Endoscopic Management of Posterior Epistaxis

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Abstract The traditional method of management of posterior epistaxis has been with anteroposterior nasal packing. Apart from the high failure rate of 26–50% reported in various series, nasal packing is associated with marked discomfort and several complications. In order to avoid nasal packing, we started doing endoscopic cauterization in cases of posterior epistaxis. A total of 23 patients with posterior epistaxis were subjected to nasal endoscopy with the intent to stop bleeding by cauterization of the bleeding vessel. Of these, in four cases unsuspected diagnosis was made. Of the remaining 19, in three patients, the bleeding point could not be localized accurately and these patients were managed by anteroposterior packing. The rest of the 16 patients were managed by endoscopic cauterization. In four patients, there was recurrence of bleeding within 24 h. In one of these, cauterization controlled the bleeding while in the rest nasal packing had to be resorted to. Thus, of the 23 patients of posterior epistaxis subjected to nasal endoscopy, we could avoid nasal packing in 17 (74%). To conclude, endoscopic nasal cauterization is recommended as the first line to treatment in all cases of posterior epistaxis. This will not only prevent the

uncomfortable and potentially dangerous nasal packing but also help in finding the underlying pathology.

Introduction

Epistaxis is a common ENT emergency. The bleeding episode may be so minor as to resolve spontaneously or so severe as to be fatal. Commonly epistaxis occur from the anterior part of the nasal cavity usually from the Kiesselbach's plexus or the retrocolumellar vein and this is easily controlled by cauterization under direct vision without resorting to nasal packing in most of the patients. However, in case of posterior epistaxis the bleeding points cannot be visualized on anterior rhinoscopy because these are located in the deep crevices of the lateral nasal wall or in the posterior part of the nasal cavity. The various sites of bleeding in case of posterior epistaxis include Woodruff's plexus situated on the posterior aspect of the lateral wall of inferior meatus; posterior part of lateral nasal wall near the sphenopalatine foramen; posterior end of inferior turbinate; the middle turbinate and its medial surface; middle and posterior part of septum and floor of nose beneath the inferior turbinate [1]. The traditional methods of control of posterior epistaxis include anteroposterior packing, nasal balloons and arterial ligation. Of these, nasal packing is the most commonly used method. Apart from the high failure rate of 26–50% associated with anteroposterior nasal packing [2], it is associated with marked discomfort, pain and swallowing difficulty and can lead to a large number of local and systemic complications. 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

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shock syndrome, hypoxia, angina, cardiac arrhythmia, sepsis and even death. As much as 68% rate of complications has been reported by Wang et al. [3]. Posterior epistaxis is more common in the elderly who cannot tolerate hemodynamic changes because of hypertension, diabetes, COAD and in these patients anteroposterior nasal packing has been associated with a fatal outcome. In view of these problems, patients with anteroposterior nasal packing need hospitalization and constant monitoring. In order to avoid nasal packing, we utilized the technique of posterior endoscopic cauterization which was first described by Wurman et al. [4]. This can be easily done under local anesthesia as an OPD procedure, avoids nasal packing, has an excellent patient tolerance, makes hospitalization if required much shorter and has few side effects. Kaluskar [1] reported an efficacy of 90%. We have used this technique over the past 5 years and are presenting our experience with recommendation to make this method as the first modality or treatment in patients with posterior epistaxis.

Technique

The instruments required include 0° and 30° 4 mm nasal endoscopes, suction cautery and a 22 gauge spinal needle. Suction cautery if not available can be made by insulating an ordinary nasal suction tip with adhesive tape. Posterior epistaxis is diagnosed from the patient's history of spitting out blood while in the sitting position. After reassurance of the patient and resuscitation if required, the side of bleeding is confirmed from the history. Occasionally the patient is not sure of the site of bleeding. Anterior rhinoscopic examination is done to rule out an anterior bleeding site. Blood clots if any are removed by suction or by asking the patient to gently blow the nose. Local anesthesia is given by placing pledgets of cotton soaked in 4% lignocaine with adrenaline in the bleeding nasal cavity or on both sides if the side of epistaxis is not clear. Vasoconstriction helps to improve the visibility in addition to reducing the discomfort. After 10–15 min, the pledgets of cotton are removed and nasal endoscopy done. If bleeding is severe, the suction cautery is introduced ahead of the scope to constantly clear the blood. A systematic examination of the nasal cavity usually reveals the bleeding point. While keeping the suction tip near the bleeding point, using the 22G spinal needle, 2% lignocaine with adrenaline 1 in 100,000 is injected adjacent to the bleeding point which is then cauterized. In case the bleeding is coming from the septum the suction cautery is medial to the endoscope while for a bleeder seen on the lateral nasal wall, the position is reversed. Most often the bleeding point is clearly identified and the cauterization leads to satisfactory stoppage of bleeding. But on occasion, the bleeding

may continue from the area adjacent to the bleeding site and in that case, feeding vessels of the bleeding site will need to be cauterized also. If the bleeding point cannot be visualized or satisfactorily controlled by cautery, a postnasal packing can be done. In unco-operative patients, the procedure can be done under general anesthesia. In case of recurrence of bleeding after initial cautery, repetition of the procedure can be tried failing which anteroposterior nasal packing is done.

Results

In a total of 23 patients with posterior epistaxis, nasal endoscopy was done with the intent to avoid nasal packing by controlling bleeding using endoscopic cauterization. This included 14 males and 9 females. The age wise distribution of the patients was: less than 20 years (2), 21–40 years (7), 41–60 years (8) and above 60 years (6). In four (17%) patients, unsuspected diagnosis was made on nasal endoscopy. This included a small nasopharyngeal angiofibroma, a haemangioma arising from the medial aspect of middle turbinate, a leech and in one patient who presented with epistaxis the outpouring of mucopurulent discharge from the middle meatus region confirmed the diagnosis of sinusitis. These patients were given definitive treatment as required. The live leech could be easily removed simply by suction. In the rest of the 19 patients, the cause of epistaxis is shown in Table 1.

In 3 of these 19 patients, bleeding point could not be seen on endoscopy and these patients were managed by anteroposterior nasal packing. In the remaining 16 patients, endoscopic cauterization was performed. In one patient with marked septal deflection, septoplasty had to be performed to allow endoscopic visualization and cauterisation of the bleeding point. The various sites of bleeding seen included lateral wall of middle meatus near the sphenopalatine foramen in eight cases (50%), the Woodruff's plexus in four patients (25%), the posterior end of inferior turbinate and posterior part of septum in two patients (12.5%) each. There was recurrence of epistaxis in 4 (25%) of these 16 patients. In one patient, re-cauterisation controlled the bleeding while in the remaining three patients, anteroposterior nasal packing had to be resorted to. Thus of

Table 1 Causes of epistaxis

A	Post-operative	7 (37%)
	FFSS	1
	Polypectomy	1
	Rhinoplasty	2
	Septoplasty	1
	Turbinectomy	2
B	Atherosclerosis/hypertension	7 (37%)
C	Idiopathic	5 (26%)

the 23 patients with posterior epistaxis, we could avoid packing in 17 (74%) patients (13 controlled by endoscopic cauterization and 4 in which an unsuspected diagnosis was made) by the use of the nasal endoscope. Of the six patients in whom nasal packing had to be done either because of inability to locate the bleeding point ($N = 3$) or failure of endoscopic cauterization ($N = 3$), we performed unilateral anteroposterior packing in five patients and only in one patient bilateral packing needed to be done. We could avoid hospitalization in eight patients (41%) by endoscopic cauterization. The average period of hospitalization in the five patients who underwent endoscopic cauterization was 1.6 days. On the other hand, the average period of hospitalization of the six patients treated with nasal packing was 4.8 days. No complications of the procedure of endoscopic cauterization were seen. An algorithm of the results of the study is given in Fig. 1.

Discussion

The usual method of nasal packing for posterior epistaxis involves placement in the nasopharynx of a postnasal pack

which blocks both posterior choana and this is followed by bilateral firm anterior nasal packing which can be placed deep enough without it falling into the nasopharynx. The pack stops bleeding by blindly exerting pressure on any bleeding point. This, however, is overtreatment since in most cases the side of bleeding can be recognized and only a unilateral anteroposterior packing needs to be inserted. This could obviate some of the problems associated with bilateral anteroposterior nasal packing which is indicated only in a few patients in whom the side of bleeding cannot be made out or the bleeding is from the nasopharynx as after adenoidectomy or excision of nasopharyngeal angio-fibroma [5]. Another method of nasal packing is by nasal balloons which are of two types viz. Foley catheters and the commercially available balloon catheters. The cheap Foley's catheter is used as a posterior pack and needs anterior packing with ribbon gauze. The balloon catheters are expensive and not easily available in our setup. These balloons are easy to insert, cause less pain and less hypoxia but are not very effective in controlling posterior epistaxis. To prevent the complications of nasal packing and to reduce hospital stay, Small and Maran [6] advocated early arterial ligation. But arterial ligation has its own problems.

Fig. 1 Results of the study

External carotid ligation can be easily performed under local anesthesia but there is high failure rate due to flow from anastomotic connections with the ipsilateral internal carotid or the opposite carotid system. Also, the ligation is performed far from the bleeding site and the drop in local blood pressure may not be substantial. A failure rate of 45% has been described by Spafford and Durham [7] by this method. Ligation of the internal maxillary artery has been a popular method over the past several decades. Since this vessel is near the commonest source of bleeding viz. the sphenopalatine artery, the drop in local blood pressure which occurs after its ligation is greater than that seen with ligation of external carotid artery. It is usually performed through the transantral route under general anesthesia. Reported success rates range from 75 to 100% [8, 9]. Complications include persistent pain in upper teeth, potential damage to sphenopalatine ganglion and vidian nerve, infraorbital neuralgia, oroantral fistula, sinusitis and rarely blindness [10]. In addition, the operation is not feasible in children, patients with maxillary sinusitis or hypoplastic antrum. Above all, the operation is technically challenging. For bleeding coming from above the middle turbinate, ethmoidal artery ligation has been useful. But its indications are limited. Possibility of optic nerve injury and failure to control bleeding do not make this modality a treatment of choice. Arterial embolisation of internal maxillary artery was used by Sokoloff et al. [11] for intractable epistaxis. The procedure can be done under local anesthesia, avoids nasal packing and reduces hospitalization. But the procedure can only be done at select centers where trained interventional radiologists are available. It is not useful for ethmoidal artery bleeding and is contraindicated in patients with atherosclerosis and allergy to contrast material. Potential but rare complications like ophthalmoplegia or hemiplegia have been reported.

We utilized the nasal endoscope in all patients presenting with posterior epistaxis and got excellent results. In 17% patients, unsuspected diagnosis was found which helped us to give specific treatment to these patients. Nasal packing with its attendant complications could be avoided in 74% patients by doing endoscopic cauterization. The procedure helped us in avoiding hospitalization in as many as 41% patients. The average time of hospitalization of those who underwent endoscopic cauterization was only 1.6 days compared with the 4.8 days of those who needed nasal packing for control of their epistaxis. Thus we

conclude that nasal packing can be avoided in patients with posterior epistaxis if posterior endoscopic cauterization is done as the first modality in such patients. We did not find any complication with this method. However, Wurman et al. [3] noticed palatal numbness for several days in some of their patients. This was presumably due to thermal injury to the greater palatine nerve. There is a theoretical possibility of damaging the eustachian tube opening and the nasolacrimal duct in the inferior meatus but these are avoidable complications.

Conclusions

To avoid nasal packing in posterior epistaxis, endoscopic cauterization is recommended as the first line of treatment. This will not only avoid the possible complications of the uncomfortable and the potentially dangerous anteroposterior nasal packing but may also help in finding the underlying pathology. Also, nasal endoscopes should be made available for the residents during emergency hours.

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