UPDATE ON MANAGEMENT OF EPISTAXIS

Ciaran Scott Hill, Owain Hughes

ABSTRACT

Epistaxis is a common presentation in the accident and emergency, often requiring admission and can result in death. The appropriate management strategy depends on both the aetiology and the anatomical classification into anterior or posterior bleed. This article gives an update on the basic treatment techniques; including use of nasal packing, silver cautery and antibiotics. This article also advises on when to escalate the treatment, reviews options for advanced invasive techniques and critically discusses the recent advances in the available treatment options.

INTRODUCTION

Epistaxis is the commonest emergency in otolaryngology and often requires admission to the hospital. Management of this condition has changed over the past few years, with ongoing research in the field. It has been stated that the current first line management of epistaxis in the UK is still suboptimal in many areas.

All cases of epistaxis, regardless of the aetiology, have a common bleeding pathway from the superficial and highly vascular tissue and vessels of the nose. It can be classically divided on the basis of anatomical location into anterior or posterior nasal bleed. About 80% of epistaxis cases are anterior bleeds, usually from the Kiesselbach’s plexus located in the lower anterior part of the nasal septum, known as the Little’s area. Recent studies show that this area is consistently supplied by three named arteries:

1. Anterior / ethmoidal (from internal carotid artery via the ophthalmic artery).
2. Sphenopalatine (from external carotid artery via the maxillary artery).
3. Superior labial (from external carotid artery via the facial artery).

* Corresponding Author: Dr. Ciaran Scott Hill, BSc(Hons) MBBS MCSP MRCS, Clinical Research Fellow, csch@doctors.org.uk
4. Posterior bleeds are usually due to injury to the posterior septal nasal artery (from the sphenopalatine artery) as it contributes to the Woodruff’s plexus.

AETIOLOGY

The aetiology can be broadly divided into the local or systemic causes, although even this distinction is difficult to make and the term “Idiopathic Epistaxis” is ultimately used in about 80-90% of the cases.

The two most common identifiable local causes of epistaxis are trauma (due to nose picking and foreign bodies) and inflammation secondary to infection or allergic rhinosinusitis. It is important to exclude a neoplasm (for example malignant squamous cell carcinoma) as a local cause for epistaxis and for this reason it is compulsory that all patients have a thorough nasal examination prior to discharge.

The congenital causes for epistaxis include structural abnormalities (for example septal spurs, deviations or perforations) and vascular abnormalities (for example hereditary haemorrhagic telangiectasia).

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<th>Aetiology of Epistaxis</th>
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<td><strong>Local</strong></td>
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<td>o Foreign body</td>
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<td>o Infection</td>
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<td>o Anatomical abnormality</td>
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<td>o Vascular malformation</td>
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The systemic causes include rare but important organ failures (for example liver failure or uraemia). The general systemic causes include haematological abnormalities triggered by anticoagulation or coagulopathies like haemophilia. Thrombocytopenia or platelet dysfunction can precipitate severe bleeds, Von Willebrand disease is the commonest cause of platelet dysfunction but leukaemia should not be missed. Other causes of epistaxis
include cocaine abuse and pressure changes at high altitudes. The key point is to exclude the important dangerous causes while examining the patient and to keep in mind that epistaxis may be a manifestation of a more serious underlying disease.

TREATMENT

Conservative

The traditional management of epistaxis includes resuscitation, succinct history and examination, chemical cautery/packing or balloon occlusion of the anterior/posterior chambers of the nose. This is supplemented by further investigations, exclusion of neoplasia and patient education. Recourse to ENT referral and surgery was classically reserved for refractory cases. A UK survey showed that primary management is currently undertaken by accident and emergency doctors in almost all cases and consists predominantly of nasal cautery followed by packing if this procedure fails.

Immediate management includes universal precautions (apron, gloves, face mask, eyewear) and may include placing a surgical mask over the patient’s mouth to minimize hazardous aerosoled blood particulates. Appropriate resuscitation according to the ATLS protocols should be undertaken including monitoring vital signs and fluid resuscitation as required. According to the recent studies, it has been proved that the use of oral diazepam, as done in the emergency departments, does not improve the anxiety or the hypertension and therefore its use is not routinely recommended. Often patients attempt to control epistaxis with a nasal pinch prior to presenting to the accident and emergency. For the nasal pinch to be effective it should be applied for at least 20 minutes. There are two techniques for the nasal pinch; the simple pinch grip and a two handed technique with one thumb on either side of the nose and elbow elevated on a pillow so that the head is upright and cranial venous return is optimized. An alternative hands free technique where two tongue depressors are taped together in the middle to form a “nose-clip” may also be tried. If this fails then the nasal cavity needs to be cleared of the clots and the source of bleeding identified. In anterior bleeds this can be achieved by simple instrumentation such as a headlight and Thudichum’s speculum along with suction using a 10Ch or 12Ch flexible suction catheter cut at 10 cm. Handling such instruments alone may be difficult and it may be prudent to enlist an assistant at this point. If a bleeding point is identified the area should be suctioned, swabbed clean and anaesthetised with a suitable topical local anaesthetic agent (eg Lidocaine Hydrochloride 5% and Phenylephrine Hydrochloride 0.5% spray).
before primary chemical cauterisation is attempted. A silver nitrate stick of 75% concentration is appropriate for cautery and seems less likely to lead to complications than the 95% concentration stick. It should be applied firmly over the bleeding point for 5-10 seconds. If the bleeding is still not controlled despite accurate visualisation of the bleeding vessel then an appropriate sized silver nitrate chip; shaved from the stick applicator; can directly be applied to the vessel. Bipolar diathermy is an alternative option, depending on the physician’s preference although monopolar diathermy is contraindicated due to the risk of nasal tip necrosis.

If cautery fails to stop an anterior bleed, or if the bleeding point has not been identified, then the second-line management involves nasal packing. Posterior bleeds are often more complicated and require an endoscopic view to identify and visualise the bleeding point. This is often not necessary for the immediate management and nasal packing can be used as a first line treatment option. It is inadvisable to use a silver nitrate stick blindly.

Nasal packs should be inserted into the cleaned, anaesthetised nose under direct vision. In case of bilateral bleeds the side where the bleeding began should be packed first. Following the insertion of the nasal pack, further management can be in the form of an ENT referral, admission and removal of the pack at 24 hours or early removal of the packs. The latter is recommended only the packs are mal-positioned or if the bleeding continues through the pack. If this occurs then, there is an option of removing the packs and instering a large diameter Foley’s catheter (off license use) under direct vision, along the floor of the nasal cavity, until seen in the oropharynx. Once visualised the catheter is inflated with 3-5mls of air and withdrawn to create pressure occlusion at the posterior choanae. It should then be fixed with an umbilical clip at the anterior columella, using a soft dressing to prevent pressure necrosis. This technique has a high failure rate 26-52%. Intra nasal insertion of the catheter is contraindicated in cases of head trauma or suspected craniofacial fracture.

Hot water irrigation is an alternative strategy for posterior epistaxis. Catheter occlusion of the posterior choana is followed by irrigation by water heated to 45-50 degrees Celsius into the nares. It is hypothesised that in addition to clearing blood clots from the nose it may also reduce local blood flow by causing mucosal oedema, whether this will endear it to the clinicians remains to be seen.

Other recent advances include the use of Fibrin glue, developed from human plasma cryoprecipitate that binds to the damaged vessels. A
randomised control trial reported complication rates lower than that of electrocautery, silver nitrate and nasal packing but re-bleed rates were comparable to electocautery.  

If nasal packs are left in situ for 24 hours then prophylactic broad-spectrum antibiotics are often prescribed. A small pilot study found no value in this but ongoing research is required to clarify this further.

Routine coagulation studies are not recommended in simple epistaxis but they are advised in patients with known coagulopathy, liver disease or on anticoagulation. Warfarin in itself does not seem to increase the risk of epistaxis per se although it does complicate its management and prolongs bleeding.

Paediatric epistaxis seems to be a slightly different entity and the above strategies may be inappropriate. There has always been a lack of clear evidence for how best to treat epistaxis in children and a Cochrane review in 2004 failed to clarify the situation. Many ENT clinicians favour the use of Naseptin applied 2-3 times a day for two weeks to control paediatric anterior epistaxis.

INTERVENTIONAL

If simple methods fail to control the epistaxis then interventional treatment options must be considered. There have been notable developments in the surgical and interventional management of complex cases of epistaxis that are refractory to first line treatments.

The greatest changes in surgical management have occurred as a result of the adaptation of the Hopkins rod for treatment of epistaxis. Endoscopic diathermy of a visible bleeding point is emerging as the new gold standard. In selected centres this approach has superseded nasal packing as the first line treatment for uncontrolled epistaxis. It allows good examination of the nasal cavity and if the bleeding point can be identified and located then nasal packing is not required. The patient needs to be observed for 3 hours and discharged home if no re-bleeding occurs. Ahmed and Woolford reported a 89% success rate with 74% reduction in admissions, thus saving a large number of patients from the compulsory admission often associated with a nasal pack.

In difficult cases of epistaxis ligation or clipping of the sphenopalatine artery using a rigid endoscope is now a popular treatment modality. In a series
of 127 patients undergoing endonasal ligation of the sphenopalatine artery there was a 98% control rate and no major complications.\(^{22}\) This technique is applicable to both the anterior and posterior bleeds. These findings are supported by a study of 43 patients undertaken by Abdelkader which showed a 93% recurrence free rate with no complications, which used an endoscopic technique to achieve haemostatic control by sphenopalatine artery ligation\(^{12}\). A 10-year study by Nouraei in 2007 showed significantly better long and short term outcomes (especially reintervention rates) with intranasal diathermy over clips.\(^{23}\) Although the technique is generally considered straightforward in experienced hands there are occasionally complicating anatomical variations that have to be considered.\(^{24}\)

Intractable epistaxis can be treated with embolization in centres where skilled interventional radiology services are available. It involves cannulation of the maxillary artery and subsequent angiographic embolisation of the bleeding point. Although the success rates are high it carries the risk of stroke and rebleeding.\(^{25}\) Studies show that this approach has a success rate of 96% with no major complications (although pain and numbness were common). The technique uses a gelatine sponge embolisation of the internal maxillary artery and microcoil embolisation of the facial artery on the side ipsilateral to the epistaxis.\(^{26}\)

Laser is another treatment option that has been used effectively in cases of recurrent epistaxis. The commonest laser used is the ‘neodymium yttrium-aluminium-garnet laser’. This is applied using an endoscopic approach to ligate the friable tissue and vessels. Argon and carbon dioxide lasers are used in some centres but due to their sparse usage there is still a lack of good data for comparison studies regarding their efficacy.\(^{27}\)

Regardless of the treatment modality used to manage a case of epistaxis it is advised that before discharge all patients sign to indicate they have read and understood an advice sheet including information on how to minimise recurrences, appropriate immediate first aid strategies and what to do in the event that these fail.\(^{28}\)

An up to date knowledge of epistaxis management is essential for all front line medical staff. Training of staff and development of local guidelines can improve management and make financial saving for hospitals through swift effective treatment and the reduction of unnecessary admissions and ENT referrals.
MCQs

1. Which of the following is NOT a method of treating epistaxis?
   A. Monopolar diathermy
   B. Cryotherapy
   C. Hot water irrigation
   D. Laser
   E. Nasal Packing

2. What concentration of Silver Cautery is advised for a small anterior epistaxis?
   A. 10%
   B. 25%
   C. 50%
   D. 75%
   E. 95%

3. Prophylactic antibiotics should be used in cases of epistaxis
   A. Always
   B. When packing remains for >36 hours
   C. **When packing remains for >24 hours**
   D. Posterior Bleeding points
   E. Never

4. The first step in management of a large anterior epistaxis is:
   A. Inspection of Nares with a Thudichum’s speculum
   B. **Application of Universal Precautions**
   C. Insertion of 2 large bore cannulae for fluid resuscitation
   D. Recording of haemodynamic markers (BP, pulse, capillary refill etc)
   E. Draw blood for crossmatch

5. Why should all epistaxis patients have a nasal examination before discharge?
   A. Exclude a Klestadt’s cyst
   B. Exclude hereditary telangectasia
   C. Look for bony spurs and deformities
   D. Examine for aberrant anatomy
   E. **Exclude Malignancy**
References (5 key selections are in bold)


