The decision to ligate an individual artery or a combination of arteries will depend on whether the site of bleeding is identified or not. A very clear understanding of the blood supply of the nose is necessary. In general, ligation of the anterior ethmoidal artery should be considered when the bleeding is from the roof of the nose or when trauma has played a significant part in the epistaxis aetiology.

Anatomy

The nose is an extremely vascular structure, as any new ST1 on call who has dealt with their first epistaxis will testify to! The main blood supply is from the external carotid artery via its larger terminal branch, the maxillary artery. This is supplemented by the superior labial branch of the facial artery. The nose also derives some of its blood supply from the internal carotid system via the ethmoidal branches of the ophthalmic artery.

The anterior ethmoid artery is a branch of the ophthalmic artery. It leaves the orbit via the anterior ethmoidal foramen, crossing the roof of the anterior ethmoidal sinus supplying the anterior ethmoid cells and frontal sinus. The artery then enters the anterior cranial fossa, gives off meningeal branches and turns downwards into the nasal cavity through the slit-like apertures at the side of the crista galli. The anterior ethmoid artery supplies the anterior one third of the lateral wall of the nasal cavity and a similar portion of the nasal septum.

Operative technique

The procedure is performed under general anaesthesia preferably using hypotensive techniques. The area should be injected with 1:200000 adrenaline with 1% lignocaine five minutes prior to the incision. The operative area is prepared in standard aseptic technique and the eye protected by a temporary tarsorrhaphy.

Any nasal packing is removed and a full endoscopic examination is carried out of the nasal cavity with a 4mm 0 degree endoscope. Nasal secretions and blood clots are removed with suction and great care should be taken to note any signs of bleeding, septal abnormality or varicose vessels at any site in the nasal cavity which can be cauterised using the suction diathermy.

A gently curved Lynch incision is made midway between the medial canthus and dorsum of the nose (Figure 1). The anterior ethmoid artery is a branch of the ophthalmic artery. It leaves the orbit via the anterior ethmoidal foramen, crossing the roof of the anterior ethmoidal sinus supplying the anterior ethmoid cells and frontal sinus. The artery then enters the anterior cranial fossa, gives off meningeal branches and turns downwards into the nasal cavity through the slit-like apertures at the side of the crista galli. The anterior ethmoid artery supplies the anterior one third of the lateral wall of the nasal cavity and a similar portion of the nasal septum.

Figure 1: Lynch incision midway between the medial canthus and dorsum of the nose.
part of the procedure. The periosteum is incised and the nasal bone exposed. The periosteal flap is elevated in a medial and posterior fashion in one layer with the skin. The lacrimal sac is usually elevated with the periosteum leaving it intact.

The dissection is continued using the Freer elevator (Figure 2) staying adjacent to the bone. An assistant retracts the orbit and lacrimal apparatus laterally using a small malleable retractor. The dissection continues endoscopically until the anterior ethmoidal artery is visualised in the frontoethmoidal suture line (Figure 3) and the inferior wall of the frontal sinus is exposed. The periosteum is rather adherent in the suture line and care must be taken not to avulse the artery in the process. The anterior ethmoidal artery is skeletonised and two haemostatic clips are applied (Figure 4 & 5).

The anterior ethmoidal artery is located 24mm posterior to the anterior lacrimal crest. The posterior ethmoidal artery is located 12mm posterior to the anterior ethmoid artery. The optic nerve is not more than 6mm posterior to the posterior ethmoidal artery. This artery should be identified but only rarely will it require division.

The periosteum is repaired with 3.0 vicryl in a continuous layer. Ethilon 6.0 is used for skin closure (Figure 6).

Postoperative packing is part of my conservative treatment after the procedure. Other more experienced surgeons may omit this.

Postoperative
The patient should be kept in the ward for at least 24 hours after the procedure. Standard observations are carried out during this period and a full blood count is done the following day. The patient is nursed upright and an ice-pack is applied to the operated area if there is any swelling. Sutures can be removed by the patients’ general practitioner at around seven days after the procedure. No ENT follow-up is required.

The periosteum is rather adherent in the suture line and care must be taken not to avulse the artery in the process.