

Rapid Rhino versus Merocel nasal packs in septal surgery

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Abstract

Objective: To compare Rapid Rhino and Merocel packs for nasal packing after septoplasty, in terms of patient tolerance (both with the pack in place and during removal) and post-operative complications.

Material and methods: Thirty patients (aged 18–40 years) scheduled for septoplasty were included. Following surgery, one nasal cavity was packed with Rapid Rhino and the other one with Merocel. Patients were asked to record pain levels on a visual analogue score, on both sides, with the packs in situ and during their removal the next day. After pack removal, bleeding was compared on both sides.

Results: The mean \pm standard deviation pain score for the Rapid Rhino pack in situ (4.17 ± 1.78) was less than that for the Merocel pack (4.73 ± 2.05), but not significantly so ($p = 0.314$). The mean pain score for Rapid Rhino pack removal (4.13 ± 1.76) was significantly less than that for Merocel (6.90 ± 1.67 ; $p = 0.001$). Bleeding after pack removal was significantly less for the Rapid Rhino sides compared with the Merocel sides ($p < 0.05$).

Conclusion: Rapid Rhino nasal packs are less painful and cause less bleeding, compared with Merocel packs, with no side effects. Thus, their use for nasal packing after septal surgery is recommended.

Key words: Septoplasty; Tampons, Surgical; Nasal Cavity; Pain, Post Operative

Introduction

Nasal packing materials are widely used in endonasal surgery, including septoplasty, turbinectomy and paranasal sinus surgery. They are also used to prevent synechiae and haematoma formation, to support septal flap apposition, and to close dead space between cartilage and subperichondrial flaps.¹

Painful nasal pack removal is often the most uncomfortable aspect of septoplasty surgery for patients. Pain may be caused by dislodgement of the blood clot and adherent tissues, following adherence of traditional nasal tampons to the nasal septum over the original bleeding site.²

Two nasal tampon types in common use are Rapid Rhino and Merocel.

Rapid Rhino packs (Arthrocare, Knaresborough, UK) consist of two parts: an inflatable cuff and carboxymethylcellulose packing. When the latter contacts blood, it promotes platelet aggregation. The whole pack has a dual effect on haemostasis: it compresses arterial bleeding, and also promotes clotting to staunch active capillary and venous bleeding.³

Merocel packs (Medtronic Xomed, Jacksonville, Florida, USA) consist of a foam-like nasal packing

material which is a polymer of hydroxylated polyvinyl acetate. The pack material contains cavities capable of absorbing fluid. Once moistened with fluid, the material becomes softer and more elastic.⁴

This study aimed to compare the use of Rapid Rhino and Merocel packs for nasal packing after septoplasty, in terms of patient tolerance (both with the pack in place and during removal) and post-operative complications.

Materials and methods

This prospective, randomised, controlled study was conducted at Magrabi Eye and Ear Hospital, Sultanate of Oman, from June 2009 to July 2010. The study was approved by the local ethical committee. Informed consent was obtained from all patients.

Thirty patients (aged 18–40 years) scheduled for septoplasty were enrolled in the study. We excluded patients with bleeding disorders and those receiving anticoagulants.

At the end of septoplasty surgery, one nasal cavity was packed with a Rapid Rhino pack (a Mannheim Gel-Knit nasal dressing, 8 cm without cuff) and the other with a Merocel pack (8 cm). Pack type was

allocated in a random manner, using sealed envelopes. Patients were blinded to the type of pack inserted on each side.

The Rapid Rhino pack was first soaked in sterile water for 30 seconds (not saline, as this inhibits the gelling characteristics), then 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 10 ml of saline, or water in case of no expansion within 30 seconds.

Patients were asked to record their pain levels on a visual analogue score, for both nasal cavities, both with the packs in situ and during pack removal.

Packs were removed the day after surgery. After removal, bleeding from both sides was recorded by the second author (AG, an anaesthetist), who was blinded to the pack type used, 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. Patients were also asked to report any bleeding in the following two weeks. A follow-up visit was scheduled after two months to check for synechiae formation.

Data were statistically described in terms of range, mean \pm standard deviation, frequency (number of cases) and percentages when appropriate. Quantitative study group variables were compared using the Mann–Whitney U test for independent samples. Categorical data were compared using the chi-square test. The exact test was used when the expected frequency was less than 5. A probability value (p value) of less than 0.05 was considered statistically significant. All statistical calculations were performed using the software programs Microsoft Excel 2003 (Microsoft Corporation, New York, USA) and the Statistical Package for the Social Science version 15 for Microsoft Windows (SPSS Inc, Chicago, Illinois, USA).

Results

Thirty patients were included in the study, with a mean age of 26 years. Twenty patients (66.67 per cent) were male and 10 (33.33) female.

The mean pain score with the pack in situ was less for the Rapid Rhino pack (4.17 ± 1.78) than for the Merocel pack (4.73 ± 2.05); however, this difference did not achieve statistical significance ($p = 0.314$). The mean pain score for pack removal was significantly less for the Rapid Rhino pack (4.13 ± 1.76) than the Merocel pack (6.90 ± 1.67) ($p = 0.001$).

After pack removal, there was significantly less bleeding noted in nasal cavities which had been packed with Rapid Rhino packs, compared with Merocel packs ($p < 0.05$) (Table I).

None of the following were observed: bleeding requiring repacking (i.e. a score of 3); secondary

TABLE I
BLEEDING SCORES AFTER NASAL PACK REMOVAL

Score	Rapid Rhino* (pts (n))	Merocel† (pts (n))
0	8	2
1	18	9
2	4	19

* $n = 30$; † $n = 30$. Pts = patients

bleeding within two weeks; or synechiae between the septum and the lateral nasal wall within two months.

Discussion

The ideal nasal pack is one which conforms easily to the contour of the nasal cavity and stimulates haemostasis. It should also be: easy to insert and remove without causing undue discomfort; comfortable while in situ; secure, without forwards or backwards prolapse; capable of achieving haemostasis without damaging the nasal cavity mucosa; and should cause minimal tissue reaction.⁵

Several techniques have been used in an attempt to reduce the pain associated with nasal pack removal, e.g. intramuscular papaveratum injection, nitrous oxide gas inhalation and pack rehydration with lidocaine. Durvasula and colleagues⁶ found that rehydration with a local anaesthetic solution (lidocaine) did not reduce the pain of pack removal after nasal surgery.

Since the introduction of Rapid Rhino nasal packs, four clinical trials have compared them with Merocel nasal packs: two trials studied patients with epistaxis,^{7,8} while the other two assessed pack use after nasal surgery.^{9,10}

Badran *et al.*⁷ studied 52 patients with epistaxis, and concluded that both pack types were equally effective in epistaxis control, but that Rapid Rhino packs were more comfortable for patients and easier for healthcare workers to insert and remove. Similar results were reported by Moumoulidis *et al.*,⁸ in their study of 42 patients.

In an attempt to minimise bias in our study findings, assessment of bleeding was performed by the second author, who was blinded to the type of nasal pack used in each nasal cavity.

From our findings, we conclude that Rapid Rhino and Merocel packs had similar pain scores whilst in situ, but that Rapid Rhino packs were less painful to remove, with less bleeding, compared with Merocel packs.

Our findings are similar to those reported by Arya and colleagues.⁹ However, these authors used a different type of Rapid Rhino pack (a Goodman 5.5 cm pack, instead of a Mannheim 8 cm pack), for a wide range of nasal procedures (i.e. septoplasty, turbinectomy and functional endoscopic sinus surgery), in only 14 patients.

Similar results were also reported by Ozcan *et al.*¹⁰ These authors concluded that Rapid Rhino packs

were associated with less post-operative pain and sensation of fullness, less pain during pack removal, and less reactionary bleeding. This study differed from our own in terms of larger patient numbers (51 patients), removal of the inflatable cuff Rapid Rhino pack after 48 hours, and an alternative bleeding assessment method (i.e. grading on a scale of 0 to 2).

- **After septoplasty, 30 patients received a Merocel nasal pack on one side and a Rapid Rhino pack on the other**
- **Both pack types were similarly painful in situ**
- **Rapid Rhino packs were less painful during removal than Merocel packs**
- **Removal of Rapid Rhino packs caused less bleeding than Merocel packs**

In our own study, the difference in pain scores between the two pack types was probably due to the elasticity and external gel coating of the Rapid Rhino pack, which reduce adhesion to the nasal mucosa and thus facilitate removal. The difference in bleeding was probably mostly due to the haemostatic properties of carboxymethylcellulose, which are similar to those of other known clotting agents such as Adenosine diphosphate (ADP), thrombin and collagen.⁹

Following pack removal, we encountered no complications in our patients, either early (e.g. significant bleeding) or late (e.g. synechia).

Two studies^{7,9} have raised the issue of accidental expulsion of Rapid Rhino packs due to their slippery surface. This was not encountered in our study, probably because we used longer (8 cm) packs and tied both ends of the packs.

Conclusion

Rapid Rhino nasal packs are less painful and cause less bleeding, compared with Merocel nasal packs, with no side effects. Therefore, our study findings can be added

to previously published reports recommending the use of Rapid Rhino packs after nasal surgery.

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