Abdominal Imaging

Biliary System
Segmental Anatomy

RIGHT
7 Posterior Superior
6 Posterior Inferior
8 Anterior Superior
5 Anterior Inferior

LEFT
1 Caudate
4 Medial Sup & inf
2 Lateral superior
3 Lateral inferior

Fig. 8.—Axial spiral CT scan obtained during arterial portography in plane of transverse scissura, defined here by the right main portal branch (RMPB), shows RMPB in its entirety. Middle vertical scissura (m), defined by vertical plane containing middle hepatic vein, separates subsegments 4a and 4b (left medial segment) from subsegments 5 and 8 (anterior segment of right hemiliver). Right vertical scissura (r), defined by vertical plane containing right hepatic vein, separates subsegments 5 and 8 from subsegments 6 and 7 (posterior segment of right hemiliver). At this level, RMPB divides into two segmental branches (anterior and posterior) for right hemiliver. Anterior segmental branch provides inferior subsegmental branch for subsegment 5 (open arrow) and superior subsegmental branch for subsegment 8 (curved arrow). Posterior segmental branch of RMPB provides inferior subsegmental branch for subsegment 6 (not seen) and superior subsegmental branch for subsegment 7 (straight solid arrow).
Biliary Segmental Anatomy

“Normal” only 60% of time
CBD – branches of GDA
Cystic duct and GB- cystic artery, most commonly from RHA (80%)
Intrahepatic ducts – branches of hepatic arteries
Choledochal Cysts

- Infancy/ early childhood presentation (60% dx in pts <10 yo)
- Mass, pain, jaundice – classic triad…most often seen in kids

**Origin** - abnormal PD - CBD union
- chronic reflux of pancreatic juice into the bile duct, resulting in irritation of the duct and subsequent dilatation. (right angle communication or long common channel –usually only 4-5mm channel)

**Rx** - requires surgery with complete Cyst excision
Type I choledochal cyst

**Women** 4x more common

Sxs Recurrent cholangitis, jaundice, cholecystitis, pancreatitis

**Cholangiocarcinoma** 20x increased risk

GB cancer risk increased
Type II

CBD diverticulum
Type III

Focally dilated distal CBD herniates into duodenum “choledochocoele”
Type IV

- Intra and extrahepatic (4a)
  - Saccular, multifocal

- Or Extrahepatic only (4b)
  - Saccular and multifocal dilatations
Type V

Intrahepatic
• Saccular
• Multifocal
Type V (Carolli’s Disease)

**Associations:** intrahepatic stones, sludge
  - hepatic abscess
  - cholangiocarcinoma
  - hepatic fibrosis and cirrhosis
  - renal cysts and renal tubular ectasia (MSK)

**Origin:** Rare, auto recessive, arrest/derangement in duct development
Approach to biliary strictures

Localize
- Intrahepatic
- Extrahepatic
- Both

Characterize
- Single
- Multifocal
Strictures DDx

• Malignant
  • Cholangiocarcinoma, liver mets
  • Portal lymphadenopathy, Panc, duodenum or ampullary Ca

• Benign
  • Sclerosing cholangitis, PBC, Oriental cholangiohepatitis, AIDs cholangiopathy
  • Post XRT, ampullary adenoma, chronic pancreatitis, portal bilopathy