

A Prospective Study for Comparison of Anterior Nasal Packing with Rapid Rhino Packs and Merocel Packs after Septoplasty in Terms of Pain, Bleeding and Post-Operative Complications

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Abstract:

Introduction: Nasal packs are used to stop bleeding after septoplasty. Wide ranges of packing materials are available, which primarily work by compression of vasculature. Rapid Rhino and Merocel are two types of commonly used nasal tampons. An inflatable cuff and carboxymethyl cellulose packing make up the Rapid Rhino pack when comes in contact with blood; it causes platelets to clump together. It stops active capillary and venous bleeding by compressing arterial bleeding and promoting clotting. Merocel nasal packing is a foam-like substance made of hydroxylated polyvinyl acetate. The pack material has cavities that can absorb liquid. The present study aimed to compare the Rapid Rhino and Merocel packs for nasal packing after septoplasty, in terms of pain, bleeding, patient tolerance (both with the pack in place and during removal), postoperative complications and endoscopic findings.

Methodology: 50 patients with deviated nasal septum were randomly selected from patients scheduled for septoplasty. Right nasal cavity was packed with a Rapid Rhino pack and left with a Merocel pack at the conclusion of septoplasty. Follow-up examinations were done for observing pain, bleeding, comfort and to check for synechiae formation.

Result: On removal of the pack, 14 (28%) of the patients in the Merocel group and 6 (12%) of the patients in the Rapid Rhino group developed bleeding. There was a statistically significant difference in the occurrence of pain and comfort in the two groups.

Conclusions: Based on our findings, Rapid Rhino is better tolerated than Merocel by patients after septoplasty. Rapid Rhino has the advantage of removing the pack sooner and causing less reactionary bleeding.

Keywords: Septoplasty, Nasal septum, Rapid Rhino, Merocel, Nasal bleeding.

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Introduction

The treatment of a dislocated or deviated nasal septum has piqued people's interest over the centuries. The major significance of septoplasty in modern nasal surgery is definitely the source of this interest. The concept of "the nose goes as the septum goes" emphasizes the role of septal abnormalities in the development of nasal pyramid dysmorphism and as a result, the absolute necessity of repairing septal deformities during rhinoplasty surgeries. [1] One of the most common otorhinolaryngological treatments for nasal blockage relief is septoplasty. However, the success

rate of primary septoplasty varies from 43% to 85%, showing that more than 15% of septoplasty patients do not have symptomatic relief. Residual or recurring septal deviation due to insufficient or poor repair of the deformity is one of the leading causes of septoplasty failure. [2] Commonest risk of septoplasty is bleeding, which usually occurs during or shortly after the surgery. Before doing septoplasty, it's necessary to inform patients that they can expect minor oozing for 1 to 2 days post-surgery. True bleeding as a result of septoplasty has been documented in 6% to 13.4% patients,

necessitating admission and overnight observation in certain cases. It's a good idea to adequately inject the area where the incisions will be performed, as well as the essential locations of vessel origin. When appropriate time for vasoconstriction is granted, a total of 5 to 6 ml of local anaesthetic is necessary for a satisfactory septal injection. Proper injections help to lift the flap by hydrodissecting the mucoperichondrium away from the septal cartilage. Hydrodissection may not function well in cases of "traumatic" nose or nasal septal fractures, and several injection sites may aid to reduce haemorrhage. [3]

Nose packing also known as an internal dressing, is used to reduce bleeding from bare surfaces, avoid septal hematomas, act as an internal splint, discourage adhesions, and improve nasal cleanliness. On the other hand, the nasal packing is also associated with risks. The following symptoms have been reported: dysphagia, aspiration, airway blockage, hypoventilation and hypoxemia, Eustachian tube block, sinusitis, and even toxic shock syndrome. [4]

Nasal packing is a painful procedure, and many patients say that removing the packs after nasal surgery is the most unpleasant part of their procedure. [5] Traditional anterior packing involves placing Vaseline-impregnated thin gauze in the nose until enough pressure is applied to tamponade the bleeding. Nasal packing is avoided wherever feasible because it causes the most discomfort when it is removed. After surgery, some bleeding is unavoidable, and clots form in the cavity, causing adhesions later. When moderate blood is swallowed, it produces nausea and vomiting, and postoperative packing in the wards causes more discomfort than the surgery itself. [6]

As a result, many are looking for a better nasal pack. Minimizing bleeding from the operated areas, reducing abrasion during insertion, and preventing recurrence of bleeding on removal are all qualities of an excellent pack. It should also be comfortable in place and less difficult during removal. Faster healing, reduced crusting, and reduced adhesions are all advantages of newer packing materials. [6]

Rapid Rhino and Merocel are two types of commonly used nasal tampons. Rapid Rhino packs are made up of two parts: an inflatable cuff and carboxy methyl cellulose packing (Arthrocare, Knaresborough, UK). When the latter comes into contact with blood, it causes platelets to clump together. The entire pack has a dual haemostasis effect: it compresses arterial bleeding while simultaneously encouraging clotting to stop active capillary and venous bleeding. [7]

Merocel is the most widely used commercial product and is used all over the world. It's a type of foam pack made of polyvinyl acetal that comes

compressed and dehydrated to make insertion easier. To activate it, it must be rehydrated with saline. [8] Merocel possesses both solid and porous properties. The pore swells, causing hemostasis, equalizing pressure on both sides of the septum, and keeping it straight after surgery. [9,10] The pain is, however, the most significant downside of simple Merocel. This happens during pack insertion, while the nasal pack is inside the nasal cavity, and when the nasal pack is removed. Over the septum, it adheres to the bleeding site, incision site, and other raw places. The pack dislodges from the site of adherence upon removal, causing damage. Due to the trauma of nasal mucosa, altered mucociliary clearance, bleeding, increased crusting, inflammation, and synechiae formation was accounted. [11]

The purpose of this study was to assess the usage of Rapid Rhino and Merocel nasal packing packs following septoplasty in terms of patient acceptability (both while the pack was in place and during removal) and post-operative complications.

Aims and Objectives

To compare the Rapid Rhino and Merocel packs for nasal packing after septoplasty, in terms of pain, bleeding, patient tolerance (both with the pack in place and during removal), postoperative complications and endoscopic findings.

Materials and Methods

Study Area:

This prospective, randomized, control study was conducted in the department of Oto-rhinolaryngology, Maharaja Agrasen Medical College, Agroha from September 2019 to March 2021 after getting approval from institute IEC.

Sample size

Assuming that the pain is one of the criteria to compare the two nasal packs Rapid Rhino and Merocel. As per the previous study, the mean pain score for Rapid Rhino pack removal (4.13 ± 1.76) was significantly less for Merocel (6.90 ± 1.67) (based on study by Ahmed H et al, [7] a 2-sided test with 95% confidence level ($\alpha=5\%$) and 80% power, expected sample size in both group is [7] each, i.e total 14, but for increase in power we had taken the sample size of 50 patients in our study.

Formulae

This calculator uses the following formula as to compute sample size

$$n_1 = \frac{(\sigma_1^2 + \sigma_2^2 / \kappa)(z_{1-\alpha/2} + z_{1-\beta})^2}{\Delta^2}$$

$$n_2 = \frac{(\kappa * \sigma_1^2 + \sigma_2^2)(z_{1-\alpha/2} + z_{1-\beta})^2}{\Delta^2}$$

Where,

The notation for the formulae is:

n1 = sample size of group1 (Rapid Rhino group).

n2=sample size of group 2 (Merocel group),

σ_1 =standard deviation of group1 (Rapid Rhino group),

σ_2 =standard deviation of group 2 (Merocel group)

Δ = difference in group means

κ = ratio-n2/n1

$Z_{1-\alpha/2}$ =two-sided Z value (e.g. Z=1.96 for 95% confidence interval).

$Z_{1-\beta}$ = power

Study population:

The study was conducted on randomly selected 50 patients of both genders scheduled for septoplasty in department of Otorhinolaryngology, who were fulfilling inclusion criteria.

Inclusion criteria:

1. Patient aged 18-40 years.
2. Patients with symptomatic deviated nasal septum
3. Traumatic deviated nasal septum
4. Patients suffering with complications of deviated nasal septum

Exclusion criteria:

1. Patients with bleeding disorders.
2. Patients receiving anticoagulants.
3. Patients not giving consent.

Statistical Methods:

Statistical analysis was carried out with the help of Microsoft Excel and Epi info 7.1 software. The description of the data was done in form of arithmetic mean +/- SD (or median) for quantitative data while in the form of frequencies (%) for qualitative (categorical) data. P-values of < 0.05 were being considered significant. For comparison of categorical variables (i.e. to examine the associations between qualitative/quantitative

variables), chi-square test was used if the number of elements in each cell are 5 or higher and Fisher's exact test, otherwise.

Methodology:

Informed consent was obtained from all patients after thorough explanation. Patient's medical history was taken. Pre-operative examination, endoscopy and routine blood investigation were done. Those patients who have satisfied the eligibility criteria were included in the study.

1. Nasal packing after septoplasty and record of their pain levels:

Fifty patients scheduled for septoplasty were randomly enrolled in the study. At the end of septoplasty, right side nasal cavity was packed with a Rapid Rhino pack and left side with a Merocel pack. The Rapid Rhino pack was first soaked in sterile water for 30 seconds and then was inserted gently along the floor of the nasal cavity. The Merocel pack was inserted along the floor of the nasal cavity first and then irrigated with 10ml of saline or water in case of no expansion within 30 seconds. Patients were asked to record their pain levels on a visual analogue scale (VAS) ranging from 0 (no pain) to 10 (worst possible, unbearable, excruciating pain) for both nasal cavities, both the packs in place and during pack removal.

2. Pack removal after 48 hours and assessment of pain and bleeding.

3. Nasal endoscopic assessment at first, third and sixth post-operative week:

Packs were removed 48 hrs after surgery. After removal, bleeding from both sides was recorded according to the following scale: 0 = no bleeding; 1 = mild trickle requiring no intervention; 2 = moderate bleeding requiring packing with small cottonoid pledgets soaked with vasoconstrictor drops for 5-10 minutes; 3 = significant bleeding requiring repacking after failure of the previous temporary pack. After pack removal, nasal endoscopy was done and mucosa of nasal cavity was examined, on first, third and sixth week postoperatively, for synechiae, excessive granulation, crusting and bleeding.

Result:

Majority of patients 26(52%) were in the age group between 12-30 years which gets affected and underwent surgery (Table 1).

Table 1: Distribution of Patients According to Age

Age in Years	Frequency	Percentage
12 - 30	26	52
31 - 50	11	22
51 - 70	10	20
>70	3	6
TOTAL	50	100

Majority of patients 38(76%) were male who got affected and underwent surgery (Table 2).

Table 2: Distribution of Patients According to Gender.

Gender	Frequency	Percentage
Female	12	24
Male	38	76
Total	50	100

Post operatively most common symptoms like nasal obstruction, nasal discharge, sneezing and headache were observed in 80%, 70%, 34% and 48% cases respectively (Table 3).

Table 3: Distribution of patients according to post operatively history of nasal obstruction, nasal discharge, sneezing and headache

Symptom	Present	%	Absent	%
Nasal obstruction	40	80	10	20
Nasal discharge	35	70	15	30
Sneezing	17	34	33	66
Headache	24	48	26	52

Table 4: Comparison of Post-Operative Pain Score between Merocel and Rapid Rhino Pack

Packing Material	Merocel	Rapid Rhino	t-value	Significance
Pain score (VAS)				
Day 1	5.26±2.02	3.48±2.21	4.20	<0.01 Significant)
Day2	5.20±1.69	3.04±1.99	5.85	<0.01Significant)

Table 4 shows the comparison of pain score between Merocel and Rapid Rhino pack. Statistically significance was ($p < 0.01$) was observed between the Merocel and Rapid Rhino pack on the first post-operative day.

In case of Merocel mean pain, score was 5.26 with standard deviation of pain ± 2.02 . The patient had minimum score of 1 and maximum of 8. In case of Rapid Rhino mean pain, score was 3.48 with standard deviation of pain ± 2.21 . The patient had minimum score of 0 and maximum of 9. Thus, it was concluded that there was significant difference in pain score between Merocel and Rapid Rhino when pack was in-situ. Pain score on removal of pack was studied on the second post-operative day

i.e. 48 hours following nasal packing. Here, statistical significance ($p < 0.05$) was observed between the Merocel and Rapid Rhino pack on the second post-operative day. In case of Merocel mean pain, score was 5.20 with standard deviation of pain ± 1.69 .

The patient had minimum score of 1 and maximum of 8. In case of Rapid Rhino mean pain, score was 3.04 with standard deviation of pain ± 1.99 . The patient had minimum score of 0 and maximum of 6. Thus, it was concluded that there was significant difference in pain score between Merocel and Rapid Rhino during pack removal with pain score was significantly less for Rapid Rhino than Merocel.

Table 5: Comparison of Bleeding on Pack Removal between Merocel and Rapid Rhino pack

Bleeding Scale Day 2	Packing Material		Total
	Merocel	Rapid Rhino	
0	36 (72%)	44 (88%)	80 (80%)
1	14 (28%)	6 (12%)	20 (20%)
Total	50	50	100

Chi-Square-4.0; P-Value-0.04; Significant

Table 5 shows the comparison of bleeding on pack removal between Merocel and Rapid Rhino pack. Packs were removed under aseptic precautions; anterior/posterior nasal bleed was looked for. It was found that 36(72%) of the patients in Merocel group and 44(88%) of the patients in Rapid Rhino group developed no bleeding or minimal bleeding, without necessity for even decongestant drops. 14(28%) of the patients in Merocel group and 6(12%) of the patients in Rapid Rhino group had

bleeding on removal of pack. All of these patients required vasoconstrictor nasal drops and bleeding stopped within 5 minutes. Statistical analysis showed $p = 0.04$, which was significant, thus Merocel was significantly more associated with bleeding compared to Rapid Rhino pack on pack removal. Major complications observed into study groups at 1st week, and 3rd week and 6th week as detailed in the table 6.

Table 6: Complications present on 1st, 3rd, and 6th in post-operative weeks

Complications	1 st week				3 rd week				6 th week			
	Merocel No. (%)	Rhino pack No. (%)	Chi-square value	Significant (p value <0.05)	Merocel No. (%)	Rhino pack No. (%)	Chi-square value	Significant (p value <0.05)	Merocel No. (%)	Rhino pack No. (%)	Chi-square value	Significant (p value <0.05)
Synechiae	31 (62%)	26 (57%)	1.02	0.3 (NS)	16 (32%)	36 (72%)	16.02	0.001 (S)	33 (66%)	18 (36%)	9.00	0.003 (S)
Granulation	32 (64%)	24 (46%)	2.5	0.1 (NS)	31 (62%)	26 (52%)	1.02	0.3 (NS)	16(32%)	36 (72%)	16.02	0.001 (S)
Major bleed	33 (66%)	28 (56%)	1.05	0.3 (NS)	32(64%)	24 (48%)	2.59	0.1 (NS)	18(36%)	16 (32%)	0.1	0.6 (NS)
Crusting	33 (66%)	18 (36%)	9.0	0.003 (S)	33 (66%)	28 (56%)	1.05	0.3 (NS)	4(8%)	6 (12%)	0.44	0.5 (NS)

S: Significant; NS: Not Significant.

31(62%) cases of synechia in Merocel group whereas, 26(52%) cases of synechia in Rapid Rhino group in the 1stpost-operative week (no statistical significance $p>0.05$).

32(64%) patients with granulations tissue in Merocel group whereas, 24(48%) patients in Rapid Rhino group in the 1stpost-operative week (no statistical significance $p>0.05$).The above table shows the frequency of patients in the 1st post-operative week. 33(66%) patients had major bleed in Merocel group whereas, 28(56%) patients in Rapid Rhino group (no statistical significance $p>0.05$).The crusting was found in 33(66%) patients in Merocel group whereas in 18 (36%) patients in Rapid Rhino group (statistically significant $p<0.05$).16(32%) cases of synechia in Merocel group whereas, 36(72%) cases of synechia in Rapid Rhino group in the 3rdpost-operative week (statistically significant $p<0.05$).31(62%) patients had granulations tissue in Merocel group whereas, 26(52%) patients in Rapid Rhino group in the 3rdpost-operative (no statistical significance $p>0.05$).32(64%) patients had major bleeding in Merocel group whereas, 24(48%) patients in Rapid Rhino group in the 3rdpost-operative week (no statistical significance $p>0.05$).The crusting was found in 33(66%) patients in Merocel group whereas, 28(56%) in Rapid Rhino group in the 3rdpost-operative week (no statistical significance $p>0.05$).33(66%) cases of synechia in Merocel group whereas, 18(36%) cases of synechia in Rapid Rhino group in the 6thpost-operative week (statistically significant $p<0.05$).16(32%) patients had granulations tissue in Merocel group whereas, 36(72%) patients in Rapid Rhino group in 6th post-operative week (statistically significant $p<0.05$).18(36%) patients had major bleeding in Merocel group whereas, 16(32%) patients in Rapid Rhino group in the 6thpost-operative week (no statistical significance $p>0.05$).The crusting was found in only 4(8%) patients in Merocel group whereas in 6(12%)

patients in Rapid Rhino group in the 6thpost-operative week (no statistical significance $p>0.05$).

Discussion

In current ENT practice chronic sinusitis, nasal septal deviation, and inferior turbinate hypertrophy are among the most common diseases. These conditions are common in patients of all ages and both genders. Surgical procedures like septoplasty, turbinoplasty and FESS are often considered when medical treatments have failed. At the end of each of these procedures, nasal packs are placed into the nasal cavities to prevent bleeding of the wound. [12]

Septoplasty followed by nasal packing serve multiple purposes. To prevent postoperative complications like nasal bleeding and formation of either adhesions or a septal hematoma, nasal packing is done. It is done to stabilize the remaining cartilage to prevent postoperative deviation. Though packing may prevent or decrease the incidence of these complications, evidence in favour of this assertion is limited at best. Various types of nasal packing have been demonstrated to increase postoperative pain and found as a causative factor of complications like toxic shock. [13]

In the present study majority of patients were in the age group between 12-30 years 26(52%) which gets affected and underwent surgery. The minimum age was 12 years whereas, maximum age was 86. The mean age in this was 37.32 years. In a study by A Hesham et al (2011), [7] thirty patients were included in the study, with a mean age of 26 years. Age ranged from 8 to 42 years (mean age 20 years) in a study by Ahmad Al-Arfaj et al (2008). [14] Age ranged from 18 to 56 years (mean 30) in a study by Caner Sahin et al (2015). [15] In a study by A. Romano et al (2016) [16], age ranges 15-78 years with a mean age of 47 years. Age ranged between 21 and 26 years old (mean age 22.83±2.26

years) in a study by Fatih Arslan et al (2020). [17] In a study by Ike Thomas et al (2016), [18] a total of 50 patients were considered, out of which 5(10%) patients were less than 20 years of age, 36(72%) patients aged between 21 years to 40 years and 9(18%) patients above 40 years.

In the present study majority of patients 38 (76%) were male who got affected and underwent surgery whereas, only 12(24%) were females. A Hesham et al (2011) [7] Ahmad Al-Arfaj et al (2008) [14], Fatih Arslan et al (2020) [17] & Ike Thomas et al (2016) [18] also observed the male preponderance in their studies. In contrast, Caner Sahin et al (2015) [15] & A. Romano et al (2016) [16] found female predominance.

In the present study, post operatively nasal obstruction was observed in 40 (80%). In a study by Özbal Koç AE et al (2016) [19] nasal obstruction was least obvious in sutures alone group at 24 hours postoperatively ($p < 0.001$). There was no difference between sutures + telfa group and Merocele alone group.

In the present study 35(70%) patients had a history of nasal discharge. In a study by A. Romano et al (2016) [16] Merocele group reported 2.24 ± 0.50 nasal secretion by 1st week. Mean nasal discharge seen in Merocele group was 5.5 ± 1.0 in a study by S Raghunandhan et al (2014). [20] Secretions on waking up from anesthesia were most obvious in Merocele alone group ($p < 0.001$) in study by Özbal Koç AE et al (2016). [19]

In the present study 24(48%) patients had a history of headache. In a study by A. Romano et al (2016) [16] average headache score was 5.3 ± 1.0 in patients receiving Merocele pack. They recorded that patients with nasal packing complained more of nasal pain and headache in the immediate postoperative period.

The ideal nasal pack is one which fits easily into the nasal cavity and stimulates hemostasis. Ideally it should be: easy to insert and remove without causing undue discomfort; comfortable while in situ; secure, without forwards or backwards prolapse; capable of achieving hemostasis without damaging the nasal cavity mucosa; and should cause minimal tissue reaction. [7] Merocele nasal packs are useful tampons with ease of use and effective hemostasis after surgery. However, there is a disadvantage of patient discomfort while removing the nasal pack. Nasal Pack can be removed after 24-48 hours of surgery. It was found that removing Merocele nasal packing 24 hours post-surgery causes less pain when compared to removing it after 48 hours of surgery. Caner Sahin [15] in their study found that as longer period the nasal packing stays in nose, patients discomfort and anxiety levels are increased. In the present study in case of Merocele mean pain score was 2.29 with

standard deviation of pain ± 2.22 . The patient had minimum score of 0 and maximum of 8. In the present study in case of Rapid Rhino mean pain score was 3.58 with standard deviation of pain ± 2.24 . The patient had minimum score of 0 and maximum of 6.

In case of Merocele mean pain score on removal of pack was 3.14 with standard deviation of pain ± 1.18 . The patient had minimum score of 0 and maximum of 8. In case of Rapid Rhino mean pain score was 3.04 with standard deviation of pain ± 1.98 . The patient had minimum score of 0 and maximum of 6. A Hesham et al (2011) [7] study found that the mean \pm standard deviation pain score for the Rapid Rhino pack in situ (4.17 ± 1.78) was less than Merocele pack (4.73 ± 2.05), but was not significant ($p = 0.314$). The mean pain score for Rapid Rhino pack removal (4.13 ± 1.76) was significantly less than that for Merocele (6.90 ± 1.67 ; $p = 0.001$). Rapid Rhino produced significantly lower scores for subjective patient discomfort during insertion and removal of pack in a study by Ioannis Moumoulidis et al (2006). [21]

In a study by Ahmad Al-Arfaj et al (2008) [14] thirty-five (64.9%) patients packed with size 8 slim Merocele, 30 (85.7%) had minimal bleeding and 5 (14.3%) had moderate bleeding. Fourteen (25.8%) packed with Merocele size 8 regular, 10 (71.4%) had minimal bleeding and 4 (28.6%) had moderate bleeding. And 5 (9.2%) packed with size 10 regular Merocele, out of which 1 (20%) had minimal bleeding and 4 (80%) had moderate bleeding. Özcan et al (2008) [22] in a study, compared the VAS scores of pain and nasal fullness of each nasal pack at 1 & 6 hours postoperatively, showed a statistically significant difference ($p < 0.05$). Similarly, comparison of the pain level for pack removal and bleeding after removal on the second postoperative day demonstrated a statistically significant difference ($p < 0.05$ and $p = 0.001$, respectively). There were significantly higher pain levels associated with Merocele pack removal than with Rapid Rhino pack removal (average pain scores 5.64 vs 1.64, $p < 0.001$) and less bleeding overall in a study by Arvind Kumar Arya et al (2003). [23]

Decision to pack the nose during surgery for hemostasis is left to the operating surgeon and is usually not contested. Nasal packing was well described in the literature and there was no universal protocol regarding the ideal packing material and duration of its effective application. Several factors facilitate preventing postoperative bleeding, thus negating the need for packing, including strict local anesthesia technique, application of local vasoconstrictors and minimal tissue damage. In a study by Ahmad Al-Arfaj et al (2008) [14] it was found that 36(72%) of the patients in Merocele group and 39(78%) of the

patients in Rapid Rhino group developed no bleeding or minimal bleeding, without necessity for even decongestant drops. 14(28%) of the patients in Merocel group and 11(22%) of the patients in Rapid Rhino group had bleeding on removal of pack all of these patients required vasoconstrictor nasal drops and bleeding stopped within 5 minutes. Statistical analysis showed $p=0.4$, which is not significant, thus Merocel is not significantly associated with bleeding compared to Rapid Rhino pack on removal.

In a study by A Hesham et al (2011) [7] after pack removal, there was significantly less bleeding noted in nasal cavities which had been packed with Rapid Rhino packs, compared with Merocel packs ($p<0.05$). Minimal bleeding was noted in 15 patients following Merocel pack removal; however, no bleeding was seen following RR pack removal in a study by Özcan et al. (2008). [22] In a study by Cruise et al (2005) [24] there was no bleeding after removal of 31 of 39 (79.5%) of the Rapid Rhino packs. In a study by Özcan et al (2008) [22] minimal bleeding was noted in 15 patients following Merocel pack removal; however, no bleeding was seen following RR pack removal. For bleeding, the mean values for Merocel and Rapid Rhino during packing and after pack removal were not significant ($p=0.38$ and 0.82 respectively) in a study by K Badran et al. (2005). [25]

In the present study there were 31(62%) cases of synechiae in Merocel group whereas, 26(52%) cases of synechiae in Rapid Rhino group. It was found that there was no statistical significance in the occurrence of synechiae between two groups ($p>0.05$). In a study by RR Joshi et al (2012) [26] there were no synechie in Merocel group, either in the 3rd or 6th post-operative week. Out of 50, 2 patients reported synechiae in a study by Swaroop Dev M et al (2015). [27] In a study by Özbal Koç AE et al (2016) [19] synechiae formation was seen in 27.3% patients and it was absent in 72.7% patients receiving Merocel packing.

Many authors suggest nasal pack can be left in situ for 7 days. [28] It would be expected that longer periods of packing have a greater influence on mucosal healing. Surprisingly, outcomes of our assessment of crusting and adhesion formation after the removal of two nasal packs indicated opposite trend. We observed crusting in 33(66%) patients in Merocel group & 18(36%) in Rapid Rhino group (statistical significant $p<0.05$). In study by Cruise et al (2005) [25] there was significant crusting on the Rapid Rhino pack side. In a study by A. Romano et al (2016) [16] Merocel group reported 2.76 ± 0.61 crusting by 1st week. Crusting was minimal with the Merocel pack as seen in the 3rd post-operative day in a study by RR Joshi et al (2012). [27]

Saini *et al.*

In the present study the crusting was found in 33(66%) patients in Merocel group whereas, 28(56%) in Rapid Rhino group. In a study by A. Romano et al (2016) [16] Merocel group reported 0.21 ± 0.26 crusting by 4th week. In the present study the crusting was found in only 4(8%) patients in Merocel group whereas, 6 (12%) in Rapid Rhino group. In study Cruise et al (2005) [25] in 6th week there was no significant crusting on Rapid Rhino side.

Conclusion

In conclusion, this study provides valuable insights into the use of Rapid Rhino and Merocel nasal packing materials post-septoplasty. Rapid Rhino demonstrated superior patient comfort, lower pain score during removal, and reduced bleeding compared to Merocel. The study's finding emphasizes the importance of choosing appropriate packing material to enhance patient outcome and satisfaction following septoplasty.

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