

Main Article

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Does epistaxis with an unknown bleeding site originate from the posterior part of the nasal cavity?

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Abstract

Objective. To review the origins of epistaxis in patients with unknown bleeding sites.

Methods. This consecutive case series included 26 patients with unknown bleeding sites previously considered to have posterior epistaxis. All patients had previously been examined endoscopically at least once, and were again examined with 30°, 45° and 70° endoscopes.

Results. The bleeding site was at the: anterior end of the lateral wall of the inferior meatus in one patient (3.8 per cent); anterosuperior lateral wall of the nasal cavity in five patients (19.2 per cent); anterior nasal cavity roof in seven patients (26.9 per cent); anterosuperior part of the cartilaginous septum in nine patients (34.6 per cent); ostium pharyngeum tubae in two patients (7.7 per cent); and anterior nasal base in two patients (7.7 per cent). The morphology of the bleeding point showed: nasal mucosa ulceration in 1 patient, isolated primary telangiectasia in 3 patients, prominent vessels in 5 patients and capillary angioma in 17 patients.

Conclusion. Epistaxis originating from the anterosuperior nasal cavity and nasopharynx can be easily misdiagnosed as posterior epistaxis or unknown bleeding sites. Areas that should be considered as possible origins of epistaxis in cases with unknown bleeding sites were identified.

Introduction

Epistaxis is a common medical condition encountered in rhinology clinics. Most cases of epistaxis originate from the posterior part of the nasal cavity in adults. Studies have shown that most cases of posterior epistaxis originate from the olfactory cleft, middle meatus region, lateral wall of the nasal cavity, inferior meatus region, posterior end of the inferior turbinate or posterior part of the septum. Chiu and McGarry¹ reported that 70 per cent of posterior epistaxis cases arose from the septum, while only 8 per cent arose from an area compatible with the definition of Woodruff's plexus. Thornton *et al.*² reported that 80 per cent of bleeding sites were on the lateral aspects of the nasal cavity, with only 20 per cent on the septum. Nevertheless, Iimura *et al.*³ suggested that none of the bleeding sites was significantly more common than any other.

Identification of the bleeding site is often difficult and can sometimes be impossible. Only two studies reported the identification of all bleeding points endoscopically,^{4,5} although their sample sizes were very small (8 and 19 patients, respectively). Other groups reported that at least 5–17.3 per cent of bleeding sites could not be identified endoscopically.^{1–3,6–9} Iimura *et al.*³ reported that the bleeding site could not be identified in 24 per cent of patients (40 out of 167), while Yukitatsu *et al.*¹⁰ could not identify the bleeding site in 20 per cent of patients (297 out of 1515).

Those cases where the bleeding point is not found on the anterior middle and lower septum are generally considered to represent posterior epistaxis or epistaxis with an unknown bleeding site, leading to further examination of the posterior part of the nasal cavity to identify the bleeding site. The inability to identify the bleeding site may be due to a number of factors. For instance, the clinician may be affected by 'inertial thinking', habitually following previous ideas when addressing the issue.

In addition, although endoscopy provides good visualisation of the nasal cavity, endoscopic inspection can be affected by various factors, including abnormal nasal anatomy, endoscope angle and outside diameter, and the patient's head position. With the patient looking straight ahead in the sitting position, it is sometimes difficult to completely view the anterior superior area, anterior basis nasi and anterior end of the lateral wall of the inferior meatus using a 0° endoscope. In fact, a number of blind areas remain, especially for the anterior superior nasal cavity,¹¹ which may result in misdiagnosis.

This study was performed to retrospectively analyse the bleeding sites in patients with unknown bleeding sites previously considered to have posterior epistaxis.

Materials and methods

Ethical considerations

This retrospective study was conducted with the approval of the Institutional Ethical Review Board of Yiwu Central Hospital, China. Informed consent was obtained from all participants.

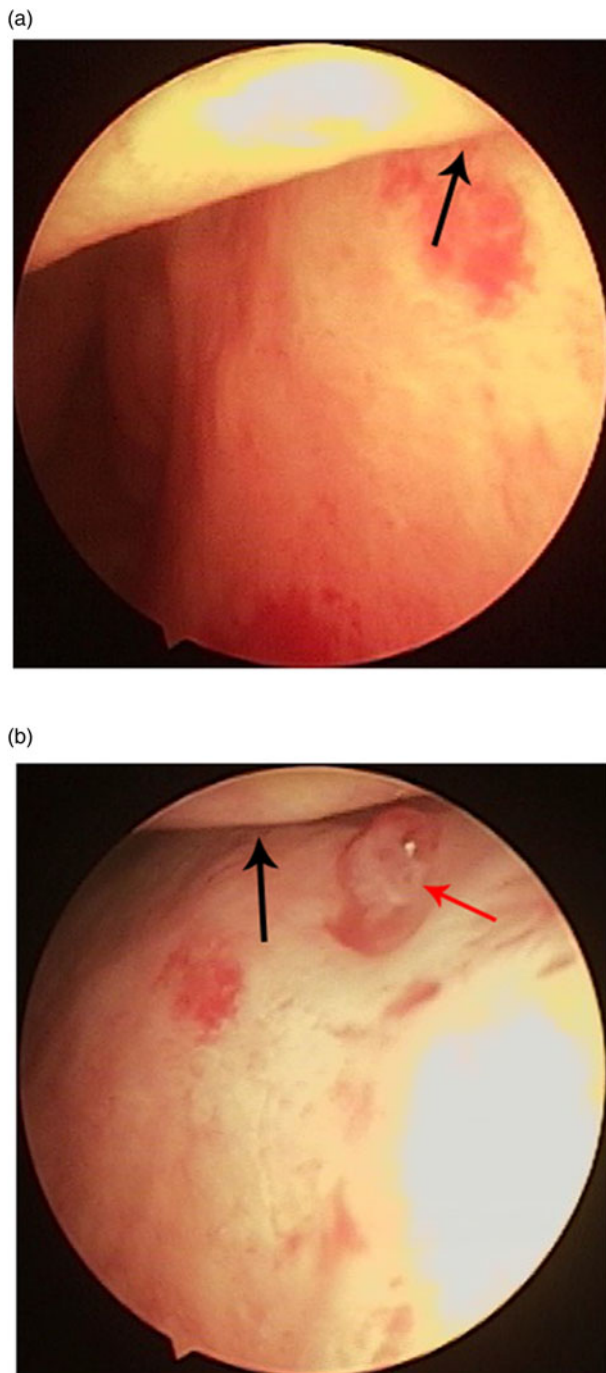


Fig. 1. (a) The anterosuperior part of the cartilaginous septum was covered by the ala nasi and formed a narrow space in the anterosuperior nasal cavity. (b) The bleeding point was seen when the ala nasi was pushed open. The black arrows indicate the ala nasi; the red arrow indicates the bleeding point.

Study and patient characteristics

The study was performed by reviewing 26 cases of idiopathic posterior epistaxis with an unknown bleeding site at the Department of Otorhinolaryngology, Yiwu Central Hospital, from January 2013 to October 2017.

The inclusion criteria were as follows: (a) recurrent massive epistaxis with a duration of more than 3 days, with or without nasal packing; (b) the nasal cavity had been examined endoscopically at least once without identifying the bleeding site, and epistaxis was classified as having an unknown bleeding site or as posterior epistaxis by another hospital or physician; and (c) the bleeding point was identified finally in the anterior

part of the nasal cavity or nasopharynx. Patients younger than 16 years, and those with a history of trauma, recent sinonasal surgery, bleeding diathesis, hereditary haemorrhagic telangiectasia, septal perforation, or nasal or nasopharyngeal tumours, were excluded from the study.

Demographic data pertaining to patients' age, gender, nasal bleeding duration and nasal packing status (with or without packing) were recorded. Informed consent was obtained from all patients prior to inclusion in the study.

Endoscopic examination

The patients were thoroughly re-examined endoscopically on hospital admission to treat their epistaxis. All patients were in the sitting position. All packing materials were removed slowly and gently, and any clots were removed.

Cotton wool pledgets soaked in 1 per cent lidocaine and 0.1 per cent adrenaline were then placed in the common meatus, and nasal roof and floor, for 15 minutes. When topical anaesthesia was achieved, the nasal cavity was examined completely with 0°, 30°, 45° and 70° nasal endoscopes. Visualisation was enhanced when necessary by shifting the fracture of the middle or inferior turbinate.

The potential bleeding sites were examined (while removing blood using suction) in the following order: superior olfactory cleft, superior meatus, olfactory cleft, middle meatus, posterior septum, posterior common nasal meatus, nasopharynx and posterior fornix, posterior lateral wall of the inferior nasal meatus and the anterior end of the inferior nasal meatus.

The patient's head was then arched back and examined in the following order: anterosuperior part of the cartilaginous septum, and anterosuperior lateral wall and roof of the anterior nasal cavity. If the anterosuperior septum was covered by the ala nasi (Figure 1a), we pushed open the ala nasi to gain sufficient exposure to the anterosuperior septum and roof of the anterior nasal cavity (Figure 1b). Finally, the anterior nasal base was examined.

Microwave ablation was applied to control bleeding after identification of the bleeding point.

Results

The study population consisted of 15 men and 11 women, with an overall mean age of 58.5 years (range, 42–71 years). With regard to treatment history, 14 patients had received anterior or posterior packing at least twice, 9 patients had received bipolar electrocautery at the olfactory cleft or inferior nasal meatus, and 3 patients had undergone endoscopic examination; however, the latter consisted only of observation without packing and cauterisation.

The bleeding site was on: the anterior end of the lateral wall of the inferior meatus in one patient (3.8 per cent), the anterosuperior lateral wall of the nasal cavity in five patients (19.2 per cent) (Figure 2a), the roof of the anterior nasal cavity in seven patients (26.9 per cent), the anterosuperior part of the cartilaginous septum in nine patients (34.6 per cent) (Figure 1), the ostium pharyngeum tubae in two patients (7.7 per cent) (Figure 2b) and the anterior nasal base in two patients (7.7 per cent).

The morphology of the bleeding point showed ulceration of the nasal mucosa in 1 patient, isolated primary telangiectasia in 3 patients, prominent vessels in 5 patients and capillary angioma in 17 patients. All the bleeding points were controlled with microwave ablation in the out-patient clinic.

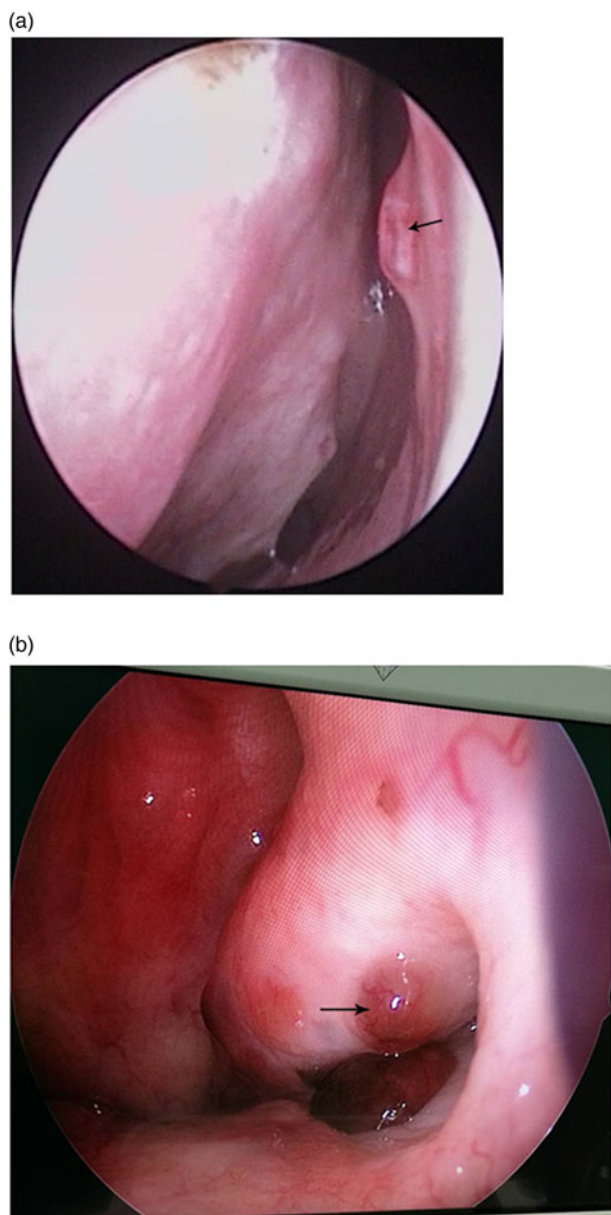


Fig. 2. Bleeding points were identified on: (a) the anterosuperior lateral wall of the nasal cavity, and (b) the ostium pharyngeum tubae. The black arrows indicate the bleeding points.

Discussion

The key to stopping nasal bleeding is to identify the bleeding site. The bleeding sites can be identified endoscopically in most but not all cases.^{1–3,6–12} Cases in which the bleeding point cannot be visualised endoscopically are usually classified as posterior epistaxis or as having an unknown bleeding point. However, some cases of anterior nasal cavity epistaxis may be misdiagnosed as posterior epistaxis. The potential bleeding sites in such cases include: the anterior end of the lateral wall of the inferior meatus, the anterosuperior lateral wall of the nasal cavity, the roof of the anterior nasal cavity, the anterosuperior part of the cartilaginous septum and the anterior nasal base.

Bhatnagar and Berry⁴ identified the bleeding site in the nasal cavity roof in 50 per cent of patients (4 out of 8). Stoddard *et al.*¹³ reported that bleeding originated from the anterior nasal floor in 10 per cent of patients (2 out of 19). Wei *et al.*¹¹ reported that the bleeding site was on the anterior

lateral wall of the nasal cavity in 7.1 per cent of patients and on the anterosuperior nasal cavity roof in 4.2 per cent of patients.

The results of this study showed that 92.3 per cent of cases of epistaxis on the anterior part of the nasal cavity were initially considered as posterior epistaxis or from an unknown bleeding point. Nasal packing was performed in most cases at the first visit to the hospital.

Although endoscopy provides excellent visualisation, there may be some blind areas in the anterior nasal cavity because of the influence of nasal anatomy, especially the anterior superior nasal cavity and the anterior end of the lateral wall of the inferior meatus. Collapse of the ala nasi results in contact between the ala nasi and anterosuperior septum, thereby forming a narrow space in the anterosuperior nasal cavity that cannot be completely exposed by endoscopy.

A 0° endoscope is usually used to examine the nasal cavity. However, there may be a blind area behind the tip of the 0° endoscope, and the anterior end of the lateral wall of the inferior meatus may not be visualised. The anterior nasal base is sometimes obstructed by a hypertrophic inferior turbinate and anterior deviation of the septum, and the bleeding point of the anterior nasal base can easily be neglected. Therefore, the anterior superior nasal cavity and anterior end of the lateral wall of the inferior meatus should be examined carefully using 30°, 45° and 70° endoscopes, with smaller diameters, in patients with unknown bleeding sites.

The bleeding originated from the torus tubarius in two patients in this study. The bleeding points showed isolated primary telangiectasia. Stoddard *et al.*¹³ reported 19 patients with isolated primary telangiectasia; none of the cases were located in the nasopharynx. Posterior epistaxis originating from the nasopharynx has rarely been reported. Therefore, endoscopic inspection should include the nasopharynx.

- Some epistaxis cases with unknown bleeding sites may be misclassified as posterior epistaxis
- Anterior superior nasal cavity examination using a 30° or 70° endoscope is crucial in epistaxis cases with an unknown bleeding site
- The nasopharynx should be examined carefully in severe recurrent epistaxis cases with unknown bleeding sites
- Some posterior epistaxis cases with unknown bleeding sites can arise from the anterior superior nasal cavity and nasopharynx

Competing interests. None declared

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