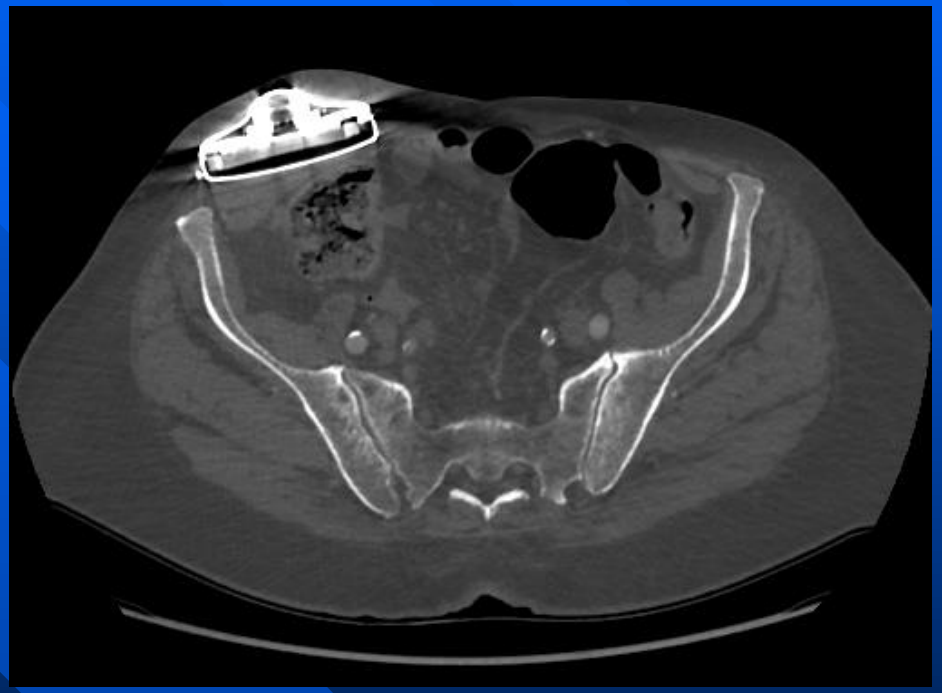
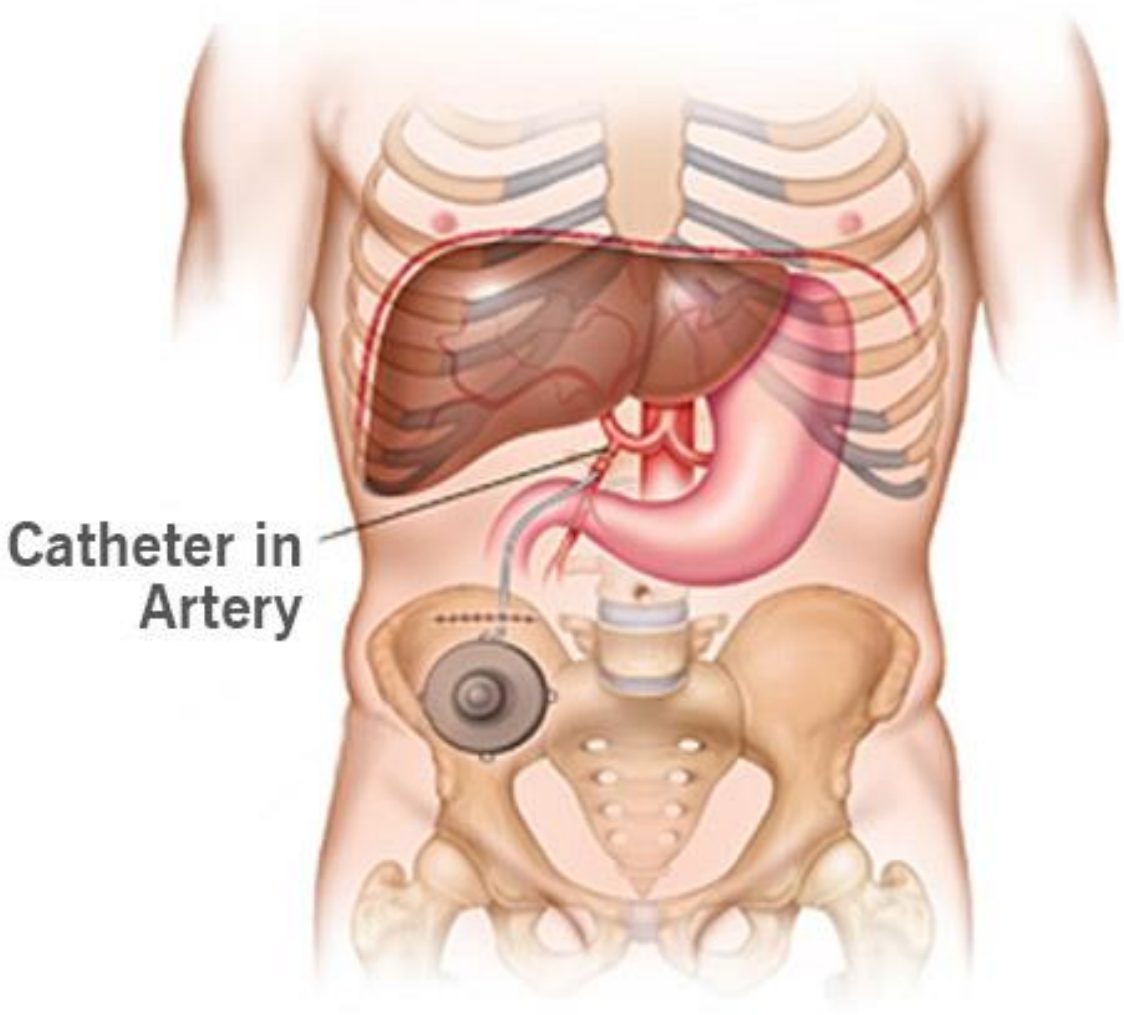
Chemotherapy-Induced Cholangitis

- Iatrogenic cholangitis
  - following intraarterial chemotherapy (hepatic artery infusion pump [HAIP] or transarterial chemoembolization [TACE]) for hepatic malignancies or metastases.
- Results from either direct toxic effects of drug on biliary ducts or fibrosis/occlusion of peribiliary vascular plexus with resultant biliary ischemic cholangiopathy
- Risk factors:
  - Preexisting biliary strictures, prior biliary surgery, portal vein occlusion, nonselective placement of catheter during chemoembolization, higher doses of chemotherapy

Hepatic Artery Infusion Pump (HAIP)

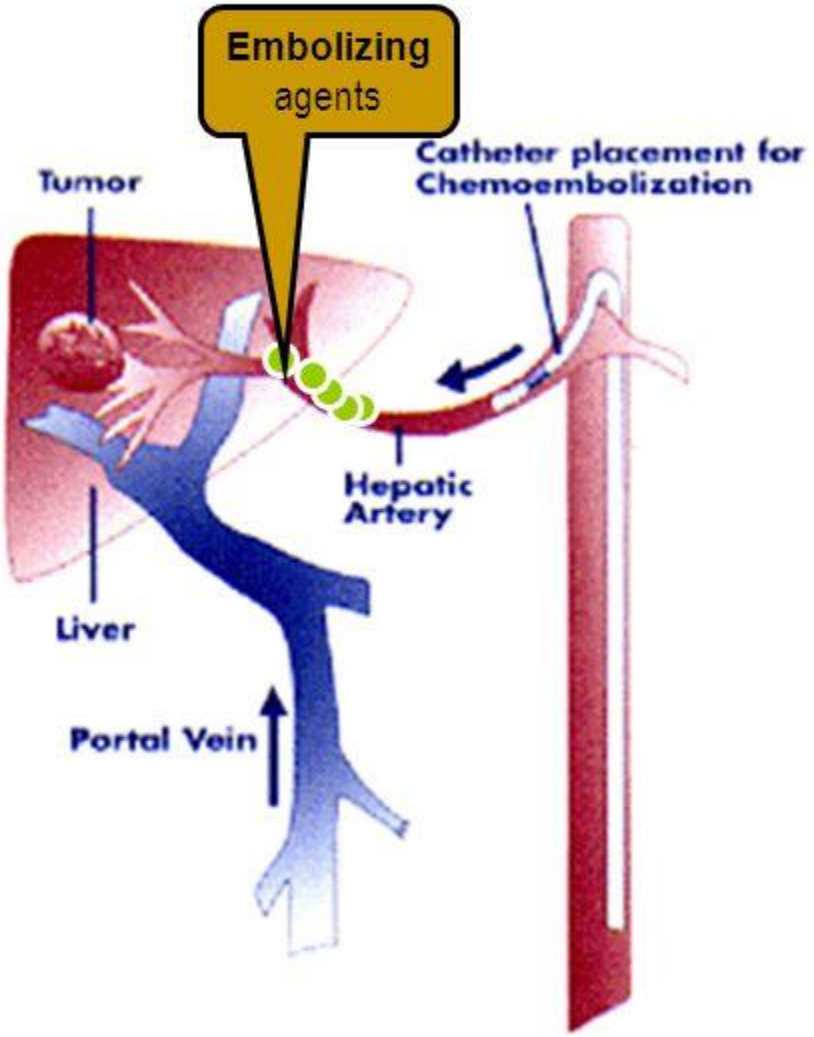
- For liver metastasis
- Small, disc-shaped device that is surgically implanted just below the skin of the patient,
- Connected via a catheter to the hepatic (main) artery of the liver.




Catheter in
Artery

Transarterial Chemoembolization (TACE)

- Meta-analysis showed survival benefit in selected pts with TACE compared to control group
  - No benefit of embolization without chemotherapeutic agent
- No data on choice of chemo agent (doxorubicin, mitomycin, and cisplatin most common) or schedule for TACE
- Partial response 15 - 55%
- Complete necrosis 22 - 29%
- > 50% develop postembolization syndrome
- Contraindicated in Child C, portal vein thrombosis or hepatofugal flow



Llovet et al. *Hepatology* 2003;37:429-442

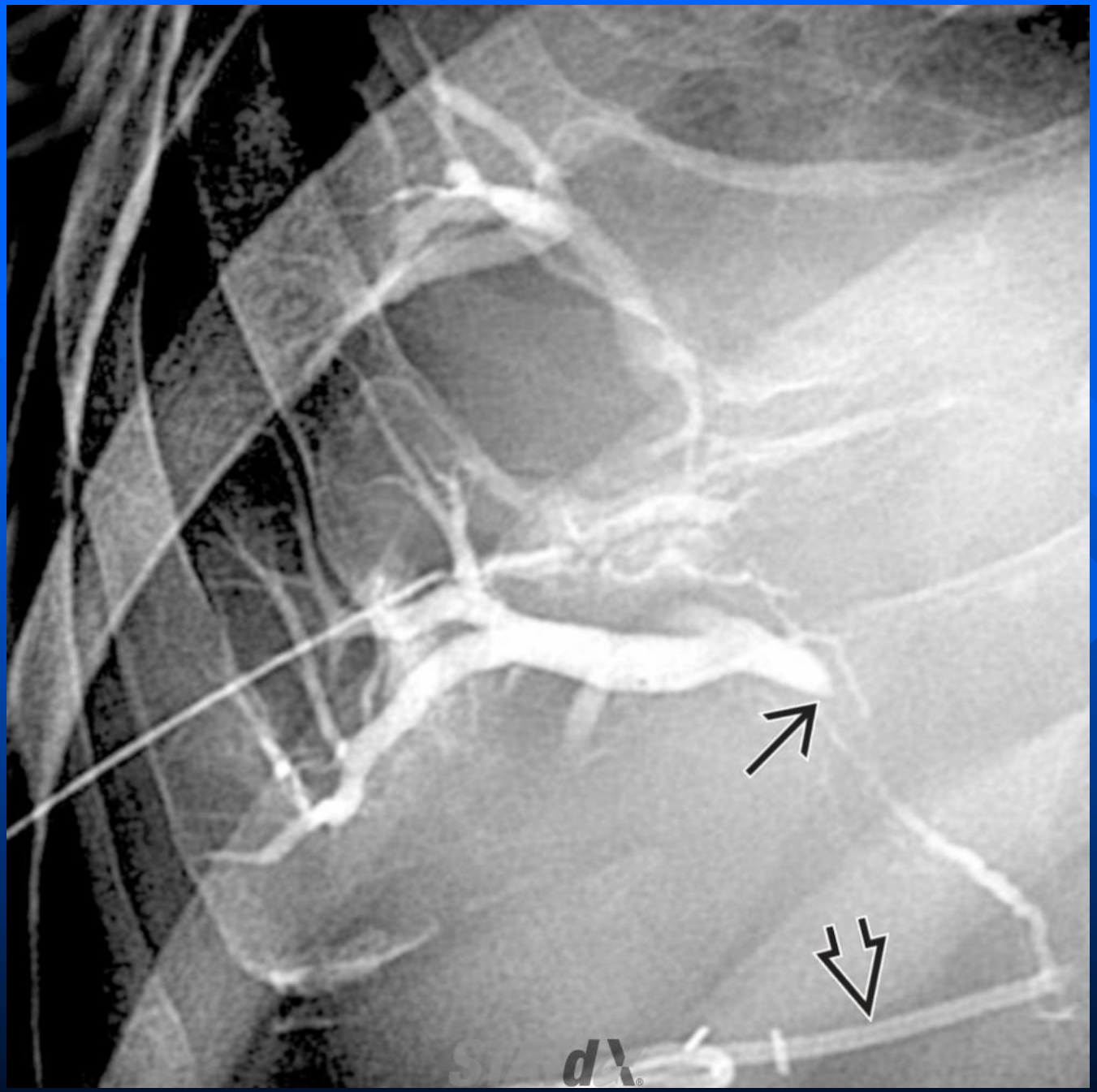
Imaging

- Findings similar to primary sclerosing cholangitis, with stenosis or complete obstruction of involved ducts
  - ± dilation of upstream intrahepatic ducts, as associated periductal fibrosis may impede ductal dilatation
- Distribution of strictures in biliary tree reflects hepatic arterial supply to bile ducts
  - Proximal extrahepatic duct and biliary confluence strictures are most common due to blood supply from hepatic artery
  - Distal extrahepatic duct is supplied by gastroduodenal artery branches, and consequently usually not involved
  - Gallbladder and cystic duct may be involved
  - Rarely causes peripheral intrahepatic strictures
- CT or MR: Involved bile ducts may show periductal edema, mural thickening, and enhancement
- Biloma formation (± abscess formation) may reflect drug-induced necrosis of peripheral ducts

General Features

- **Location**
  - Distribution of strictures in biliary tree reflects hepatic arterial supply to bile ducts
    - » Proximal extrahepatic duct and central intrahepatic ducts/biliary confluence are most commonly involved (~ 50%) due to blood supply from hepatic artery branches
    - » Distal extrahepatic duct supplied by gastroduodenal artery branches, and consequently not usually involved
    - » Rarely causes peripheral intrahepatic strictures
    - » Gallbladder and cystic duct may be involved
- **Morphology**
  - Findings similar to primary sclerosing cholangitis, with stenosis or complete obstruction of involved ducts
    - » ± dilation of upstream intrahepatic ducts, as associated periductal fibrosis may impede ductal dilatation

Axial CECT shows a liver metastasis (black curved arrow) that is low in attenuation, likely as a result of necrosis. Note the dilated ducts (black solid arrow) that resulted from a stricture of the biliary bifurcation and common hepatic duct, also due to chemotherapy.



Transhepatic cholangiogram in the same patient shows gross dilation of the intrahepatic ducts, with abrupt, high-grade stenosis (black solid arrow) at the confluence of the right and left ducts. This patient had received floxuridine through an arterial catheter (black open arrow).