



Silicon Nasal Splints v/s Conventional Nasal Packing: A Comparative Study to Assess Post Operative Outcome After Septoplasty

Priyank R Akhani¹, Sushant Joshi^{2*}, Samta Verma³, Ramkalyan Meena⁴, Siddharth Gautam¹ and Harjider Singh Bhuie⁵

¹Junior Resident, Department of ENT, Ananta Institute of Medical Science and Research Centre, Rajsamand, Rajasthan, India

²Associate Professor and Head, Department of ENT, Ananta Institute of Medical Science and Research Centre, Rajsamand, Rajasthan, India

³Senior Resident, Department of ENT, Ananta Institute of Medical Science and Research Centre, Rajsamand, Rajasthan, India

⁴Assistant Professor, Department of ENT, Ananta Institute of Medical Science and Research Centre, Rajsamand, Rajasthan, India

⁵Professor, Department of ENT, Ananta Institute of Medical Science and Research Centre, Rajsamand, Rajasthan, India

*Corresponding Author: Sushant Joshi, Associate Professor and Head, Department of ENT, Ananta Institute of Medical Science and Research Centre, Rajsamand, Rajasthan, India.

DOI: 10.31080/ASOL.2024.06.0662

Received: March 01, 2024

Published: May 20, 2024

© All rights are reserved by Sushant Joshi, et al.

Abstract

Introduction: Nasal packing after septoplasty surgery is a common practice among ENT surgeons. Conventional nasal packing with antibiotic ribbon gauze, merocele and nasal silicon splints are commonly used for nasal packing after septoplasty surgery. Silicon nasal splint has been tried as an alternative in an attempt to diminish morbidity associated with nasal packing. The aim of our study is to compare between silicon nasal splints and conventional ribbon gauze nasal packing with a focus on assessing their impact on postoperative outcomes.

Methods: A 1-year comparative study was conducted on 50 patients who underwent septoplasty in Otorhinolaryngology department at Ananta institute of medical sciences and research centre, Rajsamand, Rajasthan. Patients were randomly allotted in 2 groups; in group A nasal packing done with conventional ribbon gauge and in group B packing done with silicon septal splint. In the postoperative period, patients were assessed for pain, nasal obstruction, bleeding, crusting and nasal synechiae.

Results: Patients in whom nasal splint were used, were found to have less postoperative nasal packing related morbidities when compared to conventional nasal packing, which was found to be statistically significant.

Conclusion: An emerging alternative to conventional nasal ribbon gauze packing includes nasal splinting with silicone plates. Our findings conclude that silicone splint utilization represents a straight forward and secure approach to reduce postoperative complications of septoplasty.

Keywords: Septoplasty; Nasal Packing; Silicon Splint; Complications

Introduction

Nasal obstruction is a common ENT problem and frequently requires nasal septum correction surgery. Septoplasty is one of the most commonly performed nasal surgery and it may lead to various post operative complications e.g., nasal bleeding, septal

hematoma, abscess formation, septal adhesion, depression of nasal bridge and septal instability after septoplasty [1].

Post operatively various methods of nasal packing like conventional ribbon gauge packing, Merocele® or silicon nasal splint

are used to support the mucosal flap and maintain the stability of the remaining structures and prevention of complication. Conventional nasal packing like ribbon gauze with paraffin and antibiotic ointment is associated with discomfort to patient due to erosion of nasal mucosa, complete blockage of nasal airflow and sometimes serious complications like vasovagal attack, toxic shock syndrome and hypoxemia.

Intranasal splints were first described in 1955 by Salinger and Cohen and they made it from radiograph film. Intranasal splint is designed to support the nasal septum and to minimize the risk of adhesion between the septum and lateral nasal wall. The use of radiograph films is also associated with some disadvantage like displacement, secondary infection, discomfort, increased crusting, and pain [2]. Various studies were done to analysed the advantages of post-operative nasal tampons aiming at the reduction of undesirable septal defects and mainly at avoiding epistaxis and nasal adhesions.

The present study is being conducted for comparative analysis between silicon nasal splints and conventional ribbon gauze nasal packing with a focus on assessing their impact on postoperative outcomes, including synechia formation, pain, bleeding, nasal obstruction, and crusting.

Materials and Methods

The present study was a 1-year study conducted in Department of Otorhinolaryngology at Ananta institute of medical sciences and research centre, Rajsamand, Rajasthan with approval of Hospital Ethics Committee. The study encompassed a cohort of 50 patients who provided informed consent before participation. All the patients from age group of 21 to 45 years with septal deviation were included and patients below 21 years or above 45 years of age and patients in which septoplasty is a part of other surgeries like FESS or Endo-nasal DCR were excluded from the study. The participants were randomly assigned to two groups named A and B prior to undergoing septoplasty. All the surgeries were done by the same surgeon. The septum was infiltrated with 2% lignocaine with adrenaline 1: 2, 00,000. Killians or Freer's incision was made on one side of nasal septum. The septum is approached by elevating perichondrial and periosteal flap. The deviated part of nasal septum is corrected by various methods, like: scoring on the concave side, shaving, cross-hatching or morselizing. Patients in group A were post-operatively packed with conventional ribbon gauze soaked in antibiotic ointment and removed on 2nd postoperative day. Patients in group B were post-operatively packed with silicone nasal splints with one splint inserted into each of the nasal cavity and fixed by suturing to the nasal septum and removed after 1 week post-operatively (Image 1).

Patients were systematically assessed for postoperative out-



Image 1: Nasal silicon splint.

comes included synechiae formation, pain levels, postoperative bleeding, nasal obstruction, and crusting formation. A visual analogue scale (VAS score, 0–10) was employed for nasal obstruction and pain evaluation while nasal endoscopy was performed for evaluation of crusting, synechiae and nasal bleeding. Patients were asked regarding pain and nasal obstruction occurred on day 1 post operatively and on day of pack removal. Nasal bleeding also evaluated on day of pack removal while complications such as crusting and synechiae were evaluated 2 to 3 weeks after septoplasty. For patient’s pain and nasal obstruction analysis, a table with values varying from 1 to 10 was elaborated in order to indirectly measure the symptom felt by such patients during the first 48 hours. Scale 1 to 3 was considered grade mild, 4 to 6 moderate and 7 to 10 severe. Chi square test was used to obtain information and analyze data. Statistical analysis was done using SPSS Software.

Results

In the present study total 50 patients of age between 21-45 years were included. Out of 50 patients 30 were males and 20 were females.

The mean postoperative pain score on day 1 for Group A was 5.5 ± 2.0 and for Group B was 3.6 ± 1.5 , mean postoperative pain score on pack removal for Group A was 4.7 ± 2.1 and for Group B was 3.2 ± 2.0 and p value was <0.05 which was significant. Mean nasal obstruction for group A was 3.8 ± 2.1 and group B was 3.7 ± 1.9 . (Table 1).

In group A, 6 patients (24%) had developed synechiae forma-

Table 1: Mean visual analogue score for pain and nasal obstruction.

		Group A	Group B
Pain	On day 1	5.5 ± 2.0	3.6 ± 1.5
	On day of pack removal	4.7 ± 2.1	3.2 ± 2.0
Nasal obstruction		3.8 ± 2.1	3.7 ± 1.9

tion, 9(36%) patients developed nasal crusting and 5(20%) patients had nasal bleeding.

In group B, no patient had developed synechiae formation, 2(8%) patients developed nasal crusting and 1(4%) patient had nasal bleeding (Table 2).

P-value was calculated as <0.05 or 5% showing a significant dif-

Table 2: Comparison of various complication.

	Group A	Group B
Crusting	9(36%)	2(8%)
Synechiae	6(24%)	0
Nasal bleeding	5(20%)	1(4%)

ference.

Discussion

Septoplasty, a common surgical procedure performed by otorhinolaryngologists, is often followed by nasal packing to serve several benefits including hemostasis, obliteration of dead space, enhancement of nasal structural stability, and synechiae prevention. Numerous packing materials such as ribbon gauze, bismuth iodoform paraffin paste (BIPP), silicon nasal splint and Meroceol nasal packs have been utilized for this purpose. Patients undergoing nasal packing post-operatively frequently report discomfort, headache, pain, sleep difficulty and nasal obstruction. Moreover, the removal of nasal packing is frequently cited as a more distressing experience than the surgical procedure itself, with some patients describing it as the most agonizing encounter they have faced. Additionally, postoperative cleansing of the nasal cavity is imperative for optimal healing of the nasal mucosa wound. Utilizing silicone plates for suturing and immobilizing mucoperichondrial flaps represents a novel and efficacious technique in septoplasty.

In our study mean postoperative pain score on day 1 was 5.5 ± 2.0 in group A and 3.6 ± 1.5 in group B and on pack removal for Group A mean pain score was 4.7 ± 2.1 and 3.2 ± 2.0 for group B. Pandurangarao SU, *et al.* [2] found mean postoperative pain score in their study on day 1 was 7.44 for group A and 2.2 for group B and on pack removal it was 6.08 for group A and 1.92 for group B. Wadhwa, *et al.* [3] did a study in 60 patients and found that intranasal septal splints result in less postoperative pain without increasing postoperative complications. similarly in a study conducted by Kurle, *et al.* found 90% incidence of pain [4].

In the present study Mean nasal obstruction for group A was 3.8 ± 2.1 and group B was 3.7 ± 1.9 . In their study Pandurangarao SU, *et al.* [2] found VAS for nasal obstruction was significant in group A and group B.

Conventional gauze pack may lead to foreign body reaction be-

cause it is not biocompatible and there is more risk of bleeding on pack removal due to mucosal erosion. Another frequent complication after nasal packing is crusting [5]. It was found in 10% cases of nasal packing in the Fjermedal, *et al.* [6] study. In the present study 9(36%) patients in Group A and 2(8%) patients in Group B developed nasal crusting. Arora P, *et al.* [7] found 6 (30%) out of 20 patients in whom conventional nasal packing was done had crust formation. No patient with nasal splint had crust formation.

Becker [8] in 1983 describe "Paraffinoma" as complication of nasal packing as nasal packs become stick to the surrounding mucosal lining and when removed they leave some shreds and mucosal raw areas which later result in synechiae formation. In the present study 6(24%) patients in Group A and no patient in Group B developed nasal synechiae. These results are comparable to other studies which also had significant lower rate of nasal synechiae in splinted patients than conventional ribbon gauze packing. Study by Arora P, *et al.* [7] found 2 (10%) out of 20 patients with conventional nasal packing had postoperative synechiae formation and no patient with nasal splints had synechiae formation. Ghouri SM, *et al.* [9] did a prospective study and they found that 4% patients developed synechiae in whom ribbon gauze packing was done and no synechiae formation seen in patients with nasal splint packing. Deniz, *et al.* [10] suggested that nasal splints were effective in reducing the incidence of nasal synechiae formation.

In our study 5(20%) patients in Group A and 1(4%) patient in Group B had nasal bleeding on pack removal. Wadhra, *et al.* [3] did a study in 60 patients and found that splint group experienced significantly fewer instances of nasal bleeding compared to conventional nasal pack.

Our investigation revealed that patients treated with silicon nasal splint exhibited significantly reduced incidences of pain, as well as obstruction, bleeding, crusting and synechiae formation compared to those managed with conventional gauze packing. This disparity may be ascribed to the mechanical effects of conventional packing, which can induce nasal wall stretching and tearing and obstruct the osteomeatal unit, thereby precipitating more aggravating complications.

Conclusion

Nasal packing is a common done following septoplasty aimed at mitigating postoperative complications. An emerging alternative to conventional nasal ribbon gauze packing includes nasal splinting with silicone plates. Our results suggest that use of silicone splints is effective method to alleviate postoperative complications of septoplasty.

Bibliography

1. Asaka D., *et al.* "Nasal splinting using silicone plates without gauze packing following septoplasty combined with inferior turbinate surgery". *Auris Nasus Larynx* 39.1 (2012): 53-58.
2. Pandurangarao SU., *et al.* "A comparative study between conventional nasal packing versus nasal splint with clip after septoplasty with bilateral reduction of inferior turbinates with bipolar cautery". *International Journal of Otorhinolaryngology and Head and Neck Surgery* 4 (2018): 986-989.
3. Wadhra R., *et al.* "Comparative study of intranasal septal splints and nasal packs in patients undergoing nasal septal surgery". *Ear Nose Throat Journal* 93 (2014): 396-408.
4. Kurle G., *et al.* "A comparative study between nasal clips and anterior nasal packing in septoplasty/submucosal resection patients at VIMS Bellary, Karnataka". *International Journal of Otorhinolaryngology and Head and Neck Surgery* 3.2 (2017): 364-370.
5. M Sloth and L Kolendorf. "Late complications after septum surgery". *Ugeskrift for Laeger* (1976).
6. Fjermedal O., *et al.* "Septoplasty and/or submucous resection? 5 years nasal septum operations". *JLO* 102 (1988): 796-798.
7. Arora P, *et al.* "Comparative study of nasal packs, quilts and splints in septal surgery". *International Journal of Otorhinolaryngology and Head and Neck Surgery* 6 (2020): 1793-1798.
8. Becker H. "Paraffinoma as a complication of nasal packing". *Plastic Reconstructive Surgery* 72 (1983): 735-736.
9. Ghouri SM., *et al.* "Prevention of Intra Nasal Adhesions by Using Intranasal Splints after Septoplasty". *PJMHS* 12.1 (2018): 286-288.

10. Deniz M., *et al.* "The impact of different nasal packings on post-operative applications". *American Journal of Otolaryngology* 35 (2014): 554-557.