Early management of complicated gallstones and acute pancreatitis

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- biliary colic/acute cholecystitis
- common bile duct stones
- ERCP
- bile leaks
- cholangitis
- acute pancreatitis

Biliary Colic/Acute Cholecystitis (1)
- Spectrum of severity
  - Label not impt
- Pts with acute cholecystitis infrequently very septic
  - Beware diabetics, immunocompromised
- If very sick has pt cholangitis?
  - LFT’s only at most mildly deranged in acute cholecystitis
- Urgent U/S: stones, gb wall, bile duct, liver

Biliary Colic/Acute Cholecystitis (2)
- Antibiotics if admission warranted
- No NG tube unless significant vomiting
- Prophylactic heparin
- Continue aspirin, cease clopidogrel/warfarin
- Semiurgent surgery preferable to delayed surgery
  - Morbidity equivalent, less IP days
  - However, logistically often difficult in public hospitals
**Clinical presentation**

- Asymptomatic
- Detected at intraoperative cholangiogram
- Symptomatic
  - Biliary colic
  - Post cholecystectomy pain
  - Obstructive jaundice
  - Ascending cholangitis
- Cx - pancreatitis

**Diagnosis – Imaging (1)**

- Ultrasound:
  - Initial imaging modality
  - Direct evidence of stones – sensitivity varies widely in literature 20-90% (38% sensitivity on metaanalysis)
  - Operator dependant
  - Body habitus
  - Distal CBD obscured by intestinal gas
  - Dilated CBD
    - Probability of stone increases with increasing CBD diameter.
      - 6-8mm – 28%
      - 8-10mm – 32%
      - >10mm – >50%
Diagnosis – Imaging (2)

Abdominal CT
- Unenhanced is probably useless
- IV contrast enhanced CT (sensitivity 65%)?
- ? done in workup of surgical patient

CT cholangiogram
- Biliary excreted contrast to obtain a cholangiogram
- Need to have ability to excrete contrast to obtain satisfactory cholangiogram
- Cut off bilirubin around 40
- Sensitivity 84% - 100%; Specificity 96-100%

Diagnosis – Imaging (3)

- MRCP
  - Best investigation
  - Sensitivity and specificity 95%
  - Contraindications

Diagnosis – imaging (4)

Management – Pre op detection

- Make decision re Mx preoperatively: either
  - Referral for ERCP prior to cholecystectomy
  - Laparoscopic bile duct exploration to clear the duct at the time of cholecystectomy
    - Technical skills
    - Volume
    - Equipment
    - Adequate preoperative imaging (MRCP) to plan surgery
- *Do not plan lap chole and leave stones for postop ERCP
  - ERCP may fail
  - ↑ risk cystic stump leak

Guidelines for the management of bile duct stones.
Cade R, Banting S, Hassen A.S, Mackay S.
Aust N Z J Surg 2008; 78: 530
Management – intraoperative detection

- Positive intraoperative cholangiogram
- Depends – on findings, operator experience and equipment available
- Options:
  - Transcystic exploration
  - Laparoscopic CBD exploration
  - Open CBD exploration if ERCP not possible
  - Postop ERCP

VSCC guidelines

In summary:

1. Common bile duct stones diagnosed pre-operatively should be dealt with either pre-operatively or intra-operatively. A decision to leave the stones for post-operative ERCP extraction is unacceptable.
2. Jaundiced patients should have a firm diagnosis established before surgery.
3. MRCP is a very useful and safe method of imaging the biliary tree. Where MRCP is unavailable, CT cholangiography is an alternative in non jaundiced patients.
4. If operative cholangiography is performed selectively rather than routinely the indications should be liberal.
5. Unsuspected bile duct stones diagnosed intra-operatively may either be dealt with at surgery or by ERCP post-operatively. ERCP is facilitated by the insertion at operation of a transcystic biliary stent. Of course ERCP may not be possible in patients who have had previous gastric surgery.

ERCP – preoperative preparation

- Fasting 6hrs prior
- Coagulation (d/w with endoscopist)
  - Prolonged INR (jaundice/sepsis)
  - Warfarin
  - Clopidogrel
  - Aspirin & Asasantin
- IV antibiotics (gentamycin/tazocin/timentin)
- IV sedation in semi-prone position

ERCP risks

- Pancreatitis ~5% (severe pancreatitis 1-2%)
- Bleeding from sphincterotomy - 1%
- Perforation - 0.1%
- Failure - 5%
- Cholangitis - uncommon unless biliary tree undrained at end of procedure
- Anaesthetic
ERCP – anatomical difficulties

- Access problems due to previous surgery/pathological conditions
- Oesophageal stricture/diverticulum
- Giant hiatus hernia
- Gastric surgery
  - Billroth II
  - Roux en Y reconstruction
  - Sleeves
  - Bands
  - HGD
- Duodenal stricture/stent placement

ERCP – cannulation

ERCP – cholangiogram

ERCP - sphincterotomy
ERCP - sphincterotomy

ERCP – stone extraction

ERCP – stone extraction

ERCP – stent insertion

- Plastic stent
- Pigtail stent
- Straight stent

- Metal stent
  - Covered (removable)
  - Uncovered (permanent)
Plastic stents – straight stent

Bile leak (1)
- ~1% cholecystectomies
- Commonest sites:
  - Cystic duct stump
  - Subvesical duct/Duct of Lushka
  - Beware of major biliary injury
- May be associated with biliary obstruction/stones

Bile leak – clinical features
- Pain out of proportion to expected pain from laparoscopic procedure – assume complication (bleeding, bile leak, visceral injury) until excluded by relevant investigation
- Abdominal tenderness/guarding
- Tachycardia/fever
- If drain tube ? bile/blood *no bile or little blood in DT does not exclude bile leak or bleed
- CT with oral and IV contrast
- MRCP – if no op chol. or suspected major biliary injury

Bile leak - management
- Priority is Rx of intraperitoneal bile
  - Does pt warrant laparoscopic washout
  - Is image guided percutaneous drainage worthwhile
  - If not septic and imaging shows small amt fluid then antibiotics only (if drain tube in place)
- ERCP: if large volume or smaller volume but continuing
  - Sphincterotomy
  - Identify site of leak
  - Extraction of stone if present
  - Insertion plastic stent
Cholangitis

- Guidelines: The Victorian Surgical Consultative Council
- Acute Cholangitis and Availability of Urgent ERCP Services
- Acute bacterial infection of biliary tree associated with underlying obstruction
- Choledocholithiasis (70%)
- Benign strictures
- Tumours (<15%)
- Polymicrobial: E.coli, Klebsiella, Enterobacter, Enterococci
- Mortality 5 - 40%

Principles of Management

- Resuscitation (fluids, inotropes)
- IV antibiotics (triple therapy or Tazocin/Timentin)
- Urgent imaging: U/S +/- MRCP
- Bloods incl blood cultures, coag studies
- Assessment of urgency for ERCP/biliary drainage
**VSCC guidelines for Mx of acute cholangitis (1)**

*Recommendations*
- The principles of management of acute cholangitis involve initial aggressive resuscitation and antibiotics followed by biliary decompression.
- The most appropriate method of biliary decompression is ERCP – sphincterotomy – stenting.
- 10%-15% of patients will show no or minimal response after initial measures – ongoing fever, hypotension, renal failure
  Plan for immediate biliary decompression

**VSCC guidelines for Mx of acute cholangitis (2)**

- Patients with poor prognostic parameter – (elderly patients; associated co-morbidities):
  Plan for urgent decompression (within 24-48hrs)
- 85%-90% of patients will respond to initial measures;
  Plan for biliary decompression on semi-urgent basis (<72 hours)
- All hospitals should have access to ERCP facilities on an urgent basis.
- Consider transferring high risk patients to centre with appropriate ICU facilities and expertise. Such transfer is not just a precaution, but in view of the propensity of such patients to deteriorate suddenly it is a time-critical part of their management.

**Acute pancreatitis**
- Acute inflammatory disorder of the pancreas.
- Diagnosis requires 2 of the following 3 features:
  1) abdominal pain (consistent with acute pancreatitis)
  2) serum lipase(or amylase) at least x3 normal
  3) imaging characteristics of acute pancreatitis (CT, US, MRI)

**Classification: Revised Atlanta classification**

Acute Pancreatitis classified as:
- Interstitial oedematous pancreatitis (absence of necrosis)
- Necrotising pancreatitis (pancreatic and peripancreatic necrosis)
Classification of severity: Revised Atlanta classification

- Mild acute pancreatitis which is characterized by the absence of organ failure and local or systemic complications
- Moderately severe acute pancreatitis which is characterized by transient organ failure (resolves within 48 hours) and/or local or systemic complications without persistent organ failure
- Severe acute pancreatitis which is characterized by persistent organ failure that may involve one or multiple organs
- Local complications of acute pancreatitis include acute peripancreatic fluid collection, pancreatic pseudocyst, acute necrotic collection and walled-off necrosis

Recommendations for determining severity

- Attempt to predict severity with a combination of clinical, radiological, laboratory investigations and scoring systems as soon as possible
- Imaging with CT/MRI at 72 hrs for patients with predicted severe pancreatitis and those with organ failure
- CRP at 48hrs

Contrast enhanced CT

- pancreatic necrosis and extrapancreatic inflammation (differentiates between oedematous and necrotising pancreatitis – exudates and necrosis do not enhance)
- Sensitivity 90%
- Indicated for
  - Severe pancreatitis
  - Deteriorating patients
  - Alternative diagnosis

Management of Pancreatitis

- Following the diagnosis and initial resuscitation of the patient attempt to stage the severity of pancreatitis. Early referral to ICU/HDU important for pts with severe pancreatitis (especially for the elderly, the obese and those with comorbidities)
- Supportive care with:
  - fluid resuscitation
  - pain control
  - nutritional support
**Fluid resuscitation**
- Aggressive rehydration with Hartmanns or N. saline
- Fluid requirements should continue to be frequently reassessed
- Adequate hydration in the 1st 12-24hrs is associated with a decrease in morbidity and mortality
- Caution must be exercised with fluid therapy after the initial 24-48hrs

**Pain control**
- Adequate analgesia is imperative
  - Uncontrolled pain can worsen haemodynamic instability
  - Avoids atelectasis/respiratory compromise
- Opiate PCA
- Simple analgesia (paracetamol, NSAIDs)

**Gallstone pancreatitis: role of ERCP**
- Associated cholangitis – **urgent ERCP**
- CBD stone: abnormal LFT’s, U/S evidence, ?MRI – ERCP within 48 hours if possible