

# A comparative study of the outcomes of ribbon gauze and merocele methods of nasal packing after septal surgery



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## ABSTRACT

**Background:** Septal surgery is one of the most commonly performed procedures in Otolaryngology. Following septal surgery, nasal packing is administered to prevent potential postoperative complications, including septal hematoma, hemorrhage, and synechia formation. Nasal packing is commonly done using either ribbon gauze or non-absorbable materials like Merocele (Medtronic Xomed Inc., Jacksonville, FL, USA). **Aims and Objectives:** The objective of the study is to compare the post-operative outcomes of ribbon gauze packing and merocele packing. **Materials and Methods:** The study was a prospective observation study, conducted in Burdwan Medical College and Hospital from August 2023 to October 2023. The study population was 40 with equal distribution between the two groups. Patients older than 18 years undergoing only septal surgery are included in the study. All the surgeries are performed by the same surgeon, both packs are removed after 48 h and followed up with diagnostic nasal endoscopy (DNE) after 1 month. Statistical analysis was done using SPSS version 22.0 (IBM Inc., US). **Results:** The total number of patients in our cohort was 40, out of which 20 were given ribbon gauze packs (Group A) and the rest were given merocele packs (Group B). The mean visual analog scale score for nasal pain ( $4.25 \pm 1.77$ ), headache ( $4.30 \pm 1.63$ ), dysphagia ( $2.50 \pm 1.15$ ), sleep disturbance ( $3.15 \pm 1.09$ ) in Group B was significantly lower than in Group A ( $6.65 \pm 1.63$ ,  $5.40 \pm 1.70$ ,  $4.00 \pm 1.84$ , and  $5.40 \pm 2.35$  respectively,  $p$  all  $< 0.05$ ). The mean of the postnasal drip score was lower in Group B, though that did not reach statistical significance ( $2.75 \pm 1.070$  vs.  $3.25 \pm 1.650$ ,  $p = 0.264$ ). There were no significant differences between the two groups with respect to the age of the patients, gender distribution, or the presence of synechia, granulation tissue, or signs of infection on DNE. **Conclusion:** Although both the merocele and ribbon gauze packs can be suggested for use after septal operations, the merocele pack has the benefit of producing much less morbidity. Merocele cost is a major constraint at present so we should try to develop a similar nasal pack with less cost to benefit the maximum population.

**Key words:** Merocele; Ribbon gauze; Septal surgery

## INTRODUCTION

Septal surgery is a common surgical procedure performed in the field of otolaryngology. The surgery is performed in patients having nasal obstruction, mouth breathing, recurrent episodes of sinusitis, otitis media with effusion, and snoring. Epistaxis due to a septal spur is also an indication for septal surgery. After septal surgery, nasal

packing is given to prevent multiple post-operative complications such as septal hematoma, hemorrhage, and synechia.<sup>1</sup> Nasal packing is done either by ribbon gauze pack or merocele (Medtronic Xomed Inc., Jacksonville, FL, USA) typical non-absorbable packing material.<sup>2</sup> Although both packing methods are effective, there are a few adverse effects of the nasal pack such as pain, headache, postnasal drip, and dysphagia.<sup>3</sup> This study was undertaken to assess

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and compare the immediate and delayed post-operative morbidity with the use of ribbon gauze packing versus merocele packing.

### Aims and objectives

To determine the outcomes of ribbon gauze and merocele methods of nasal packing after septal surgery.

## MATERIALS AND METHODS

The study was a prospective, comparative, randomized, controlled, and clinical study. A detailed informed consent was obtained from all participating patients.

### Inclusion criteria

Patients older than 18 years undergoing septal surgeries were included in the study.

### Exclusion criteria

Patients with allergy, asthma, rhinosinusitis, and undergoing additional surgical procedures such as turbinectomy and functional endoscopic sinus surgeries were excluded from the study.

Forty patients with equal distribution in two groups (ribbon gauze pack vs. merocele pack) were studied from August 2023 to October 2023 with a follow-up of 3-month postnasal pack removal.

In this study, all the septal surgeries were performed by the same surgeon under general anesthesia. Modified Killian incision was given; tunnels were created submucosally exposing the nasal septum. The deviated cartilaginous and bony septum was excised. The mucoperichondrial and the periosteal flaps were repositioned and the modified Killian incision site was closed with 3–0 vicryl sutures. Ribbon gauze pack impregnated with soframycin ointment was given in 20 patients while the other 20 were given merocele pack irrigated with 10 mL of saline. Both the packs were removed after 48 h.

The patient's subjective symptoms which consist of nasal pain, headache, postnasal drip, dysphagia, and sleep disturbance were graded using the visual analog scale (VAS) of 0 (none) to 10 (unbearable) on 1<sup>st</sup> post-operative day. All the patients were evaluated for the synechia, granulation tissue, and infection (perceived as foul-smelling discharge) after 30 days with diagnostic nasal endoscopy (DNE) using a 4 mm 0° endoscope. The presence of these on DNE was recorded as positive findings.

Statistical analysis was performed using SPSS version 22.0 (IBM Inc., USA). The VAS score of the subjective symptoms, graded from 0 to 10, was presented as

mean±standard error of the mean and were compared between the two groups done using an unpaired t-test. The prevalence of the positive findings on DNE in the two groups was compared using Fischer's exact tests. P<0.05 was considered significant.

## RESULTS

The total number of patients in our cohort was 40, out of which 20 were given ribbon gauze pack (Group A) and the rest were given merocele pack (Group B). The mean age of the cohort was 33.40 years, with a range of 19–56 years. 55 % were females.

In Group A, the mean age was 31 years (31.40±11.156 years) and in Group B, the mean age was 35 years (35.40±11.736).

The mean VAS score for nasal pain (4.25±1.77), headache (4.30±1.63), dysphagia (2.50±1.15), sleep disturbance (3.15±1.09) in Group B was significantly lower than in Group A (6.65±1.63, 5.40±1.70, 4.00±1.84, 5.40±2.35, respectively, p all<0.05). The mean of postnasal drip score was lower in Group B, though that did not reach statistical significance (2.75±1.070 vs. 3.25±1.650, P=0.264). There were no significant differences between the two groups with respect to the age of the patients, gender distribution, or the presence of synechia, granulation tissue, or signs of infection on DNE (Table 1).

## DISCUSSION

Nasal pack was first introduced in 1951.<sup>4</sup> Nasal packing has been utilized to close the mucoperichondrial flaps following septoplasty to reduce bleeding and hematoma, maintain the neo-organized septal cartilage and bone fragments and avoid synechia and lateral wall displacement. However, it can increase post-operative morbidity such as pain, headache, and disturbed sleep.<sup>5</sup> The ideal nasal pack should

**Table 1: Distribution of various parameters in two groups**

Parameters	Group A (n=20)	Group B (n=20)	P-value
Age (mean±SD)	31.40±11.16	35.40±11.74	0.276
Sex (M: F)	9:11	9:11	1.000
Nasal pain <sup>#</sup>	6.65±1.63	4.25±1.77	0.001
Headache <sup>#</sup>	5.40±1.70	4.30±1.63	0.043
Dysphagia <sup>#</sup>	4.00±1.84	2.50±1.15	0.004
Post nasal drip <sup>#</sup>	3.25±1.65	2.75±1.07	0.263
Sleep disturbances <sup>#</sup>	5.40±2.35	3.15±1.09	0.001
Synechia	25%	10%	0.407
Granulation tissue	10%	5%	1.000
Infection	10%	5%	1.000

All quantitative variables were expressed as Mean±SD and categorical variables were expressed as prevalence. <sup>#</sup>Expressed as Visual analog score

be able to manage bleeding and minimize pain, headache, damage to the nasal mucous membrane, and tissue reaction.<sup>6</sup> Newer packing materials such as nasopore and absorbable nasal packs such as rapid rhino are available.<sup>7</sup> The type of packing method and material chosen by the surgeon is usually determined by habit, long term practice, departmental provision, the superiority of the material and cost.<sup>5</sup>

In a developing nation like India, cost and availability are important constraints; hence, we only employ a ribbon gauze pack and merocele in our practice. In India, there is presently no published material that compares the two groups (ribbon gauze against merocele) in post-septoplasty patients, which is the study's novelty.

Nasal pain, headache, and dysphagia are among the many complaints associated with nasal packing. In this study, a comparison between the two groups (ribbon gauze vs. merocele) is done based on complaints.

Although pain measurement is a complex problem with many pitfalls, the decision to use a visual analog score instead of any other pain rating scale was based on the following advantages: (i) simplicity, high sensitivity, and longitudinal reproducibility; (ii) it generates a directly measurable numerical pain score; and (iii) there is a good correlation between pain scores obtained.<sup>8</sup>

Headache, dysphagia, and sleep disturbances are also analyzed using visual analog score. The post-operative synechiae, granulation, and infection are evaluated using DNE.

In a randomized control experiment comparing Surgicel Nu-knit, Merocele, and Vaseline gauze packs, Shinkwin et al., discovered that while the Surgicel Nu-knit caused less pain and bleeding.<sup>9</sup>

As per Wang et al., in patients who had Vaseline gauze packing, the incidence of synechiae and excessive granulation tissue in the middle meatus, as well as substantial post-operative hemorrhage, was comparable to the frequency of these problems in patients who got Merocele. Nasopore was not a better non-absorbable packing material than the other two.<sup>5</sup>

In our study, merocele pack was associated with significantly less nasal pain, headache, dysphagia, and sleep disturbances compared to the ribbon gauze pack. The incidence of post-operative synechiae, granulation

tissue, and infection was also less in merocele pack but not statistically significant.

### Limitations of the study

Study was done in a single centre and also the sample size was small. Long term follow up is also essential to come to a final conclusion.

## CONCLUSION

Although both the merocele and ribbon gauze packs can be suggested for use after septal operations, the merocele pack has the benefit of producing much less morbidity. Merocele cost is a major constraint at present so we should try to develop a similar nasal pack with less cost to benefit the maximum population.

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**Authors Contribution:**

**RR-** Definition of intellectual content, Literature survey, prepared first draft of manuscript, implementation of study protocol, data collection, data analysis, manuscript preparation and submission of article; **AS-** Concept, design, clinical protocol, manuscript preparation, editing, and manuscript revision; **TKM-** Design of study, statistical Analysis and Interpretation; **RS-** Review manuscript.

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