The Master Surgeon Trust

Epistaxis Handbook

Survival guide for junior doctors and medical students

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Preface

This e-book provides an overview of the assessment and management of epistaxis. Information is presented in a step-by-step approach to provide a unique practical perspective on epistaxis management. This guide has been written primarily for those wishing to improve their knowledge and skills in epistaxis management in line with evidence-based guidance. We feel this handbook will be an indispensible guide for junior doctors that manage epistaxis at the frontline in the Emergency Department and working on the ENT wards. Junior doctors from other specialties that are expected to cross-cover ENT at night will also find this handbook useful. I am confident that medical students will also benefit by gaining a strong foundation in the basics of epistaxis management.

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Definitions and Abbreviations

Epistaxis	Acute haemorrhage from the nasal mucosa in nostrils, nasal cavity, nasopharynx
Kiesselbach's plexus	Rich arterial anastomosis in the anterior septum
FBC	Full blood count is a common blood test that measures the number and status of different types of blood cells including red cells, white cells and platelets
Clotting screen	The clotting screen is a group of tests designed to detect possible problems with a person's blood coagulation / clotting mechanism
INR	The INR (International Normalised Ratio) is a test used to monitor a person's coagulation / clotting mechanism when on the anticoagulant drug Warfarin
Group and Save / Cross Match	Used to identify a person's blood group and antibody profile. This is useful for patients who may require a blood transfusion
U&E	Urea and electolytes is a test for kidney function and to detect abnormalities in blood chemistry for example dehydration
LFT	Liver function tests are groups of blood tests that give information about the state of a patient's liver
AF	Atrial fibrillation
DVT	Deep vein thrombosis
PE	Pulmonary embolism
NSAID	Non-Steroidal Anti-Inflammatory Drugs
Thudicum	Nasal speculum used to examine the anterior nasal cavity
Tilley nasal forceps	Straight blunt-ended forceps used to dab the nasal septum with cotton or pack the nose with BIPP gauze
BIPP	BIPP gauze is ribbon gauze impregnated with a bright yellow paste of bismuth subnitrate 250mg/g, iodoform 500mg/g and liquid paraffin 250mg/g

Chapter 1: Epistaxis in Adults

1.1 Introduction

- Epistaxis is common, it affects up to 60% of the UK population[1].
- The condition has a bimodal distribution. It peaks in under 10 year olds and in the over 50s[2].
- Epistaxis is classified as anterior or posterior depending upon the primary bleeding site[3]. This division is clinically important as it affects management[2].
- Anterior epistaxis accounts for 80-95% of epistaxis[1]. It originates from Kiesselbach's plexus in the anterior region of the nasal septum (Little's area) and is more common in children and younger adults[2,3].
- Posterior bleeding is rare and generally arises from the posterior nasal cavity via branches of the sphenopalatine arteries[1,2]. Posterior bleeds usually occur in older people, are more profuse, result in bleeding from both nostrils, and the bleeding site cannot be identified on headlight examination of the nasal cavity[1].

1.2 Risk factors

Most epistaxis is self-limiting and harmless, and the cause of damage to the blood vessels is not identified in 85% of cases[1]. Risk factors include[1]:

Local causes

- Trauma
- Inflammation
- Topical drugs e.g. steroids, nasal oxygen
- Tumours
- Vascular causes e.g. Hereditary Haemorrhagic Telangiectasia, Wegener's.

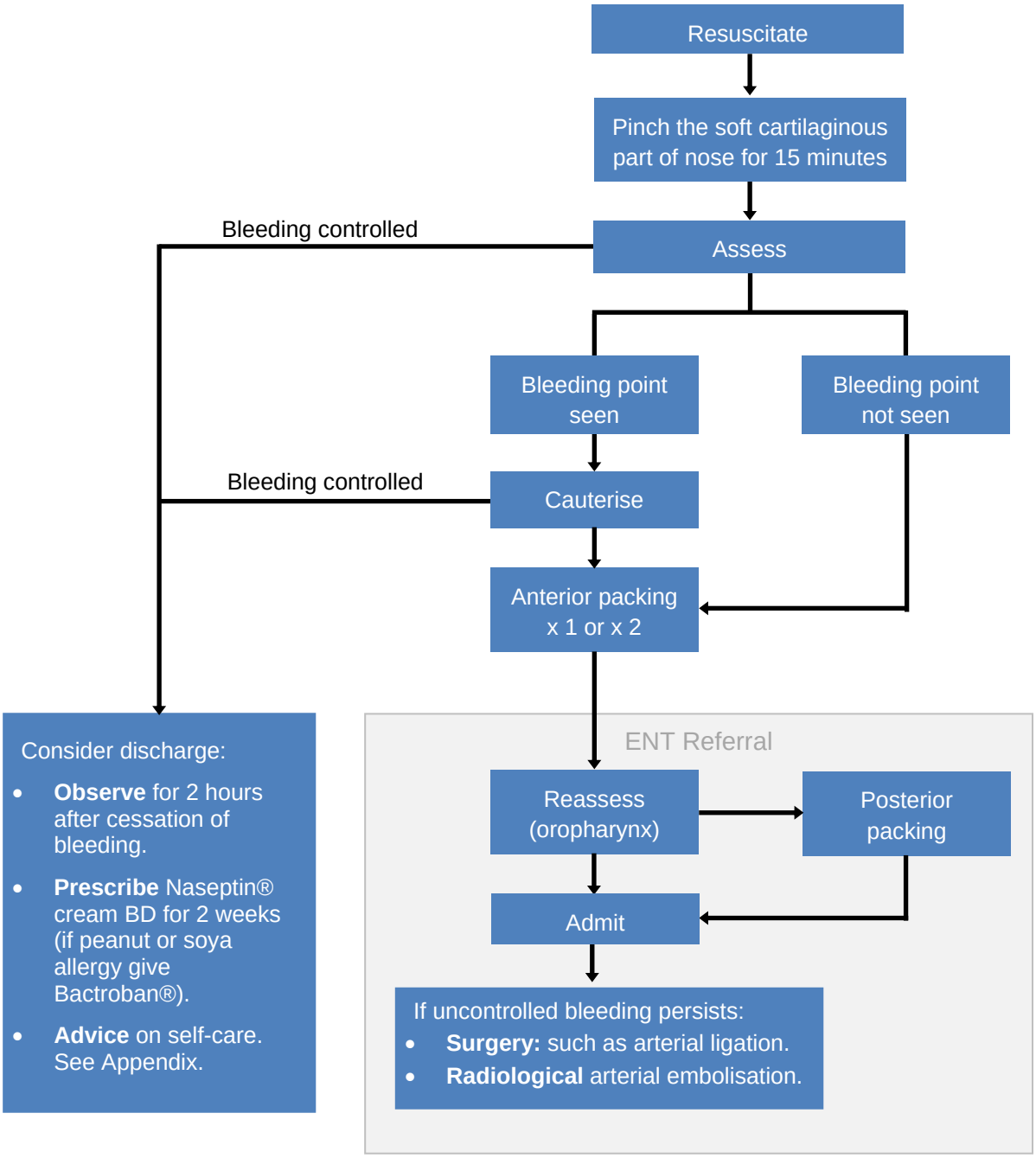
Systemic causes

- Hypertension
- Atherosclerosis
- Increase venous pressure
- Excessive alcohol consumption
- Environmental factors e.g. cold, dry.
- Haematological disorders e.g. thrombocytopenia, leukaemia, haemophilia
- Systemic drugs e.g. anticoagulants

1.3 Investigations

- FBC should be performed for patients with heavy or recurrent epistaxis, or if anaemia is suspected[1].
- Clotting Screen (INR) is not routinely required unless the medical history suggests bleeding history, or a potential cause for abnormal coagulation[4], e.g. taking warfarin[1], or systemic conditions that could lead to coagulopathy, in which case testing for hepatic (LFT) or renal dysfunction (U&E) may also be required[5].
- Group and Save +/- Cross Match for patients with severe haemorrhage[5].

1.4 Treatment Algorithm



1.5 Initial Measures

1) Resuscitate in cases of haemodynamic instability[6].

2) Ask the patient to pinch the entire lower compressible part of their nose to apply pressure to possible anterior bleeding sites for 15 minutes, and tilt their head forward[1,2,6].

3) Consider application of a combination of topical vasoconstrictor spray (such as 0.05% oxymetazoline) and topical anaesthetic spray (such as 4% lidocaine), or a combined mixture (such as co-phenylcaine), to encourage haemostasis[1,6].

4) A thorough history should be taken while the patient pinches their nose, with attention to laterality, duration, frequency, and severity of epistaxis[5]. Any contributing or inciting factors listed in section 1.2, and a family history of bleeding disorders[5].

1.6 Assessment

Indication: To determine whether a bleeding point can be seen.

Equipment:

- Personal protective equipment e.g. gloves, gown or apron, goggles
- Thudicum's nasal speculum
- Headlight
- Local anaesthetic/vasoconstrictor spray
- Suction
- Cotton gauze or wool
- Tilley nasal forceps
- Tongue depressor

Procedure:

1) Position the patient upright at 30°[7].

2) Inspect the nasal cavities using a Thudicum nasal speculum and headlight[7].

3) Clear the blood and clots with gentle suction if bleeding area cannot be visualised[6,7].

4) Consider application of a combination of topical local anaesthetic and vasoconstrictor spray, to encourage haemostasis and to help visualise the bleeding point[1,6].

5) Using cotton gauze or wool soaked in local anaesthetic/vasoconstrictor and forceps, dab the septum and look for bleeding points[5,6].

6) Assess the oropharynx for potential posterior bleeding.

1.7 Chemical Cautery

Indication: If bleeding point seen on the nasal septum.[6]

Equipment:

- Thudicum's nasal speculum
- Headlight
- Silver nitrate cautery sticks
- Cotton gauze or wool

Procedure:

1) Obtain verbal consent and apply topical local anaesthetic spray.

2) Lightly apply the silver nitrate stick around the bleeding point. Then apply direct pressure with the cautery stick onto the bleeding vessel for at least 10 seconds[1].

3) Only cauterize one side of the septum to avoid nasal septal perforation[1].

4) Hold cotton gauze or wool near the nostrils to prevent chemical burns caused by silver nitrate dripping onto upper lip skin.

5) Apply Naseptin® cream to the cauterised area (or Bactroban if allergic to peanuts or soya).

1.8. Nasal Packing

1.81 Anterior Packing

Indication: If cautery fails to control bleeding, or source of bleeding is not visible[6].

If you have not had training in cautery and therefore it has not been attempted, consider asking the ENT doctor for help prior to anterior packing. If anterior packing can be avoided this reduces associated pain, risk of infection and need for hospital admission.

Equipment:

- Anterior nasal pack x 2 (such as Merocel® or Rapid-Rhino®).
- OptiLube® Sachet or equivalent lubricating water-soluble gel.
- Silk tape.
- Cotton gauze pack.

Procedure:

1) Lubricate Merocel® or Rapid-Rhino®.
2) Insert along the floor of the nasal cavity. The pack should not protrude from the nostril.
3) Secure the pack. Most packs have a string attached that can be taped to the cheek[1].
4) Assess the oropharynx for ongoing bleeding[1]. Bilateral anterior packing may be required if single packing does not control the bleeding but should be avoided if possible.
5) Re-assess the oropharynx. If bleeding persists, posterior packing may be required[6].
6) If there is oozing of blood from the anterior packs, consider making a bolster using folded cotton gauze. Wrap silk tape around the bolster to maintain its shape and to stick it down to skin[6].

1.82 Posterior Packing

Indication: For suspected posterior bleeding or failure of a properly placed anterior pack to control haemorrhage[6].

Equipment:

- Assistant
- 12 French Foley® catheter
- OptiLube® Sachet or equivalent lubricating water-soluble gel
- 10 mL syringe
- BIPP (bismuth iodoform paraffin paste) gauze
- Bayonet forceps

- Cotton gauze pack
- Silk tape
- Gate clamp or Hollister umbilical clamp
- Tongue depressor

Procedure:

1) Lubricate a 12 French Foley® catheter[6].

2) Pass catheter through the nostril until the balloon is visible in the posterior oral cavity. Inflate the balloon with 7 to 8 mL of air.

3) Apply anterior traction to position and lodge the balloon in the posterior nasal choana[6].

4) Pack the anterior nasal cavity with BIPP gauze in the nostril containing the catheter. An assistant is required to maintain steady anterior pull on the catheter to maintain its position. BIPP is inserted using Tilley nasal forceps. Lay the BIPP first along the floor of the nose and successively superiorly to fill the nose. Compress each layer of packing downward after placement to increase pressure on the nasal cavity walls[6].

5) Apply padding between the catheter shaft and nostrils using a piece of cotton gauze. This is to prevent pressure necrosis of the nostril, which can cause significant cosmetic deformity[1,6].

6) Secure a gate clamp or umbilical clamp against the padding, and ensure adequate tension is maintained on the catheter to keep the balloon in the posterior choana[6].

7) Re-assess the oropharynx. In cases of on-going haemorrhage senior ENT input is necessary as surgical or radiological intervention may be necessary.

1.83 Nasal Pack Removal

Indication: Clinical decision by ENT registrar or consultant. The optimal duration of use is unknown as it has not been evaluated in randomised controlled trials[5].

Equipment:

- 10 mL syringe
- 10 mL sterile water
- Vasoconstrictor / anaesthetic spray
- Thudichum's nasal speculum.

- Light source e.g. headline, otoscope, pen torch, mounted lamp in treatment room, etc.

Procedure:

1. Irrigate the packing with 5 to 10 mL of sterile water. Saturating the pack promotes its softening and lubrication and therefore facilitates its removal.
2. Alternatively, spray a mixture of decongestant and local anaesthetic onto the sponge pack[6]. The decongestant shrinks adjacent mucosa, and anaesthetic provides some analgesia, as removal is associated with mucosal trauma.
3. Gently withdraw the pack by applying circular traction on the string.
4. Cautery (usually silver nitrate) may be indicated following pack removal for suspicious vessels or friable, haemorrhagic sites[6]. – see section 1.7.
5. Self care advice should be given to the patient[7] (see Appendix) and risk factors (see 1.2) should be addressed to reduce the risk of recurrence.

Chapter 2: Epistaxis In Children

2.1 Introduction

- Nose bleeds are very common in children, although it is rare before the age of 2[3].
- In the majority of children, spontaneous haemorrhage is almost always the result of an anterior septal bleed[3].
- The cause is usually idiopathic[3]. Risk factors include local minor trauma, dry air, low humidity, and upper respiratory tract infections[3].

2.1 Management

- The vast majority of epistaxis resolves with simple measures such as applying pressure on the soft cartilaginous part of the nose[3].
- Cautery with silver nitrate under local anaesthetic may be needed if the site of bleeding is clearly visible and bleeding is not too brisk[3].
- Packing is rarely indicated in children.
- Topical therapy (Naseptin® cream or Bactroban if allergic to peanuts or soya).
- Advice to the parents (see Appendix).

2.2 Referral

- ENT referral is indicated if epistaxis occurs in a child younger than 2 years of age, as epistaxis is rare in this age group and warrants consideration of trauma (accidental and non-accidental), nasal foreign body, and/or a systemic medical condition (e.g. leukaemia, bleeding disorder)[1,7].

Chapter 3: Epistaxis In Patients With Coagulopathy

3.1 Coagulopathy

- Coagulopathic conditions include: primary disorders of coagulation such as haemophilia, hereditary hemorrhagic telangiectasia; and acquired coagulopathies such as liver or renal disease, or hematological cancers[5].
- Absorbable or degradable material e.g. Nasopore®, is useful for patients with coagulopathies[5] as it does not require formal removal, which is associated with mucosal trauma and can precipitate further bleeding.

3.2 Anticoagulant Therapy

- Epistaxis is relatively common among patients who are medically anticoagulated[7].
- In the presence of relative indications for warfarin (e.g. AF), warfarin should be withheld only whilst nasal packing is in situ[8]. If not packed, then continue warfarin[8]. Consult a haematology specialist if you are not sure whether it is safe to stop warfarin.
- In the presence of absolute indications for warfarin (e.g. metallic heart valves, recurrent DVTs, PE, ischaemic stroke), warfarin should be continued unless the INR is grossly above the therapeutic range, in which case it is stopped temporarily until the INR has been restored to within therapeutic range[8]. If considering reversal, seek advice from a haematology specialist.

3.3 Antiplatelet Therapy

- There is no association between NSAID drugs and epistaxis[7]. Do not routinely stop NSAIDs.
- If bleeding is controlled, aspirin and clopidogrel do not routinely need to be stopped[8].
- If bleeding is uncontrolled and active, omit aspirin[8]. However, if the patient has a cardiac stent, consult a cardiologist before stopping aspirin.
- Continue clopidogrel. If considering stopping seek advice from a cardiology specialist.[8]

3.4 Novel Oral Anticoagulants (NOAC)

- Examples include direct thrombin inhibitors (dabigatran) or factor Xa inhibitors (rivaroxaban, edoxaban, apixaban).9
- If considering stopping, risks and benefits need to be considered9. Seek advice from haematology and/or cardiology specialists.
- There are no specific antidotes to reverse their anticoagulant effect in the event of bleeding[9].
- Aggressive supportive management and prompt consideration of procedural/surgical haemostatic intervention remain the mainstays of treatment[9].

Chapter 4: Prophylactic Antibiotics

4.1 *Oral Antibiotics*

- The use of oral prophylactic antibiotics is an area of uncertainty due to a lack of evidence[5]. There is a theoretical risk of infection due to impaired sinus drainage and aeration, and blood saturated foreign material[6].
- Oral co-amoxiclav (or clarithromycin in penicillin allergic patients) should be prescribed if nasal packing is in-situ for more than 48 hours.

4.2 *Topical Antibiotics*

- The evidence for topical antibiotics is limited, however despite this, after-care of the nasal mucosa is generally recommended to moisturise the mucosa and promote healing of friable mucosa and superficial vessels, and therefore prevent recurrence.
- Once epistaxis is controlled, prescribe a course of Naseptin® (chlorhexidine and neomycin) antimicrobial cream twice daily for two weeks (Bactroban® if the patient has peanut or soya allergy)[1].

Chapter 5: Recurrent Epistaxis

- The acute episode of epistaxis should be managed as usual (see 1.4).
- Self care advice should be given to the patient[7] (see Appendix) and risk factors (see 1.2) should be addressed to reduce the risk of recurrence.
- ENT clinic referral is indicated in cases of recurrent episodes of epistaxis for investigation and further management[1].
- Repeated episodes, particularly if they are unilateral or accompanied by other nasal symptoms, may warrant radiographic (computed tomography or magnetic resonance) and endoscopic evaluation to rule out neoplastic processes[5].
- When bilateral septal cautery is warranted, the treatments should be separated by 4 to 6 weeks to provide time for mucosal healing[5].
- Severe nosebleeds that are unresponsive to chemical cautery may require electrocautery[5].

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Appendix

Self-Care Advice For Patients

For 24 hours after bleeding, try to avoid:

- Blowing or picking the nose
- Heavy lifting
- Strenuous exercise
- Lying flat
- Drinking alcohol or hot drinks
- If the nose has been cauterized, the person should avoid blowing their nose for a few hours to prevent straining of the nostril

The following treatment is advised:

- Naseptin® cream twice daily for two weeks after an epistaxis episode
- Saltwater nasal spray may be purchased in pharmacies and sprayed into the nose throughout the day to keep it moist
- Placing a humidifier near the bed helps to prevent drying at night
- If bleeding restarts and does not respond to pinching the soft part of the nose for 15 minutes and leaning forward, the person should seek urgent medical advice
- Nasal decongestant spray may be sprayed on to a small cotton wool ball and placed on the bleeding area in addition to pinching the nose