

Original Research Article

Trans-septal quilting suture versus intranasal silicone splint for preventing complications post endoscopic septoplasty

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ABSTRACT

Background: Septoplasty is a common procedure in the field of otolaryngology for treatment of septal deviations. Intranasal splints and trans-septal quilting suture are commonly utilized to prevent post-operative complications. The silicone splint is a quick and simple technique to aid in cartilage support; however, it can cause discomfort. Trans-septal quilting suture is more available, well-tolerated and can help in mucosal tear closure, though is time-consuming. This study aimed to compare the efficacy of intranasal silicone splints versus quilting suture in the prevention of post endoscopic septoplasty complications.

Methods: This was a retrospective COHORT study comprised of patients who underwent endoscopic septoplasty between January 2017 and December 2019 at Qatif central hospital. The patients were assigned into two groups: group S, who received intranasal splints and group Q, who received trans-septal quilting suturing. Patients' medical records were reviewed for evaluation of post-operative visits and post-operative nasal endoscopic video recordings from the image archive software were evaluated to document complications. Statistical analysis was conducted using SPSS 23.0 software.

Results: The study included 65 patients, of whom 41 were in group S and 24 were in group Q. None of the patients had major bleeding, local infection or mucosal synechia. There was a higher complication rate in terms of mucosal crustation, septal hematoma and perforation among group S; however, the difference was not statistically significant.

Conclusions: We conclude that trans-septal quilting suture and intranasal silicone splints are both equally effective in preventing complications following septoplasty.

Keywords: Hematoma, Nasal obstruction, Otolaryngology, Septoplasty, Silicone, Suture

INTRODUCTION

Nasal obstruction due to allergic, inflammatory or anatomical causes is a common complaint in otolaryngology. Nasal septal deviation is a common cause of anatomical obstruction, which presents in around 22-90% of the population internationally.^{1,2} Septoplasty is the recommended procedure for treating deviated septum. The surgical methods utilized in this procedure differ, though the procedure typically involves removal of the deviated cartilage and bony septum that creates a dead

space between the mucosal flaps. Although rare, complications such as septal hematoma and consequently abscess formation, adhesions and perforation can occur post-operatively. Three main methods have been employed to prevent such complications. These are intranasal occlusive packing, intranasal silicon splinting, and transseptal quilting suturing.³⁻⁵ Current evidence suggested against the use of intranasal occlusive packing because studies have not found it to make a difference in the occurrence of post septoplasty complications. Moreover, intranasal occlusive packing can lead to pain,

anxiety, oral mucosal dryness, sore throat and even hypoxia due to total occlusion of the nasal passage. Patients also frequently complain of headache and sleep disturbance and it has been found to cause nasal mucosal and ciliary damage.⁶⁻⁹ Intranasal silicone splinting is fast, technically simple and can be used for cartilage support. However, it can cause discomfort in terms of frequent sneezing and epiphora and has a potential risk for bacterial colonization. By contrast, quilting suture is more readily available, better tolerated by patients. It can help in closure of mucosal tears and support the remaining cartilage, though it is technically difficult and more time-consuming.^{5,10,11}

At present, research comparing trans-septal quilting suturing and intranasal silicone splinting in the prevention of post septoplasty complications is limited. This study aimed to explore the efficacy of trans-septal quilting suturing compared with intranasal silicone splinting in preventing post septoplasty complications.

METHODS

Subjects and study design

The present study was a retrospective COHORT study conducted at Qatif central hospital. Adult patients who underwent an endoscopic rhinological procedure that included septoplasty from 1 January 2017 to 31 December 2019 were included in the study. Revision cases and patients for whom overlapping suture and quilting techniques were utilized were excluded. The patients were assigned into two groups according to the technique utilized following septoplasty: trans-septal quilting suture (group Q) and intranasal silicone splints (group S).

Surgical procedure

All septoplasties were conducted endoscopically using a zero-degree Hopkins endoscope following a previously described technique.¹²

Group Q

A 3-0 monocryl with a curved cutting needle (Ethicon, Johnson and Johnson, USA) was used to close the dead space. A knot was placed at the distal end of the suture material and the initial placement of the suture was at the posterior end of the septum under endoscopic visualization. The procedure subsequently proceeded in a zigzag shape inferior to superior side-to-side in a continuous manner until the caudal end of the septum was reached. Finally, the suture was tied on itself, typically on the contralateral side of the starting knot.

Group S

A 1 mm flat silicone splint (Spiggle and Thies, Germany) covered with fucidin ointment was applied intranasally

and bilaterally around the septum and fixed at the caudal end with a 2-0 silk mattress suture.

Data collection

Patients files were reviewed to evaluate the post-operative visits. In addition, the nasal endoscopic video recordings of all patients from our image archiving software were reviewed and the presence of any complications was documented.

Statistics

All variables among the groups were statistically analyzed with SPSS 23.0. (SPSS, Inc., Chicago, IL, USA). The mean and standard deviation were reported for the continuous data. Chi square tests were used to analyze the differences among the groups. A p value of less than or equal to 0.05 was considered significant.

RESULTS

Among the 65 patients who underwent septoplasty, 41 underwent intranasal silicon splinting and 24 underwent septal quilting. The mean ages of group S and group Q were 37.2±3.6 and 33.4±4.5, respectively. The patients sex and procedures received are shown in Table 1.

Table 1: Demographic data of the enrolled patients.

Demographic data		Group S ¹	Group Q ²
Mean age (in years)		37.2±3.6	33.4±4.5
Sex	Male	36	13
	Female	5	11
Procedure	Septoplasty	11	3
	Septoturbinoplasty	18	7
	Dacrocystorhinostomy	1	6
	Functional endoscopic sinus surgery	11	8

¹Splint group; ²quilting group.

Table 2: Post-operative complications.

Complications	Group S	Group Q	P value
Major bleeding	0	0	NS
Mucosal crusting	4	1	0.4
Septal perforation	4	0	0.1
Mucosal synechia	0	0	NS
Local infection	0	0	NS
Septal hematoma	1	0	0.4

For patients in group S, splints were kept in place for a mean of 7.6 days (range of 2-12 days). Patients were followed up at a mean of 8.5 months post-operative.

In group S, four patients had mucosal crusting, four patients had septal perforation and one patient had septal hematoma. Group Q patients had no complications, except for one patient who had mucosal crusting. There was no statistical significance in the complication rate between the two groups. The occurrence of post-operative complications was observed and are summarized in Table 2.

DISCUSSION

Numerous complications after septoplasty have been reported in the literature, ranging from simple to severe complications with long term sequelae.¹³ Avoidance of such complications required good pre-operative planning, proper intraoperative management and post-operative follow up.¹⁴ The most frequently used intra-operative tools for preventing complications were intranasal splinting and trans-septal quilting suturing.

Previous reports have shown comparable results and no significant difference post-septoplasty between the use of the intranasal splint or trans-septal quilting suturing in controlling major bleeding.^{8,9} In the present study, there were no reported cases of this complication in either group. There were also no reported cases of either mucosal synechia or local infection. Naik and Wang et al found that trans-septal quilting suturing decreased the rate of post-operative adhesion compared with the intranasal splint.^{6,15} These findings conflicted with those of Karatas et al who found that prolonged use of the intranasal silicone splint for over 10 days significantly decreased the rate of synechia, though led to greater discomfort among patients.¹¹ However, several studies have found no statistically significant difference between groups receiving trans-septal quilting suturing or an intranasal splint.^{4,8,9,16,17} Although there was potential risk for gram positive and negative and even methicillin-resistant *S. aureus* colonization of the intranasal silicone splint, it has not been found to increase the risk of local or systemic infection.^{8,11}

Although all patients in this study were discharged on normal saline nasal douches, the splint group was found to have a higher rate of mucosal crusting, but this difference was statistically insignificant. This could be related to non-compliance among patients or the presence of concurrent turbinoplasty. However, the findings of the present study were in accordance with those of Amin et al who found no significant statistical difference in occurrence of crustation post-septoplasty between quilting and splint groups.¹⁶

In the present study, the rate of septal hematoma was also found to be insignificantly higher in splint group. Data in

the literature regarding this complication were poor, either due to lack of reports or publication bias.^{8,9,16,18,19}

There were more cases of perforation among the S group, though the difference was insignificant. This result could be interpreted as being in favor of trans-septal quilting suture because it helped in the closure of mucosal tears.^{5,16} Such an interpretation was in agreement with a literature review conducted by Tang et al who observed a higher rate of septal perforation in patients receiving splints, though again, the difference was not significant.²⁰

Trans-septal quilting suture was much better tolerated by patients. The post-operative pain score was found to be significantly lower in the suturing group compared with the splint group. In addition, patients were found to have a smoother arousal from general anesthesia than patients with occlusive packing or intranasal splints.²¹⁻²³

There were some limitations of the present study. First, there was no comparison between post-operative pain and quality of life, mainly because the study was a retrospective study. Moreover, there was lack of reporting on septal closure time because the entire duration of the operation was recorded and some of the operations such as functional endoscopic sinus surgery, lasted as long as four hours, while others such as isolated septoplasty were as short as one hour. In addition, further research comparing residual septal deviation was needed.

CONCLUSION

The results of the present study indicate that trans-septal quilting suture and silicone splints are both equally reliable techniques for preventing complications following septoplasty. However, the availability, low cost and patient tolerability towards quilting technique makes this method preferable over other available methods.

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