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Nasal splints, revisited

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Abstract

A study was carried out to compare the effectiveness of nasal splints (in preventing intranasal adhesions) with the morbidity associated with their use in nasal surgery. One hundred and ten patients undergoing a routine nasal operation were randomly allocated into two equal groups, one with splints and the other without. Post-operative pain and discomfort was assessed by a visual analogue scale at 48 hours and a week following surgery when either nasal suction (non-splinted group) or removal of splints was carried out. All patients were examined after six weeks for development of adhesions.

Results showed that there was no significant difference in the incidence of adhesions between the splinted and non-splinted patient groups. However, the patients with splints had significantly more pain and nasal discomfort when assessed one week after surgery.

It is concluded that the morbidity associated with nasal splints does not justify their use in routine nasal surgery if the aim is to prevent nasal adhesions, but they may still be indicated for enhancing the stability of the septum following septoplasty.

Key words: Nasal septum; Surgery, operative; Splints

Introduction

The development of intranasal adhesions has long been a recognized complication following nasal surgery with a reported incidence varying between 11–36 per cent (Shone and Clegg, 1987; White and Murray, 1988). As a result, the beneficial use of nasal splints has been widely advocated (Campbell *et al.*, 1987; Eliopoulos and Philippakis, 1989).

However, subsequent studies have cast considerable doubt on the effectiveness and efficacy of intranasal splints and have also identified an apparent increase in morbidity associated with their use (Cook *et al.*, 1992; Von Schoenberg *et al.*, 1992). In addition, a more serious consequence attributed to the use of nasal splints involving the toxic shock syndrome has also been described (Wagner and Toback, 1986).

In view of these apparently conflicting reports, a further randomized prospective study was carried out to quantify both the benefit and morbidity associated with intranasal splints to try and establish their current place and role in routine nasal surgery.

Patients and methods

One hundred and ten consecutive patients undergoing routine nasal surgery involving the septum and turbinates were studied. Patients undergoing other nasal procedures were excluded. Standard preparation of the nose with Moffet's solution was used in all cases.

By a method of random allocation, 55 patients had splints inserted at the end of their procedure and 55 did not. The splints used were either trimmed Silastic® or of Cawoods type which were fixed by a silk stitch through the septum in all but seven cases, the remainder simply being secured by a stitch joining them together over the collumellar. In addition, Jelonet 'trousers' or glove finger packs were inserted (although in some cases no packing was used) which were removed the next day.

All patients were seen at one week for either removal of splints or nasal suction and toilet. The patients subjective post-operative pain level was assessed on a standard 100 mm visual analogue scale at two days and one week after surgery. Statistical analysis of the results was carried out using both the Fisher's exact test and the unpaired student *t* test.

A final evaluation of each patient was made six weeks post-operatively when the presence of adhesions, or any other complications, were recorded together with an assessment of the patients' satisfaction with the surgical outcome.

Results

Complete follow-up data were obtained from 55 patients with splints, but only 52 without, three being lost to follow-up.

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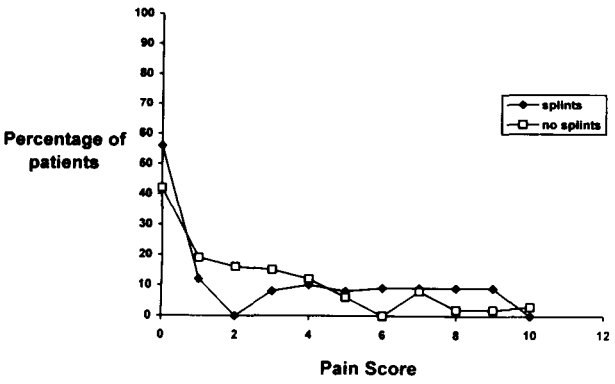

FIG. 1
Patient pain scores with, and without, nasal splints 48 hours after nasal surgery.

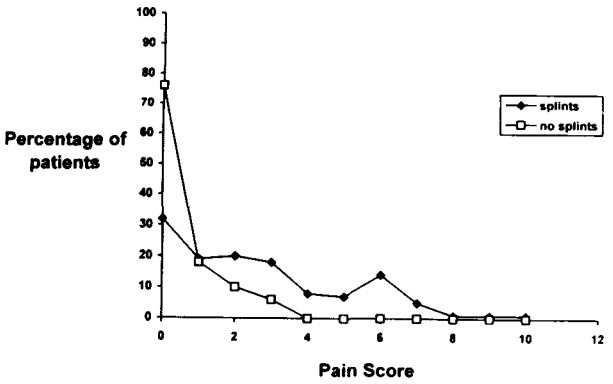

FIG. 2
Patient pain scores with, and without, nasal splints seven days after surgery.

In the first 48 hours after surgery, both groups experienced a similar degree of nasal pain and discomfort as shown in Figure 1, while the mean pain score during this period in the splinted (2.1) and the non splinted (1.8) patients showed no statistically significant difference (p = 0.5). However, further assessment one week post-operatively showed that the patients with splints were experiencing significantly more pain and discomfort than the group without, as shown in Figure 2, while the difference in the mean pain score between splinted (2.2) and non-splinted (0.5) patients was statistically highly significant (p<0.0001) using the unpaired student t test.

The final assessment six weeks after surgery revealed the presence of intranasal adhesions in one of the splinted patients (1.8 per cent) and in four of the non-splinted patients (7.7 per cent). Using the Fisher's exact test this difference was not shown to be significant (p = 0.197, DF = 1). In addition the adhesions in every case were asymptomatic and minor and were not interfering with the nasal airway which was adjudged to be much improved by all patients participating in the study.

Discussion

This study provides further objective evidence that nasal splints are associated with significant morbidity and are no more effective in the prevention of nasal adhesions, in the early post-operative period, than simple nasal toilet that by contrast is well tolerated by virtually every patient.

There seems little doubt from reports in the literature, that nasal adhesions will develop in a significant percentage of patients undergoing routine nasal surgery unless preventative measures are taken (Campbell *et al.*, 1987; Shone and Clegg, 1987; White and Murray, 1988). Bilateral wall procedures and, in particular, operations including turbinate excision seem to constitute the highest risk with adhesion rates in excess of 10 per cent often quoted. In the report by White and Murray (1988) the adhesion rate reached a staggering 36 per cent in patients whose nasal surgery included turbinate resection. In addition, they found that in 49 per cent of the patients, the adhesions were so bad that treatment under general anaesthetic was required to deal with the problem effectively. This clearly demonstrates that post-operative adhesions can be a problem and that measures need to be taken to avoid them.

The use of nasal splints became fashionable in the early 1970s after Foxen (1971) and Gilchrist (1974) had reported their use to be invaluable in the prevention of nasal adhesions although no mention was made of any accompanying morbidity. As a result, nasal splints were commonly used in nasal surgery, although this practice was not based on any scientific evidence of their effectiveness. Despite this, their use is currently widespread. This was demonstrated by a survey in 1992 which showed that 64 per cent of consultants in the United Kingdom continued to use splints routinely, almost exclusively for the purpose of preventing intranasal adhesions (Pringle, 1992). Although splints have been shown to be successful in preventing intranasal adhesions (Campbell *et al.*, 1987), the significant increase in associated morbidity demonstrated by a number of previous studies (Cook *et al.*, 1992; Von Schoenberg *et al.*, 1992), as well as our own, makes their routine use questionable. Apart from the measured increase in pain and nasal soreness experienced in those with nasal splints, we also observed an added and often considerable morbid anxiety developing in the patients in anticipation of their removal.

Even though all our patients underwent bilateral wall procedures, and the vast majority included bilateral inferior turbinectomy, and could therefore be classified as 'high risk', the number of patients developing adhesions was extremely small and in contrast to the study by White and Murray (1988), none of the patients required any further treatment.

This current study, together with a number of earlier reports (Cook *et al.*, 1992; Von Schoenberg *et al.*, 1992), has therefore shown that the same benefit and an equally low adhesion rate, can be obtained in the early post-operative period by simple nasal toilet that has little or no associated morbidity. In view of this, we would no longer recommend the use of nasal splints for the sole purpose of preventing nasal adhesions in routine nasal surgery, although in selected cases they may still be helpful in providing support for the re-constructed septum.

References

Campbell, J. B., Watson, M. G., Shenoi, P. M. (1987) The role of intra-nasal splints in the prevention of post-operative nasal adhesions. *Journal of Laryngology and Otology* **101:** 1140–1143.

Cook, J. A., Murrant, N. J., Evans, K. L., Lavelle, R. J. (1992) Intra-nasal splints and their effects on intra-nasal adhesions and septal stability. *Clinical Otolaryngology* **17:** 24–27.

Eliopoulos, P. N., Philippakis, C. (1989). Prevention of post-operative intra-nasal adhesions (a new material). *Journal of Laryngology and Otology* **103:** 664–666.

Foxen, E. H. M. (1971) In *Scott-Brown's Diseases of the Ear, Nose and Throat.* 3rd Edition (Ballantyne, J., Groves, J., eds.) Butterworths, London, pp 174–175.

Gilchrist, A. G. (1984) Surgery of the nasal septum and pyramid. *Journal of Laryngology and Otology* **88:** 759–771.

Pringle, M. B. (1992) The use of intranasal splints: A consultant survey. *Clinical Otolaryngology* **17:** 535–539.

Shone, G. R., Clegg, R. T. (1987) Nasal adhesions. *Journal of Laryngology and Otology* **101:** 555–557.

Von Schoenberg, M., Robinson, P., Ryan, R. (1992) The morbidity from nasal splints in 105 patients. *Clinical Otolaryngology* **17:** 528–530.

Wagner, R., Toback, J. M. (1986) Toxic shock syndrome following septoplasty using plastic nasal splints. *Laryngoscope* **96:** 609–610.

White, A., Murray, J. A. (1988) Intranasal adhesion formation following surgery for chronic nasal obstruction. *Clinical Otolaryngology* **13:** 139–143.

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