

Comparison the Effect of trans-septal suture technique versus the intranasal Merocel packing regarding local nasal pain and sleep disturbances after septoplasty

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Abstract

Background and objectives: Nasal septal deviation is corrected by septoplasty which is a common surgical procedure performed by otolaryngologists. Septal surgery may be associated with numerous complications mainly pain. Otolaryngologists frequently pack both nasal cavities with different types of nasal packing to minimize these complications. Nasal packing is associated with some burden on the patient in post-operative days like local pain. To avoid these issues, many surgeons use trans septal [through and through] suturing techniques to overcome the need for packing after surgery. The aim of this study was to compare the effect of trans-septal suture technique versus the intranasal packing regarding local nasal pain and sleep disturbances after septoplasty. **Methods:** Prospective comparative study conducted on 120 patients. These patients underwent septoplasty, without additional nasal procedure, for nasal septal deviation. Patients were randomly divided into two equal groups before the operation. Group (A) with trans-septal suture technique was compared with group (B) in which intra nasal packing with Merocel was done which were removed on the second postoperative day. Pain level using visual analog scale postoperatively was recorded over a follow up period of 1st and 2nd postoperative day. **Results:** Out of 120 patients who had classical septoplasty, 74 patients were males (61.7%) and 46 patients were females (38.3%). Patients who had intra nasal packing got significantly more postoperative pain ($P < 0.05$), Visual analog scale score was significantly higher in group B than those who had trans-septal suture [group A]. **Conclusions:** Trans-septal suturing technique without nasal packing for septoplasty postoperatively can be safely performed and with minimal local pain and sleep disturbances compared with the intra-nasal packing technique.

Key words: Intranasal packing, Septoplasty, Trans-septal suturing.

Introduction

Surgery for correction of a deviated nasal septum has evolved over the course of years. As a fact 75% to 80% of the general population is estimated to exhibit some type of anatomical deformity of the nose, most commonly a deviated nasal septum. This deviation results in a smaller nasal passage on one side or the other, or even on both sides leading to nasal obstruction¹. Septoplasty is a corrective surgical procedure done to correct or repair any defect of the nasal septum, it is one of the commonest nasal surgeries performed by otolaryngologists, alone or in combination with other procedures, such as inferior turbinoplasty, endoscopic sinus surgery and rhinoplasty². In the past period septoplasty was usually performed with a submucous resection (SMR) of the nasal septum, which removed a variable amount of the deviated portions of the

septal cartilage and bone³. Scar formation and subsequent contraction of the fibrous tissues in the resected part of the septal cartilage were a frequent cause of saddling and retraction of the columella. Septal perforations were another complication. Another drawback of this technique was that correction of pathology in the dorsal, caudal, inferior and posterior parts of the septum was not possible⁴. These criticisms led to the emergence of the septoplasty operation⁵. In 1963, Cottle and van Dishoeck gave the basic concepts were to reconstruct instead of resect and to deal with function and cosmetics in one procedure⁶. In the surgeon's pursuit to reduce trauma; many of the techniques promoted by Cottle have evolved into more delicate procedures. Furthermore, the open approach, as promoted by Sencer⁷ and Padovan⁸ and reintroduced by Goodman⁹ and others, found its place in nasal surgery. More recently, endoscop-

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ic septoplasty was introduced as a technique to address the deviated nasal septum for enhanced visualization during endoscopic sinus surgery¹⁰. The use of postoperative packing has been proposed to minimize postoperative complications such as hemorrhage, mucosal adhesions, and septal hematoma. Postoperative nasal packing is also believed to stabilize the remaining cartilaginous septum and minimize the persistence or recurrence of septal deviation. Numerous packing materials are available including ribbon gauze, fingerstall packs, polyvinyl acetate sponge (Merocel), cellulose sponges, and carboxymethyl-cellulose^{11,12}. Merocel is the most commonly used commercial nasal pack available throughout the world¹³. Evidence to support the use of postoperative packing is lacking. The most common morbidity associated with packing is postoperative pain^{11,14}. Other complications attributed to post-septoplasty nasal packing are headache, sinusitis, and even bleeding¹⁵. Systemic complications induced by nasal packing include decreased sleep quality, respiratory problems and decreased oxygen saturation¹⁶. Toxic shock syndrome is the most serious complication which is also attributed to it. Besides, removal of nasal pack is often uncomfortable and painful for the patients and is often associated with bleeding^{15,17}. The main disadvantage of packing is patient discomfort and the need for hospital stay^{18,19}. Others complications have been related to pack insertion, including vasovagal attack, cardiovascular collapse, and vasovagal reflex, as well as trauma to the columella, nasal mucosa, and soft palate. Late complications include adhesions, septal perforations, velopharyngeal incompetence or stenosis, and pack granuloma²⁰. Intranasal (septal) splints have been used as an alternative to nasal packing to prevent intranasal adhesions and maintain septal stability²¹. They have the advantage that they can stay in the nose and allow the patient to breathe through the nose, thus prolonging the time the septum is supported⁴, but similar to nasal packing, septal splints have indicated morbidity²¹. To overcome these issues, many surgeons use suturing techniques to obviate the need for packing after surgery²². Several suturing techniques have been described to approximate the mucosal flaps after septal procedures to reduce the complication rate²³. In 1984, Sessions et al²² reported continuous quilting suture using 4.0

plain catgut on a small cutting needle to approximate the mucosal flaps. A similar technique using a curved needle was described by Lee et al.²³ These techniques also help to close mucosal tears and support the remaining cartilage²⁴. The aim of this study is to compare the outcome of results regarding post-operative pain and sleep disturbances, by using either trans-septal suturing technique or intranasal packing in septoplasty.

Patients and methods

A prospective comparative study involved 120 patients with symptomatic deviated nasal septum. The study conducted in Rizgary Teaching Hospital and private hospital in Erbil/Iraq, from February 2016 until October 2018. Both Genders above 18 years were included in the study.

All patients with history of previous nasal surgery, the presence of chronic rhinosinusitis with or without nasal polyposis, diabetic patients, uncontrolled hypertension, blood disorders and patients on anticoagulant therapy; hormonal therapy; aspirin intake or systemic steroids were excluded from the study. Ethical approval was registered by the ethical committee of the Hawler medical college.

Informed consent was obtained from all patients who were enrolled in the study. In the outpatient department, history was taken and a routine clinical assessment by anterior rhinoscopy and endoscopy was done. Nasal airflow was assessed by Cottle test. Routine clinical investigations done in preparing patients for general anesthesia and surgery. Patients were randomly divided into two groups before undergoing septoplasty, each group included 60 Patients. Group A (38 males, 22 females) for trans-septal suture technique without nasal packing and group B (36 males, 24 females) for nasal packing with (Merocel).

Under general anesthesia a caudal septal incision was made (hemitransfixion). The septum was approached by elevating the perichondrial flaps, the deviated cartilage and bone were removed, and we tried to preserve septal cartilage as much as possible to prevent external nose deformation. Finally the incision was closed using 4/0 Vicryl sutures. In group A, a trans-septal suture technique was used to closely and gently oppose the mucoperichondrium flaps following septoplasty using 4/0 Vicryl sutures, applying and leaving about 1-2 cm apart. No nasal packing or

splints were used in this group. In group B, a Merocel pack (PMS Steri pack, EUROCELL NAZAL TAMPON) was inserted into each of the nasal cavities following septoplasty and let to expand and swollen by instillation of normal saline. The pack was removed after 24h.



Figure (1):Merocel pack

Patients of both groups stayed in the ward for one night and discharged from the hospital in the morning of the 1st postoperative day. For the nasal packing group, packs were removed on the 1st postoperative day and discharged. Antibiotics were not prescribed for both groups, only simple analgesics [Paracetamol one gram twice daily on need] were prescribed for all patients postoperatively and after their discharge from the hospital. All the patients were advised to use sea water spray.

Postoperatively, the subjective symptoms were evaluated, including postoperative local nasal pain and sleep disturbance. These evaluations, were performed using a visual analogue scale (VAS; a scale between 0 and 10; 0 nil, 10 very severe). Patients were interviewed regarding their symptoms on the 1st and 2nd postoperative days. Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 20) for data analysis, p-value ≤ 0.05 or less was considered statistically significant.

Results

The mean age ($\pm$ SD) of the sample was 26.27 ± 7 years, ranging from 18-46 years. The main age group was between 20-29 years (56.7%), as shown in Figure (1). Statistically there was a non-significant association between different age groups and type of operation, p-value = 0.74.



Figure (1):Age distribution

Regarding gender distribution, out of 120 patients, 74 patients were males (61.7%) and 46 patients were females (38.3%), as shown in Figure (2). The male to female ratio was estimated to be 1.6:1.

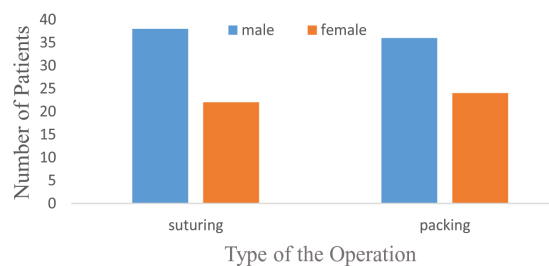


Figure (2):Gender distribution.

According to the findings in Table (1) and Figure (3), the level of postoperative local nasal pain in both days was higher among packing group compared to suturing group. There was a significant difference between the two groups in both first and second postoperative days. p-value was 0.001.

Table (1): Postoperative nasal pain

Type of operation		1 st POD	2 nd POD
Suturing	Mean	22.67	16.00
	SD	6.397	6.747
Packing	Mean	38.33	26.67
	SD	9.129	9.223
p-value		0.001	0.001

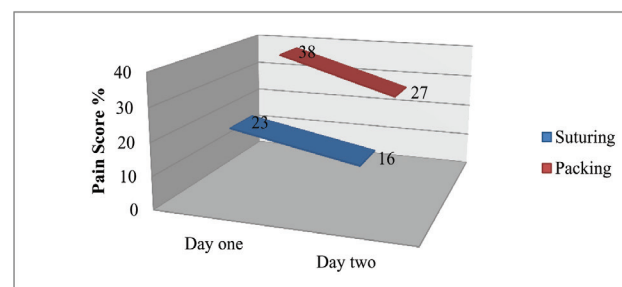


Figure (3):Postoperative nasal pain

There was a significant variation in postoperative sleep disturbance [Difficulties in initiating and maintaining sleep, excessive somnolence, changing in sleep-wake schedule] regarding both groups on the first day, Table (2). Those patients with intranasal packing experienced much sleep disturbance in comparison to suturing group patients, p-value was 0.001. While there was no significant difference between both groups regarding sleep disturbance in the 2nd post-operative day, difference disappeared on the second day and p-value was 0.36.

Table (2): Postoperative sleep disturbance

Type of operation		1 st POD	2 nd POD
Suturing	Mean	19.00	11.67
	SD	7.120	4.611
Packing	Mean	33.00	13.00
	SD	10.22	6.513
p-value		0.001	0.36

Discussion

The mean age of our patients was 26.27 years with a range between 18-46 years (± 7 years). This is mostly because people in this period of their lives are more active and prone to accidents and traumas that will result in increased incidence of septal deviation. In the study of Cukurova et al²⁵; the mean age of their patients was 28.9 years.

The postoperative local nasal pain in both days according to the VAS was higher among group B patients with intranasal packing compared to those patients with trans-septal suturing group [group A]. Intra nasal packs were removed on the 1st postoperative day but the pain score was still higher in the packing group on the 2nd postoperative day compared to the suturing group. This is because of the pressure applied by the Merocel pack on the nasal walls, resulting in more pain sensation. This is in accordance with the results of Walikar¹¹, a comparative study of septoplasty with or without nasal packing, where 79.3% of patients with nasal packing experienced postoperative pain compared to only 25.7% of patients without nasal packing.

In a retrospective analysis of 697 septoplasty surgery cases: packing versus trans-septal suturing method which was done by Cukurova et al²⁵, the reported pain levels were 2.3 for suturing and 4.8 for packing on a scale of 1 to 10, indicating that the suturing group felt less pain than the packing group (p -value < 0.05). Another study done by Awan et al²⁶ on nasal packing after septoplasty: a randomized comparison of packing versus no packing in 88 patients showed that the most common pain scores were 10 in the packing group and one in the non-packing group. Naghibzadeh et al¹⁵ conducted a study on 145 patients in 2011 which was "Does post septoplasty nasal packing reduce complications?" in which all patients in packing group ($n=77$) mentioned severe pain feeling while only 2 out of 68 patients without nasal packing felt such pain.

Regarding postoperative sleep disturbance, patients in

group B [packing group] experienced more sleep disturbance on the 1st POD compared to suturing group patients. This difference disappeared on the 2nd day, mostly due to removal of the pack as a cause of mechanical obstruction to the airway on the 1st postoperative day and also due to higher pain levels appreciated by packing group patients. This result is similar to other studies. Turhan et al²⁷ examined the effects of using nasal packing or trans-septal sutures in septoplasty specifically on the polysomnographic parameters in the postoperative period in two different groups of young patients. The authors found a significant postoperative increase in the apnea-hypopnea index within the packing group. A study done by Daiya Asaka²⁸ disagreed with our results by finding insignificant difference that may be due to the use of sponge pack instead of Merocel pack which is smaller in size and causes less pressure with less harm to mucosa, therefore less pain and minimal obstruction resulting in better sleep pattern. Awan et al 2008²⁶ found that 81.1% of patients in the packing group had less than 6 hours of sleep on the night after surgery, compared with only 15.9% in the non-packing group (p -value < 0.05). Arafat Jawaid et al²⁹ found in their study "Intranasal pressure splints - a reliable alternative to nasal packing in septal surgery" that 80% in the packing group had less than 6 hours of sleep on the night after surgery, compared with only 16.2% in the non-packing group (p -value < 0.05).

This study showed that male patients were 74 (61.7%) and female patients were 46 (38.3%). This distribution is approximate to that of Ansari et al³⁰; 60% males and 40% females. The male to female ratio was 1.6:1 with slight male predominance which may be due to the small sample size and may be due to the male contour frame or being overweight and complaining more from nasal obstruction and snoring.

Conclusions

Trans-septal suturing technique without nasal packing in septoplasty can be done safely and easily, with better patient compliance, less postoperative local nasal pain and less sleep disturbance in comparison with intra nasal Merocel packing..

Conflict of interest

Nothing to declare.

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