7 Haemobilia and Bleeding Complications in Pancreatitis

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7.1 Introduction

Haemorrhage into the biliary tract is called haemobilia. It was first described in 1654 [1], but the condition was not termed ‘haemobilia’ until 1948 [1, 2]. The majority of cases are due to trauma (50%), operative trauma accounting for 15% [2], though this incidence may have increased with the introduction of laparoscopic biliary surgery [3]. Pancreatitis is a rare cause of haemobilia.

The majority of patients who develop significant bleeding as a complication of pancreatitis do so because of associated upper gastrointestinal ulceration and inflammation. Occasionally portal vein thrombosis can lead to variceal bleeding [4]. Neither of these pathologies is within the remit of this chapter. The estimated incidence of visceral aneurysm development in patients with pancreatitis is 5%–10% [5, 6]. Such aneurysms are caused by the actions of pancreatic enzymes such as elastase on adjacent blood vessels released in the course of pancreatitis.

Though spontaneous thrombosis of such aneurysms has been reported [7] mortality from conservative management is said to be more than 90% [8, 9]. The reported mortality when such aneurysms are treated surgically ranges from 12.5% to 40% [10]. Importantly re-bleeding can occur in 6%–10% of patients who survive initial surgery [11]. The first report of successful embolization in this condition was in 1982 [12]. Since then there has been a plethora of articles describing the diagnosis and endovascular treatment of pancreatitis associated visceral aneurysms [8, 13–15].

7.2 Haemobilia

7.2.1 Clinical, Pathophysiological and Anatomical Considerations

The classical triad of gastrointestinal bleeding, right hypochondrial pain and jaundice suggest haemobilia [2]. However it can be difficult to diagnose and if bleeding is of low volume may present as anaemia of unknown cause. Bleeding can also be massive and life threatening. The commonest cause as already stated is blunt and penetrating trauma in 35%. Iatrogenic haemobilia is a complication of all forms of biliary surgery, percutaneous biliary procedures (4%–14%) including stent insertion [16] and biopsy (3%–7%) [17]. In addition an aberrant papillary artery, found in approximately 20% in cadaveric studies, can bleed following endoscopic sphincterotomy [18]. Other causes include gallstone induced cholecystitis, halothane induced liver necrosis, varices secondary to severe portal hypertension, primary and metastatic malignancies of the liver.
and biliary tract, arteriovenous malformations in
the liver or pancreas and infections and infestations
including ascariasis, hydatid and amoebic abscess,
and mycotic aneurysms due to any organism [17].

Haemobilia is almost always due to damage to the
hepatic artery. As this supplies only about one third
of the liver’s blood supply it can usually be tied off
or embolized with impunity. However if the portal
vein is occluded interruption to the hepatic arterial
supply may lead to liver infarction. This is not invar-
able as the hepatic arteries can backfill around the
portal triads. This latter feature also means that a
proximal tie or embolization may not be effective.
Therefore embolization is best done proximal and
distal to the pseudoaneurysm or bleeding point.

7.2.2 Imaging and Technical Considerations

Although ultrasound and ERCP can confirm the
diagnosis of haemobilia in a few cases, CT is more
sensitive, contrast enhanced CT (CECT) diagnos-
ing active blood loss or haematoma and its site of
origin in almost 100% of cases. In occult cases
increased attenuation of bile in the gall blad-
der and ducts confirms the diagnosis [17]. Good
quality selective and super-selective angiography
remains the diagnostic procedure of choice, as it
not only confirms the diagnosis, but also localises
the site accurately and allows immediate treatment
by embolization (Fig. 7.1). It is essential prior to
definitive treatment to make sure that the portal
vein is patent and this must be imaged on CECT or
indirect portography.

Catheterisation of the hepatic artery is usually
performed from the femoral artery. The radial or
brachial approach may be preferred especially where
the patient is thin and the angle with the aorta very
acute. A 4- or 5-F Cobra Glidcatheter (Terumo) and
hydrophilic wire will usually suffice to diagnose and
cross the bleeding point in the hepatic artery. If it
is very peripheral, proves difficult or is stenosed or
in spasm, a co-axial system will almost always do
so. Occasionally patients have a series of intermit-
tent large haematemeses. Though the diagnosis of
haemobilia is obvious from their history, ERCP and
perhaps CT findings, no pseudoaneurysm or bleed-
ing site can be seen at angiography. Invariably there
will be spasm somewhere associated with the tem-
porarily sealed bleeding site or occult pseudoan-
eurysm. Usually local contrast injection will reveal
this but in any case the area should be embolized.
This usually requires a coaxial system to negotiate
the narrowed segment (Fig. 7.2).

For a list of technical requirements see Table 7.1.

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<td><strong>Primary</strong></td>
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| | 2. Coaxial catheters are often very useful if superselective or distal embolization is necessary | 2. Multipurpose or Beren-
sstein catheters useful if arm approach |
| Wires | Glidewire (Terumo) | Other hydrophilic wire |
| Embolic material | Steel coils | 1. Glue |
| | Platinum microcoils if co-axial system used | 2. Thrombin |
| | | 3. Long detachable coils or detachable balloons if the aneurysm must be packed |
| | | Unless the haemorrhage is immedi-
ately life threatening (see Fig. 7.3) do not use: |
| | | Particles |
| | | Gelfoam |
| | | Autologous blood |