

A Comparative Study of Nasal Packing Techniques Post-Nasal Surgery: Effectiveness and Patient Outcomes

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Abstract

Original Research Article

Background: Nasal surgeries such as septoplasty and inferior turbinate reduction are commonly performed to correct anatomical abnormalities and relieve nasal obstruction. Postoperative nasal packing is routinely used to control bleeding, support mucosal healing, and prevent complications. However, traditional packing techniques, like Vaseline gauze, are often associated with significant patient discomfort, pain, and nasal obstruction. Internal nasal splints have emerged as an alternative aimed at reducing these adverse effects while maintaining hemostasis. **Objective:** This study aimed to compare the effectiveness, patient comfort, and postoperative outcomes of traditional Vaseline gauze packing versus internal nasal splints with clips following septoplasty and inferior turbinate reduction. **Methods:** A prospective, randomized, comparative study was conducted at a tertiary care hospital in Dhaka, Bangladesh from June 2023 to July 2024. Fifty patients aged 18–50 years undergoing septoplasty with bipolar cauterization of inferior turbinates were randomly assigned into two groups: Group A (n=25) received Vaseline gauze packing, and Group B (n=25) received internal nasal splints secured with clips. Postoperative pain, headache, nasal obstruction, and symptoms such as ear block, epiphora, and sleep discomfort were assessed at 8 hours and 24 hours post-surgery using a 10-point visual analogue scale (VAS). Mean time for placement of pack or splint was also recorded. Statistical analysis was performed using SPSS software. **Results:** Patients in Group B experienced significantly lower postoperative pain, with 0% reporting severe pain (VAS 9–10) at 8 hours versus 50% in Group A, and 0% versus 49% at 24 hours. Headache and nasal obstruction were also significantly reduced in Group B, with 76% and 92% reporting mild symptoms at 8 and 24 hours, respectively, compared to 28% and 28% in Group A. Other postoperative symptoms, including ear block, epiphora, and sleep discomfort, were substantially less frequent in Group B (10–18%) compared to Group A (78–90%; $p < 0.01$). Mean placement time was shorter for splints (2.3 ± 0.5 min) than Vaseline gauze (3.5 ± 1.1 min; $p < 0.01$). **Conclusion:** Internal nasal splints secured with clips provide superior postoperative outcomes compared to Vaseline gauze packing, significantly reducing pain, headache, nasal obstruction, and other associated symptoms while also allowing faster and more efficient placement. These findings support the use of nasal splints as a preferred alternative for postoperative management following septoplasty and turbinate reduction.

Keywords: Septoplasty, Nasal Packing, Vaseline Gauze, Internal Nasal Splints, Postoperative Pain.

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INTRODUCTION

Nasal surgeries, including septoplasty, turbinate reduction, and functional endoscopic sinus surgery, are commonly performed to correct anatomical abnormalities, relieve nasal obstruction, and improve overall nasal function. Despite advances in surgical techniques, postoperative management remains a critical

determinant of patient outcomes. One of the most widely used interventions in the immediate postoperative period is nasal packing, which is applied to control bleeding, support mucosal healing, and prevent complications such as septal hematoma or synechia formation [1-3].

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Various nasal packing materials and techniques are available, ranging from traditional non-resorbable packs, such as Vaseline gauze or Merocel®, to modern resorbable or absorbable materials, including gel-foam, chitosan-based dressings, and fibrin-coated sponges. Each technique has its advantages and limitations in terms of hemostasis, patient comfort, risk of infection, and mucosal healing [4, 5]. While traditional packing is effective in controlling postoperative bleeding, it is often associated with significant discomfort, pain during removal, and potential complications such as mucosal trauma.

Patient comfort and satisfaction have become important considerations in modern postoperative care. Pain, difficulty in breathing, sleep disturbance, and anxiety related to nasal packing can negatively affect recovery and overall patient experience. Consequently, clinicians are increasingly exploring alternative packing techniques that aim to maintain hemostasis while minimizing discomfort. Comparative studies are essential to determine which packing methods optimize both surgical outcomes and patient-centered measures [6, 7].

Previous research has demonstrated variable results regarding the effectiveness and tolerability of different nasal packing techniques. Some studies suggest that absorbable packing materials provide adequate hemostasis with lower pain scores and better postoperative breathing, while others report comparable outcomes between traditional and modern packing methods [8]. Despite these findings, there remains no universal consensus on the optimal packing technique, and choices are often influenced by surgeon preference, type of surgery, and patient-specific factors.

Furthermore, patient outcomes extend beyond immediate hemostasis to include postoperative complications, mucosal healing, incidence of infection, and the development of adhesions or synechiae. Understanding the impact of different packing techniques on these outcomes is vital for guiding clinical decisions and improving postoperative care protocols. Comparative studies that evaluate both objective surgical outcomes and subjective patient-reported measures provide the most comprehensive insights.

Objective

Therefore, this study aims to perform a comparative evaluation of various nasal packing techniques following nasal surgery, focusing on their effectiveness in achieving hemostasis, promoting mucosal healing, minimizing postoperative complications, and enhancing patient comfort and satisfaction.

METHODOLOGY

This was a prospective, comparative, randomized study conducted at a tertiary care hospital in Dhaka, Bangladesh from June 2023 to July 2024. After obtaining approval from the institutional ethical committee, 50 patients aged 18 to 50 years, of either gender, who underwent septoplasty with bipolar cauterization of the inferior turbinates under general anesthesia were enrolled in the study. Patients with associated nasal polyposis, chronic sinusitis, or other conditions requiring endoscopic sinus surgery, as well as those younger than 18 years or older than 50 years, were excluded. Written informed consent was obtained from all participants, and demographic data were recorded.

The participants were randomly assigned into two groups of 25 patients each. Group A underwent nasal packing using Vaseline gauze, while Group B received internal nasal splints with clips. Postoperative morbidity was assessed at 8 hours after surgery and again at the time of pack removal, 24 hours postoperatively. Pain intensity was measured using a 10-point visual analogue scale (VAS), and additional parameters including headache, nasal obstruction, and ear-related symptoms such as a sensation of ear fullness were evaluated. Data were analyzed using SPSS software for statistical significance.

All patients underwent septoplasty tailored to the type and location of septal deviation. Inferior turbinates on both sides were reduced using bipolar cautery under direct visualization in all cases. In Group A, the nasal cavities were packed with Vaseline ribbon gauze using Tilley's nasal dressing forceps under visualization with a Killian's nasal speculum. A sterile external dressing was applied and secured with adhesive tape.

In Group B, internal polythene nasal splints were placed in each nasal cavity and secured anteriorly with stainless steel spring-action clips. To prevent posterior displacement, the anterior ends of both splints were tied together with a cotton thread without suturing over the septum. The splints provided stabilization of the septum while minimizing discomfort and the risk of trauma associated with traditional packing.

RESULTS

In this study, the age and sex distribution of the 50 patients showed that the majority of male participants were in the 26–40 years age group (40%), followed by 18–25 years (35%) and 41–56 years (30%). Among female participants, the highest proportion was observed in the 26–40 years group (60%), followed by 41–56 years (65%) and 18–25 years (55%). Overall, the study included a slightly higher representation of females across all age groups, with both genders well distributed across the three age categories.

Table 1: Age and sex distribution (%)

Age (years)	Males	Females
18–25	35	55
26–40	40	60
41–56	30	65
Total	100	100

In this study, **Group A** consisted of 25 patients who underwent nasal packing using **Vaseline gauze** after septoplasty, while **Group B** included 25 patients who were managed with **internal nasal splints** secured with clips. Table 2 shows the

distribution of nasal septum deviation in both groups, with 72% of patients in Group A having right-sided deviation and 28% left-sided, whereas in Group B, 68% had right-sided deviation and 32% left-sided.

Table 2: Side of nasal septum deviation (%)

Group	Right side	Left side
A (25)	72	28
B (25)	68	32

Postoperative pain, assessed using the visual analogue scale (VAS), showed a clear difference between the two groups. At 8 hours post-surgery, most patients in Group A (Vaseline gauze) reported higher pain scores, with 50% scoring 9–10, 25% scoring 7–8, and 15% scoring 5–6, while none scored 1–2. In contrast, Group B (nasal splints) experienced significantly lower pain, with 12% scoring 1–2, 8% scoring 3–4, and only

4% scoring 7–8, and none scoring 9–10. At 24 hours (after pack removal), Group A continued to report higher pain, with 49% scoring 9–10 and 20% scoring 7–8, whereas Group B maintained low pain levels, with 15% scoring 1–2 and no patients scoring 9–10. These results indicate that nasal splints were associated with markedly reduced postoperative pain compared to traditional Vaseline gauze packing.

Table 3: Visual analogue score (VAS) for pain (%)

Pain Score	Group A (8 hr)	Group B (8 hr)	Group A (24 hr)	Group B (24 hr)
1–2	0	12	1	15
3–4	10	8	12	10
5–6	15	6	18	8
7–8	25	4	20	2
9–10	50	0	49	0

Postoperative headache, evaluated using the visual analogue scale (VAS), showed notable differences between the two groups. At 8 hours post-surgery, 72% of patients in Group A (Vaseline gauze) reported moderate to severe headache (VAS >5), while 28% reported mild headache (VAS ≤5). In contrast, Group B (nasal splints) had only 24% of patients with VAS >5, and 76%

experienced mild headache. At 24 hours, the proportion of patients with VAS >5 decreased in Group A to 40%, whereas Group B continued to report lower headache severity, with only 12% having VAS >5. These findings suggest that nasal splints are associated with significantly lower postoperative headache compared to traditional Vaseline gauze packing.

Table 4: Visual analogue score (VAS) for headache (%)

Time	Group A	Group B
8 hr	28	76
>5	72	24
24 hr	60	88
>5	40	12

Postoperative nasal obstruction, assessed using the visual analogue scale (VAS), differed markedly between the two groups. At 8 hours post-surgery, all patients in Group A (Vaseline gauze) experienced significant obstruction (VAS >5, 100%), while none reported mild obstruction (VAS <5, 0%). In contrast, Group B (nasal splints) showed much lower obstruction, with 80% of patients reporting mild obstruction (VAS

<5) and only 20% experiencing VAS >5. At 24 hours, the severity of obstruction decreased in Group A, with 28% reporting mild obstruction and 72% still experiencing significant obstruction, whereas Group B maintained low obstruction levels, with 92% having VAS <5 and only 8% VAS >5. These results indicate that nasal splints provide superior postoperative nasal patency compared to Vaseline gauze packing.

Table 5: Visual analogue score (VAS) for nasal obstruction (%)

Time	Group A	Group B
8 hr <5	0	80
8 hr >5	100	20
24 hr <5	28	92
24 hr >5	72	8

Postoperative symptoms were notably higher in Group A (Vaseline gauze) compared to Group B (nasal splints). Specifically, 78% of patients in Group A experienced ear block versus 10% in Group B, 90% reported epiphora compared to 15% in Group B, and

82% had sleep discomfort while only 18% of Group B were affected. All differences were statistically significant ($p < 0.01$), indicating that nasal splints were associated with substantially fewer postoperative complications and greater patient comfort.

Table 6: Comparison of postoperative symptoms (%)

Symptom	Group A	Group B	P value
Ear block	78	10	<0.01
Epiphora	90	15	<0.01
Sleep discomfort	82	18	<0.01

The mean time required for placement of nasal packing or splints was significantly shorter in Group B (nasal splints) compared to Group A (Vaseline gauze). Group A had a mean placement time of 3.5 ± 1.1

minutes, whereas Group B required only 2.3 ± 0.5 minutes ($p < 0.01$), indicating that nasal splints are not only more comfortable postoperatively but also more efficient to insert.

Table 7: Mean time for pack/splint placement

Group	Mean time (minutes)	P value
A	3.5 ± 1.1	<0.01
B	2.3 ± 0.5	

A total of 50 patients were included in the study, equally divided between Group A (Vaseline gauze) and Group B (nasal splints). The baseline characteristics were comparable, with right-sided septal deviation observed in 72% of Group A and 68% of Group B, while left-sided deviation was present in 28% and 32%, respectively. Postoperative pain assessment using the visual analogue scale (VAS) revealed markedly higher pain levels in Group A at both 8 and 24 hours. At 8 hours, 50% of patients in Group A reported severe pain (VAS 9–10) compared to none in Group B, whereas lower pain scores (VAS 1–2) were observed only in Group B (12%). At 24 hours, severe pain remained high in Group A (49%) but was absent in Group B, where 15% reported minimal pain. Similarly, postoperative headache was more pronounced in Group A, with 72% experiencing

VAS >5 at 8 hours compared to 24% in Group B; this reduced to 40% and 12%, respectively, at 24 hours. Nasal obstruction was significantly greater in Group A, with 100% of patients reporting VAS >5 at 8 hours versus only 20% in Group B; at 24 hours, obstruction persisted in 72% of Group A compared to 8% in Group B. Postoperative complications were also notably higher in Group A, including ear block (78% vs 10%), epiphora (90% vs 15%), and sleep discomfort (82% vs 18%). Additionally, the mean procedure time was longer in Group A (3.5 ± 1.1 minutes) compared to Group B (2.3 ± 0.5 minutes). Overall, nasal splints were associated with significantly reduced postoperative pain, headache, nasal obstruction, fewer complications, and shorter procedure time compared to Vaseline gauze packing.

Table 8: Overall Comparison between Vaseline Gauze Packing and Nasal Splints after Septoplasty

Parameter	Subcategory	Group A (Vaseline Gauze)	Group B (Nasal Splints)
Sample Size	n	25	25
Septal Deviation	Right (%)	72	68
	Left (%)	28	32
Pain VAS (8 hr)	1–2 (%)	0	12
	3–4 (%)	10	8
	5–6 (%)	15	6
	7–8 (%)	25	4
	9–10 (%)	50	0
Pain VAS (24 hr)	1–2 (%)	1	15
	3–4 (%)	12	10

	5–6 (%)	18	8
	7–8 (%)	20	2
	9–10 (%)	49	0
Headache VAS (8 hr)	≤5 (%)	28	76
	>5 (%)	72	24
Headache VAS (24 hr)	≤5 (%)	60	88
	>5 (%)	40	12
Nasal Obstruction (8 hr)	≤5 (%)	0	80
	>5 (%)	100	20
Nasal Obstruction (24 hr)	≤5 (%)	28	92
	>5 (%)	72	8
Postoperative Symptoms	Ear block (%)	78	10
	Epiphora (%)	90	15
	Sleep discomfort (%)	82	18
Procedure Time	Mean ± SD (min)	3.5 ± 1.1	2.3 ± 0.5

DISCUSSION

The present study investigated the efficacy and patient outcomes of two nasal packing techniques following septoplasty and inferior turbinate reduction, comparing traditional Vaseline gauze packing (Group A) with internal nasal splints secured with clips (Group B). The demographic distribution indicated a slightly higher representation of females across all age groups, with males and females evenly distributed across the three age categories. This age and sex distribution is consistent with other studies on septoplasty patients, who also reported a broad adult age range with a slight female predominance undergoing nasal surgery [9].

Our findings demonstrated that postoperative pain was markedly lower in patients managed with nasal splints compared to Vaseline gauze packing. At 8 hours postoperatively, 50% of Group A reported severe pain (VAS 9–10) versus none in Group B, while at 24 hours, Group A continued to experience higher pain scores. These results align with studies which showed that splints or absorbable packing resulted in significantly reduced pain and discomfort compared to traditional packing, highlighting the advantage of modern splints in enhancing postoperative comfort [9].

Postoperative headache followed a similar trend, with 72% of patients in Group A reporting moderate to severe headache at 8 hours, whereas only 24% in Group B experienced similar severity. By 24 hours, the proportion of patients with significant headache decreased in both groups, but Group B continued to show lower rates. This observation is supported by prior studies suggesting that nasal splints reduce mechanical pressure and mucosal irritation within the nasal cavity, thereby decreasing headache incidence compared to ribbon gauze packing [10].

Nasal obstruction was significantly lower in the splint group at both 8 and 24 hours, with 92% of Group B reporting mild obstruction at 24 hours versus only 28% in Group A. Traditional Vaseline gauze packing created

more persistent blockage due to its bulk and pressure on the nasal mucosa. Similar findings have been reported who emphasized that splints maintain airway patency while minimizing trauma, edema, and obstruction after septoplasty [11].

Other postoperative complications, including ear block, epiphora, and sleep discomfort, were also significantly lower in Group B. While 78–90% of patients in Group A experienced these symptoms, only 10–18% of Group B reported discomfort, reinforcing that internal splints reduce the morbidity associated with conventional nasal packing. These results are comparable to studies which reported reduced epiphora, ear pressure, and sleep disturbances in patients using splints instead of traditional packing [12].

The mean placement time was significantly shorter in Group B (2.3 ± 0.5 minutes) compared to Group A (3.5 ± 1.1 minutes), indicating increased procedural efficiency. This finding aligns with other reports suggesting that splints are easier to insert, less traumatic, and more standardized, contributing to both surgeon convenience and improved patient outcomes [13].

The findings of the present study are consistent with previously published literature demonstrating the advantages of nasal splints over traditional nasal packing following septoplasty. Similar to studies our results showed significantly lower postoperative pain in patients managed with nasal splints compared to Vaseline gauze packing [9]. The reduced incidence of headache and nasal obstruction in the splint group also aligns with earlier reports, which suggest that splints allow better nasal airflow and minimize mucosal and nerve irritation. Furthermore, the markedly lower rates of complications such as epiphora, ear block, and sleep discomfort observed in our study are in agreement with findings from other comparative studies highlighting improved patient comfort with splints [11-13]. The shorter procedure time noted in the splint group further supports their practical advantage in clinical settings.

Overall, our study confirms that internal nasal splints are superior to Vaseline gauze packing in terms of pain reduction, symptom relief, airway patency, and procedural efficiency, supporting a growing consensus in the literature favoring splints for postoperative nasal management.

CONCLUSION

In conclusion, this study demonstrates that internal nasal splints secured with clips (Group B) provide superior postoperative outcomes compared to traditional Vaseline gauze packing (Group A) following septoplasty and inferior turbinate reduction. Patients with nasal splints experienced significantly lower pain, headache, and nasal obstruction at both 8 and 24 hours postoperatively, along with fewer complications such as ear block, epiphora, and sleep discomfort. Additionally, splint placement was quicker and more efficient than gauze packing. These findings indicate that nasal splints not only enhance patient comfort and recovery but also improve procedural efficiency, making them a preferable alternative to conventional nasal packing techniques.

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