



Pre-Operative Services Teaching Rounds 5 Feb 2011

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- **Liver disease**

- History
- Physical
- Labs
- Risk

- **Cataract**

- History and physical
- Associated diseases
- Labs
- Anesthesia



Case

59yr old male for left cataract surgery

- PMH:
 - DM type 2
 - Hepatitis C, 30 years ago
 - Low platelets
- PSH:
 - Mitral valve repair 6 months earlier complicated by pleural effusion
- SH:
 - Last alcohol 18 months ago

Case (cont)

- Meds:
 - Sotalol
 - Pantoprazole
 - Spiranolactone
 - Furosemide
 - Folate
 - Metformin

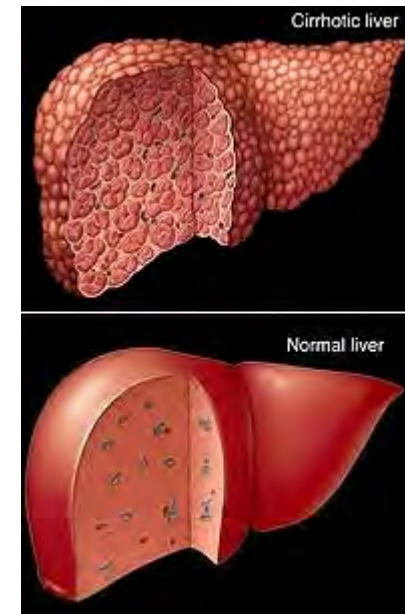
Yellow font denotes findings in our patient

Hepatitis C

- **Blood transfusion**, IV drug abuse, tattoos, STD.
- Acute – rarely liver failure
- Chronic (almost 100%)
- **Chronic active** (60-80%) raised AST/ALT
- **Cirrhosis** (20+% of chronic Hep C at 20 years)
- Hepatocellular cancer (5%)
- Associated infections
- Commonest indication for liver transplant in USA

Review of systems – Hx of hepatitis

- Follow up
- Treatment (antiviral)
- Cirrhosis (fibrosis and scarring)
- Jaundice / urine / stools / pruritis
- Ascites
- Encephalopathy
- Oesophageal varices
- Alcohol and toxins
- Meds



Exam

- General:
 - **Jaundice**
 - Oedema
 - **Pallor**
 - Clubbing
 - **Muscle wasting**
 - Low BP – postural hypotension

Spider naevi

Palmar erythema

Orthodeoxia



Jaundice



Palmar erythema



Peripheral edema



Clubbing

Exam(cont)

• Abdomen

- **Ascites** (assoc pleural effusion)
- Caput medusa
- Superficial veins
- Hepato**splenomegaly**

• CNS

- **Confusion**
- Flapping tremor (Asterixis)
- **Handwriting**

• Hormonal

- **Gynaecomastia** (incr. estrogen – less metabolism)
- Testicular atrophy

• Dupytren's contracture



Veins flowing away from portal hypertension

Ascites
Caput medusa



Air-Fluid
Interface
Shifted Upward
to Point Closer
to Umbilicus

Patient on Right Side

Jaundice
Spider nevi
Veins





Gynaecomastia



Labs

- Chemistry Na 132, Cr 1.15
- LFTs AST/ALT 69/82
- CBC HB 11 plts 81000
- INR 1.5
- CXR
- ECG
- O₂ sats



Morbidity/Mortality in cirrhosis

High

- Bleeds
 - low platelets from hypersplenism 2^o portal hypertension
 - INR prolonged – synthetic function of liver
- Infections
 - Immunoglobulins
 - Wound healing
- Liver failure
 - Ischemia
- Toxins

Risk

- **Liver disease**

- **Type and Severity as determined by Child Pugh score**

Cirrhosis especially high risk

(associated risk factors in addition: high ASA score, high Creatinine, preop GI bleeding, anemia, hypoxemia, malnutrition, portal hypertension, infection)

Child- Turcotte 1964

Modified by Pugh Child – Turcotte- Pugh 1973.

Child-Pugh classification of severity of liver disease

Parameter	Points assigned		
	1	2	3
Ascites	Absent	Slight	Moderate
Bilirubin	<2 mg/dL (<34.2 micromol/liter)	2-3 mg/dL (34.2 to 51.3 micromol/liter)	>3 mg/dL (>51.3 micromol/liter)
Albumin	>3.5 g/dL (35 g/liter)	2.8-3.5 g/dL (28 to 35 g/liter)	<2.8 g/dL (<28 g/liter)
Prothrombin time			
Seconds over control	<4	4-6	>6
INR	<1.7	1.7-2.3	>2.3
Encephalopathy	None	Grade 1-2	Grade 3-4

Modified Child-Pugh classification of the severity of liver disease according to the degree of ascites, the plasma concentrations of bilirubin and albumin, the prothrombin time, and the degree of encephalopathy. A total score of 5-6 is considered grade A (well-compensated disease); 7-9 is grade B (significant functional compromise); and 10-15 is grade C (decompensated disease). These grades correlate with one- and two-year patient survival: grade A - 100 and 85 percent; grade B - 80 and 60 percent; and grade C - 45 and 35 percent.

Child Pugh Score

Points	Classes	Disease	One year survival	Two year survival	Perioperative mortality 1997 ¹	Perioperative mortality 2010 ²
5-6	A	Well compensated	100%	85%	10%	2%
7-9	B	Significant functional compromise	81%	57%	30%	12%
10-15	C	Decompensated	45%	35%	82%	12%

1.Mansour etal Surgery 1997 (similar to Garrison etal Ann Surg 1984

2.Telem etal Hepatol 2010

All in abdominal surgery.

Our patient's score:

- 1 for No ascites
- 1 for No encephalopathy
- 1 for INR = 1.5
- 2 for Albumin = 3.2
- 1 for Bilirubin = 1.8

6 = Total

Child A



Risk(cont)

- Surgery type
 - Cardiac
 - Hepatic
 - Emergent
 - Abdominal
 - Large blood loss



Risk (cont)

- Anesthesia
 - Hepatotoxins
 - Halothane (20% metabolized)
 - Liver blood flow –
 - portal vein 90%
 - Hepatic artery
 - Analgesics and sedatives and hepatic encephalopathy
- Infection
- Hypotension



Other Risk assessment

- MELD
- APACHE
- Quantitative assessment of liver function with dynamic tests
- Child score superior

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Contraindications to elective surgery in patients with liver disease

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Acute alcoholic hepatitis

Acute viral hepatitis

Child's class C cirrhosis


Fulminant hepatic failure

Severe chronic hepatitis

Severe coagulopathy (prolongation of the prothrombin time >3 seconds despite vitamin K administration; platelet count < 50,000/mm³)

Severe extrahepatic complications:

- Acute renal failure
- Cardiomyopathy, heart failure
- Hypoxemia

- 
- Mild chronic hepatitis – not increased risk
 - NASH –may have slightly increased risk
 - Alcoholic – some increase
 - Abstinence recommended
 - Wilson's / Hemochromatosis – other organ involvement
 - Autoimmune hepatitis – steroids
 - Drug induced hepatitis



Drug induced liver injury

- 10% of all ADRs (adverse drug reactions)
- Commonest cause of drug therapy withdrawal
- Commonest cause of acute liver failure
- Cause of acute jaundice in up to 50% of patients

Other sequelae of cirrhosis

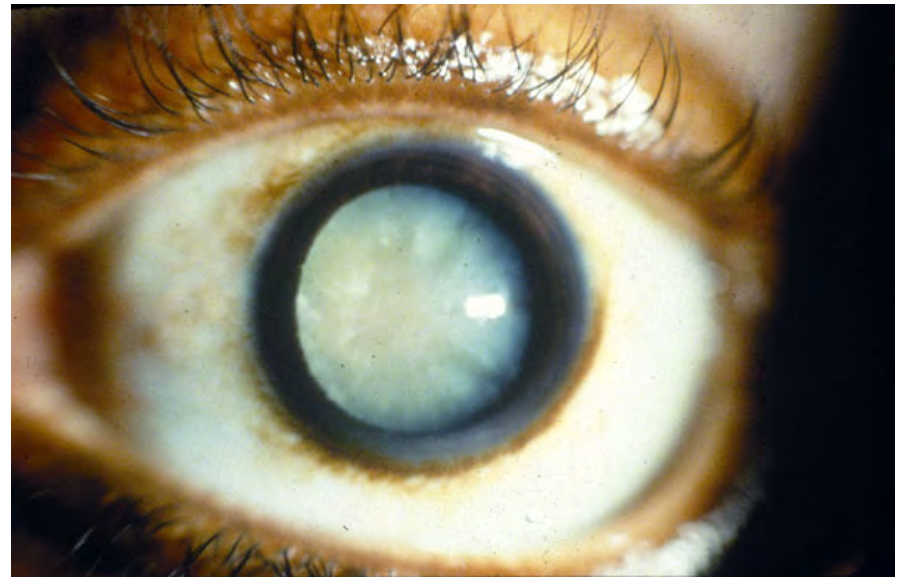
- Hepatopulmonary syndrome (intrapulmonary vascular dilatations)
 - Platypnea
 - Orthodeoxia
 - Hyperdynamic circulation
- Pleural effusions / ascites
- Pulmonary hypertension
- Cardiac failure
 - High output
- Fluid retention
- Electrolyte abnormalities
- Hepatorenal syndrome
- Clotting
- Drug effects – metabolism/interaction
- Varices
 - Oesophageal
 - Haemorrhoids

Optimize

- Gastroenterologist input
- Treat hepatitis
 - Abstain from toxins
 - Steroids
 - Interferon
- Control ascites
 - Tap
 - Diuretics
- Encephalopathy
 - Protein load
 - Beta blocker for decreasing variceal bleed
 - No role for prophylactic lactulose and neomycin
- Clotting
 - Vit K
 - FFP
 - Platelets
- Nutritional status
- Cardiac failure
- Liver transplant

Cataract

- Most common
- >1 000 000/yr in USA
- Low risk, ambulatory, local anesthesia
- <30 minutes





Causes

- 'Senile'
- Trauma
 - Associated with other eye surgeries
 - Ex premies
- Steroids
- Diabetes
- Syndromes

Role of routine testing in cataract surgery

Low risk surgical procedures with minimal hemodynamic changes

- 19,557 Cataract operations

Randomized into 2 groups

No testing(n=9408) and Routine testing(n=9411)

- 3% overall rate of complications (bradycardia and hypertension most common)
- Similar rate in both groups
- Eliminating testing does NOT increase adverse outcome – testing does NOT improve safety

Schein OD. N Engl J Med 2000;342:168-75

Role of routine testing in cataract surgery

Good History

- Procedure and indication
- PMH
- PSH
- Allergies
- Medications

And Physical

- Vitals
- Heart
- Lungs
- Level of Consciousness



Positioning: Supine

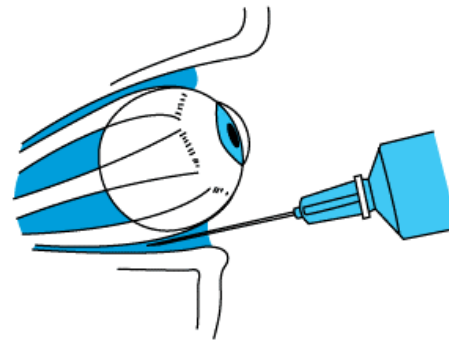
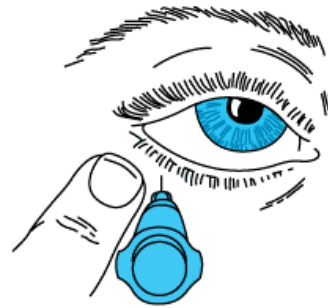
Anesthesia options

- GA (traditionally)
 - Now reserved for uncooperative
 - Child
 - Developmentally disabled
 - Dementia
 - Risk of movement
 - Parkinson's
 - Cough
- Retrobulbar block
- Peribulbar block
- Subtenon injection
- Topical

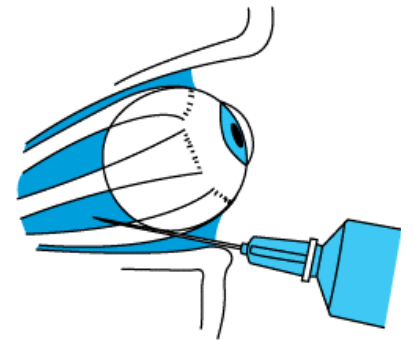
- With sedation



Retrobulbar block



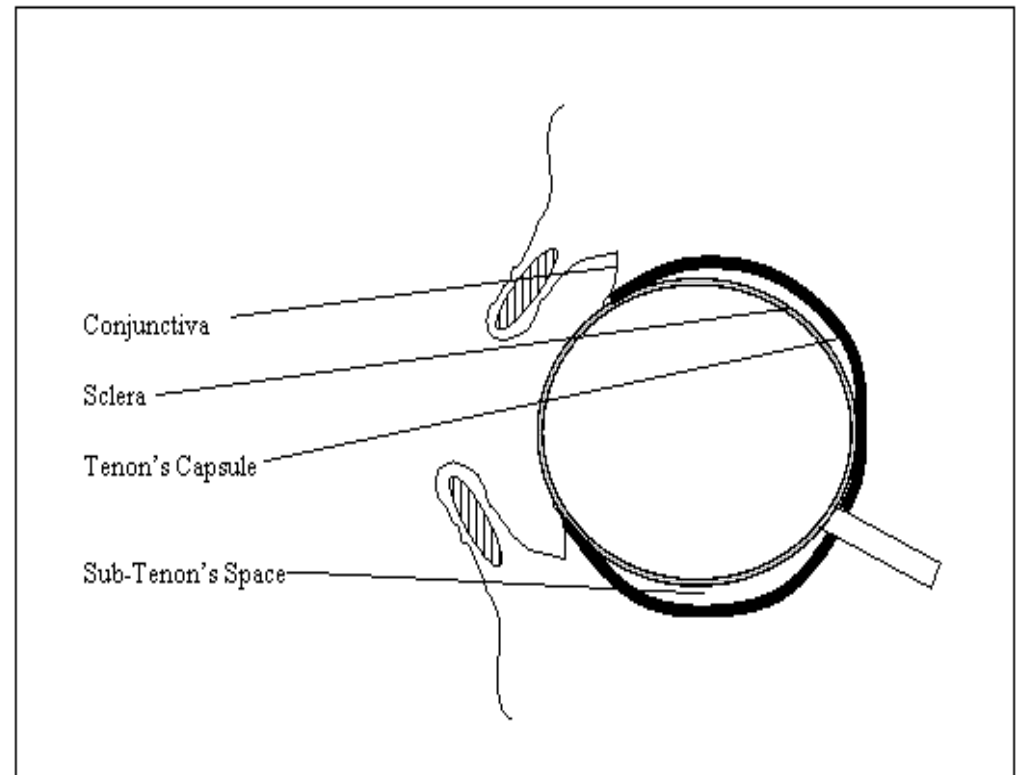
A



B

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Subtenon block

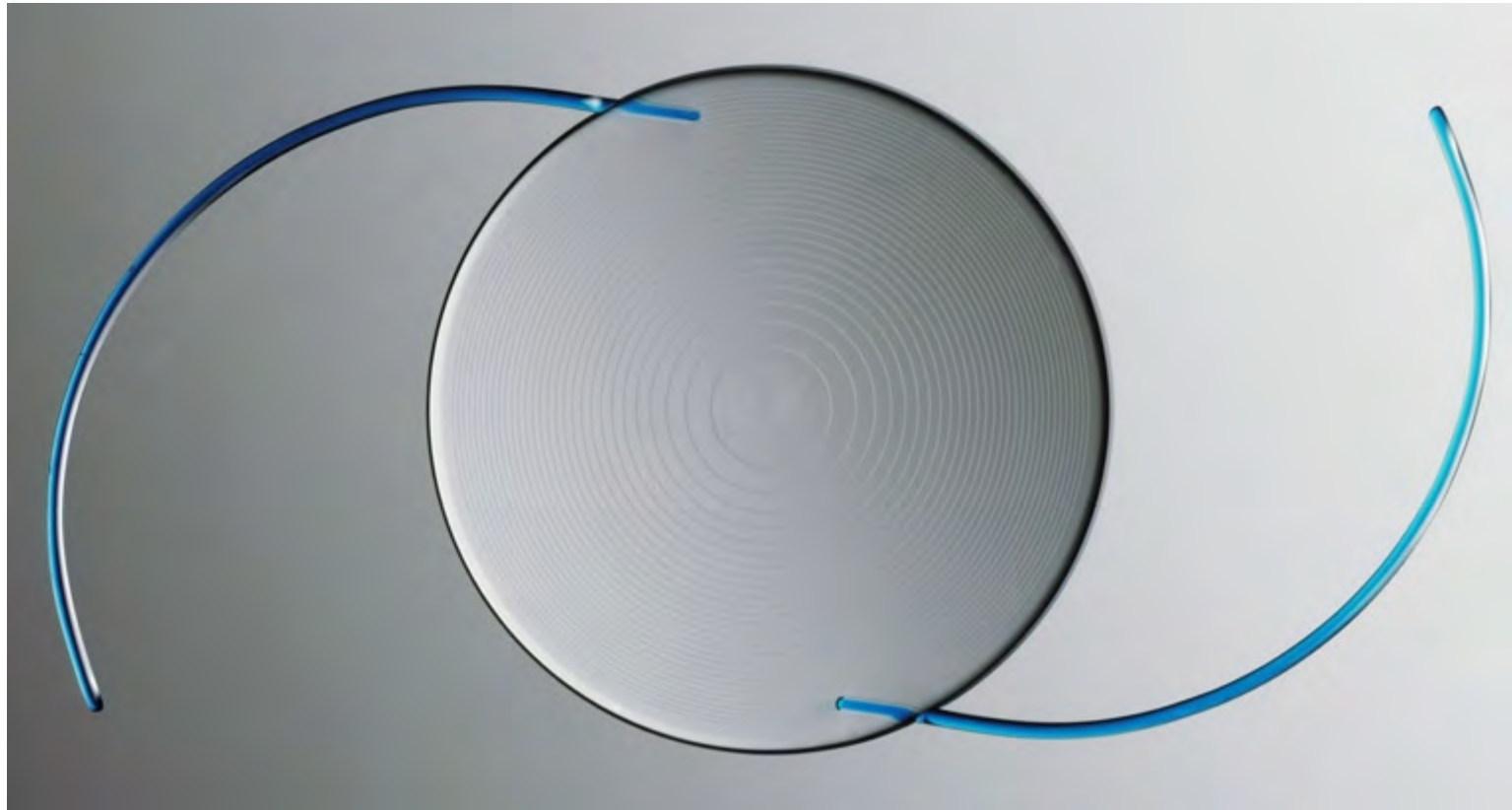


Incision can be as small as 2mm.



Surgical instrument using ultrasonic energy to remove a cataract.

IOL (now foldable)



Summary

- Cataract
- Common low risk surgery
- LA/sedation
- Basic 'Jaccho' H&P
- Cause of the cataract
- Can the patient lie flat and still for 40 minutes?
- No labs
- Stable disease even ASA 4 can go ahead if optimised
- Cirrhosis
- Significant mortality
- Child Pugh score
 - INR
 - Bilirubin
 - Albumin
 - Ascites
 - Encephalopathy
- Delay /cancel if risk ↑
- Optimize