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Comparative study between septoplasty with or without nasal packing

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ABSTRACT

Introduction: Deviated nasal septum is a common condition in otorhinolaryngology, often requiring septoplasty. The side effects of nasal packing have led to an increasing preference for septoplasty without packing.

Objective: To compare the advantages and disadvantages of septoplasty with or without nasal packing.

Methodology: A prospective, comparative study was conducted in the Ear, Nose, and Throat Department at Universal College of Medical Sciences Teaching Hospital, Siddharthanagar, Rupandehi, Nepal, over 18 months (2016 November to 2018 April) after getting institutional ethical clearance. Total 40 patients (aged 15–70 years) with symptomatic deviated nasal septum undergoing septoplasty were included in this study using non-probability convenient sampling. Lottery method was used to divide patients into two groups: Group A, who underwent septoplasty with nasal packing and Group B, who underwent septoplasty without nasal packing. Post-operative pain and bleeding were assessed on the first, second, fifth, seventh, and 30th post-operative days, while synechiae formation was evaluated on the seventh and 30th post-operative days. Data analysis was performed using SPSS v.17, applying the Chi-square test, with statistical significance level set at $p \leq 0.05$.

Result: The mean age of patients was 33.4 ± 15.3 years. Pain was significantly higher in the nasal packing group on the first post-operative day ($p = 0.013$). Synechiae formation was more frequent in the packing group on the seventh ($p = 0.035$) and 30th post-operative days ($p = 0.042$).

Conclusion: Septoplasty with packing increases morbidity (pain and synechiae). Therefore, septoplasty without packing may be a preferable alternative.

Keywords: bleeding; deviated nasal septum; nasal packing; pain; septoplasty; synechiae.

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INTRODUCTION

Nasal obstruction is a prevalent complaint in otorhinolaryngology, often caused by a deviated nasal septum (DNS).[1] Globally, septal deviations occur frequently, with a prevalence of 22% in newborns delivered vaginally and 4% in those born via caesarean section.[2,3] While many cases are asymptomatic, severe deviations require surgical correction.[4,5] Septoplasty is the standard treatment, utilising various techniques,

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including submucosal resection, traditional septoplasty, and extracorporeal methods.[6]

Traditionally, nasal packing is used post-septoplasty to prevent bleeding, adhesions, and septal haematomas. It is believed to stabilise the septum, promote flap apposition, and reduce recurrence.[7] However, nasal packing can cause complications such as pain, infection, toxic shock syndrome, and sleep disturbances. Alternative techniques, including septal suturing, splints, and biological adhesives, are gaining attention as potential replacements.[8]

Despite increasing concerns, nasal packing remains common procedure at many hospitals, including study site. Hence, this study aimed to compare septoplasty with and without nasal packing, focussing on post-operative pain, bleeding, and synechiae formation. Addressing this knowledge gap is crucial in optimising surgical outcomes and minimising patient morbidity. To the best of our knowledge, this is the first study at Universal College of Medical Sciences (UCMS) evaluating these techniques. Findings may contribute to refine standard surgical practices in Nepal and beyond.

METHODOLOGY

A prospective comparative study was conducted at the Department of Ear, Nose and Throat-Head and Neck Surgery (ENT-HNS), UCMS Teaching Hospital, Siddharthanagar, Rupandehi, Nepal after obtaining ethical clearance from Institutional Review Committee of UCMS (Ref. UCMS/IRC/047/16).

Patients undergoing septoplasty for symptomatic DNS within the 18 months period from 2016 November 01 to 2018 April 30 were selected for the study using convenient sampling based on inclusion and exclusion criteria. All symptomatic DNS patients undergoing septoplasty age 15 years to 70 years who gave informed consent and presented within the study duration were included. The terminally ill with serious medical condition and/or not in the state of giving consent and patients having acute infection or history of nasal surgery were excluded. The patients were randomly divided into two groups: Group A, who underwent septoplasty with nasal packing and Group B, who underwent septoplasty without nasal packing. A lottery method was used to decide which group would be allotted to the patient. Informed written consent was obtained from each respondent above 18 years and those who were below 18 years, informed written assent from respondents and informed written consent from the guardian was obtained before data collection.

Cases underwent detailed history-taking and ENT examination, including cold spatula tests, anterior and posterior rhinoscopy, and deviation assessment. Patients provided informed consent after being briefed on the procedure, risks, and post-operative care. Preoperative tests included blood tests, chest X-ray, renal function tests, Electrocardiogram (ECG) (for patients over 25), and imaging studies such as X-ray paranasal sinuses (PNS) and Computed Tomography (CT) scans. A correlation between clinical and radiological findings was established before surgery. All surgeries were performed under general anaesthesia, with nasal packing using xylocaine-adrenaline-soaked gauze for 10 minutes. Patients were positioned supine, intubated, and placed in reverse Trendelenburg with a fibreoptic headlight for illumination (Figure 1).

During surgery, the septum was anaesthetised, and a Freer's incision was made on the opposite side of the deviation (Figure 2). Mucoperichondrial and mucoperiosteal flaps were elevated, and deviated bony and cartilaginous parts were removed (Figure 3). Cross-hatching was performed on the remaining cartilage. Closure involved horizontal mattress sutures with 3-0 Vicryl. Packing cases received antibiotic-impregnated ribbon gauze, while non-packing cases had sutured septal flaps with antibiotic ointment (Figures 4, 5).

Post-operative pain was assessed using the Numerical Rating Scale (NRS)[9] on the first post-operative day (POD), with reassessment after pack removal in the packing group on the second POD. Bleeding was monitored using soaking of blood in average-sized walnut cotton balls, and nasal packs were removed after 48 hours. Post-operatively, patients were prescribed antibiotics, antihistamines, analgesics, nasal drops, and alkaline nasal douching for two weeks.

Patients were discharged on the third POD with antibiotics, decongestants, and nasal douching instructions for two weeks. Follow-ups on the fifth, seventh, and 30th POD assessed pain, bleeding, and synechiae using subjective and objective methods, including cold spatula tests, and anterior rhinoscopy. Synechiae, if present, were managed with suctioning, nasal douching, and antibiotic ointment. Adhesions were released under local anaesthesia, with follow-ups every four days until resolved.

Microsoft Excel sheet was used for data recording, Statistical analysis was done using SPSS Statistics for Windows, version 17.0 (SPSS Inc., Chicago, Ill., USA). Data

analysis was done using a Chi-square test. A p-value of ≤0.05 was taken to be significant.

RESULT

The study included 40 patients, evenly divided into two groups: 20 (50%) who underwent septoplasty with packing (Group A) and 20 (50%) without packing (Group B). Among the patients, 35 (87.5%) were male, and five (12.5%) were female, with a male-to-female ratio of 6:1. In Group A, 17 (85%) were male and three (15%) female while Group B had 18 (90%) male and two (10%) female, with no statistically significant difference (p = 0.63) (Table 1). Patients ranged from 15 to 70 years, with a mean age of 33.4 ± 15.30 years. The most common age group was 20-30 years (12 patients, 30%), followed by 30-40 years (10 patients, 25%), with no significant difference between groups (p = 0.34) (Table 1). The S-shaped DNS was most common in both groups (nine patients, 45%), followed by C-shaped (35% in Group A, 40% in Group B) and spur (20% in Group A, 15% in Group B), with no significant difference (p >0.05) (Table 2). A significant difference in NRS pain scores was observed on the first POD (p = 0.013), while no significant differences were noted on the second (p = 0.45), fifth (p = 0.19), seventh (p = 0.78), and 30th POD (p = 0.06) (Table 3). No statistically significant difference in bleeding was observed on the first (p = 0.31), second (p = 0.76), and fifth POD (p = 0.24), and no bleeding occurred on the seventh and 30th POD in either group (Table 4). A statistically significant difference in synechiae presence was noted on the seventh (p = 0.03) and 30th POD (p = 0.04), with a higher occurrence in Group A (Table 5).

Table 1: Age and sex distribution in each group (N = 40), n (%)

Variables	Group A	Group B	p-value
Age (in years)			
<20	5 (25)	4 (20)	
20-30	4 (20)	8 (40)	
30-40	5 (25)	5 (25)	0.34
40-50	3 (15)	-	
>50	3 (15)	3 (15)	
Sex			
Female	3 (15)	2(10)	0.63
Male	17 (85)	18 (90)	

Table 2: Distribution based on the shape of the deviated nasal septum (N = 40), n (%)

Shape of DNS	Packing (A)	Without packing (B)	p-value
S-shaped DNS	9 (45)	9 (45)	
C-shaped DNS	7 (35)	8 (40)	0.9
Spur	4 (20)	3 (15)	

Table 3: Distribution of numerical rating scale pain score in each group of surgery (N = 40), n (%)

Group	Pain	First POD	Second POD	Fifth POD	Seventh POD	30th POD
Packing (A)	None	-	-	2 (10)	10 (50)	18 (90)
	Mild	-	-	16 (80)	10 (50)	2 (10)
	Moderate	11 (55)	16 (80)	2 (10)	-	-
	Severe	9 (45)	4 (20)	-	-	-
Without packing (B)	None	-	-	5 (25)	14 (70)	18 (90)
	Mild	-	11 (55)	13 (65)	6 (30)	2 (10)
	Moderate	18 (90)	9 (45)	2 (10)	-	-
	Severe	2 (10%)	-	-	-	-
p-value		0.01	0.45	0.19	0.78	0.06

Table 4: Bleeding in each group of surgery (N = 40), n (%)

Packing	Bleeding	First POD	Second POD	Fifth POD	Seventh POD	30th POD
With packing	Yes	-	5 (25)	1 (5)	-	-
	No	20 (100)	15 (75)	19 (95)	20 (100)	20 (100)
Without packing	Yes	4 (20)	5 (25)	-	-	-
	No	16 (80)	15 (75)	20 (100)	20 (100)	20 (100)
p-value		0.31	0.76	0.246	NA	NA

NA=Not Applicable

Table 5: Distribution of presence of synechiae in each group (N = 40), n (%)

Packing	Synechiae	Seventh POD	30th POD
With packing(A)	Yes	8 (40)	6 (30)
	No	12 (60)	14 (70)
Without packing(B)	Yes	2 (10)	-
	No	18 (90)	20 (100)

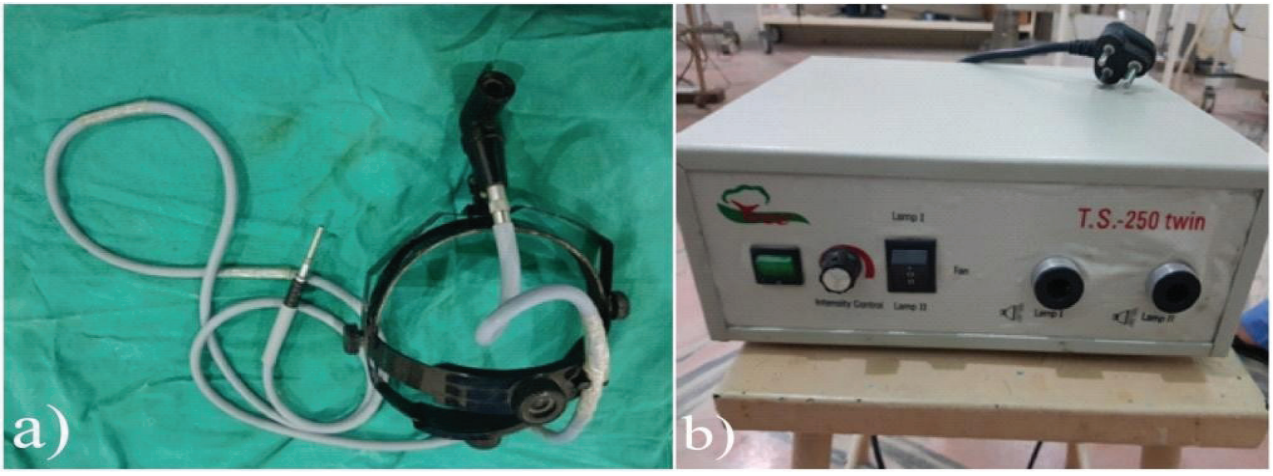

Figure 1: a) Head light and b) Fibreoptic light source

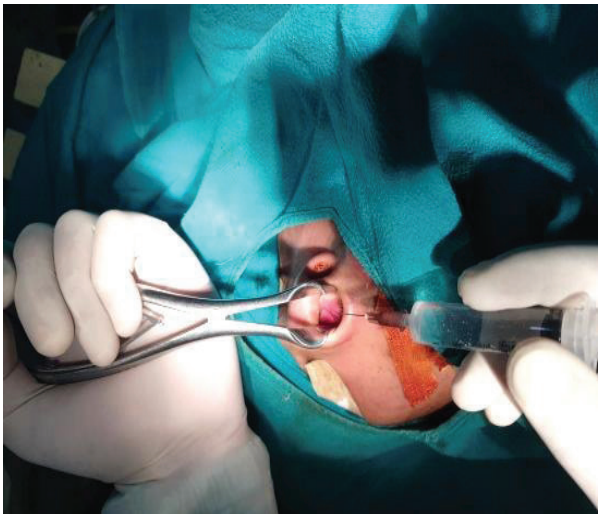

Figure 2: Infiltration of local anaesthesia

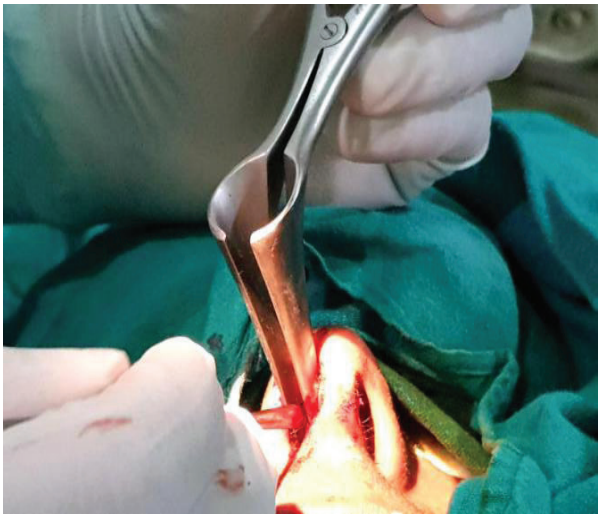

Figure 3: Mucoperichondrial flap elevation

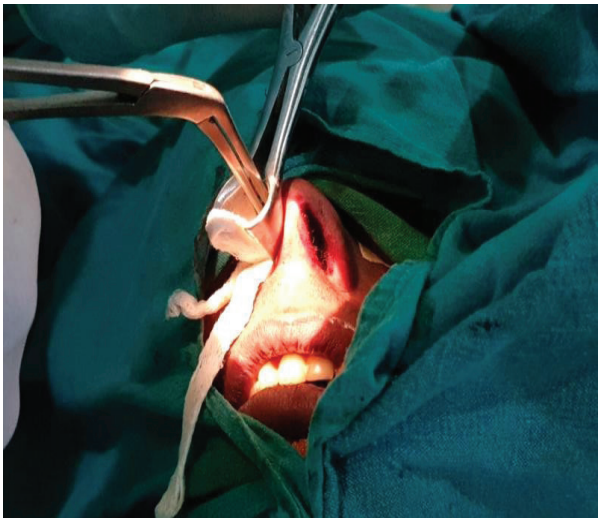

Figure 4: Nasal packing

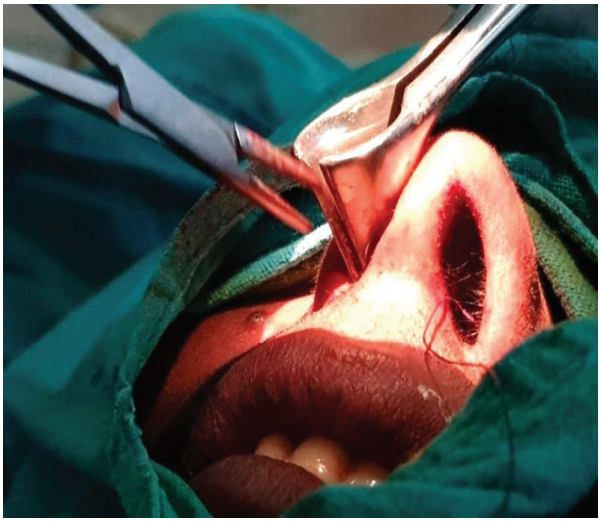

Figure 5: Transseptal suture in non-packing

DISCUSSION

Correction of nasal septal deformities dates to the beginning of medical literature in the Egyptian papyri and has been modified and improved since then.[10] This study compares the study between patients undergoing septoplasty with nasal packing and septoplasty without nasal packing. The common complaints in a patient of DNS are nasal obstruction, headache, snoring, coryza, facial pain, etc.

In this current study, patients were evaluated based on otolaryngological examination, and only patients with symptomatic DNS not responding to medical therapy were selected and were considered for surgery. The present study comprised patients aged between 15-70 years with a mean ± standard deviation age of 33.4 ± 15.30 years. The incidence of patients undergoing septoplasty was maximum (30%) in 20-30 years. There was no statistically significant difference noted in the age-wise distribution between both groups. The age group of 20-30 years was common because people in this period of their lives are more prone to accidents and traumas that will result in an increased incidence of septal deviation.[11] Similar results were seen in the study done by Walikar et al., where 83.4% of patients belong to the age group of 10- 30 years.[12] The patient above 15 years and under 70 years was enrolled in this study, as studies have shown that there is the ongoing growth of nasal septum in younger children and the procedure of septoplasty is usually difficult in children. In the elderly, the result would be conditioned by the deterioration in the healing process with the aging of the tissues and the concomitance of specific pathologies with alteration of microcirculation microangiopathies prevalent in older people.[13] In the present study, the authors found male-to-female ratio to be 6:1. There was no statistically significant difference noted in gender-wise distribution in both groups. In the study of Ghimire et al., 29.5% of cases belong to females while 70.5% belong to males (M:F = 2.3:1).[14] Most patients of DNS were male which might be due to involvement in sports and outdoor activities. In current study, 45% of patients had S-shaped DNS, 37.5% of patients had C-shaped DNS and 17.5% had spur. In a study done by Moorthy et al., 40% of patients had C-shaped DNS which was the most common DNS followed by 21% of patients with S-shaped DNS.[15]

First post-operative day: In the present study, the pain was the most predominant symptom. On the first POD, 11 (55%) patients had moderate and nine (45%) patients had severe pain whereas, in the non-packing group 18 (90%) patients had moderate and two (10%) patients had severe pain which was statistically significant ($p = 0.013$). Similarly, a study was done by Naghibzadeh et al., in which all the cases in the packing group and only 3% of cases in the non-packing group complained of moderate to severe pain.[16] A study done by Walikar et al., showed 79.3% of the packing group and 25.7% of the unpacking group complained of moderate to severe pain.[12] Furthermore, in a study done by Cukurova, pain levels were statistically significant in the packing and non-packing groups ($p < 0.05$). This indicates that the septal suturing group felt less pain than the packing group.[17] In a similar study performed by Said et al., pain is higher in the packing group in comparison to non-packing and it was statistically significant in first POD ($p = 0.001$).

Pain was due to pressure applied by the Merocel pack on the nasal walls, resulting in more pain sensations.[11] In current study observation, in the packing group, no bleeding was observed in group A whereas four (20%) patients with bleeding and 16 (80%) patients in the non-packing group were statistically insignificant. Likewise, Naghibzadeh et al., in which 1.2% of cases from packing and 2.9% from unpacking group had no bleeding at the end of the operation.[16] Moreover, a similar study carried out by Ghimire A et al., showed that one patient from the non-packing group developed bleeding on the first post-operative day, which needed anterior nasal packing.[14]

In this present study, on the second POD, 80% of patients had moderate and 20% had severe pain in the packing group. While 55% of patients had mild pain and 45% had moderate pain in a non-packing group. Similarly, in a study done by Awan et al, 46% of patients were graded as moderate pain while 52% of patients were graded as severe pain after pack removal in the packing group.[18] In a study by Günaydın et al., 75 patients (76.5%) in the transseptal suture group had post-operative pain scores of mild whereas, 89 patients (89%) in the nasal packing group had scores of moderate pain.[19] In a similar study performed by Said et al., pain was higher in the packing group than the non-packing and was statistically significant in the second POD (p= 0.001).[11]

In this current study, on the second POD, 25% of patients had bleeding in the packing group. While in the non-packing group, 25% of patients complained of bleeding. In a study by Günaydın et al., seven patients (7%) had minor and two patients (2%) had significant bleeding in the transseptal suture group. Neither minor nor major bleeding was observed in patients with nasal packing.[19] In a study done by Plasencia et al., none of the nasal packing patients had post-operative bleeding, four patients reported significant bleeding after removing the packing, although none had to use them again.[20] The data obtained conclude that patients with nasal packing have a reduced risk of post-operative haemorrhage which is not significant from a statistical point of view.

In this present study, on the fifth POD, 80% had mild pain and 10% had moderate pain in the packing group. In the non-packing group, 65% had mild pain and 10% had moderate pain. In the study done by Walikar et al., post-operative pain incidence was less in patients without nasal packing.[12]

In this current study, on the fifth POD, 5% of patients had bleeding in the packing group. While in the non-packing group, there was no bleeding. In the study done by Walikar et al., post-operative bleeding was minimal on day three in patients without nasal packing than in patients with nasal packing.[12]

In this present study, on the seventh POD, 50% had mild pain in the packing group whereas in the non-packing group, 30% had mild pain and 70% had no pain. Moreover, no patient had bleeding in the packing as well as the non-packing group on the seventh POD. In current study observation, there were eight (40%) cases of the presence of synechiae in the packing group in comparison to two (10%) cases of the presence of synechiae in the non-packing group which was statistically significant (p = 0.035). Similarly, a study done by Ardehali et al., showed that 3% of cases had synechiae in the packing group and 2% of cases from the unpacking group developed synechiae.[8] On the contrary, Naghibzadeh et al, 1% of cases developed synechiae in both packing and non-packing groups. In the packing group, packing makes the nasal mucosa raw and more susceptible to synechiae formation.[16] Similarly, Ghimire et al. in their study mentioned that two patients of the packing group developed synechiae between the lateral wall of the nasal cavity and nasal septum.[14]

In this present study, on the 30th POD, 10% had mild pain in the packing group and 90% had no pain. Similarly, in the non-packing group, 10% had mild pain and 90% had no pain. In this observation, on the 30th POD, no patient had bleeding in the packing group as well as in the non-packing group. In this study, there were six (30%) cases of synechiae in the packing group in comparison to no case of synechiae in the non-packing group which was statistically significant (p = 0.042). The contrary to study by Said et al., only one patient (3.3%) in a suturing group and two patients (6.7%) in the packing group developed unilateral adhesions and the p-value was 0.38 which was not significant on the 30th POD.[11]

Septoplasty without packing has no obvious advantage over nasal packing in minimising post-operative bleeding. This study had been carried out over a limited period, comprising a limited number of cases. The facts seen concerning complications mentioned here may considerably vary for a more extensive series. Further studies with a more significant number of patients are necessary to determine the most appropriate method for controlling the post-operative sequel of septoplasty. Septoplasty without packing can be an alternative to septoplasty with nasal packing due to decreased morbidity in terms of pain and synechiae.[12] Only a small group of people were included in this study, so this study may not be generalisable to a broader population. A

study with a larger sample would be better. A study with a longer follow-up period would show a better result. Comparison of other parameters such as headache, haematoma scoring system would show better results.

CONCLUSION

In the current study it was observed a significantly lower frequency of pain and synechiae in patients with septoplasty without packing than those with nasal packs following septoplasty. Patients treated without nasal packing reported lower pain scores than their counterparts, and the differences were statistically significant on the first POD. Synechiae was observed more in the packing group on the seventh POD and 30th POD which was statistically significant. Bleeding was the only complication that was more commonly associated with septoplasty without packing rather than nasal pack but, was statistically insignificant.

Thus, routine use of nasal packing in septoplasty is not justified for symptomatic DNS because of minor bleeding between two groups and increased potential morbidity (pain and synechiae) in septoplasty cases packing. So, septoplasty can be performed without packing and is preferred to avoid post-operative pain and synechiae.

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