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Nasal surgery: Does the type of nasal pack influence the results?

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SUMMARY

A prospective study was performed on 106 patients undergoing routine nasal surgery to compare the influence of three different packing methods on the final outcome. Pneumatic balloons were found to cause persistent nasal obstruction and an increased incidence of adhesion formation, while lubricated ribbon gauze was more uncomfortable for the patient. Glove finger packs were associated with the least problems.

INTRODUCTION

After many surgical procedures in the nose it is customary, but not invariable (Stucker and Ansel, 1978), to pack the nasal cavity. The purpose of the pack is to control bleeding from raw surfaces and to prevent haematoma formation. Many different types of pack are in use, including balloons, tampons, absorbable sponge, and a variety of methods using ribbon gauze. A number of complications of nasal packing have been reported (Stemm, 1981; Fairbanks, 1986), including dysphagia; aspiration; airway obstruction, hypoventilation and hypoxaemia; Eustachian tube obstruction; sinusitis, and even toxic shock syndrome (Thomas et al., 1982). Shone and Clegg (1987) suggested that trauma from the pack may contribute to postoperative adhesion formation. To our knowledge there have been no previous studies relating the type of pack used to the outcome after nasal surgery. The trial described here compares three packing methods and addresses this question.

MATERIALS AND METHODS

Patient details

One hundred and six consecutive patients undergoing nasal surgery in our unit entered the trial. Details of the types of operations performed are shown in

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Table 1. There were 69 men and 37 women. The median age was 37 (range 11 to 75 years).

Table 1. Details of operations performed.

operation	number
septal surgery (SMR/Septoplasty)	14
inferior turbinate reduction (Diathermy or Turbinectomy)	28
combined septal surgery and turbinate reduction	54
simple nasal polypectomy	10
total	106

Packing

At the end of each operation, a unilateral silicone rubber nasal splint was inserted (the side being chosen at random) as part of an associated project concerning the role of such splints in the prevention of adhesions (Campbell et al., 1987). The opposite (i.e. unsplinted) nostril was studied in this trial. Both nostrils were then packed using the same material, which was selected on a random basis from the following:

a. pneumatic balloons [PB] (Simpson's epistaxis balloons (Eschmann); Figure 1), 37 patients
b. lubricated ribbon gauze [LRG] (Jelonet™ (Smith and Nephew); Figure 2), 37 patients
c. polythene glove fingers filled with dry ribbon gauze [GF] (Figure 3), 32 patients.

In each case, the packs were removed after 24 hours.

Assessment

Postoperatively, the patients were assessed for nasal comfort, airway patency and intranasal appearance. The assessments were performed 48 hours, seven days and six weeks after the operation.

Patency

The nasal inspiratory airflow was assessed and graded as either blocked (total or almost total blockage) or patent (moderate or normal airflow).

Appearance

Anterior rhinoscopy was performed, and the appearance of the nasal cavity graded as either clean (nil or mucoid debris only), or debris-containing (thick, fibrinous or crusts). In addition, at six weeks, the presence or absence of intranasal adhesions (between inferior turbinate and septum) was noted. Adhesions

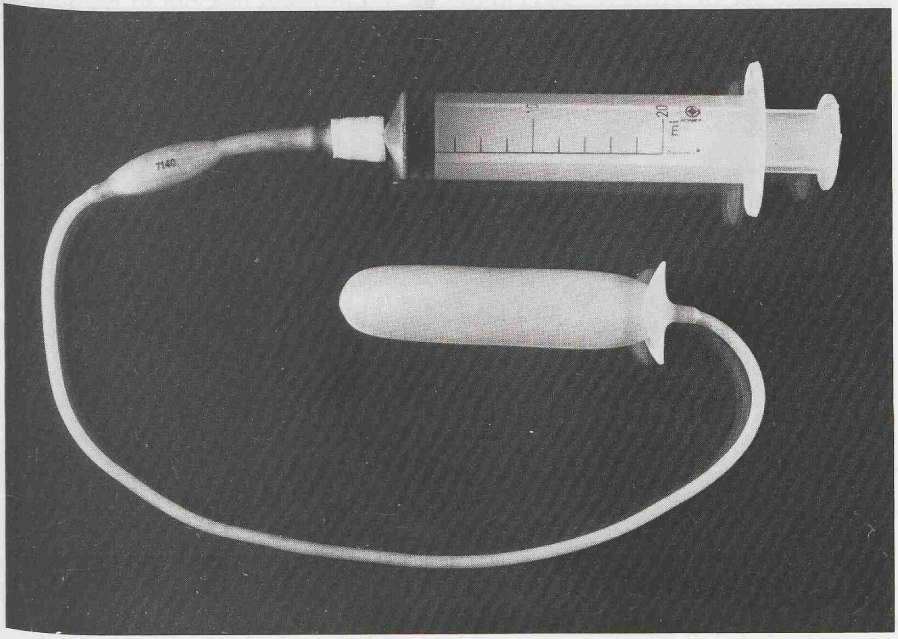

Figure 1. Simpson's epistaxis balloon.

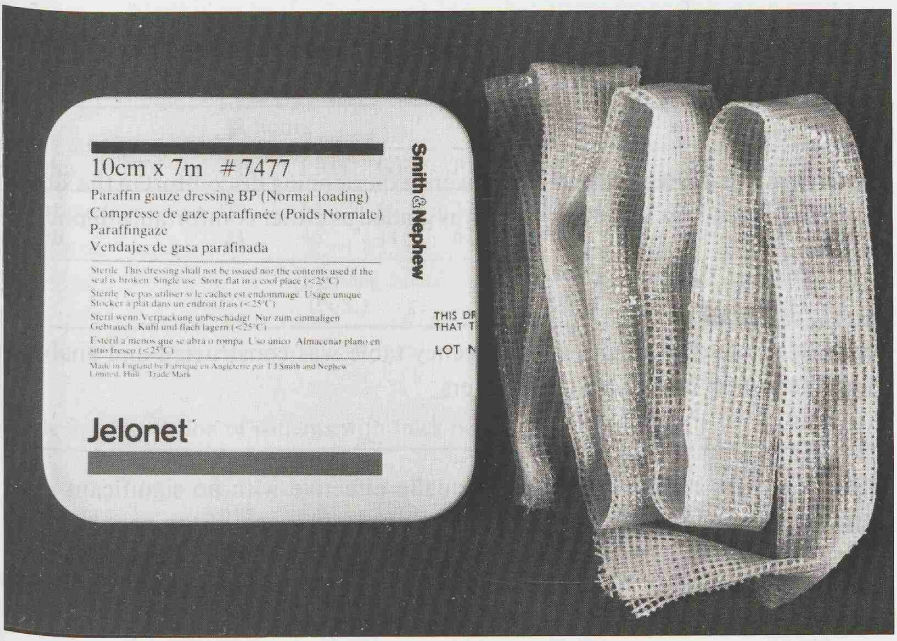

Figure 2. Lubricated ribbon gauze pack.

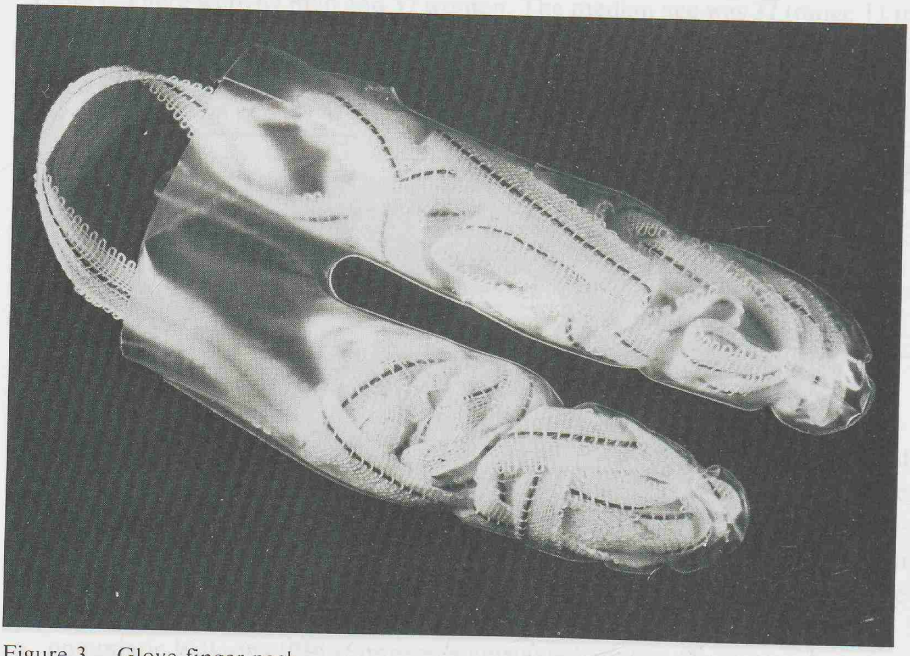

Figure 3. Glove finger pack.

were classified as flimsy (easily separated in the consulting room) or dense (requiring a definitive procedure for their division).

Comfort

The patients were asked whether they were experiencing discomfort in the side of the nose under study. Their response was graded as either comfortable or uncomfortable.

Statistical analysis

For each factor considered, a contingency table was constructed and analysed using the χ^2 test on the actual numbers.

RESULTS

The three types of nasal pack were equally effective with no significant postoperative bleeding or septal haematoma occurring in any of the patients.

Patency (Table 2)

At 48 hours, the majority of patients in each group had blocked nostrils. After seven days, the incidence had fallen to 18% overall, with a significantly higher

proportion of blocked noses in the PB group (33%, $p<0.02$). By six weeks, the overall incidence of nasal obstruction had fallen further to 6%, with a persistently greater proportion of noses in the PB group remaining blocked (14%, $p<0.05$).

Appearance (Table 3)
At 48 hours and seven days, all of the noses in the pneumatic balloon group contained debris. By six weeks this proportion had diminished to 22%. The noses in both of the other groups cleared much more rapidly and at each assessment contained significantly less debris than the PB group.

Comfort (Table 4)
At 48 hours, a significantly higher proportion of patients packed with lubricated ribbon gauze experienced discomfort (50%, $p<0.01$). After seven days, the incidence of discomfort had fallen to 24% overall, but remained significantly greater in the LRG group (39%, $p<0.05$). By six weeks, the overall incidence of discomfort had fallen to 4% and was similar for all three groups.

Adhesions (Table 5)
Intranasal adhesions were significantly more common following the use of pneumatic balloons (32%) than with the other packs ($p<0.05$). 72% of the adhesions were flimsy and 28% dense, with no difference between the groups.

Table 2. Proportion of patients with nasal obstruction (%).

	48 hours			7 days			6 weeks		
patency	PB	LRG	GF	PB	LRG	GF	PB	LRG	GF
obstructed	79	54	56	33	13	7	14	0	3
patent	21	46	44	67	87	93	86	100	97
		$\chi^2_2=5.4$ (N.S.)			$\chi^2_2=8.58$ $p<0.02$			$\chi^2_2=6.87$ $p<0.05$	

Table 3. Proportion of patients with thick nasal debris (%).

	48 hours			7 days			6 weeks		
appearance	PB	LRG	GF	PB	LRG	GF	PB	LRG	GF
debris	100	65	52	100	11	7	21	3	0
clear	0	35	48	0	89	93	79	97	100
		$\chi^2_2=19.29$ $p<0.001$			$\chi^2_2=72.2$ $p<0.001$			$\chi^2_2=11.26$ $p<0.005$	

Table 4. Proportion of patients with nasal discomfort (%).

	48 hours			7 days			6 weeks		
comfort	PB	LRG	GF	PB	LRG	GF	PB	LRG	GF
comfortable	87	50	83	80	61	89	97	91	100
uncomfortable	13	50	17	20	39	11	3	9	0
		$\chi^2_2=12.97$ $p<0.005$			$\chi^2_2=7.31$ $p<0.05$			$\chi^2_2=3.81$ (N.S.)	

Table 5. Proportion of patients with nasal adhesions at 6 weeks postoperatively (%).

adhesions	PB	LRG	GF
present	32	14	7
absent	68	86	93
	$\chi^2_2=7.76$ $p<0.05$		

DISCUSSION

Our results show that the type of pack used does influence the outcome after nasal surgery.

The pneumatic balloons were associated with a significantly higher incidence of debris accumulation, adhesion formation and nasal obstruction. To identify a causative factor for these complications the reports of Steiner and Masing (1976) and Elwany et al. (1986) could be relevant. They found mucosal damage and septal perforation after using balloon packs to treat epistaxis, and suggested that the balloons produced mucosal ischaemia leading to pressure necrosis. This would explain the large amount of debris which accumulated, and the ensuing healing of adjoining raw surfaces (i.e. septum and inferior turbinate) would predispose to adhesion formation. On the positive side the balloons were generally favoured by the surgeons, who found them particularly easy to insert. They also had the advantage that after deflation they could be left in situ and reinflated if bleeding recurred. They would probably be more satifactory if they were left inflated for a shorter period of time and the inflation pressure carefully limited, although with the type of balloon used the pressure was difficult to control.

The lubricated gauze packs were associated with a greater degree of discomfort during the first week. The possible causative factors could include the natural tendency of the surgeon to firmly pack the most accessible of the nose (the vestibule) which can become distended, and the abrasive effect of removing the pack, which by that stage is encrusted with blood clot and stale secretions.

In the case of the glove fingers, it was very difficult to pack them into the nose too

firmly, and their removal was atraumatic. As a consequence the morbidity associated with the other two methods was avoided, whilst their performance as a postoperative pack was equally good.

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