

Original Research Article

Role of nasal endoscopy in evaluation and management of epistaxis

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ABSTRACT

Background: Epistaxis is the most common ENT emergency. The localization of bleeding site and its control in profuse epistaxis is of major concern for the ENT surgeon. Nasal endoscope has proved to be a boon for the otolaryngologist and is an important tool in diagnosing these bleeding points and their immediate management which reduces the incidence of nasal packing either anterior or posterior. Aim was to study the importance of nasal endoscopy in diagnosing the cause and site of epistaxis and managing them appropriately.

Methods: It was a prospective study conducted in 187 patients of epistaxis visiting ENT emergency at SMGSH, Jammu after getting IEC clearance.

Results: 139 (73.8%) had anterior and 48 (26.2%) posterior epistaxis. Dry nasal septum and mass lesions were the common local causes followed by deviated nasal septum. Anterior part of septum (little's area) was the common site of bleeding followed by woodruff's area. The overall success rate of diagnosing the local cause and site of epistaxis was 99% with nasal endoscopy and only 47% with combined anterior and posterior rhinoscopy. Thus, eliciting the importance of nasal endoscopy over conventional anterior and posterior rhinoscopy.

Conclusions: Nasal endoscopy helps in detecting the site and cause of epistaxis and also aids in its appropriate management. It helps in endoscopic guided direct pressure packing, bipolar electrocautery, endoscopy assisted mass excision and endoscopic guided foreign body removal. However, nasal endoscopy is not a substitute for nasal packing.

Keywords: Epistaxis, Nasal endoscopy, Leech, Cauterisation

INTRODUCTION

Epistaxis is the most frequently encountered emergency in the practice of otorhinolaryngology. Approximately 60% of people may experience epistaxis in their lifetime, with 6% seeking medical attention.¹ Its presentation ranges from mild intermittent bleeds to life threatening profuse hemorrhage. The former can be easily controlled with medical treatment whereas severe bleeds traditionally require some form of nasal packing. Apart from the high failure rate of 26-50% reported in various series, nasal packing causes marked discomfort, pain and even swallowing difficulty and is associated with a large number of local and systemic complications.² Local

complications include sinusitis, synechiae, otitis media, columellar/alar necrosis, septal perforation, facial edema, epiphora/dacryocystitis, orbital cellulitis and even cavernous sinus thrombosis. General complications reported include toxic shock syndrome, hypoxia, angina, cardiac arrhythmia, sepsis and even death.³ As much as 68% rate of complications has been reported, with mortality rate below 0.01%.⁴ Nasal packing also increases the cost to the healthcare system by increasing hospitalization, antibiotic usage and utilization of physician time.⁵ Most often the source of nose bleed is the Kiesselbach's plexus (90-95%) or the retrocollumellar vein on the anterior part of the nasal septum.⁶ Uncommonly, the site of anterior epistaxis can be from a

“hemorrhagic nodule” which is an aneurysmal dilatation of an unusually sited muscular artery in the nose.⁷ All these points are readily seen on anterior rhinoscopy and are easily controlled by cauterization under direct vision. When not visualized on anterior rhinoscopy, the localization of the bleeding site and its control especially when profuse, is a challenge for the ENT surgeon. In such situations, the bleeding points are most of the times hidden either behind septal deviations/spurs or in the crevices of the lateral nasal wall which are not easily visualized or accessed by conventional anterior or posterior rhinoscopy. In these cases nasal endoscopy has proved to be an important tool in pinpointing the site of the bleed and directly control it, thus markedly reducing the incidence of anterior or posterior nasal packing. The targeted haemostasis of the bleeding vessels by nasal endoscopy can be achieved by using chemical, thermal or electric cautery, direct pressure from miniature targeted packs, endoscopic ligation of sphenopalatine artery, endoscopic ligation of ethmoidal arteries or with use of lasers or cryosurgery.⁸

Nasal endoscopy has also been found to be helpful in making unsuspected diagnosis in patients with epistaxis leading to specific proper treatment.³ The present study was conducted to assess the usefulness of the nasal endoscope in the localization and treatment of such bleeds.

METHODS

It was a prospective study comprising patients who presented in the department of ENT and head and neck surgery, SMGS Hospital, Government Medical College, Jammu from November 2015 to October 2018 with epistaxis. The study was conducted after taking approval from institutional ethics committee. All the patients above 15 years of age reporting to the ENT department with epistaxis were included in the study.

Children below 15 years of age, patients with bleeding disorder or receiving anticoagulant drugs, patients in which bleeding point was easily seen on anterior rhinoscopy or bleeding was already controlled with nasal packing were excluded from the study.

The patients either presented with active bleeding or had a history of bouts of bleeding. In cases of active nasal bleeding, first priority was given to hemodynamic stabilization of the patient as required. While examining the patient, a detailed history about its onset, duration, severity, recurrence, laterality, trauma, drug intake was taken. After reassuring, the patient was made to lie comfortably with the head slightly raised. Anterior rhinoscopy was done to locate the bleeding point which, if found on the anterior septum, was cauterized under local anaesthesia. Otherwise, the blood clots were sucked from the nose and patient was prepared for nasal endoscopy. During this period, an attempt was made to elicit other relevant points in history and examination.

Endoscopic nasal examination

A diagnostic nasal endoscopy was performed under local anaesthesia, using 4 mm-0 degree and 30 degree nasal endoscopes. Three cotton pledgets soaked in 4% xylocaine with (1:10,000) adrenaline and squeezed were placed in the nose along the floor, along the middle turbinate and along the roof, for about ten minutes. In hypertensive patients xylometazoline was used instead of adrenaline. The patient was placed in supine position with head and neck slightly flexed. Nasal endoscopy was carried out after removing the cotton pledgets and further sucking any blood clots. In 8 patients, endoscopy was not tolerated by the patient and nasal cavity had to be infiltrated with local anaesthetic and in 2 patients, general anaesthesia had to be given. If bleeding was present, the suction cautery was placed ahead of the endoscope to clear the blood and reveal the bleeding point. Before definitive treatment, the area around the bleeding point was infiltrated with 2% lignocaine in 1 in 100,000 adrenaline, using a 26 gauge spinal or a 1.5 inch long hypodermic needle. In cases where the bleeding point was not visualized, the patients underwent conventional nasal packing and endoscopic examination was done after the removal of packs.

Endoscopic management of epistaxis

This comprised the following procedures.

First, endoscopic cauterization: once the bleeding point was localized with the endoscope, chemical cautery using a bead made from silver nitrate crystals or electrocautery was done. While doing chemical cautery with silver nitrate, care was taken to prevent the chemical dripping into the pharynx by keeping a pledget of cotton soaked in normal saline posteroinferior to the bleeding point. In case the bleeding point was situated deeper or behind a deviation or spur, the bead was sheathed in a plastic drinking straw before introducing into the nasal cavity. After reaching near the bleeding point, the bead was pushed beyond the distal opening of the straw to cauterize the target. This helped to prevent unnecessary chemical trauma to the normal nasal mucosa.

Second, endoscopic selective nasal packing (ESNP): after endoscopic localization of the bleeding site, endoscopic selective nasal packing was done over the bleeding site using a small piece of merocel or gelfoam.

Third, endoscopic assisted mass excision (EME): nasal endoscope was used to take endoscopic guided biopsy of nasal masses and their removal.

We reported our experience in a tertiary care hospital of endoscopic management of epistaxis and how it helped our patients in reduction of hospital stay.

The recorded data was compiled and entered in a spreadsheet (Microsoft excel) and then exported to data editor of statistical package for the social sciences (SPSS)

version 20.0. Continuous variables were expressed as mean $\pm$ SD and categorical variables were summarized as percentages.

RESULTS

During the study period, a total of 187 patients with a history of epistaxis were seen. There were 132 males and 55 females, the average age being 41 $\pm$ 7.35 years. Out of these, 139 had anterior and the rest 48 had posterior epistaxis. The site of bleeding could be identified in 93 cases on anterior rhinoscopy and were excluded from our analysis. In the rest of the 94 patients, nasal endoscopic examination was done to see the bleeding site. Endoscopic examination helped in finding the site of bleeding in 87 cases in whom the site of bleed was not visible either on anterior or posterior rhinoscopy. This is shown in Table 1. In 6 patients, no definite bleeding point could be visualized despite endoscopy and these patients were managed by the traditional method of nasal packing. In two patients, with a markedly deviated septum, septoplasty had to be done to visualise the bleeding point on the posterior part of septum with the endoscope. The various sites of bleeding and their management is shown in Tables 2 and 4. Nasal endoscopy also helped in making unexpected diagnosis in as many as 14 (6.7%) out of the 94 patients who underwent endoscopy (Table 3).

Table 1: Usefulness of endoscopy in epistaxis.

Parameters	N (%)
Total no. of patients with epistaxis	187
Anterior epistaxis	139
Bleeding point seen on anterior rhinoscopy	93
Nasal endoscopy required	46
Posterior epistaxis	48
Nasal endoscopy required	48
Total no. of patients needing endoscopy	94
Endoscopy helpful	87 (92.6%)

*Recurrence after pack removal (N=21), continuance despite packing (N=13), no bleeding point seen (N=7)



Figure 1: Nasal endoscopic image showing hemangiomatic mass in right nasal cavity.

Table 2: Site of bleeding as confirmed on endoscopy.

Site	No. of patients (%)	PE*	AE*
Woodruff's area	13 (15)	13	0
Behind septal spur/deviation	22 (25.3)	0	22
Posterior part of septum	11 (12.6)	11	0
Posterior part of inferior turbinate (post-turbinectomy)	6 (6.9)	6	0
Posterior part of middle turbinate	8 (9.2)	8	0
Lateral nasal wall excluding inferior and middle turbinate	11 (12.6)	0	11
Anterosuperior septum	2 (2.3)	0	2
Mass lesions	12 (13.8)	5	7
Foreign body (leech)	2 (2.3)	2	0
Total	87 (100)	45	42

*AE=anterior epistaxis, *PE=posterior epistaxis



Figure 2: Nasal endoscopic picture showing rhinosporodiosis in left nasal cavity.

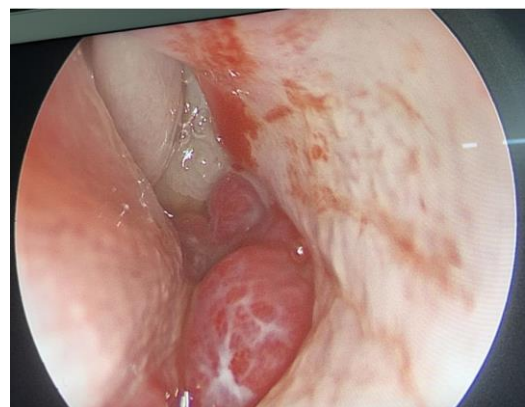


Figure 3: Endoscopic picture showing nasopharyngeal angiofibroma.

Table 3: Various mass lesions.

Mass lesions	N
Haemangioma	3
Hamartoma	1
Rhinosporodiosis	3
Angiofibroma	2
Lymphoma nasopharynx	1
Tubercular polyp	1
Carcinoma maxilla	1
Total	12

Table 4: Various endoscopic procedures for control of epistaxis procedure.

Endoscopic procedures	No. of patients		
	Ant. epistaxis	Post. epistaxis	Total
Selective nasal packing	14	0	14 (16.1)
Bipolar cautery	2	26	28 (32.2)
Chemical cautery	21	10	31 (35.6)
Foreign body removal	1	1	2 (2.3)
Biopsy for mass lesions	7	5	12 (13.8)
Total	45	42	87 (100)

DISCUSSION

The common emergency of epistaxis in otolaryngology practice can be a challenging experience for the treating physician since many times it is not possible to visualize the site of bleeding by rhinoscopic examination.⁹ While the commonest source of bleeding is from the Little's area situated in the anteroinferior part of the septum and is easily amenable to management by cauterisation of the bleeding point even by a beginner, the problem arises when nasal examination fails to localize the site of bleeding. In such a situation, the traditional method of control has been anterior or antero- posterior nasal packing, a procedure which is not only uncomfortable for the patient but, as discussed earlier, is associated with several complications. Packing is a blind process and is done with the premise that it will stop the bleeding by simple compression but it may not achieve its goal by missing the target. Removal of the pack invariably leads to several bleeding mucosal abrasions and can confuse the endoscopist. This is overcome by decongesting the mucosa and patiently waiting for several minutes before introducing the endoscope. With the introduction of the nasal endoscope, the localisation of the bleeding site has become easier and has helped in preventing nasal packing in a large number of patients.³

In our study, we analysed 187 patients between 16 and 60 years who presented with epistaxis over a three- year period in a tertiary care hospital. Of these, 139 (73.8%) had anterior and 48 (26.2%) posterior epistaxis (Table 1). In as

many as 93 (49.7%) cases, simple cauterisation of the bleeding site at the Little's area under local anesthesia sufficed to control the bleeding. In the rest of the 94 (50.3%) patients, we had to resort to nasal endoscopic management. Out of these 34 (36.2%) patients had nasal packing done either outside or in the emergency. This included 21 patients in which the bleeding had recurred after pack removal and 13 patients who continued to bleed despite the packing.

In 7 patients, endoscopy was not helpful. These included one patient who presented with a history of recurrent bouts of epistaxis but endoscopy showed no bleeding point and he had no further bleeding. In 6 patients, endoscopy failed to pinpoint the site of bleeding and these patients had to be managed by nasal packing. Thus, endoscopy was helpful in managing 87 (92.6%) patients by avoiding nasal packing. This comprised 45 (51.7%) with anterior and 42 (48.3%) with posterior epistaxis.

As seen in Table 2, the commonest site (23.5%) of bleeding observed on endoscopy was behind septal spurs or deviation in anterior part of nose, followed by Woodruff's area in 15%, posterior part of nasal septum and lateral nasal wall excluding the turbinates in 12.6% each, middle turbinate in 9.2% and the inferior turbinate in 6.9%. The bleeding from the turbinates and lateral nasal wall was postsurgical viz. after inferior turbinectomy (N=6), endoscopic sinus surgery (N=10) and reduction of nasal bone fracture (N=1). In 12 (13.8%) cases, mass lesions were detected as the source of bleeding. These were managed with further investigations including endoscopic biopsy and were treated as required. In 2 (2.3%) patients, bleeding was being caused by a leech in the nose. Leech in the nose is an unusual cause of epistaxis and needs a high index of suspicion in a patient with recurrent bouts of nasal bleeding especially when associated with a foreign body sensation. Leeches are hermaphroditic parasites inhabiting in fresh water and enter the nose during swimming or drinking water from a stream.¹⁰ Since it secretes an anesthetic chemical, the host does not feel its presence and thus remains undiagnosed till the symptom of bleeding appears.¹¹ The leech attaches itself to the nasal lining by its powerful suckers and the bleeding is caused by the anticoagulant effect of hirudin and histamine-like substances present in its saliva.¹² In one patient, the leech was attached to the lateral aspect of middle turbinate and in the other, it was hidden in the nasopharynx and was causing posterior epistaxis. In both cases nasal endoscopy helped to make the diagnosis and remove them. In another 2 (2.3%) patients, the site of bleeding on the septum was hidden in the nasal valve area and had been missed on anterior rhinoscopy but became apparent while performing nasal endoscopy. During initial examination of the nose, the nasal valve area should be opened up especially when the blood is seen trickling from the antero-superior part of the septum. One patient who had sustained traumatic nasal bone fracture and was admitted with recurrent epistaxis despite nasal packing done twice in a peripheral hospital, was found on endoscopy to have a spurter in the lateral nasal wall which was cauterised resulting in stoppage of bleeding and required no further treatment.

After identifying the bleeding site with the endoscope, the commonest method of controlling the bleeding was by cauterisation in 67.8% cases (Table 3). These included 31 (35.6%) patients in whom chemical cauterisation was done and 28 (32.2%) patients who underwent electrocautery. In those patients who had minor bleeds, selective nasal packing with a piece of gelfoam was done (N=8). However, when the bleeding was more than a trickle a small piece (1-1.5 cm) of the threaded end of merocel was cut, smeared with antibiotic ointment and placed over the bleeding area and this was removed after 24-48 hours. In 7 (8%) patients after removal of the selective pack, minor bleeds were seen and needed re-cauterisation. Bipolar cauterisation was used in cases of bleeding from the Woodruff's area, lateral nasal wall and turbinates. Two of these patients complained of palatal numbness which lasted about a week. This complication has been reported by Wurhametal.¹² Other complications of endoscopic cauterization reported include trauma to the eustachian tube and nasolacrimal duct but we could avoid these by being careful.

Unsuspected mass lesions were detected in 12 (13.8%) patients (Table 2) and they were managed as required. In a previous study, unsuspected diagnosis was seen in 4 out of 23 (1.73%) patients presenting with posterior epistaxis.³

Of the 87 patients managed by nasal endoscopy, as many as 37 (42.5%) returned to normal activity within 24 hours of control of their bleeding and did not need hospitalization. On the other hand, the 6 patients who needed nasal packing had an average hospital stay of 8.3 days. The 12 patients with mass lesions were managed as required and were not included in analysis of hospital stay. The rest of the 32 patients had an average hospital stay of 2.1 days. Most of these patients were from out of town and preferred to stay in the hospital for 1-3 days.

Limitation

Limitation of the current study was the small sample size; a bigger sample size could give more consistent results.

CONCLUSION

In view of the excellent results by use of nasal endoscope in the diagnosis and management of patients with epistaxis, we can conclude that nasal endoscopy should be the first priority when the site of bleeding is not visualised on anterior rhinoscopy. Since most of these patients present during emergency hours when the junior resident doctor is the first to manage the case, it is imperative that the residents during early part of their training are imparted the necessary skills to perform endoscopic management of such cases. This will help in avoiding not only

hospitalization but also the painful process of nasal packing with its attendant complications in a large number of patients and improve their quality of life since with minimal trauma to the nasal mucosa there will be early healing. Nasal endoscopy in patients with epistaxis has the added advantage of making unsuspected diagnosis as happened in 13.8% cases. However, nasal packing still remains the first choice in the emergency room as the management of epistaxis.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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