Selective carotid angiography in patients with intractable epistaxis

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The nose protruding from the face is easily traumatized. Nose-bleed after trauma is most often profuse but soon ceases and does not recur. It is not common to seek medical attention for this type of nose-bleed. Among 212 patients who needed care at the Mayo clinic because of nose-bleed there were approximative 10% who had post-traumatic nose-bleed (Hallberg, 1952). In an English case study of 300 patients 12% had nose fractures with post-traumatic nose-bleed (El Bitar, 1971). Arterial bleeding was most frequent, causing a considerable blood-loss, tendency to hypovolemic shock and necessitating blood-transfusion. Post-traumatic epistaxis in combination with fractures of the facial skeleton has a tendency to recur one or more weeks after the trauma (Shapiro, 1967; von Kecht, 1968; Jackson, 1970 and Pathak, 1972). The bleeding may be violent and profuse but more often one sees repeated small intensive bleeding episodes which stop spontaneously after a short while. The bleeding periods may be frequent enough to make the patients anemic.

Since 1870 30 cases of post-traumatic nose-bleed have been reported. These are all reports of traumatic aneurysms of the internal carotid artery (Van Beusekom et al., 1966; Jackson, 1970; Pathak, 1972). The aneurysms were often located in the sphenoidal part of the artery. The artery is here partially surrounded by the cavernous sinus (Adner, 1968 and Jackson, 1970). In these cases the bleedings started weeks to a couple of months after the trauma. When the aneurysms burst the bleeding was very heavy and impossible to stop.

Reports in medical literature of other forms of post-traumatic nose-bleed are scarce. Nevertheless this type of epistaxis must be common, — sometimes a trivial but some times a serious problem, especially in connection with multiple facial fractures. It may be difficult to localize the bleeding vessel in a traumatised nose. Anterior and posterior nose pack do sometimes fail to stop the bleeding for more than just a day or week. When the package is removed it might start bleeding again. This asks for surgical treatment after an exact localisation of the bleeding vessel. As in every other surgical field the bleeding should naturally be stopped as close to the bleeding point as possible if anastomoses are to be avoided (Shaheen, 1970).

It is known from experimental angiographic investigations that a bleeding artery in

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the abdomen can be localised if the bleeding exceeds 0,5 ml/min provided subtraction technique is used (Baum, 1963, 1965).
In two cases of traumatic recurrent nose-bleed selective internal carotid angiography was used during actual bleeding. The bleeding vessel was easily visualised at both occasions. But these patients required only minimal sedation and intravenous blood or Macrodex® infusion and the ENT-surgeon was present during the angiographic procedure.

Case report

A 35-year old lumberman had a nose fracture caused by a falling tree. 11 days after trauma he started to bleed heavily through his right nostril. In spite of anterior and posterior nose pack the bleeding recurred 3 times during the following 3 days. A selective internal carotid angiogram was taken in order to determine the bleeding source preoperatively. On the X-ray one could see an extra-vasation of contrast from the anterior ethmoidal region, most probably from the anterior ethmoidal artery itself. A very tight nose-pack in this region stopped the bleeding at once. The package was removed 6 days later and the bleeding was not recurred. For this reason the artery was not ligated. (Figure 1).
A 21-year old office clerk had earlier undergone unsuccessful plastic repair of a repositio nasomaxillaris congenita. 7 days after an osteotomy for the same reason, — an osteotomy ad mod. Joseph —, the patient started to bleed heavily through the left nostril. The patient was treated with several anterior and posterior nose-packs during the following 7 days. In spite of this the bleeding recurred

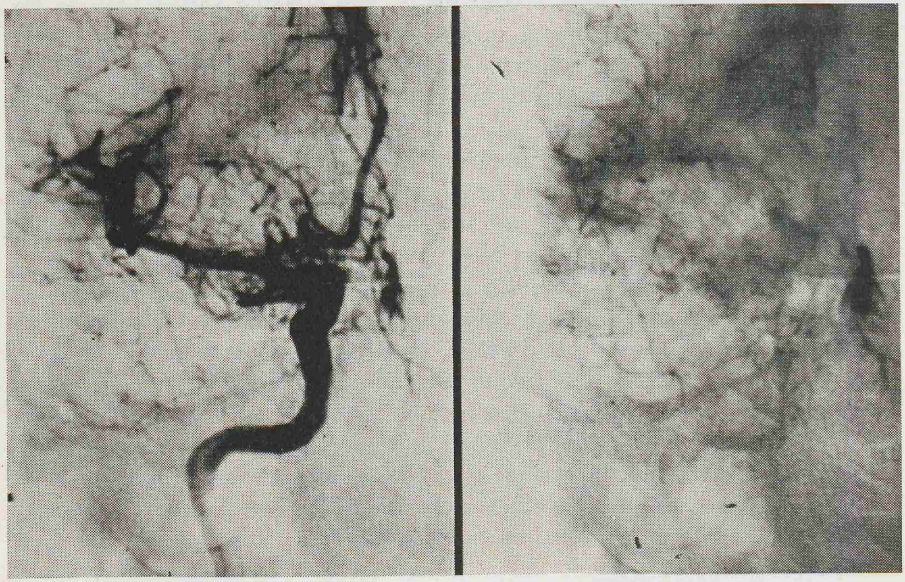

Fig. 1 Arterial phase Venous phase

Angiogram with visualization of extravasation of blood in the anterior ethmoid region on the right.

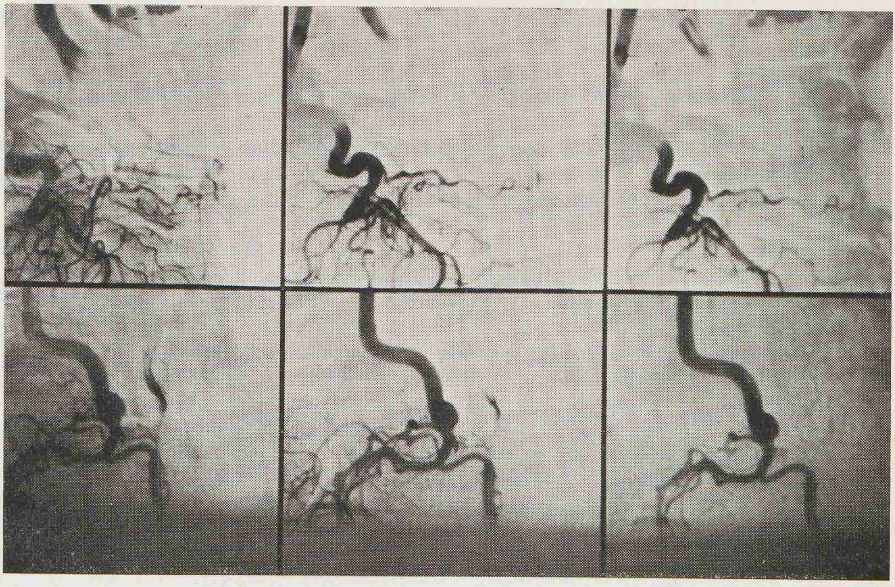

Fig. 2. Int. carotid art., middle cerebral art. and pericallosal art. with extravasation of blood in left anterior ethmoid region and blood flowing backwards into nasopharynx.

5 times. In order to localise the bleeding vessel a selective internal carotid angiogram was taken. The bleeding was seen to originate from the anterior left ethmoidal artery. The vessel was ligated by the ordinary approach transorbitally where it was found and secured just before its passage through the medial orbital wall. The bleeding stopped immediately. A losse nose-pack was removed the following day and no bleeding has recurred. (Figure 2).

It has thus been shown that it is possible to localise a bleeding vessel in the nose by selective internal carotid angiography technique. By this means it is possible to differentiate between an anterior and posterior ethmoidal artery bleeding and choose ones surgical approach (Middleton, 1967 and Pearson, 1969). When there is no bleeding from the ethmoidal arteries it is possible, using the selective technique, to proceed to investigate the external carotid artery and its branches, the sphenopalatinal artery and the internal maxillary artery, descending palatine artery a.s.o. And so it is probable that one can localise a bleeding even from these arteries. They are easily approached using the transantral route (Pearson, 1969).

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