviation, and frequencies ANOVA and t-test were applied for significance.

RESULTS

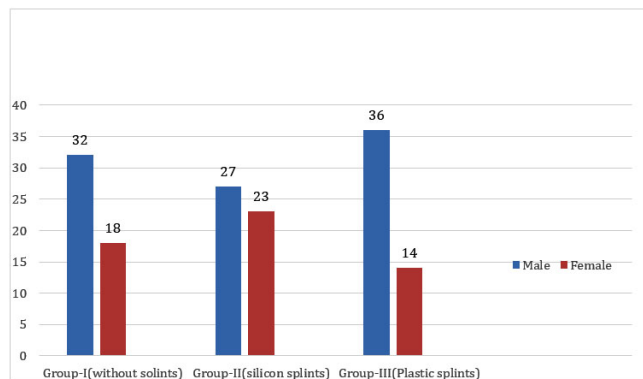
Male to female ratio in the study was 95:55 and the male to female ratio in the Group I was 32:18, in the Group II, it was 27:23 and in the Group III, it was 3:14 (As shown in graph 1)

Mild pain was noted in fifteen patients in Group I while it was in twenty patients in Group II and in 20 patients in Group III. Moderate pain was observed in 10 patients in Group I, ten patients in Group II, and 15 patients in Group III. Severe pain was noted in 10 patients in Group II (silicon splint) while severe pain was not reported in Group I (without splint) and 15 patients in Group III (Plastic splint) (As shown in graph 2).

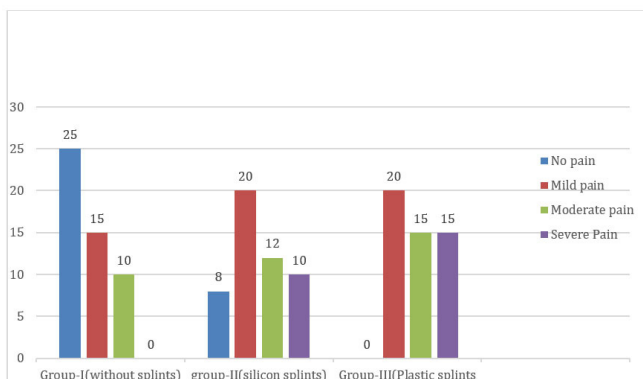
The mean age of the patients was 30 ± 7.75 years in Group I and in Group II, it was 28 ± 7.75 years and in Group III, it was 29 ± 8.50 years (Table 2). Post-operated nasal bleeding was seen in 8 patients (16%) in Group I (without splint) as compared with Group II and Group III, they were in 9 patients (18%) and in 40 patients (80%) respectively and the p-value was less than 0.001 (significant). Post-operated nasal adhesion was found more in Group I (without splint) i.e., 24 (48%). Post-operated nasal adhesions were in 4 (8%) of patients in Group II, and in group III and the p-value was less than 0.001 (significant).

The hematoma was seen in 2 patients in Group I (without splint) while hematoma occurred in 4 patients in Group II (silicon splint) and the hematoma was seen more (16%) in Group III (plastic splints) and the p-value was less than 0.001 (significant). Post-operated septal perforations were not seen in Group II and in Group I, it was noted in 6 patients (12%) while in Group III (plastic splint) it was in 1 patient. Post-operated infection associated with fever, body aches, and a headache was seen in Group I, in 4 patients (8%) while the infection was noted in two patients (4%) in Group II (silicon splint) and in six patients (12%) in Group III (plastic splints).

The overall result disclosed fewer complications after surgery (septoplasty) in the silicon splint group (Table 2).



Graph 1: Gender distribution in three different groups. N=150.



Graph 2: Intensity of post-operated pain after septoplasty in different groups. N=150.

Table 1: Comparison of different variables in group I, group II, and in group III. (N=150)

Parameters	Group I (Without splints) n=50	Group II (Silicon splints) n=50	Group III (Plastic splints) n=50	p-value
Mean age	30+7.75	28+7.75	29+8.50	0.041
Nasal bleeding	8 (16%)	9 (18%)	40 (80%)	0.001
Hematoma	2 (4%)	4 (8%)	8 (16%)	0.001
Nasal adhesion	20 (40%)	2 (4%)	3 (6%)	0.001
Infection	4 (8%)	2 (4%)	6 (12%)	0.014

Table 2: Comparison of complications of septoplasty in different groups. (N=150)

Variables	Group I (Without splints) n=50	Group II (Silicon splints) n=50	Group III (Plastic splints) n=50	p-value
Saddle nose deformity	0	0	2 (4%)	0.371
Septal perforations	6 (12%)	0	1 (2%)	0.133

DISCUSSION

Intra nasal splints have not been preventing post-operated nasal adhesion (synechia) i.e., 0% in splinted group versus non splinted group 21% while in our study nasal splints have the significant part in the prevention of post-operated nasal adhesion.⁹

According to Deniz M et al. that the nasal splints were very effective for reducing the incidences of post-operated nasal adhesion (synechia) formation, this study is correlating with our study.¹⁰

A study elaborated that the rate of complications of septoplasty such as, septal hematoma, septal perforations and nasal adhesion (synechia) were 0.7%, 2.1% and 3.8% respectively.¹¹

The post-operated septal hematoma was not encountered in a study in any group. A total of 2 patients (3%) had septal perforations in nasal packing group and 2 patients (3%) had post-operated nasal adhesion in the non-packing group.¹²

Another study reported that after septoplasty, post-operated adhesion was noted in (14.44%) 13 patients in group A while in group B, it was seen (3.33%) 3 patients and the p-value was less than 0.0005 which was very significant¹³ and in our study post-operated adhesion was 48% in without splint group.¹³

In a study hemorrhage (post-operative bleeding) occurred in (34.7%) 17 patients and nasal synechia (post-operated adhe-

sion) were noted (6.1%) 3 patients¹⁴ and in our study post-operated adhesion was 8% and 8% in silicon splint versus plastic splint group (similar).

In a study, only the VAS score for nasal bleeding was significantly higher in the non-splint group as compared with the splint group. No significant differences were noted in nasal pain, headache etc between the groups. Synechia, infection septal hematoma and septal perforations were not noted between groups.¹⁵

It was mentioned in a study that the most frequent complication of septoplasty is excessive bleeding or hemorrhage (3.3%), and septal perforation was observed in 2.3% of the patients. Infection was observed in 3.1% of patients. Post-operated nasal adhesion is rarely seen due to the usage of nasal splints.¹¹

The post-operated intensity of pain was very significant and the p-value was less than 0.001 only on 1st post-operated day, 18.97 for the transseptal suture group and 27 for the silicon splint group.¹⁶

Severe pain was noted at 22.9% in the nasal splint group while in the non-splint group it was 2.1% co-relating with our study in which pain was less in a non-splint group compared with the plastic splint group and silicon splint group. Synechia was 0% in the nasal splint group and in the non-splint group, synechia was 10.6% of patients after septoplasty¹⁷, this is also relating to our study.⁴

CONCLUSION

Silicon nasal splints are very good and effective because by using silicon nasal splints, patients were more comfortable and had fewer complications when compared to plastic splints and without a splint.

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Conflict of interest

None

Permission

It was taken from the ethical review committee of the institute.

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