Contemporary management of epistaxis: a useful guide for primary care physicians

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Abstract

Introduction: Epistaxis (nasal bleeding) is a common condition. It may be very severe and life-threatening but in most cases is trivial and easily controlled by first aid management, and in severe cases, primary care physicians are consulted before seeing a specialist (Otorhinolaryngologist). The initial management instituted determines the overall outcome. This aims to review the literature and current knowledge for evidences supporting up to date management of epistaxis at primary level of care.

Methodology: Review of current literature and published peer reviewed works in Medline, PubMed, Embase, and Cochrane Database of systematic reviews for articles in English language.

Results: It was found that tremendous advancement have been recorded in the care of patients presenting with Epistaxis. While little has changed in the first aid measures with more patient-friendly conservative measures, advanced technology in imaging and optics have rendered endoscopic treatment safer, cost effective and almost routine over the traditional open approaches.

Conclusion: Recent advances in the management of epistaxis have made it possible to restore normalcy from various degrees of epistaxis.

Keywords: Epistaxis; Nosebleed; primary care, Management

Introduction

Epistaxis is defined as bleeding from inside the nasal cavity. This is a Greek word meaning nose bleed. It is a very common problem and is seen in all age groups- children, adults and older people. It often presents as an emergency, hence its true incidence is very difficult to predict because most cases are self-limiting and not reported. The historical literature contains numerous references to epistaxis and its antiquity is reflected in the fact that the simplest treatment for a nose bleed (pinching the ala nasi) is called the Hippocratic technique. Epistaxis is a sign and not a disease per se and an attempt

should always be made to find any local or constitutional cause.

Epidemiology

In Nigeria, incidence of epistaxis is difficult to determine because most episodes resolve with self-treatment and therefore, are not reported. Epistaxis can be a nuisance to many but, the problem can be life threatening, especially in elderly patients and in those with underlying medical problems. Incidence of epistaxis tends to be higher in males (58%) than in females (42%). Age distribution is bimodal, with peaks in young children and elderly individuals.

Vascular anatomy

The internal and external carotid arteries supply the nose via branches which anastomose extensively within the lateral wall, septum and across the midline. In 1879, James Little identified an arterial plexus on the anterior septum as a frequent site of bleeding and the same plexus was described one year later by Kiesselbach As a result of these descriptions, the area most frequently implicated in epistaxis is known as Little's area or Kiesselbach plexus. In the posterior nasal cavity, the vessels are larger than those in Little's area and can more easily be traced to their external or internal carotid origin. Therefore lateral wall and nasal septum are supplied thus;

A). Nasal Septum

Internal Carotid System

Anterior ethmoidal and posterior ethmoidal arteries which are branches of ophthalmic artery

External Carotid System

(a) Sphenopalatine artery (branch of maxillary artery) gives nasopalatine and posterior medial nasal branches.

(b) Septal branch of greater palatine artery (Br. of maxillary artery).

(c) Septal branch of superior labial artery (Br. of facial artery)

B). Lateral Wall

Internal Carotid System

Anterior ethmoidal and posterior ethmoidal arteries which are branches of ophthalmic artery

External Carotid System

(a) Posterior lateral nasal branch from sphenopalatine artery

(b) Greater palatine artery from maxillary artery

(c) Nasal branch of anterior superior dental artery from infraorbital branch of maxillary artery

(d) Branches of facial artery to nasal vestibule

C). Little's Area

This anterior inferior part of nasal septum, just above the vestibule, consist of anterior ethmoidal, septal branch of superior labial, septal branch of sphenopalatine and the greater palatine arteries anastomose here to form a vascular plexus called "Kiesselbach's plexus". This area is exposed to the drying effect of inspiratory current and to finger nail trauma, and is the usual site for epistaxis in children and young adults.

D). Retrocolumellar vein.

This vein runs vertically downwards just 2mm behind the columella, crosses the floor of nose and joins venous plexus on the lateral nasal wall. This is a common site of venous bleeding in young people.

E). Woodruff's Area

This is responsible for posterior bleeds. This area is located over the posterior end of the inferior turbinate. The anastomosis here is made up of branches from the internal maxillary artery namely its sphenopalatine and ascending pharyngeal branches. Bleeding from Woodruff's plexus commonly occur in patients with extremely high blood pressure. In fact, this plexus acts as a safety valve in reducing the blood pressure in these patients, lest they will bleed intracranially causing more problems. In patients with posterior bleeds it is difficult to access the amount of blood loss because most of the blood is swallowed by the patient.

Classification of epistaxis

Traditionally, epistaxis has been classified on the basis of presumed aetiology and publications include long lists of factors thought to cause the condition. As most cases are idiopathic, a clinical classification based on the patterns of presentation of epistaxis is more useful (Table 1.)

Table 1. Structured clinical classification.

Classification:

1. Primary: No proven causal factor
2. Secondary: Proven causal factor
3. Childhood: <16 years

4. Adult: > 16 years

5. Anterior: Bleeding point anterior to piriform aperture

6. Posterior: Bleeding point posterior to piriform aperture

Aetiology

The etiology of epistaxis is not just simple or straight forward. It is commonly multifactorial, needing careful history taking and physical examination skill to identify the cause. For purposes of clear understanding the aetiology of epistaxis can be classified under three broad heads, i.e. into local causes (ie, trauma, mucosal irritation, septal abnormality, inflammatory diseases, tumors), systemic causes (ie, blood dyscrasias, arteriosclerosis, hereditary hemorrhagic telangiectasia), and idiopathic causes.

1. Trauma:

- Self-induced trauma from repeated nasal picking in young children, acute facial and nasal trauma, nasal surgery etc.
- Mucosal irritation: Dry, hot weather and long uncontrolled use of topical nasal sprays.
- Septal abnormalities: Septal deviations and spurs, persistent edges of septal perforations.
- Inflammatory disease: Bacterial, viral, and allergic rhinosinusitis, granulomatous diseases such as sarcoidosis, wegener granulomatosis, tuberculosis, syphilis, and rhinoscleroma
- Tumors: Benign and malignant tumors may present with signs and symptoms of nasal obstruction and rhinosinusitis, often unilateral.

2. Blood dyscrasias:

- Congenital coagulopathies with a positive family history, easy bruising, or prolonged bleeding from minor trauma or surgery. Examples hemophilia and von Willebrand disease.
- Acquired coagulopathies can be primary (due to the diseases) or secondary (due to their treatments). Example is thrombocytopenia and liver disease.
- Arteriosclerosis and Hereditary hemorrhagic telangiectasia are essential group to rule out.

3. Idiopathic causes:

Approximately 10% of patients with epistaxis have no identifiable causes even after a thorough evaluation.

Management

The theoretical ideal requires identification of the bleeding point and direct control of the bleeding. First, the patient must be resuscitated; bleeding controlled, the nasal cavity examined and a treatment plan established (Figure 1.)

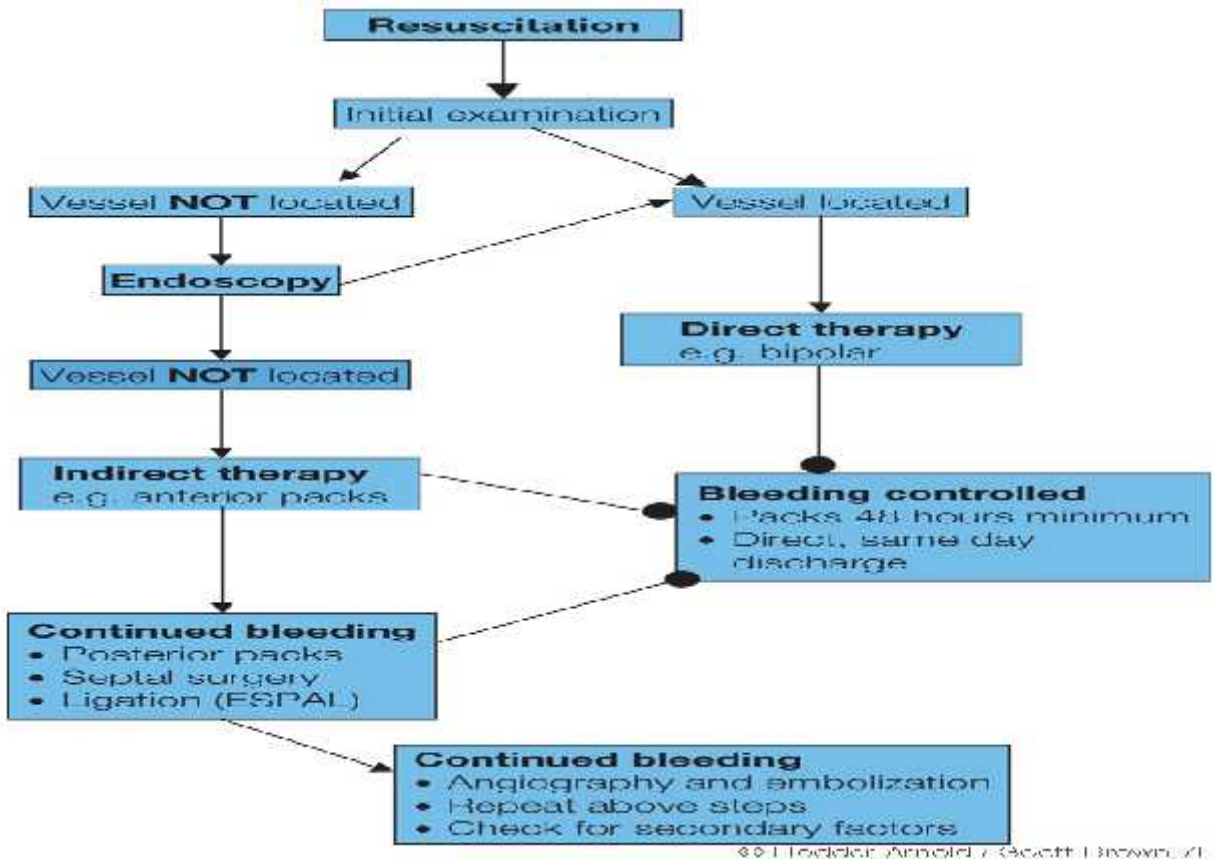

Figure 1. Management strategy for adult primary epistaxis.

Resuscitation

In majority of times, pinching the nose with the thumb and index finger for about 5 minutes controls minor bleeding. This compresses the vessels of the Little's area. In Trotter's method, patient is made to sit, leaning a little forward over a basin to spit any blood, and breathe quietly from the mouth. Cold compresses should be applied to the nose to cause reflex vasoconstriction. In more profuse bleeding, it is absolutely necessary to assess the quantum of blood loss. The blood pressure and pulse rate of these patients must be constantly monitored. Intravenous access secured with wide bore canula. Infusion of fluid must be started immediately. Initially ringers lactate solution will suffice or more commonly normal saline solution. If the patient has suffered blood loss of more than 30% of their blood volume (about 1.5 liters) then blood transfusion becomes a must. Further examination should be started only after the patient's general condition stabilizes.

History:

Careful history taking is a must to and should cover the following points:

1. History regarding the mode of onset (spontaneous or following finger trauma), frequency, severity, duration and side of the nose bleed.

2. Inquire about precipitating and aggravating factors and methods used to stop the bleeding.

3. Obtain a head and neck history with an emphasis on nasal symptoms

4. In addition, elicit a general medical history concerning relevant medical conditions (eg, hypertension, arteriosclerosis, coagulopathies, liver disease), current medications (eg, coumadin, nonsteroidal anti-inflammatory drugs [NSAIDs]), and smoking and drinking habits.

Physical examination:

The nasal pack if any must be removed. Anterior nasal examination should be done, first attempted without the use of nasal decongestants. If visualization is difficult due to oedema of the nasal mucosa then nasal decongestants can be used to shrink the nasal mucosa. The solution used for anesthetising and decongesting the nose is a mixture of 4% xylocaine and xylometazoline, either as a spray or pledget. Nasal endoscopy can be performed under local anesthesia to localise anterior and

posterior bleeds, using flexible or rigid endoscope with preference to rigid.5, ,

Investigations:

If bleeding is minimal, no investigation is necessary. Routine coagulation studies in the absence of a positive history are not indicated. , If bleeding is more, then a complete blood work up to rule out blood dyscrasias is a must. It includes bleeding time, clotting time, platelet count, partial thromboplastin time and liver function test.

Imaging studies like X-ray or CT scan and/or MRI of the paranasal sinuses must be done to rule out local nasal conditions of epistaxis. Imaging must be done after 24 hours of removing the nasal packing. Scans done with the nasal pack in situ or immediately after removing the nasal pack may not be informative. In difficult and intractable cases, angiography can be done and the internal maxillary artery can be embolised in the same sitting. This procedure should be reserved for cases of intractable nasal bleeding.

Treatment

Before evaluating a patient with epistaxis, have sufficient illumination, adequate suction, protective face mask and gurgles, all the necessary topical medications, cauterization and packing materials ready.

Conservative:

1. Cautery: Bleeding from the Little area is frequently treated with silver nitrate cauterization. Manage the vessels leading to the site before managing the actual bleeding site. Avoid random and aggressive cautery and cauterizing opposing surfaces of the septum. After the bleeding has been controlled, recommend to the patient the use of nasal saline spray, antibiotic ointment and to avoid strenuous activities for 7-10 days. NSAIDs should be avoided if at all possible. Digital manipulation of the nose is to be avoided as well. A topical vasoconstrictor may be used if minor bleeding recurs with the dislodging of the eschar. Monopolar diathermy should not be used in the nasal cavity as there have been reports of blindness due to current propagation.

2. Anterior packing: Nasal packing can be used to treat epistaxis that is not responsive to cautery. Two types of packing, anterior and posterior, can be placed. In both cases, adequate anesthesia and vasoconstriction are necessary. For anterior packing, various packing materials are available. Petroleum jelly gauze (0.5 in X 72 in) filled with liquid paraffin and an antibiotic ointment is

traditionally used. Layer it tightly and far enough posteriorly to provide adequate pressure. Blind packing with loose gauze is to be avoided. Merocel sponges can be placed relatively easily and quickly but may not provide adequate pressure. They should be coated with an antibiotic ointment and can be hydrated with a topical vasoconstrictor. All packing should be removed in 3-4 days. The newer packs like the BIPP (Bismuth Iodine paraffin paste) packs can be left safely in place for more than a week. Absorbable materials (eg, Gelfoam, Surgicel, Avitene) may be used in patients with coagulopathy to avoid trauma upon packing removal. For all patients with packing, administer prophylactic antibiotics and advise them to avoid physical strain for 1 week.

3. Posterior packing: Epistaxis that cannot be controlled by anterior nasal packing can be managed with a posterior pack. Classically, rolled gauzes are used, but medium tonsil sponges can be substituted. Recently, inflatable balloon devices, such as 12F or 14F Foley catheters, or specially designed catheters manufactured by companies such as Storz and Xomed (eg, Storz Epistaxis Catheter, Xomed Treace Nasal Post Pac) have become popular because they are easier to place. Avoiding overinflation of the balloon is important because it can cause pain and displacement of the soft palate inferiorly, interfering with swallowing. Regardless of the type of posterior pack, an anterior pack should also be placed. Admit all patients with posterior packing to the hospital. Close monitoring of oxygenation, fluid status, and adequate pain control is essential in these individuals. They should also be given an antibiotic to prevent rhinosinusitis and possible toxic shock syndrome. Other medical care, hot water irrigation, systemic tranexamic acid administration are equally supportive. Few complications of nasal packing are;

1. Epiphora (watering of eyes) occurs due to blocking of the nasal end of the nasolacrimal duct.

2. Heaviness /headache due to blocking of the normal sinus ostium.

3. Prolonged post nasal pack can cause eustachean tube block and secretory otitis media.

4. Prolonged nasal packing can cause secondary sinusitis due to blockage of sinus ostium.

Surgical management:

Endoscopic cauterisation can be tried if the bleeders are localised and accessible. Commonly, endoscopic or microscopic Spenopalatine artery clipping is done. If not accessible, ligation of the internal maxillary artery can be done through caldwelluc approach or endoscopically. In rare cases external carotid artery ligation at the neck can be resorted to.

Ethmoidal artery ligation: If epistaxis occurs high in the nasal vault, anterior and posterior ethmoidal arteries may be ligated using an external ethmoidectomy incision or more technically via endoscopic route. The anterior ethmoidal artery is usually found 22mm from the anterior lacrimal crest. If ligation of the anterior ethmoidal artery does not stop bleeding then posterior ethmoidal artery should also be ligated. The posterior ethmoidal artery can be found 12mm posterior to the anterior ethmoidal vessel.

Septal surgery: In prominent septal deviation or vomeropalatine spur, septoplasty or submucosal resection (SMR) may be required to access the bleeding point.

Embolization: Embolization under angiographic guidance has been shown to control severe epistaxis in between 82 and 97 percents of cases.17, , Epistaxis caused by the presence of tumors both benign and malignant types calls for definitive treatment of the tumor.

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