Liver Anatomy (and HCC)
External Anatomy
Components of Hepatectomy

Outflow
Hepatic veins
Vena Cava

Inflow
Hepatic artery
Portal vein

Parenchyma
Portal Pedicles

Right liver

Left liver

Right pedicle

Left pedicle
CT Segmental Anatomy
Components of Hepatectomy

- **Outflow**
  - Hepatic veins
  - Vena Cava

- **Inflow**
  - Hepatic artery
  - Portal vein

- Parenchyma

**Extrahepatic or intrahepatic control of inflow and outflow?**
Hepatic veins
Hepatic veins
Hepatic veins
Outflow Control

Extra-hepatic

Intra-hepatic
Left Liver Mobilization
LHV and MHV Control
Right Liver Mobilization
Outflow Control
Right Hepatic Vein Division
Extrahepatic Outflow Control
Importance of the Middle Hepatic Vein

• No liver hypertrophy
• Large loss of normal liver
Extrahepatic Outflow Control

MHV
LHV
RHV
IVC
Extrahepatic Outflow Control
Hepatic artery

- LH
- MH
- Left gastric
- Aorta
- Celiac trunk
- Splenic
- RH
- Cystic
- Proper hepatic
- Supraduodenal
- Gastroduodenal
- Right gastric
- Common hepatic
CT Angiogram
Inflow - Intrahepatic Pedicles

Right liver

Left liver
Portal Pedicles
Portal Pedicles
Portal vein - left
Hepatotomies for Inflow Control

For right pedicle control
Inflow Control
Right Pedicle Division
Intrahepatic Inflow Control
Extrahepatic Inflow Dissection

- Time consuming
- Difficult if previous RUQ surgery
- Associated with vascular/biliary injury on occasion
- Mandatory for perihilar tumors
Left Portal Vein
Inflow/Outflow Control?
Hepatocellular Carcinoma
Anterior Sectorectomy
Colorectal metastases

Left Lateral Segment

Right Posterior Sector
Hepatocellular carcinoma
HCC Features

**Diagnosis**
- CT/MR: Hypervascular on arterial phase with washout
- AFP >500
- Biopsy

**Staging**
- Lymph node involvement
- Distant disease

**Treatment** - Hepatic function, portal HTN
- Resection
- Embolization
- Transplant
Cirrhosis
“Hanging” Hepatoma
40 y.o. F with acute RUQ pain
Four patients with HCC

Patient 1: Tumor expanding portal vein

Patient 2: Tumor in posterior sectoral portal vein

Patient 3: Tumor in left hepatic vein

Patient 4: Tumor in IVC and atrium
39 y.o. Caucasian female without risk factors
Sorafenib in Advanced HCC

10.7 vs. 7.9 months
65 y.o. drinker with pain, AFP 40
10 year survivors HCC

- R0/R1 resections of HCC (n=212)
  - Died <3 months (n=13)
  - Lost to follow up <10 years (n=12)
  - Died without recurrence <10 years (n=28)
  - Survived >10 years (n=50)
  - Died of recurrence <10 years (n=109)
50 y.o. Asian female with Hepatitis B
20 y.o. male with pain

Liver tumor

Nodal met

Liver tumor