

Evaluation of Surgicel Nu-knit, Merocel and Vasolene gauze nasal packs: A randomized trial*

C.A. Shinkwin¹, N. Beasley¹, R. Simo¹, L. Rushton², N.S. Jones¹

¹ Department of Otorhinolaryngology, Universital Hospital, Nottingham, United Kingdom

² Department of Public Health Medicine and Epidemiology, University Hospital, Nottingham, United Kingdom

SUMMARY

A randomised, prospective trial to evaluate Surgicel Nu-knit with Vasolene ribbon gauze and Merocel packs, respectively. Sixty patients (36 males and 24 females) undergoing bilateral nasal surgery, each having the same procedure performed on both sides, were recruited. The mean age was 49 years (range: 16-70 years). At operation, Surgicel Nu-knit was placed in one nostril, the other nostril was randomised to Vasolene gauze or Merocel. Twenty-four hours post-operatively, patients were asked to assess the discomfort experienced in either side of the nose while the packs were in position and on removal. The length of time and estimated amount of bleeding following removal of packs were also assessed. Surgicel Nu-knit caused significantly less discomfort both while in position and on removal than Vasolene gauze ($p < 0.01$, respectively). Compared to Merocel sponges, Surgicel Nu-knit caused significantly less discomfort on removal ($p < 0.01$). Bleeding following removal was also significantly less compared to the other packs. One patient in the Surgicel group required a general anaesthetic to remove a retained pack fragment. At 6-week follow-up, no nasal complications were noted in all of the groups.

Key words: nasal haemorrhage, nasal packs, Surgicel Nu-Knit, Merocel packs, Vasolene gauze

INTRODUCTION

Nasal packs are placed following nasal surgery to arrest primary haemorrhage. The ideal nasal pack should fulfill certain requirements: (1) it should be easy to insert and remove without causing undue discomfort; (2) it should be comfortable when in place; (3) it should prevent post-operative bleeding without damaging the mucous membrane; and (4) it should provoke minimal tissue reaction and reduce infection. A variety of nasal packs have been tried and compared, but none have attained universal acceptance in clinical practice in Britain to meet both the needs of the patient and the surgeon (Watson et al., 1989; Nigam et al., 1992; Garth and Brightwell, 1994).

Probably the commonest pack in use at present is a vasolene gauze pack which is inexpensive, but notorious for the discomfort which it produces - not only whilst in position, but in particular when it is removal. The discomfort which such packs produce is so unpleasant that many patients describe it as some of the worst discomfort they have ever experienced.

Merocel sponges have recently been introduced and are said to be more comfortable *in situ*, but they still appear to cause some discomfort on removal and they are more expensive than

Vasolene gauze packs. Surgicel Nu-Knit is a new haemostatic product and while made of Surgicel, it has considerably more intrinsic strength than normal Surgicel (Degenshein et al., 1963). It is also bacteriostatic (Dineen, 1976).

The aim of this study was to evaluate patients' assessment of these three types of nasal packs, using the two which are in routine use as controls. Surgicel Nu-Knit has not been compared with other nasal packs previously and it is believed that it may have a role to play in not only improving haemostasis, but also in reducing patient discomfort both while the pack is *in situ* and in particular at removal.

MATERIAL AND METHODS

Local Ethical Committee approval having been obtained, 60 patients with bilateral nasal disease under the care of a single consultant and having the same surgery performed on each side of the nose were recruited at Nottingham University Hospital in the year to April 1994.

There were 36 (60%) males and 24 (40%) females with a mean age of 49 years (range: 16-70 years). Thirty-eight (63%) patients underwent bilateral intranasal polypectomy and antral

washouts, 13 (22%) underwent bilateral functional endoscopic sinus surgery including ethmoidectomy, and nine underwent inferior turbinate surgery. Surgery was performed under general anaesthesia in all cases.

At the end of the procedure, patients were randomly allocated into one of two groups by an independent observer using previously prepared sealed envelopes. In one group of patients, Surgicel Nu-knit was inserted in one side of the nose, Vasolene gauze in the other side. The second group had Surgicel Nu-knit in one side and Merocel packs in the other. In both groups, the side into which the Surgicel Nu-knit was inserted was randomly allocated. The packs were sutured together to prevent aspiration.

Nasal packs were removed 24 h post-operatively by a ward staff nurse. Prior to removal, the patients were asked to record their level of nasal discomfort on each side of the nose while packs were *in situ* on a 100-mm visual analogue scale, with 0 mm being no pain to 100 mm, indicating the most severe pain imaginable. The packs were then removed and the patients again were asked to record on the visual analogue scale the degree of discomfort experienced while each nasal pack was being removed. On pack removal, an ice pack was placed on the nose. Any haemorrhage which occurred was recorded by both measuring the length of time it took to stop and estimating the amount of blood loss as less than usual, usual, or more than usual. The person removing the packs also recorded any comments they may have had during the procedure. At a 6-week follow-up clinic, any intranasal complications noted on examination were recorded.

Thus, there were two groups of 30 patients; one having had Surgicel Nu-Knit and Vasolene gauze inserted into each nasal airway, respectively; the other group, Nu-Knit and Merocel respectively. Analysis of results were performed in each group independently.

As we had carried out a paired matched experiment, the paired t-test was used to compare the mean pain scores in each group respectively. Haemorrhage following pack removal was analysed using the Wilcoxon signed-ranks test to compare the length of time it took bleeding to stop in each group. To compare the estimated amount of bleeding a crude measure and subject-to-interobserver variability we used the Sign test.

RESULTS

In the Surgicel Nu-Knit/Merocel group, 29 patients completed the trial. In one patient neither of the packs controlled primary haemorrhage following bilateral intranasal polypectomy and they were replaced by Vasolene gauze packs. The mean pain scores while the packs were in position were 18.41 for the Nu-Knit and 23.07 for Merocel. The mean difference, thus, was 4.66 (95% confidence intervals: -1.53, 10.84), but on testing it was not statistically significant ($p=0.13$).

The mean pain scores on pack removal were 33.21 for Nu-Knit and 50.72 for Merocel, the mean difference being 17.52 (95% c.i.: 4.36, 30.67). Merocel packs caused statistically significantly more pain on removal than the Surgicel Nu-Knit ($p=0.011$).

In the Surgicel Nu-Knit/Vasolene patients, the mean pain scores for the packs in position were 14.23 and 24.77 respectively with a mean difference of 10.53 (95% c.i.: 4.68, 16.39). On analysis, Vasolene gauze caused more pain while in position ($p < 0.01$).

On removal of the Surgicel Nu-Knit/Vasolene packs, one patient required a general anaesthetic to remove the Surgicel Nu-Knit pack which had fragmented on attempted removal on the ward. In the other 29 patients, the mean pain scores on removal were 33.03 and 51.52 for the Surgicel Nu-Knit and Vasolene respectively with the mean difference being 18.48 (95% c.i.: 5.46, 31.5; $p < 0.01$), showing that removal of the vasolene gauze packs was more uncomfortable.

Analysis of the estimated amount of haemorrhage after pack removal reveals that Nu-knit resulted in significantly less bleeding compared to Merocel and Vasolene gauze ($p < 0.01$ respectively). The length of time bleeding occurred after pack removal was also significantly greater in the Merocel and Vasolene groups ($p < 0.001$ and $p=0.02$, respectively).

Of the 60 Surgicel Nu-Knit packs used in the study, seven (12%) fragmented on removal. Of these, one required removal with the use of the a head mirror, and one a general anaesthetic. At 6-week follow-up no nasal complications were noted.

DISCUSSION

The measurement of pain is a complex problem with many pitfalls (Reading, 1989). We have chosen a visual analogue scale as opposed to other methods because of its simplicity, high sensitivity, reproducibility, and the fact that it generates a directly measurable numerical pain score (Von Schoenberg et al., 1993). Also important is the point that each patient in our study act as his or her own control, eliminating interpatient variability in response to pain.

Our results show that Surgicel Nu-Knit is more acceptable to patients as it causes significantly less discomfort than Vasolene gauze packs both while in place and on removal, and it is also significantly less painful on removal than Merocel. It also resulted in significantly less bleeding on pack removal both in the estimated amount of bleeding and the length of time bleeding occurred compared to the two controls. The statistical tests used to analyse the post-operative bleeding compared each pair of results in each individual patient independently, thus abolishing any inter-observer variation.

However, seven (12%) of the Surgicel Nu-Knit packs used in this study fragmented on removal, one patient requiring a further general anaesthetic to remove a deep fragment. These packs had been inserted into the nose dry and we found that soaking the pack in sterile water prior to insertion into the nose overcame this problem.

One patient in the Surgicel Nu-Knit/Merocel group had to have both packs replaced in theatre with Vasolene gauze, because they did not control the haemorrhage resulting from the surgery. Thus, we cannot recommend the use of either of these packs in cases where there is major primary haemorrhage at the time of surgery.

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C.A. Shinkwin, FRCS
Dept. of Otorhinolaryngology
University Hospital
Nottingham NG7 2UH
United Kingdom

ANNOUNCEMENT

Third International Course in Modern Rhinoplasty Techniques

Amsterdam, The Netherlands
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Teacher of honour:
M. Eugene Tardy Jr. MD

Information:

G.J. Nolst Trenité MD PhD
Academic Medical Center of the University of Amsterdam
ENT Department
Meibergdreef 9
1105 AZ Amsterdam

Tel 00 31 20 566 3889 / Fax 00 31 20 691 3850