Traumatic epistaxis and its treatment

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SUMMARY

We must insist on the fact that after a trauma apart from benign haemorrhages, serious and cataclysmic haemorrhage may result in which packing is futile.
The severe haemorrhage follows a craniofacial fracture with luxation and is treated by direct haemostasis of the anterior ethmoidal and sphenopalatine arteries.
The cataclysmic haemorrhage follows a skull-fracture. A free interval is present. Involvement of the optic nerve on the same side is usual. Arteriography is indispensable. Therapy consists of ligation of the internal carotid artery in the neck.

THE problem of posttraumatic epistaxis is important for the rhinologist.
In our opinion we have to distinguish three types:

1. The benign epistaxis
2. The severe epistaxis
3. The cataclysmic epistaxis

In the present survey we will not discuss the problems resulting from an abnormal condition of the patient (transient or lasting) resulting in a haemorrhagic diathesis or vascular fragility nor the general treatment such as coagulation and blood transfusions.

BENIGN EPISTAXIS

Definition - Haemorrhage which directly follows a trauma and ceases either spontaneously or with simple methods.

Cause - These are common trauma of the septum and fractures of the nasal bones.

Treatment - Treatment is easy. Fractures of the nasal bones and septum do not bleed of any importance. But, let us recall here the haematoma of the septum and its urgent treatment.

Once, we had to coagulate an abnormally large artery in the floor of the nasal fossa. The benign epistaxis can also be very annoying with boxers. In the case of the allergic child who agitates his nose, epistaxis can be a cause of worry for the parents especially when it starts at night.

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PROMINENT EPISTAXIS

Definition - Haemorrhage characterized by a repetitive and sudden induction. There is a great blood loss each time (150-400 gr.).

Cause - Mostly a fracture with dislocation of the middle part of the face. A scissor-effect is produced on the arteries in their course through the bone (canalis ethmoidalis anterior for the anterior ethmoidal artery; canalis palatinus and foramen sphenoidale and palatinum for the maxillary artery and its branches).

Treatment - Packing is delusive and useless. It is necessary to act directly on the anterior ethmoidal and maxillary artery. Out of seven cases we were able to stop the haemorrhage by isolated ligature of the anterior ethmoidal artery in three cases, while in the other four patients it was necessary to ligate the sphenopalatine and palatine arteries.

I - HAEMOSTASIS OF THE ATERIA ETHMOIDALIS ANTERIOR

Local anaesthesia with Xylocaine 1% - Adrenalin. A 2 cm curved skin-incision is made (1 cm in the medial part of the eyebrow and 1 cm below it). Incision on the bone dividing the periosteum. Detachment of the periosteal layer as far as the frontal ethmoidal suture. The elevatorium comes across a fibroperiostic cone (fibrous sheath and vascular - nervous content of the canalis ethmoidalis anterior). This pedicle is isolated above and below without opening the sheath. A small retractor is then placed on the content of the orbit, which is protected by the fibroperiosteum. The pedicle can then easily be clipped.

II - HAEMOSTASIS OF THE ARTERIA MAXILLARIS AND ITS BRANCHES (Escat and Hemous)

Because of the general condition of the mostly profound anaemic subject, we prefer local anaesthesia, which offers the great advantage of haemostasis. This last point is capital, for it is absolute essential that the operation takes place in a completely bloodless field. The anaesthesia consists firstly of the infiltration of the mucous membranes of the canine fossa in the same way as it is done in a Caldwell-Luc operation. Then after trepanation the sinus is packed with a gauze soaked in cocaine-adrenaline solution for five minutes, the gauze being firmly pushed against the posterior sinus wall. Anaesthesia of the superior maxillary nerve is not only useless but inadvisable as the infiltration of the anaesthetic could interfere with the discovery of the artery.

Operative method

1. After carefull haemostasis of the mucosal incision in order to facilitate further steps the anterior wall of the maxillary sinus is opened as in a Caldwell-Luc operation.

2. Trepanation of the posterior wall of the sinus. After cleansing of the sinus, which is often filled with bloodclots, a gauze with cocaine-adrenaline solution is firmly pushed against the posterior wall and left in place for five minutes. After the gauze has been removed, the cavity should be perfectly free from blood. The best place for trepanation is the superior internal portion of the posterior wall. The limits of the bony window to be resected must be scrupulously respected above and inside. Above at a line parallel to the angle between posterior and superior walls and 3 mm underneath the latter; inside at a vertical line parallel to the angle between the internal and posterior walls at a distance of approximately 5 mm from the latter. The external and inferior limits are less precise and vary with the dimensions of the sinus. The window opened is roughly a quadrangle and varies in its diagonal dimension from 10 to 13 mm.

The trepanation is done with the aid of a light gouge of 2 mm width, applied perpendicular to the surface of the bone. It will fracture but not separate the bone as the sinus wall in this area is very thin (not more than 0,5—0,8 mm). A window is made by small successive cuts with the gouge, which is applied with extreme delicacy. A fine hook (ear surgery-type) is then introduced to bring the bone fragments (which detach from the periosteum as does a eggshell from the vitellin membrane) in pieces in the sinus cavity.

From this moment on one is separated from the fossa pterygopalatina only by the periosteum. Carefull observation often permits visualisation of arterial pulsations. With the same hook one now proceeds with extreme care to open the periosteum avoiding any deep invation the cellular tissues of the fossa. The artery appears generally revealing itself with a superiorly concave curve. It is bluntly isolated in the area of the superior-internal angle of the trepanation. During this manoeuvre the origine of the arteria palatina descendens and arteria infra-orbitalis are revealed. When these two vessels are identified, the posterior face of the artery is isolated by means of a blunt hook (the tenotomy hook of the ophtalmologist is perfect) between the arteria infra-orbitalis and arteria palatina and if possible, within the latter. A ligature is placed. This can be done by means of a number 1 linen thread introduced by a special curved instrument that we have constructed or in a much simpler way by means of clips. If the arteria palatina descendens can be recognized, we consider it of advantage to place two clips: one above this artery and the other below the area of the foramen pterygopalatinum.

The operation is then terminated by loosely packing the sinus with a soaked gauze that can be removed in two days time.

Bouche (1964) advocates an operation of the Lima, which permits him to pack the ethmoid and the ethmoidal arteries and to coagulate, to ligate or simply to pack the terminals of the arteria maxillaris.

Thanks to the described techniques, one is able to effect a more direct haemostasis then by means of the earlier ligatures of the external carotid artery, which can not assure a haemostasis of the ethmoid as the anterior ethmoidal artery is a branch of the arteria ophthalmica and thus of the internal carotid artery. The prognosis of this type of epistaxis, which was a few years ago a great worry for the rhinologist, is greatly improved.

CATACLYSMIC EPISTAXIS

The cataclysmic epistaxis is less known to the rhinologist, but when diagnosed it can be controlled.

Definition - Cataclysmic epistaxis arises suddenly and produces a great blood loss of one liter or more within 15 to 30 minutes.

Cause - The cause is mostly an apparently benign trauma. In fact there is a simple fracture of the base of the skull but associated with involvement of the optic nerve. There exists a free interval of many days. Carotid angiography shows an additional filling on the level of anterior portion of the carotid syphon in its portion where it is in contact with the wall of sphenoid. The epistaxis as a result of a lesion of the internal carotid artery with bloss of blood through the sphenoid. A different symptomatology exists of the lesion concerns the cavernous sinus. In this case a pulsating exophthalmus is present.

Treatment - Ligature of the internal carotid artery in the neck under E.E.G.-control. A temporary compression of approximately 10 minutes is necessary before the ligature is definitely applied.

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