

## COMPARATIVE ANALYSIS OF POST-SEPTOPLASTY VENTILATING VERSUS PARAFFIN GAUZE NASAL PACKS ON PATIENT DISCOMFORT AND ANXIETY

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### Abstract

**Objectives:** To compare patient discomfort and anxiety in patients after septoplasty with ventilated versus paraffin gauze nasal packing.

**Study Design:** Comparative Study

**Place and Duration of Study:** Combined Military Hospital, Multan from May-2024 to April-2025.

**Methodology:** A total of 126 patients who underwent septoplasty were included and were divided into ventilated nasal packing (Group-V) and paraffin gauze nasal packing (Group-P). Patients were assessed for discomfort (through pain visual analogue scale) and anxiety (through HAM-A score) after nasal packing removal at 24-hours after procedure. Intergroup comparison was performed using Mann Whitney U-test.

**Results:** Median age of DNS patients treated by septoplasty was 37.00 (20.25) years. There were 93 (73.80%) male and 33 (26.20%) female patients. Smoking history was positive in 58 (46.00%) patients. Most common grade of DNS was grade-III present in 31 (24.60%) patients followed by grade-V in 30 (23.80%), grade-VI in 30 (24.60%), grade-IV in 18 (14.30%) and grade-VII in 17 (13.50%) patients. In Group-V, median pain VAS and HAM-A scores were 3.00 (2.00) and 15.00 (6.00) while in Group-P, these values were 5.00 (3.00), ( $p < 0.001$ ) and 20.00 (5.00), ( $p < 0.001$ ), respectively.

**Conclusion:** Ventilated nasal packing significantly reduces patient discomfort and anxiety in patients after septoplasty as compared to paraffin gauze nasal packing.

### INTRODUCTION

Deviation of the nasal septum (DNS) is one of the most common structural abnormality related to the nose which is found in majority of the population and is often asymptomatic.<sup>1,2</sup> Global prevalence of this pathology has been reported to exhibit a high degree of variability with rates ranging from 26% to 97%.<sup>3</sup> In Pakistan, a study found the prevalence of this condition to be

43% when patients presenting to a tertiary care hospital were analyzed for osteomatal complex variations.<sup>4</sup> Despite most cases being asymptomatic, it has been found that this condition is associated with a variety of other conditions (allergic rhinitis, chronic rhinosinusitis and turbinate hypertrophy) that necessitate its surgical correction due to debilitating symptoms through septoplasty.<sup>5,6</sup>

Septoplasty is generally a daycare procedure that involves surgical straightening of the deviated septum of the nose and most patients are discharged on the same day of the surgery.<sup>7</sup> One of the important step after completion of this surgical procedure is packing of the operated nose with packing material.<sup>8</sup> In this instance, there are various packing materials commercially available which may influence the levels of patient discomfort and anxiety undergoing septoplasty.<sup>9</sup> Alam et al. recently reported that mean anxiety score in patients with ventilated nasal packing was  $16.55 \pm 1.06$  while in patients with regular nasal packing it was  $17.08 \pm 0.66$ , ( $p < 0.0001$ ).<sup>10</sup>

When it comes to comparative analysis of ventilated versus paraffin gauze nasal packing in terms of patient discomfort and anxiety in patients after septoplasty, local data is not readily available. Since demographics influence mental health and therapeutic satisfaction of the patients, it is important to have local data. Therefore, present study was conducted to compare patient discomfort and anxiety in patients after septoplasty with ventilated versus paraffin gauze nasal packing.

## METHODOLOGY

This quasi-experimental study was held at Combined Military Hospital, Multan from May 2024- April 2025 after approval of ethical review committee No: (3/Trg 15 April 2024).

**Inclusion criteria:** Male and female patients who underwent planned septoplasty for DNS Mladina types III through VII and were aged 18 years or above were included.

**Exclusion criteria:** Patients with other type of nasal surgery, nasal septum perforation, intraoperative complications, pre-diagnosed cases of psychological disorders, already on anti-anxiety medications and lactating mothers were excluded.

Sample size was calculated utilizing WHO sample size calculator. For calculation of sample size, a level of significance of 95%, power of 80% and anticipated mean post-procedural anxiety score in ventilated versus paraffin gauze nasal

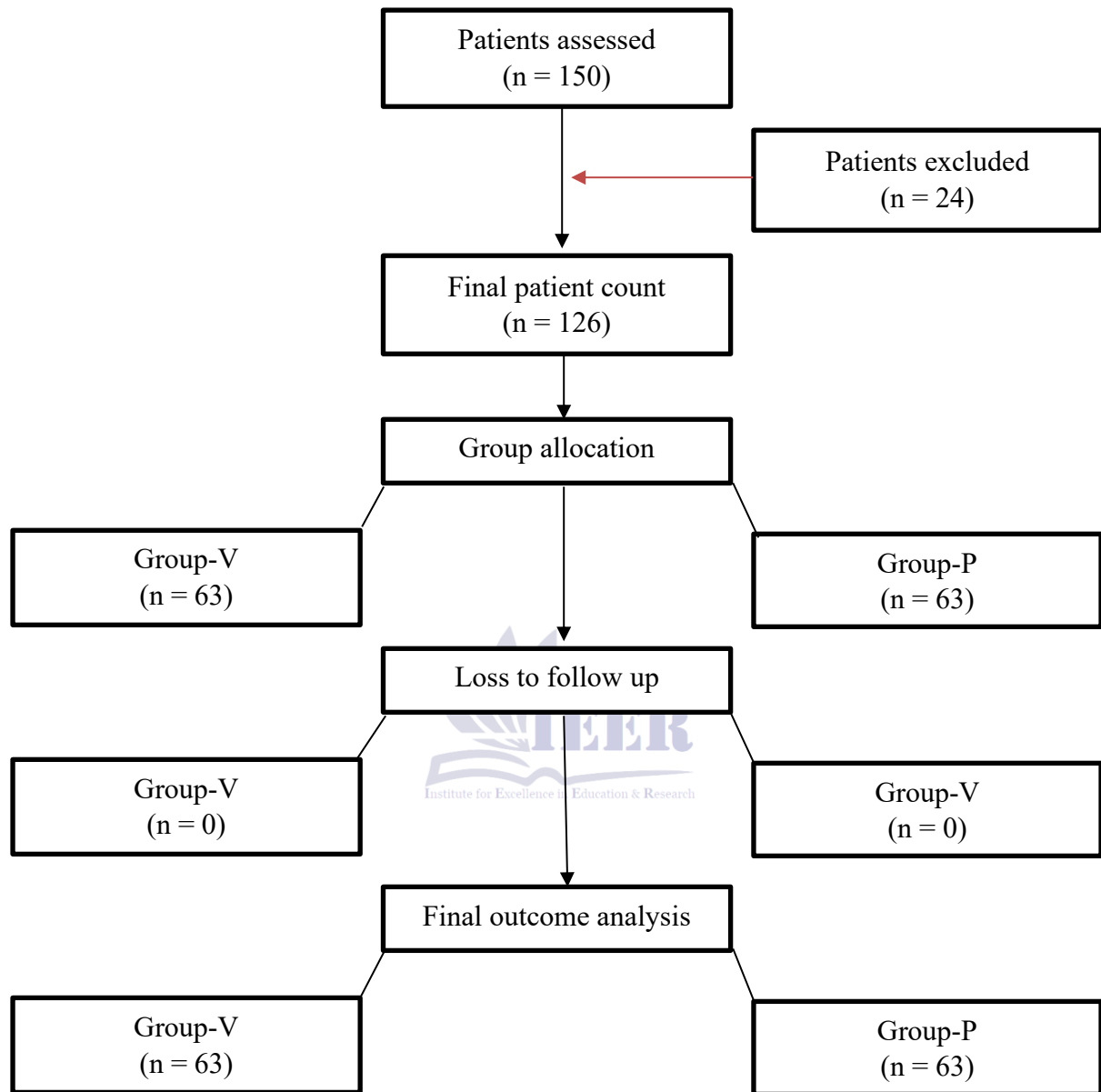
packing patients of  $16.55 \pm 1.06$  and  $17.08 \pm 0.66$ , respectively<sup>10</sup> were taken. Calculation gave a sample size of 126 patients (63 in each group) was selected. This sample was selected consecutively using non-probability sampling.

To take informed consent, a written predesigned consent form was presented to the patients that contained the purpose of study, surgical procedure information and potential risks of the procedure. Once the patients signed the forms, they were made part of the study. Patient characteristics including age, gender, smoking history, marital status and grade of DNS based on Mladina's classification.<sup>11</sup>

After this, patients underwent septoplasty through a standardized procedural protocol to avoid any procedural bias. All the procedures were performed by ENT surgeons with a minimum of five years post-fellowship experience. Procedures were performed under local anesthesia. Initially, a nose was packed using cotton pledgets soaked in 4% Lignocaine with 1:100000 Adrenaline solution for ten minutes to achieve decongestion. After this, 5ml of 2% Lignocaine - 1:200000 Adrenaline solution was infiltrated in nasal submucosa. After this, Killian incision was made and elevation of mucoperichondial/periosteal flaps was performed. Deviated nasal septum was straightened through excision/repositioning while preserving 1cm L-strut. Spurs correction was also performed when needed. After this, flaps were replaced and absorbable sutures were applied.

After surgery, based on nasal packing being used, patients were divided into two groups. Selection was based on combined choice of surgeon and patient through preoperative discussion. Through this protocol, number of patients who chose ventilated nasal packing reached the target earlier so remaining patients were only offered paraffin gauze nasal packing. In Group-V ( $n = 63$ ), those patients were added who chose ventilated nasal packing while in Group-P ( $n = 63$ ), those patients were added who chose or were given paraffin gauze nasal packing. Patient selection and study progression is demonstrated as patient flow diagram (figure-1) below:

Figure-1: Patient flow diagram (n = 126)



Packing was kept in place for 24-hours. At completion of 24-hours, nasal packing was removed and 30-minutes after removal patients were assessed for discomfort using pain visual analogue scale (pVAS) score. In addition, anxiety levels were also assessed by using Hamilton anxiety rating scale (HAM-A) score. Assessment was made by the principal researcher only by directly asking the questions of HAM-A scale from the patients and rating the response based on the answers of the patients so that any inter-rater variability could be avoided. This

scale was selected since it is a publicized property which is not an intellectual property of a specific person or institution. HAM-A score is a 14-questions score which has minimum and maximum scores of 0-56. A score between 0-7 was considered as normal, 8-14 as mild, 15-23 moderate and 24-56 as severe anxiety. Analysis of the collected data was performed by using Statistical Package for Social Sciences (SPSS) version 22.00. Variables that were quantitative in nature (age, pVAS and HAM-A score) were first assessed for normality by using

Shapiro-Wilk test which showed these to have non-normal distribution. These were thus represented as median interquartile range (IQR). Qualitative variables (gender, smoking history, marital status and grade of DNS) were represented as frequency and percentage. Inter-group comparative analysis of patient discomfort and anxiety was done through Mann Whittney U-test. A p-value of  $\leq 0.05$  was taken as statistically significant.

RESULTS

A total of 126 patients were included. Median age of DNS patients treated by septoplasty was 37.00 (20.25) years. There were 93 (73.80%) male and 33 (26.20%) female patients. Smoking history was positive in 58 (46.00%) patients. Most common grade of DNS was grade-III present in 31 (24.60%) patients followed by grade-V in 30 (23.80%), grade-VI in 30 (24.60%), grade-IV in 18 (14.30%) and grade-VII in 17 (13.50%) patients. Inter-group comparative analysis of patient demographics is given in Table-I:

Table-I: Inter-group comparative analysis of patient demographics (n = 126)

Demographic	Group-V (n = 63)	Group-P (n = 63)	p-value
Median age (years)	36.00 (21.00)	39.00 (20.00)	0.646 <sup>a</sup>
Gender			0.543 <sup>b</sup>
Male	45 (71.43%)	48 (76.19%)	
Female	18 (28.57%)	15 (23.81%)	
Smoking	33 (52.38%)	25 (39.68%)	0.153 <sup>b</sup>
Marital status			0.573 <sup>b</sup>
Married	23 (36.51%)	20 (31.75%)	
Unmarried	40 (63.49%)	43 (68.25%)	
DNS grade			0.835 <sup>b</sup>
III	15 (23.81%)	16 (25.40%)	
IV	10 (15.87%)	8 (12.70%)	
V	17 (26.98%)	13 (20.63%)	
VI	14 (22.22%)	16 (25.40%)	
VII	7 (11.11%)	10 (15.87%)	

DNS = Deviated Nasal Septum, a = Mann Whittney U-test, b = Chi-square test

In Group-V, median pVAS and HAM-A scores 30-minutes after removal of packing were 3.00 (2.00) and 15.00 (6.00) while in Group-P, these values were 5.00 (3.00), ( $p < 0.001$ ) and 20.00

(5.00), ( $p < 0.001$ ), respectively. Inter-group comparative analysis of patient discomfort and anxiety is given in Table-II:

Table-II: Inter-group comparative analysis of patient discomfort and anxiety (n = 126)

Outcomes	Group-V (n = 63)	Group-P (n = 63)	p-value
Median pVAS	3.00 (2.00)	5.00 (3.00)	$< 0.001$ <sup>a</sup>
Median HAM-A	15.00 (6.00)	20.00 (5.00)	$< 0.001$ <sup>a</sup>

pVAS = Pain Visual Analogue Score, HAM-A = Hamilton Anxiety Scale, a = Mann Whittney U-Test

DISCUSSION

Present study focused on comparing the impact of two different types of nasal packing on the levels of anxiety and discomfort of the patients who underwent septoplasty and found ventilated nasal packing to provide significantly better outcomes in comparison to paraffin gauze nasal packing after septoplasty.

In present study, the indication of this procedure was DNS which is the most common reason for patients to undergo this surgery.<sup>12, 13</sup> In this study, clinical classification used for grading the severity of DNS and determine its operability was Mladina’s classification which is highly useful and well validated system of DNS classification which has been used by multiple studies in the past.<sup>11, 14</sup> Similarly, for anxiety

assessment, HAM-A score was used because of its high degree of validity and reliability to assess for anxiety.<sup>15,16</sup>

In this study, average age of the patients who underwent this surgical procedure was 37 years with majority of sufferers of DNS being male patients who made up 73.8% of the total population, thereby exhibiting a male to female ratio of 2.21. Compared to this, clinical characteristics of the patients of DNS were demonstrated by Sharma et al. and reported that most symptomatic patients of DNS were aged between 23 to 30 years and there was a male predominance who constituted 62.14% of study population.<sup>17</sup> Ubaidullah et al. reported that average age of DNS sufferers was 30 years with a clear male predominance who constituted 62% of the patients.<sup>18</sup> Although, conclusive evidence regarding the male predominance for DNS has yet not been available but one possible reason for this predominance could be attributed to higher chances of males to get nasal trauma due to their social behaviors and engagement in contact sports.<sup>19</sup>

Nasal packing was kept in-situ for 24-hours of surgery and then it was removed. There were two reasons for selecting this duration of time. First, for achievement of physiologic hemostasis of post-procedural nose bleed, 24-48 hours period is required. Secondly, there is scientific evidence that if the nasal packing is kept for longer duration (particularly more than 48 hours) it increases the possibility of developing an infection which can significantly worsen the procedural outcomes.<sup>20</sup>

Upon comparison of patient discomfort scores, it was observed that with the use of paraffin gauze nasal packing, the level of discomfort of patients after 24-hours of procedure was significantly higher as compared to those who were managed with ventilated nasal packing ( $p < 0.001$ ). Similar to this, Ambi et al. found that level of discomfort (assessed based on 24-hours post-septoplasty pain score) was significantly higher among patients with ventilated nasal packing compared to those who had nasal packing without ventilation ( $4.6 \pm 0.24$  versus  $7.1 \pm 0.188$ ,  $p < 0.001$ ).<sup>21</sup> Contrarily, Khan et al. reported that proportion of patients who experienced discomfort after nasal packing removal post-septoplasty showed statistically

insignificant difference between patients managed with ventilated rather than unventilated nasal packing ( $p > 0.05$ ).<sup>22</sup> Similarly, non-significant difference was observed between ventilated and conventional non-ventilated nasal packing, used post-septoplasty, based on the level of patient discomfort scores ( $p = 1.00$ ) by Gad et al.<sup>23</sup> Contrary findings were observed by Ertugay et al. with significantly less discomfort in patients who were managed through ventilated, rather than conventional nasal packing ( $2.7 \pm 2.27$  versus  $6.1 \pm 2.58$ ,  $p < 0.05$ ).<sup>24</sup> This difference would have occurred due to difference in the assessment parameters and operational definition for discomfort being set by aforementioned study.

Upon analysis of anxiety levels based on HAM-A scores, similar trend was observed where patients who were managed through ventilated nasal packing had significantly lower levels of anxiety as compared to those who had paraffin gauze nasal packing inserted post-septoplasty ( $p < 0.001$ ). Similar to this finding, a study assessed the anxiety levels of the patients who received either of the two nasal packing materials which were focus of current study and reported significantly lower mean HAM-A score for patients with ventilated nasal packing rather than regular nasal packing ( $16.55 \pm 1.06$  versus  $17.08 \pm 0.66$ ,  $< 0.0001$ ).<sup>10</sup> On the other hand, another study compared the ventilated and conventional nasal packing in terms of anxiety score. In this study, it was observed that there was no significant impact of the type of nasal packing on the level of anxiety of the patients ( $2.3 \pm 2.59$  with conventional versus  $2.7 \pm 5.83$  with ventilated nasal packing,  $p > 0.05$ ).<sup>24</sup>

Based on the findings of present study, local evidence regarding better tolerability of ventilated nasal packing, based on significantly lower pVAS and HAM-A scores, is established. This evidence also concurs with the previous evidence being reported in international studies. Therefore, it is recommended that when a choice has to be made regarding the type of nasal packing after septoplasty, ventilated nasal packing should be used on preferential basis rather than unventilated conventional paraffin gauze packing.

## LIMITATIONS

None.

## CONCLUSION

In conclusion, ventilated nasal packing significantly reduces patient discomfort and anxiety in patients after septoplasty as compared to paraffin gauze nasal packing as evidenced by significantly lower pain VAS and HAM-A scores.

## CONFLICT OF INTEREST

None.

## ACKNOWLEDGEMENTS

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