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# Nasal endoscope in posterior epistaxis: a preliminary evaluation

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**Abstract**

The findings of a preliminary, prospective evaluation of the role of endoscopy in the management of adult posterior epistaxis are presented.

A cohort of patients managed by the endoscopic technique was compared with a control group managed by the traditional methods of nasal packing or epistaxis balloons.

The endoscope allowed visualization and direct treatment of previously undiagnosed posterior bleeding points. Patients managed by the endoscopic technique had a significantly shorter duration of in patient stay than those managed by traditional methods.

## Introduction

All otolaryngologists have experienced the diffculties of managing epistaxis from a source in the posterior nasal cavity. The technical problems associated with examination of the posterior reaches of the nose during active bleeding mean that many sources of epistaxis remain undiagnosed. In these patients with posterior epistaxis indirect techniques are used to control the haemorrhage. These techniques rely on nasal tamponade using gauze packing or specially designed balloon catheters. Whilst these traditional methods are often effective they require hospital admission and may be associated with serious side effects such as hypoxia, bacteraemia and even myocardial infarction (Herzon, 1971; Larsen *et al.*, 1982).

In 1982, Pearson pointed to the need for a more direct approach to bleeding vessels in the posterior nasal cavity, but he acknowledged that such treatments may require general anaesthesia. With the advent of the rod lens nasal endoscope the entire nasal cavity can be examined in an awake patient and it was only a matter of time before these instruments were used in the treatment of epistaxis. In 1988, Wurman reported the technique of endoscopic electrocautery performed under local anaesthesia for the treatment of posterior epistaxis (Wurman *et al.*, 1988). In their paper they reported successful control of bleeding in 12 out of 18 patients but did not attempt any comparison between this new method and the existing techniques of nasal tamponade.

In an attempt to investigate the endoscopic technique, this pilot study was designed to allow a comparison between a group of patients managed with access to a nasal endoscope and a control group managed by nasal packing or nasal balloons. The groups were compared with regard to a number of outcome variables including immediate control of bleeding, duration of hospital stay, side effects of treatment and incidence of rebleeding. In addition some general observations on the endoscopic approach were made.

## Patients and methods

The study group consisted of adults (older than 16 years) with spontaneous epistaxis admitted to Glasgow Royal Infirmary over a seven month period. Patients with nasal haemorrhage following trauma or nasal surgery were excluded. Patients who were referred to the Otolaryngology department on days when the author was on call entered study group A. These patients were managed with access to facilities for nasal endoscopy and endoscopic electrocautery. Those admitted on other days entered study group B and were managed by one of three other post-fellowship otolaryngology registrars. The nasal endoscope was not available for use on any of the patients in group B.

All patients underwent a standard nasal examination using headlight illumination, nasal speculae, cocainization and suction as appropriate. If a bleeding point was identified on this initial examination the bleeding was referred to as anterior and this was dealt with by direct means (predominantly silver nitrate cautery of the bleeding vessel). Patients with anterior bleeding were not studied further. Those patients in whom an anterior bleeding point could not be found were by definition suffering from posterior epistaxis (Pearson, 1982). Patients in group A with posterior epistaxis proceeded to nasal endoscopy in an attempt to locate and directly treat the bleeding point. Patients in group B with posterior bleeding were managed by insertion of nasal packing or epistaxis balloon catheters (Fig. 1).

All patients were admitted to hospital and managed by bed rest and observation. Patients were deemed fit for discharge if there had been no further bleeding for a full 24 hours after endoscopic treatment or in the case of group B patients if there had been no bleeding in the 24

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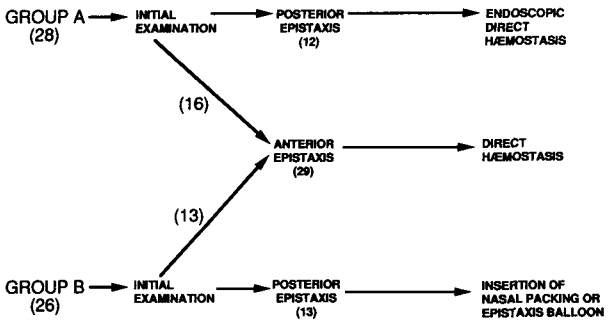


FIG. 1

Flow diagram showing steps in management with patient numbers shown in brackets.

hours following removal of the balloon or packing. All patients were asked to attend for review one month following discharge when they were examined for evidence of local complications and asked about further bleeding or readmission to hospital.

*Description of endoscopic technique*

All patients in group A with posterior epistaxis underwent nasal endoscopy performed by the author. A 2.7 mm, 25° rod lens nasal endoscope (Richard Wolf Endoscopes Ltd.) was used to search for the source of the bleeding. A 2.7 mm endoscope was used in preference to a 4 mm endoscope because the narrower diameter of this endoscope allowed septal spurs and deviations to be passed without undue discomfort to the patient. A slim nasal endoscope is particularly useful when manipulating the suction cannula or cautery probe under direct vision in a narrow nose. Continual use of the nasal suction cannula was required to maintain a clear field of vision. Since the suction cannula reglarly became blocked with clot a selection of different sizes of cannula was necessary. The rate of bleeding was reduced prior to endoscopy by insertion of a strip of cotton wool soaked in 1.5 ml of 10 per cent cocaine. This was removed before introducing the endoscope. The endoscopic search followed a systematic pattern beginning with an inspection of the inferior meatus and inferior turbinate followed in turn by examination of the middle meatus and turbinate, nasal septum, nasal vault (including the superior turbinate and sphenoethmoidal recess), floor of the nose and post-nasal space. Once located, the area of bleeding was anaesthetized by local infiltration of 0.5 ml of lignocaine one per cent with 1:80,000 adrenaline. This was performed under direct endoscopic vision using a 22 gauge spinal needle on a 2 ml syringe. This technique proved to be remarkably easy to perform and had the effect of reducing the bleeding to little more than a trickle. The bleeding point was then cauterized using an insulated nasal cautery unit. In two patients cautery could not be performed because of malfunction of the cautery unit and in these patients haemostasis was achieved by direct pressure using a local pack in the form of half of a dental roll. These miniature packs measured approximately 0.5 cm in diameter and were transfixed with a length of nylon suture which was taped to the patient's cheek. This suture allowed the pledget to be removed with ease after 24 hours. The equipment and instruments used in this technique are shown in Fig. 2.

## Results

During the seven month study period there were 54 adult admissions with spontaneous epistaxis (32 male, 22 female, mean age 60 years, range 17–90 years). Twenty-eight patients were managed by the author and therefore entered group A and 26 patients were managed by the other registrars and entered group B.

*Group A*

Of the 28 patients in this group 16 (57 per cent) were found to be bleeding from anterior sources and were not studied further. The remaining 12 patients (seven male, five female, mean age 57 years, range 35–84 years) were suffering from posterior epistaxis. These 12 patients underwent nasal endoscopy using the technique outlined above and in all twelve the bleeding point was located. the site of the bleeding in each of the patients is shown in Table I. Haemostasis was achieved in 10 patients by local anaesthetic injection followed by electrocautery and in two patients by endoscopically guided direct pressure with 'mini-packs' (see above). One patient bled again within two hours of endoscopy and this was managed by the insertion of a Brighton Epistaxis Balloon.

The mean duration of hospital stay for patients in group A was 2.7 days (range 1–6 days, standard deviation two days). Eleven patients (92 per cent) attended the follow-up clinic at one month. At the time of follow-up, no local complications were identified and no patient had been readmitted to hospital with epistaxis.

*Group B*

Of the 26 patients in this group, 13 (50 per cent) had an identifiable, anterior source of bleeding. the remaining 13 patients with posterior epistaxis consisted of eight males and five females with a mean age of 56 years (range 29–77 years). Six of these patients were managed by insertion of nasal packs using vaseline impregnated ribbon gauze and the remaining seven were managed by the insertion of an epistaxis balloon catheter on the side of the bleeding (Brighton Balloon was used in four patients and the 'Epistat' device was used in three).

Initial control of bleeding was achieved in all cases but three patients bled again within 24 hours of admission. These three required surgical procedures under general anaesthesia to obtain control of their bleeding. One patient required a septoplasty and insertion of nasal packing, another was managed by insertion of a post-nasal pack and the third underwent a nasal polypectomy and the insertion of packs. The author was not involved in the decision to operate on any of these patients.

Analysis of the complications in this group revealed one immediate complication when a 54-year-old male patient sustained an acute myocardial infarction at the time of insertion of an 'Epistat' device. He was admitted to the coronary care unit and he made an uneventful recovery. The mean duration of hospital stay in this group was 4.5 days with a range of two to seven days (standard deviation two days). Ten (77 per cent) of the initial 13 patients attended for review at one month. At this visit two complications were noted. One patient had a 1 cm septal perforation and another had developed a

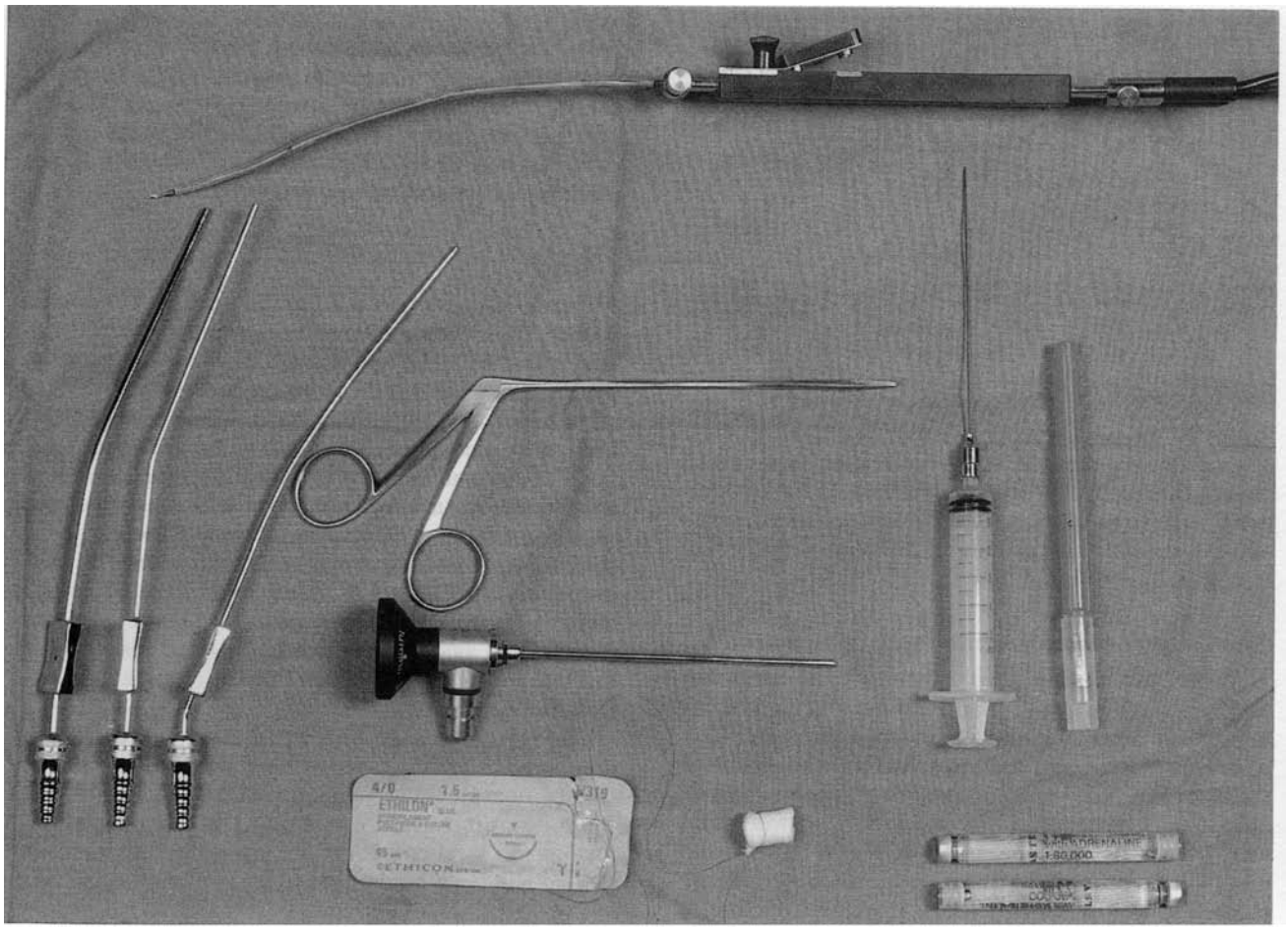

FIG. 2

Photograph showing materials required for the endoscopic technique, these include: 2.7 mm 25° nasal endoscope, long crocodile forceps, suction cannulae (three different sizes), insulated nasal cautery unit, 22 gauge spinal needle mounted on a syringe for injection of lignocaine and adrenaline solution, portion of dental roll transfixed with nylon suture to enable retrieval.

well formed adhesion between the septum and the medial border of the inferior turbinate. Interestingly both of these patients had initially been managed by insertion of the 'Epistat' device.

A summary of the results in group A and group B is presented in Table II.

## Discussion

This study was designed as a pilot study prior to embarking on a major randomized prospective evaluation of the endoscopic approach in adult epistaxis. As a result the number of patients involved allows only basic comparisons to be made between the groups. Although the initial randomization of patients to each of the treatment groups is open to criticism, the patients in both groups were relatively well matched for age and sex. In addition the observation that comparable numbers of anterior bleeding points were found in both groups points to the initial overall similarity of groups A and B.

The principal finding in this study was that the endoscopic approach to posterior epistaxis allowed identification of the bleeding point in all of the patients in group A. This would suggest that treatment directed at the bleeding point is a therapeutic option in all cases of epistaxis as opposed to only anterior bleeding. It is interesting that bleeding from the lateral nasal wall accounted for only 25 per cent of posterior bleeding points in this group of patients. Other studies have suggested that the lateral nasal wall is the prime site of posterior bleeding but our findings tend to support those of Shaheen who stressed the importance of the nasal sep-

TABLE I

ANATOMICAL LOCATION OF BLEEDING VESSELS IN PATIENTS WHO UNDERWENT ENDOSCOPY

| Number of patients | Anatomical location of bleeding vessel |
|---|---|
| 8 | Posterior part of nasal septum |
| 2 | Middle meatus |
| 1 | Inferior meatus |
| 1 | Nasal floor |
| Total 12 | |

TABLE II

COMPARISON OF OUTCOME OF TREATMENT IN GROUPS A AND B

| | Group A | Group B |
|---|---|---|
| Total no. of patients | 28 | 26 |
| Number with posterior epistaxis | 12 | 13 |
| Mean age of patients with posterior epistaxis (years) | 57 | 56 |
| Initial control of bleeding achieved | 12 | 13 |
| Re-bleeding | 1 | 3 |
| general anaesthetic required | 0 | 3 |
| Readmission within one month | 0 | 0 |
| Procedure related complications | 0 | 3 |

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tum in arterial epistaxis (Shaheen, 1967; Jackson *et al.*, 1988; Wurman *et al.*, 1988).

The endoscopic technique allowed direct control of bleeding in 11 out of 12 patients without recourse to nasal packing or general anaesthesia. Although no formal assessment of patients feelings towards the endoscopic technique was made, it was a strong clinical impression that endoscopy and local anaesthetic cautery was well tolerated and that group A patients suffered less discomfort than their counterparts in group B.

When the mean duration of in-patient stay in the groups was compared it was apparent that the endoscopic technique allowed a shorter period of hospital stay. The numbers in this study were sufficient to show that this difference in mean in-patient stay was statistically significant ($p<0.05$, Students t-test).

This potential for reducing the duration of in-patient management makes the endoscopic technique a very attractive means of improving the quality of patient care and simultaneously reducing the cost of treatment. As experience with the technique grows it should become possible to manage the majority of posterior epistaxis cases on an out-patient basis. All otolaryngologists should possess the ability to perform nasal endoscopy and epistaxis provides a good opportunity for the clinician to perfect his endoscopic abilities. If this technique was widely adopted in preference to the blind insertion of nasal packing or balloons then it is likely that the morbidity associated with the commonest otolaryngological emergency would be greatly reduced.

**Key words: Epistaxis; Endoscopy**

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