Epistaxis

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Aetiology

There is a bimodal distribution, with peaks in childhood and old age. The main blood supply of the nose is the sphenopalatine artery, which is a terminal branch of the external carotid artery. Epistaxis may be anterior or posterior. Anterior bleeds are responsible for about 80% of epistaxis cases and occur at an anastomosis (Kiesselbach's plexus) on the lower anterior part of the septum (Little's area). Epistaxis can be divided into local and systemic causes (Figure 1), but the majority (80–90%) are idiopathic.

Management

Assessment

Gloves and plastic apron must be worn; surgical mask and eye protection is advisable. All patients who are actively bleeding need to be fully assessed and resuscitated if necessary. The clinical state of an elderly patient may deteriorate rapidly and careful resuscitation is vital. During the resuscitation process, bleeding should be controlled by digital pressure. A cold compress or the patient sucking on ice can enhance this. Blood tests should include a full blood count and a group and save. Routine clotting studies are indicated only if there is a suspected bleeding diathesis or if the patient is anticoagulated.

Good nasal preparation is critical in locating the source of the haemorrhage. Local anaesthesia is more effective if the nasal cavity is free of blood. Asking the patient to blow his nose is a good way of achieving this, although this may restart the bleeding. Anterior rhinoscopy should be undertaken using a Thudicum's speculum. Local anaesthetic (ideally with a vasoconstrictor) can be applied on cotton wool or as a nasal spray. Because anterior epistaxis is the usual cause, Little's area should be visualized first.

Cautery

Cautery is the first-line treatment for anterior epistaxis. A silver nitrate stick is commonly used. The stick reacts with the mucosal lining to produce a chemical burn. Only one side of the septum should be cauterized at a time, because there is a small risk of septal perforation. Electrocautery is a specialized form in which an electrically heated wire loop seals the bleeding vessel; it is available in ENT clinics in the UK .

Packing

Forms of anterior nasal packing: packing is necessary if cautery is unsuccessful. There are several forms of anterior nasal packing.

Causes of epistaxis

Local	Examples
Idiopathic (85%)	
Trauma	Digital Fractures Foreign body
Inflammatory	Infection Allergic (e.g. rhinitis) Autoimmune diseases (e.g. Wegener's granulomatosis)
Vascular	Hereditary haemorrhagic telangectasia Arteriovenous malformations
Structural	Septal deviation Septal perforations
Iatrogenic	ENT/maxillofacial/ophthalmic surgery nasopharyngeal instrumentation (e.g. nasogastric tube)
Neoplasia	Benign (e.g. juvenile angiofibroma) Malignant (e.g. sino-nasal carcinoma)
Drugs	Nasal sprays Drug abuse (e.g. cocaine)
Systemic	
Haematology	von Willebrand's disease Leukaemia Haemophilia
Environment	High temperatures Humidity Altitude
Medication	Anticoagulants (e.g. warfarin, heparin) Antiplatelet drugs (e.g. aspirin, clopidogrel)
Organ failure	Renal (e.g. uraemia) Liver (e.g. cirrhosis)
Other	Alcohol Hypertension

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Nasal tampons are popular because they offer a simple and effective mechanism for applying pressure to the bleeding vessel. They are easy to insert in the casualty setting and are effective in >85% of cases.

Formal packing – if the nasal tampon fails to stem epistaxis, formal packing with ribbon gauze is needed. There are many pre-prepared packs, but the most common are Vaseline™ or bismuth-iodoform paraffin paste-impregnated packs. If bleeding continues, consider packing the other side before removing the inserted pack. This may increase the tamponade pressure over the cartilaginous septum.

Complications of nasal packing include acute sinusitis and obstruction of the nasal airway leading to hypoxia or sleep apnoea. Inhalation of the pack can occur, which may cause acute obstruction of the airway. If packs are retained for >48 hours, antibiotics

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(e.g. co-amoxiclav) should be started to prevent toxic shock syndrome. Nasal packing is often insufficient to control vessels bleeding from the posterior nasal cavity. Such bleeds can be difficult to treat and may require balloon insertion or a posterior pack.

Endoscopic electrocautery

The examination of the nasal cavity is performed with a Hopkins rod rigid endoscope (0° or 30° angle). Suction removes clots and locates the bleeding point. Bipolar cautery is then used to seal the vessel. A device with an integrated suction tip improves the field of view and increases the efficiency of cautery. The patient should be observed for two hours and can be discharged if there is no rebleeding.

Surgery

Bleeding which fails to stop requires surgical intervention.

Diathermy: nasal instrumentation and the subsequent localization of a bleeding point is much easier under general anaesthesia. Bipolar diathermy is safer (particularly when operating close to the orbit) than monopolar diathermy because of the risk of inadvertent thermal damage associated with monopolar diathermy.

Septal surgery: most haemorrhage occurs from the septum. Hence, the raising of a mucoperichondral flap during septal surgery will decrease blood flow to the mucosa. Septal surgery is also used to correct a deviated septum or septal spur, which may be the underlying cause of the epistaxis.

Arterial ligation: there are three main types.

External carotid artery ligation is a non-specific method of decreasing blood flow to the nose. Studies have shown a long-term failure rate of 45%. This is because of collateral circulation, which can cause continued bleeding despite unilateral arterial ligation. Ligation of the external carotid artery is generally considered a 'last resort'. However, its relatively straightforward approach and its rapid effect is useful in controlling profound haemorrhage.

Maxillary artery ligation is more specific than an external carotid artery ligation and is effective in 87% of cases. A modified Caldwell–Luc procedure is used. Complications include devitalized gums and teeth, sinusitis and problematic intraoperative bleeding.

Sphenopalatine artery ligation is the most specific arterial ligation procedure. It is performed under direct rigid endoscopy and the vessel is normally clipped or coagulated using bipolar diathermy. The success rate is better than other forms of arterial ligation, probably because it is an end artery with little collateral flow.

Other management options include angiographic embolization and the use of cryoprecipitate fibrin glue.

Follow-up

Patients who require admission should be reviewed in clinic with a repeat full blood count. Anyone with severe epistaxis should have a formal examination of the nasal cavity to exclude a neoplastic lesion. Patients with high blood pressure on admission need referral to their GP. Anticoagulation may also need to be reviewed. ◆

Facial and orbital injuries

Niall Kirkpatrick

Neurosurgeons and plastic, oral and maxillofacial, ENT, ophthalmic surgeons share a common interest in craniomaxillofacial trauma and management is best served by a multidisciplinary team.

Historically, the surgical management of facial and orbital injuries has been characterized by delayed surgery, small, poorly sited incisions, external and wire fixation of fractures, and late management of the soft tissues. This often resulted in poor cosmetic appearance and functional outcomes.

Modern surgical management is based on the principles of craniofacial surgery i.e. early one-stage repair, exposure of all fracture fragments by correctly sited cosmetic incisions, precise internal fixation, immediate bone grafting and definitive management of soft tissues.

History

There is evidence from mummies that fractures and dislocations of the jaw were treated in ancient Egypt. Hippocrates described the use of circumdental wires and external bandages for immobilization of fractured jaws. Interdental fixation to splint the fractured mandible against the intact maxilla was recorded by William of Saliceto in 1276. In 1888, Schede used a solid steel plate held by four screws for fixation of a mandible. In 1901, René Le Fort described fractures of the middle one-third of the facial skeleton. External fixation using a halo frame was first used in 1943. The origins of modern craniomaxillofacial plating systems date from the 1960s, and the last decade has seen increasing interest in the use of resorbable plating systems.

Aetiology

Craniomaxillofacial trauma in the adult population in the UK is due to:

- interpersonal violence (52%)
- road traffic accidents (16%)
- sports injuries (19%)
- falls (11%)
- industrial accidents (2%).

Patients may present with isolated facial trauma or severe multisystem injuries. There is a rising incidence of craniomaxillofacial trauma due to interpersonal violence in most 'developed' countries. There has, however, been a dramatic reduction in trauma associated with road traffic accidents over the past 20 years in the UK, despite increasing usage of cars. This decrease (about 30%) has been attributed to a number of measures, including:

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