AUGIST Training Day 2012

HPB Stream MDT

Faculty Handbook

AUGIS Training Day – 17 June 2011

Echo Arena Conference Centre

Case 1 – Advanced Colorectal Cancer

64 year old man. PMH of IHD with CABG 4 years previously. Non smoker, cycles to and from work as an office manager (15 miles per day). BMI 28.4. On Aspirin 75mg, and Ramipril. Nil other history.

PR Bleeding led to diagnosis of Mid Rectal Ca 3. years earlier.

He underwent anterior resection for a T3 N0 moderately differentiated Adenocarcinoma. No adjuvant chemotherapy given.

Developed further rectal bleeding and was found to have anastomotic recurrence staged at T3/4 N0 M0 – moderately differentiated. Underwent Long course chemo radiotherapy, with a partial response in the pelvis. Unfortunately a CT of the abdomen and Pelvis following chemo radiotherapy detected a lesion in the Liver, prompting referral to HPB MDT.

Point to Discuss management options. Use PowerPoint HPB Case 1 Image 1 +/- PACS CT 11/2/2010

Specialist HPB MDT planned to proceed with resection of the Liver first and arranged PET CT and MRI Liver.

MRI confirmed the segment 3 metastasis. PET CT identified the pelvic recurrence, and the liver lesion but unfortunately also identified a right lung lesion which was FDG Avid.

Point to discuss management options. Use PowerPoint HPB Case 1 image 2, or PACS PET CT – 22/7/2010 AND MRI 21/09/2010.

As all these lesions were considered resectable so it was decided to pursue this in the following order – Liver, Rectal, Lung.

He underwent Liver resection without difficulty(clear margin). APR was performed but unfortunately was complicated by recurrent pelvic sepsis that made sitting in a car difficult and painful. Consequently he DNA'ed all tertiary appointments for 12 months and finally represented to the cardiothoracic surgeon at just over 4.5 years after his primary.

He repeated the PET-CT as it was 14 months out of date.

This demonstrated 4 sites of FDG activity.

1) Within the lung there were 3 FDG lesions (presumed metastasis in close proximity in the right lower lobe)
2) There was FDG activity in the liver resection margin.
3) The was a lesion within the Hepatic flexure of the colon that was FDG Avid.
4) There was also FDG activity within the pelvis.

Point to Discuss management options. Use PowerPoint HPB Case 1 image 3, +/- PACS CT 3/1/2012, and PET CT 6/3/2012, AND MRI 30/1/2012.

HPB MDT decided to gain further imaging, and investigations as it was felt the pelvic FDG avid disease was most likely related to his on going sepsis.

Colonoscopy and poylpectomy was performed for an adenoma with low grade dysplasia(clear margin). The lung was deemed resectable. MRI confirmed what was thought to be a local recurrence within the Liver.

Unfortunately a biopsy from the pelvic collection identified that this was malignant, and this was deemed surgically irresectable.

After discussion with an advanced pelvic resection team, the cardiothoracic team, the oncologists and the HPB MDT he is now pursuing palliative chemotherapy with Cetuximab as he was Kras wild type.

Case 2 – Advanced Colorectal Cancer

70 year old gentleman presented in January 2011 with rectal bleeding. Staging identified a T3N1M1 rectal cancer. The metastasis only included 2 liver metastasis.

Point to discuss – what are the management options.

He was assessed locally and commenced on long course chemo-radiotherapy that was completed in May 2011. Imaging identified that there were now multiple metastasis in the Liver in segments 2, 8, 5/6.

Consequently he was referred to HPB MDT.

Other significant PMH included a recent diagnosis of a Gleason 3 prostate adenocarcinoma, which he was on hormonal treatment for.

Point to Discuss management options. Use HPB Case 2 Image 1 and 2, or PACS CT 27/6/2011.

Specialist HPB MDT felt that given the rapid development of liver metastasis it would be worth fully staging him with LIVER MRI and PET prior to palnning management.

Point to Discuss management options. PACS PET CT 21/07/2011 AND MRI 4/8/2011.

Specialist HPB MDT felt that whilst he had resectable liver only metastasis , the rate at which they had developed suggested that considering chemotherapy in the first instance to gain disease control would be his best option. He was commenced on 5FU + Oxaliplatin + Cetuximab

That was completed in January 2012. He suffered a significant pulmonary embolus on chemotherapy and was warfarinised.

Imaging following chemotherapy showed static disease. No Extrahepatic metastasis.

Point to discuss management options. Use HPB Case 2 image 3, 4 and 5, or PACS MRI 30/01/2012.

It was felt that he would require a right hemihepatectomy but that his left liver was not of sufficient volume given that he would require metastectomies on this also. Consequently he underwent a two stage procedure of metastectomy segment 2 and 3 with portal vein ligation. Followed 6 weeks later by a right hemihepatectomy.

Point to discuss.

Currently on further radiotherapy, prior to rectal resection.

Case 3 - Neroendocrine

A 58 year old male was found to have multiple incidental liver lesions on CT KUB performed for renal colic, which were further characterized using MRI. 9 distinct lesions were identified, of which 3 were confidently diagnosed as haemangiomas. The remaining 6 lesions were suspicious for metastatic disease.

Discussion point-what are the radiological characteristics of different liver lesions?

(CT 8/3/10, MRI 14/2/2007)

Serum tumour markers were negative, as was CT thorax, OGD and colonoscopy. Following discussion at the HPB MDT, an USS guided liver biopsy was performed.

Discussion point – what is the role of biopsy in diagnosing liver lesions?

Unfortunately, the biopsy demonstrated normal hepatic parenchyma. This was repeated, with the second biopsy failing to collect any tissue.

It was decided to wait 3 months and perform an interval scan. In the interim, serum chromogranin A levels were reported as 680 (ULN = 60). The patient also started to develop some flushing symptoms with loose stool.

Discussion point - what are the treatment options for hepatic neuroendocrine metastases?

The patient was treated with long acting monthly Octreotide analogue, with some symptomatic improvement. He was also given 3 Dotatoc treatments, but declined further targeted intervention because of side-effects.

The patient remained stable for the next 18 months, with good symptom control and regular CTs demonstrating stable disease.

In late June 2010 he started to complain of worsening symptoms, including night sweats, intermittent crampy abdominal pain and diarrhea.

Discussion point – what further treatment options could be considered for this patient?

The treatment options were discussed with the patient, who declined any liver intervention but proceeded to uneventful small bowel resection of 3 ileal primary neuroendocrine tumours. The opportunity was taken at laparotomy to perform IOUS, which demonstrated resectable liver disease.

6 months later, he complained of worsening carcinoid symptoms and requested liver intervention. The initial plan was for formal liver resection, but incidental finding of splenic artery aneurysm meant this couldn't be performed. He therefore underwent 5 open microwave ablations. He was discharged home after 4 days.

10 days later he represented with right upper quadrant pain, jaundice and black stool.

Discussion point – what could cause these symptoms?

(CT 16/1/12)

Urgent CT demonstrated a false aneurysm of the left hepatic artery, presumably related to the ablation. This was treated with transarterial coil embolisation, the patient recovered and was discharged home 4 days later. He remains symptom free.

EXTRA CASES

INDEX

CASE 1

History and clinical examination

A 73 year old lady was admitted as an emergency with Jaundice and right upper quadrant pain. She has been well until a week ago when she developed the pain, and in last 24 hrs she had become jaundiced with pale stools and dark urine. She has no significant co-morbid history.

Clinically she was jaundiced and abdominal examination showed tenderness in the RUQ. No masses were felt.

What is the presumptive diagnosis and your management priorities.

Obstructive jaundice due to impacted CBD stone.

Management priorities.

1. ABC Assessment/ CRISP guidelines
2. Analgesia
3. IV fluids
4. +/- Antibiotics
5. Ix cause

Relevant investigations

LFT's

Liver Profile				
T.Bilirubin	19	umol/L	(3 - 18)	H
ALP	462	U/L	(35 - 120)	H
AST	148	U/L	(10 - 40)	H
GGT	1025	U/L	(12 - 58)	H
ALT	220	U/L	(10 - 56)	H
Albumin	36	g/L	(35 - 50)	

CA19-9 – Discuss relevance of measuring tumour markers at this stage

Test	Result	Units	Ref. Range	Hi/Lo Flag	Status	All
CA19-9						
CA19-9	123	U/ml	(0 - 37)	H	Reported	
	Result checked.					

USS - *The gallbladder is distended. The intra-hepatic bile ducts are also dilated and there is marked dilatation of the CBD (1 8mm). No calculi are seen and dilatation extends to the pancreatic head. No obvious lesion is seen in the head of pancreas but a small periampullary tumour cannot be excluded. The pancreas appears normal as does pancreatic duct cali bre. No focal parenchymal abnormality is seen in the liver.*

MRCP (figure 1)

CT Pancreas (figure 2 a&b)

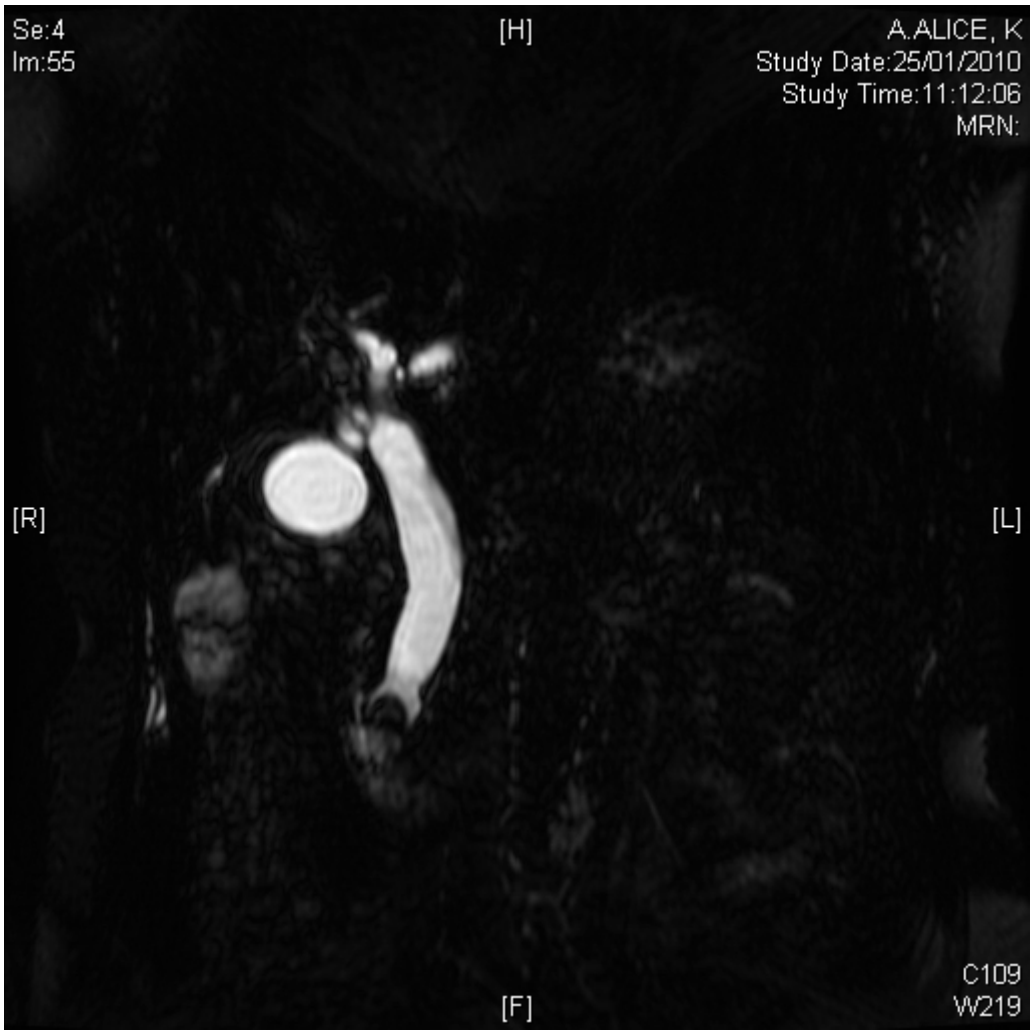
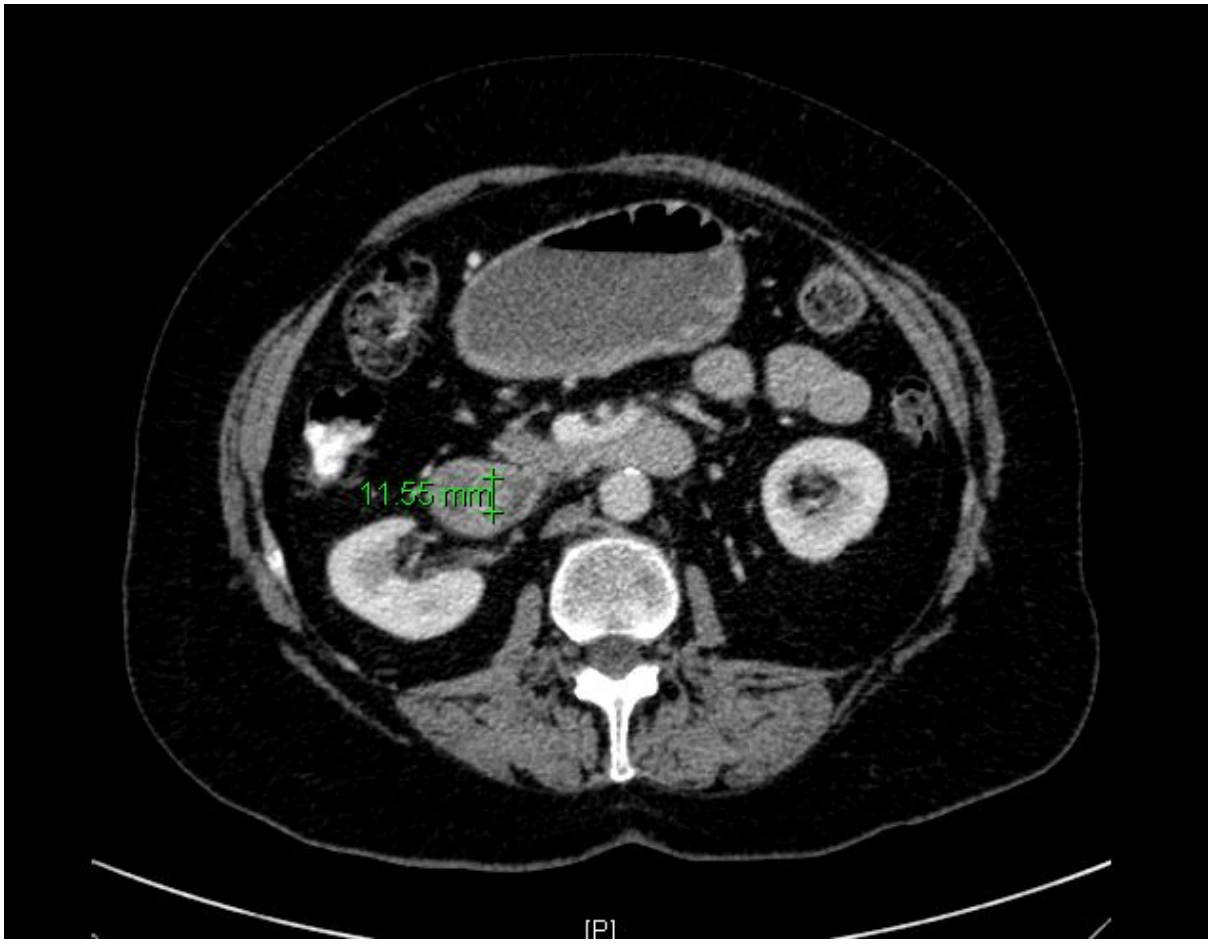


Figure 1

There is a filling defect in the distal CBD with splaying of the distal CBD aroun d the lesion. It most likely relates to a calculus although I note it was not re adily demonstrated on ultrasound. The CBD is dilated up to 22 mm. No gallst ones are readily seen in the gallbladder. There is some intra-
hepatic duct dilatation also noted. Pancreatic duct is not dilated measuring 3 m m in diameter.


11.55 mm
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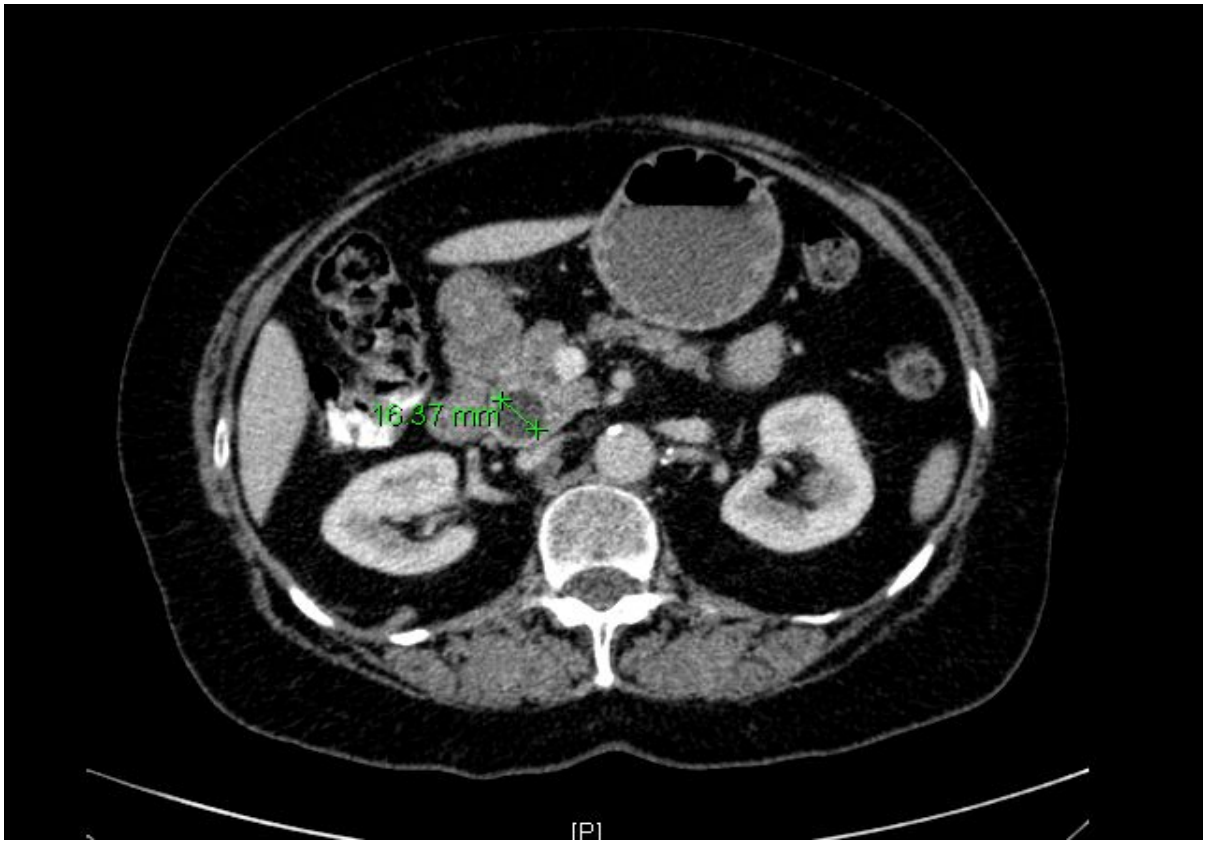

16.37 mm
[P]

Figure 2 a & b

There is a 1.2 cm partially calcified gallstone impacted in the distal CBD near th e ampulla. There appears to the little gas within the duct adjacent to the calc ulus. The CBD is dilated at 1.6 cm. The common hepatic duct measures 2.0 cm. There is moderate intra-
hepatic duct dilatation. No focal liver lesion. No calcified calculi are seen withi n the gallbladder. The pancreatic duct is not dilated. No pancreatic atrophy, a bnormal enhancement or focal mass identified. The surrounding fat planes are cl ean.

Management plan

Review figures 1 and 2 and discuss management options. Base discussion on current BSG guidelines for management of CBD stones.

1. Straight to ERCP followed by laparoscopic cholecystectomy
2. Laparoscopic CBD exploration
3. PTC
4. Anything else?

Operative intervention

In this case laparoscopic cholecystectomy and CBD exploration was carried out.

Per-operative findings: large stone impacted in lower end of CBD . Unable to retrieve using Fogarty balloon catheter and too large for Dormia basket.

What are the intra-operative management options?

- Crush stone and remove piecemeal
- Push stone into duodenum
- Lithotripsy
- Conversion to open procedure - ?Successful removal / Duodenotomy / Choledochojejunostomy or Choledochodoudenostomy
- Abandon with abdominal drain and post-op ERCP

Post operative complication

In this case crushed and removed in pieces.

Patient was reviewed back in OPC in 3 months time after being re- referred by GP for ongoing RUQ pain Nausea and normal LFTs

Investigations :

LFT's

Liver Profile			
T.Bilirubin	**5**	umol/L	(3 - 18)
ALP	**93**	U/L	(35 - 120)
AST	**16**	U/L	(10 - 40)
GGT	**34**	U/L	(12 - 58)
ALT	**19**	U/L	(10 - 56)
Albumin	**42**	g/L	(35 - 50)

USS -

There is no biliary dilatation, with the CBD measuring up to 9 mm in diameter,

which is acceptable post cholecystectomy. It is difficult to see the entire length of the CBD however no CBD calculus has been demonstrated.

MRCP (Figure 3)

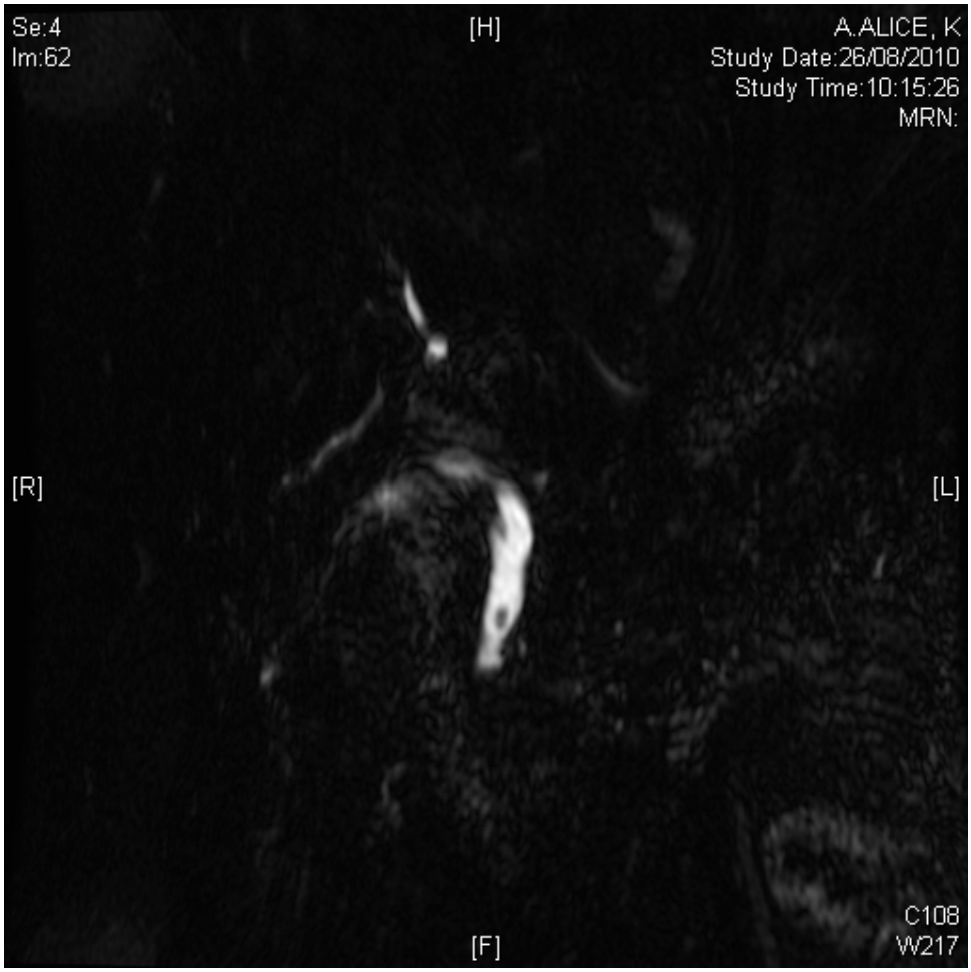


Figure 3

There is a filling defect in the distal CBD consistent with a small calculus. It measures 4.5 mm in size. Of note there is the impression of a band-like or ring-like narrowing with poststenotic dilatation noted in the distal CBD.

Please review figure 3 and discuss management plan

- ERCP – Failed due to large duodenal diverticulum.
- Repeat laparoscopic procedure.
- Open re-exploration +/- bypass.
- Rendezvous procedure.

CASE 2

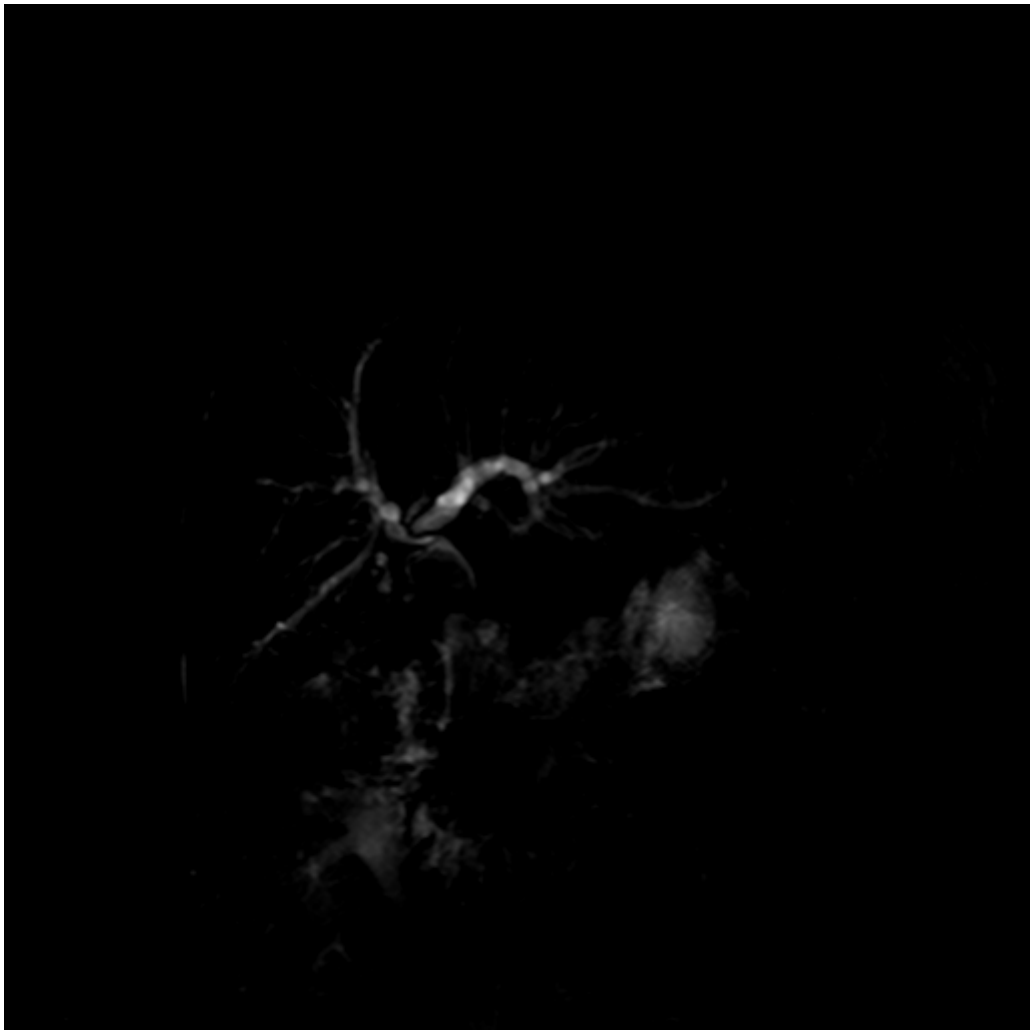
A 67 year old female presented with history of jaundice and weight loss of 2 stone over 3 month period. Jaundice resolved spontaneously after 3 weeks, but LFTs remained obstructive pattern. USS was performed and was reported as showing a large stone in gallbladder, markedly dilated intrahepatic ducts and normal distal CBD.

What diagnoses would you consider at this stage?

Statistically a malignant condition is most likely with this presentation in this age group. Jaundice which resolves spontaneously is suggestive of an ampullary tumour, though the normal diameter distal bile duct would make this less likely. Gallstone disease causing obstruction is a possibility, with either passage of an obstructing stone or development of a fistula accounting for the resolution of the clinical jaundice.

What investigations would you perform next?

Patient proceeds to CT scan and MRCP.



What do these images show?

The CT shows a mass in the area of the hilum of the liver. It contains flecks of calcification, and would be consistent with a gallstone. The MRC image shows smooth compression of the proximal bile duct, most likely by a gallstone.

What would you do next?

The diagnosis appears clear, and it would be reasonable to proceed to surgery on this basis. An ERCP was performed in this case by the referring gastroenterologist.

Patient has an ERCP:

A stent is inserted with subsequent improvement in LFTs.

What definitive treatment would you advise?

Cholecystectomy +/- biliary reconstruction.

How would you counsel the patient preoperatively?

This is likely to be a difficult operation. It may be necessary to repair or remove the bile duct. There is a significant risk of bile leaks and late structuring, and further surgery may become necessary.

At operation a large stone was found in a contracted GB. The gallbladder was densely adherent to the common hepatic duct, and could not be separated from it. After opening the gallbladder and removing the stone, a large fistula was seen from the gallbladder into the common hepatic duct. Around 50% of the bile duct circumference was intact.

What syndrome is this?

Mirizzi Syndrome.

Who is it named after?

Pablo Luis Mirizzi. Argentinian surgeon born 1893 died 1964. Also famous for performing the first cholangiogram in 1931.

How is it classified?

Type 1, where the bile duct is narrowed or strictured by inflammatory oedema from a stone impacted in gallbladder neck. Type 2, as in this case, where erosion from the stone has progressed to the development of a fistula. A later proposed modification to this classification introduced type 3 and 4 depending on the degree of destruction of the bile duct, but this terminology has not been widely adopted.

What would you do next?

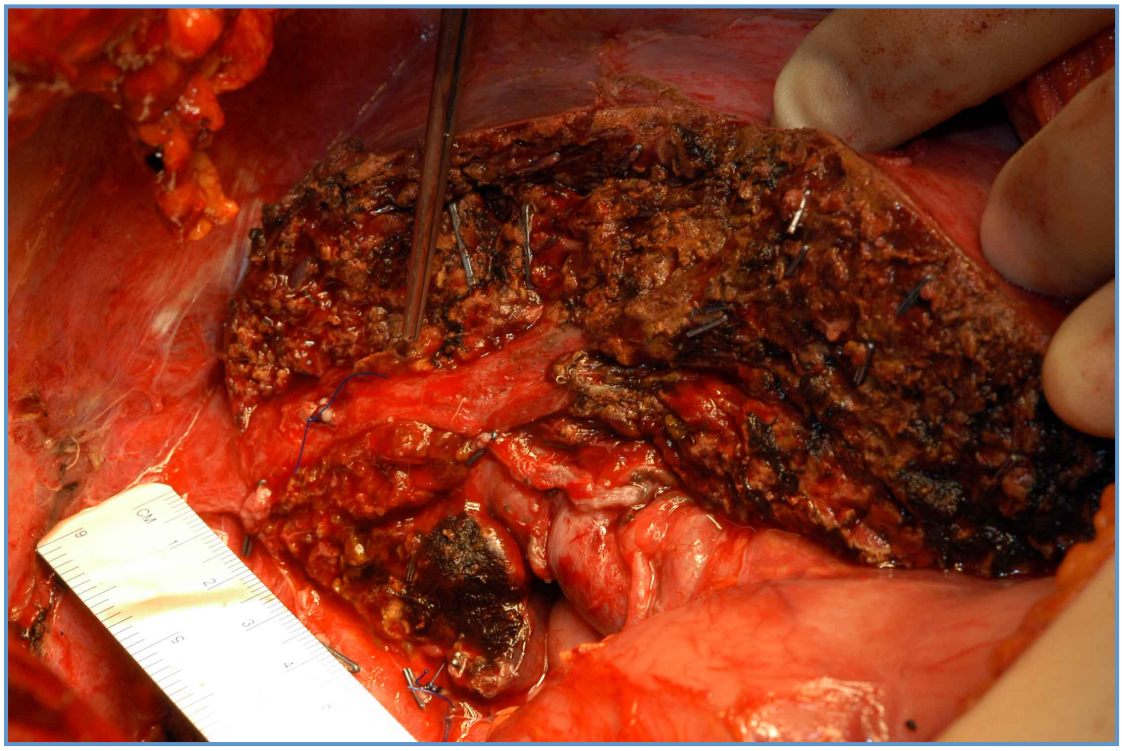
Discuss options of subtotal cholecystectomy and drainage, perhaps with a T-tube, biliary bypass onto stump of gallbladder or side of bile duct, or transaction of the bile duct and hepaticojejunostomy.

Patient had a cholecystectomy together with excision of the bile duct from the bile duct confluence down to the upper border of the duodenum. Reconstruction was with a long Roux loop anastomosed to the bile duct confluence. She remains well with normal LFTs more than a year later.

Discuss the technical considerations in performing this operation. What are the pitfalls?

CASE 3

What are the structures.

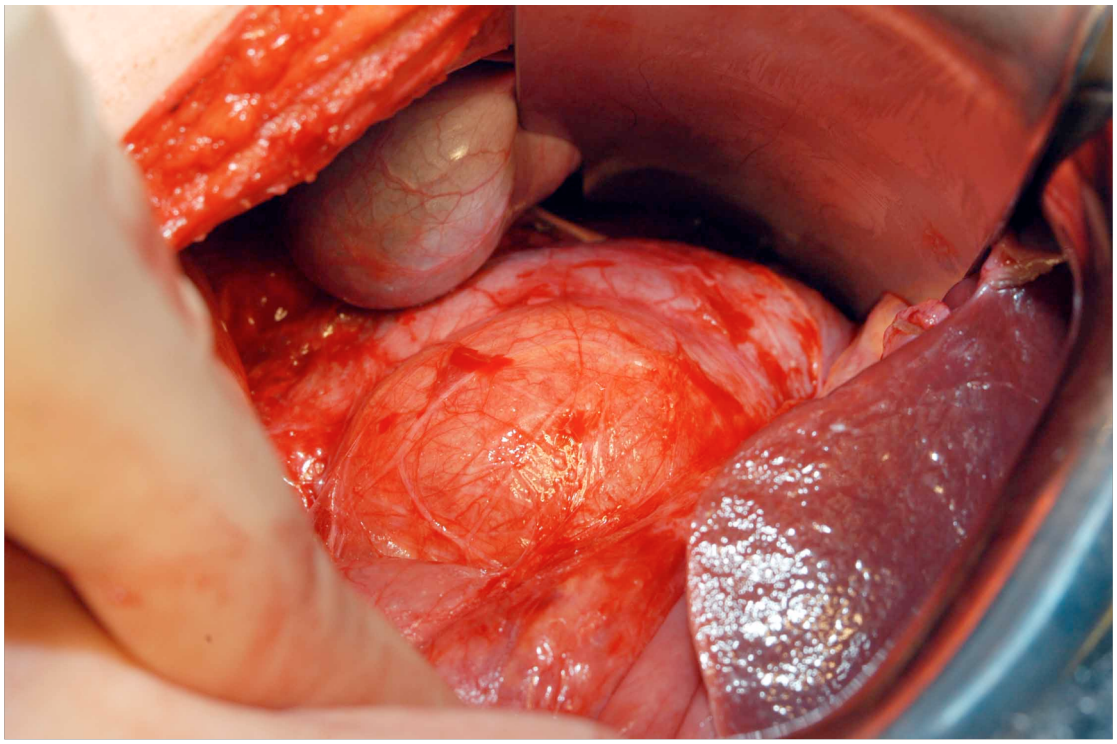


CASE 4

A 34 year old girl was found to have a cystic mass in the retroperitoneum between the vena cava and aorta.

1. What are the possible differentials for such a lesion.
2. What investigations should be performed.

3. The photograph demonstrates the mass. What complictions may result from removing a mass from this location.



4. How does one treat such complications.

CASE 5

History and Clinical Examination:

47 years old male with a benign pyloric stricture and gastric outlet obstruction, admitted electively for OGD and dilatation. Previous history of duodenal ulceration and chronic pancreatitis secondary to alcohol.

Uneventful procedure. Stricture was dilated up to 12mm in diameter.

Same night Patient C/O severe epigastric pain.

O/E tachycardic with pulse of 120/min. R/R 35/ min. BP 120/60. Abdominal Examination: Rebound tenderness in the upper abdomen. Dry ++

What is presumptive diagnosis & Management

Gastric/Duodenal Perforation

Management:

ABC/ CRISP principles

O2, IVF, Catheter, ABG, Analgesia, IV Antibiotics

What investigations are needed.

Erect CXR (Figure 1)

+/- CT Scan

Please review figure 1 and discuss management plan

Laparotomy findings - Stenosed pylorus/D1 with anterior perforation

Surgical options ?

- Patch repair – does not deal with probable ongoing outlet obstruction
- Limited distal gastrectomy/D1 resection and Roux-en-Y procedure
- +/- feeding jejunostomy

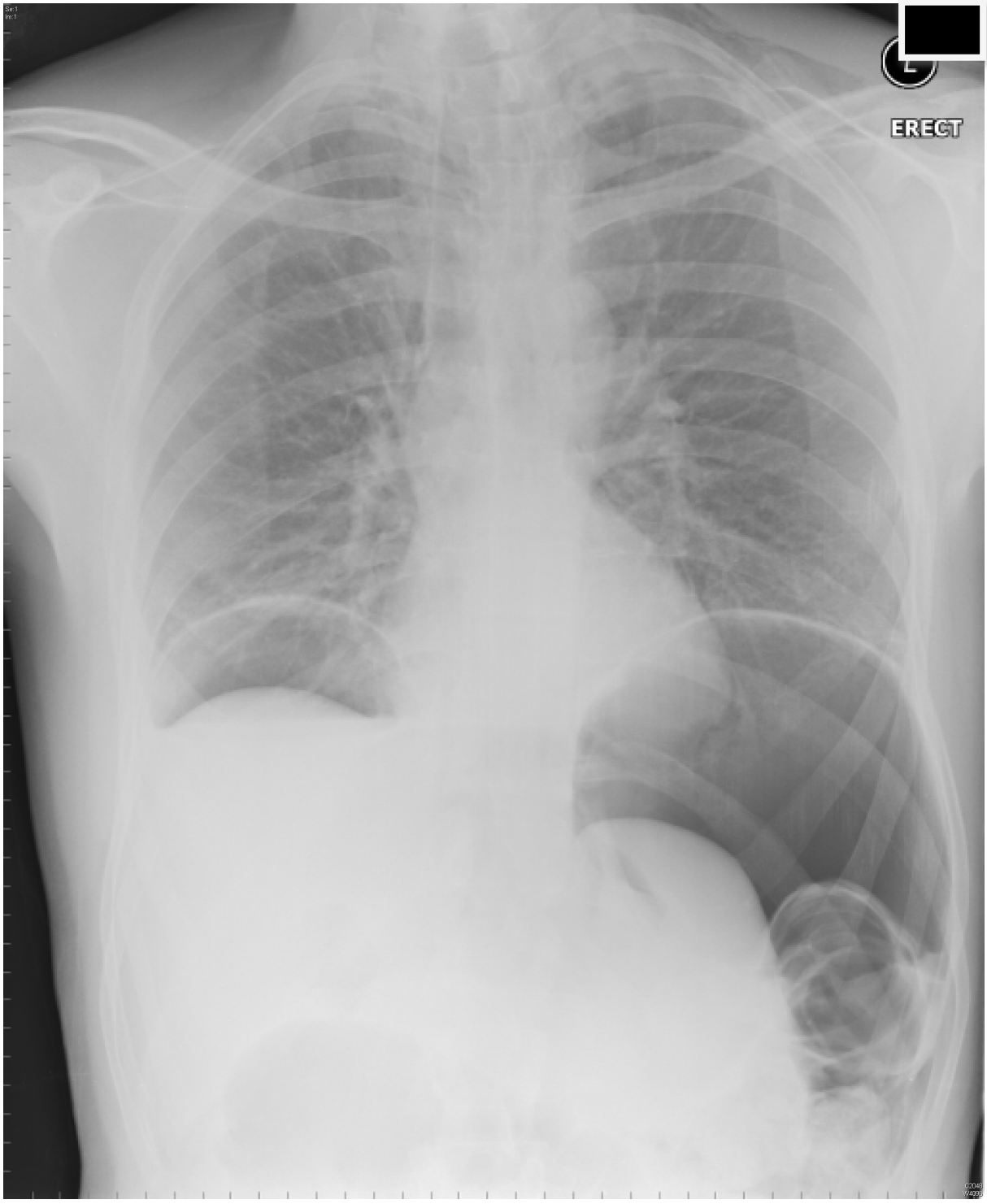


Figure 2

Postoperative period

Day 5 following surgery. Tolerating clear oral fluids and jejunostomy feeding. Bowels opening, not complaining of abdominal pain. However has ……..

- Persistent Tachycardia
- Low saturations despite high flow O2
- Large output of colourless clear fluid from abdominal drain (800+ mls per day).

What investigations needed

- ECG/CXR
- Gastrograffin swallow (Figure 2)
- CT Abdomen / CT Pulmonary Angiogram –
    - *CTPA -*
      multiple filling defects in the both lower lobes suggestive of PE. T here is a large right and moderate left-
      sided pleural effusion. There is atelectasis at both lung bases.
    - *CT abdomen –*
      No significant collection is identified within the upper abdomen and there is no free air evident.
- Fluid for Amylase level (>40,000)

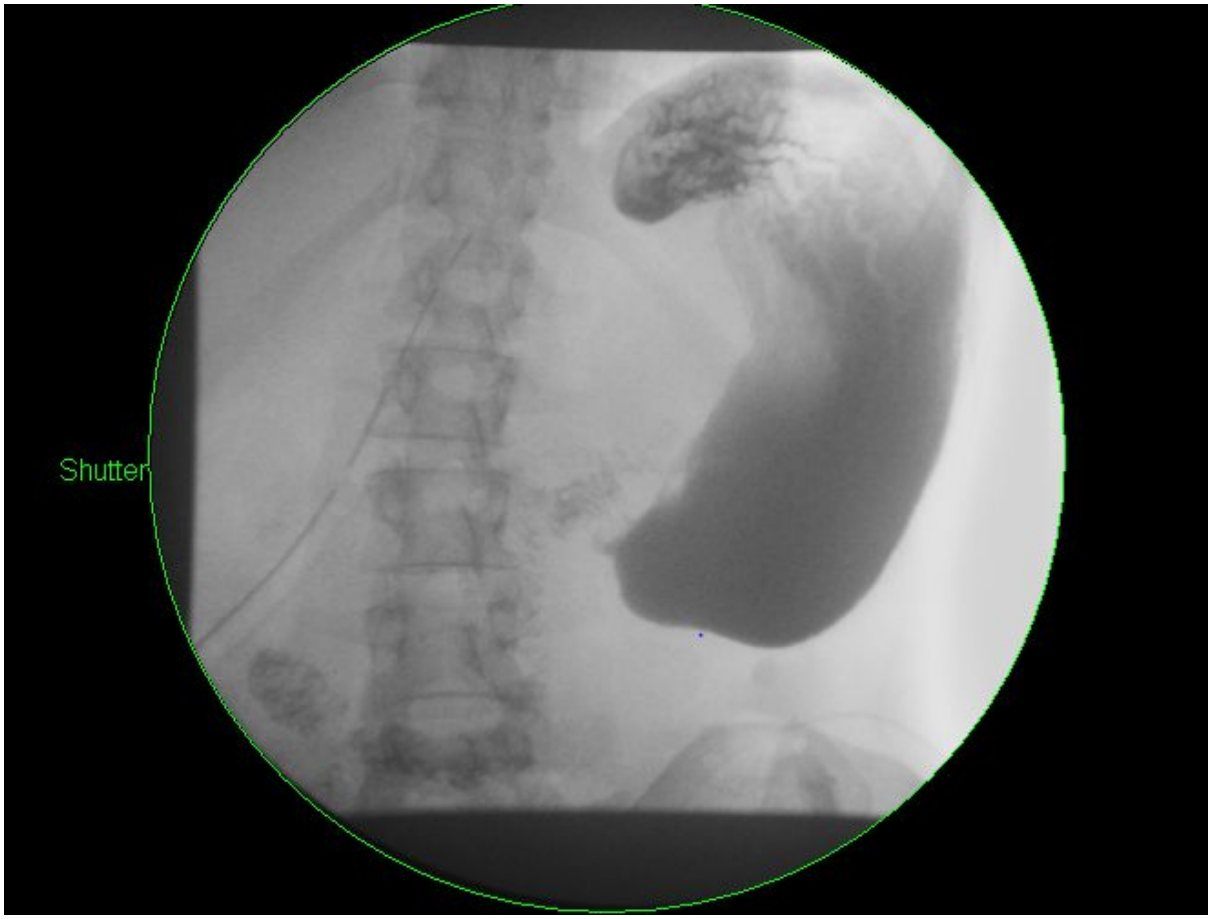


Figure 3

Contrast promptly empties from the stomach into small bowel. No evidence of in tra abdominal leak of contrast is seen. Normal peristalsis is observed at the an astomosis. Contrast is visualised in the small bowel distally.

Discuss management of PE

- O2, TEDS, Regular ABG's & CXR
- Therapeutic clexane
- Other Ix required ? – Dopplers, V/Q

Further management of pancreatic fistula

- Discuss non operative management of pancreatic fistula – S.N.A.P.
- Somatostatin analogue
- ERCP and stenting – not possible in this case due to Roux-en-Y
- Fistulogram (Figure 3)
- MRCP – *Confirmed the presence of a fistula, thought to arise from a side branch injury at the neck of the pancreas. No intra-abdominal collection was identified. The was evidence of chronic pancreatitis with a dilated main pancreatic duct, and a dominant stricture in the head of the pancreas (i.e. distal to level of fistula)*
- ?Radiological intervention e.g. Cannulation of fistula/main pancreatic duct, Cyanoacrylate
- Ongoing nutritional issues – jejunostomy feeding, Creon

Figure 3

REPORT -
Water soluble contrast was injected via a small catheter into the fistula located on the right abdominal wall. Contrast was demonstrated to flow superiorly on t he right side of the abdomen to the level of L1. At this level, contrast outline s multiple duct like projections. No intra abdominal leak or connection to bowel is demonstrated. Appearances are consistent with a cutaneous pancreatic fistul a.

Failed non operative management

Over the following 5 months despite conservative measures the fistula continued to drain 500 to 800mls of clear pancreatic fluid per day.

Re-presented to A&E with abdominal pain, swelling and sudden cessation of fistula output. O/E Pyrexic 38.5, Upper abdominal tenderness and swelling, clinically jaundiced.

CRP - 256

WCC - 20.4

LFT - Alp 532, GGT 209, TBil 56

Further imaging ?

CT scan abdomen (Figure 4)

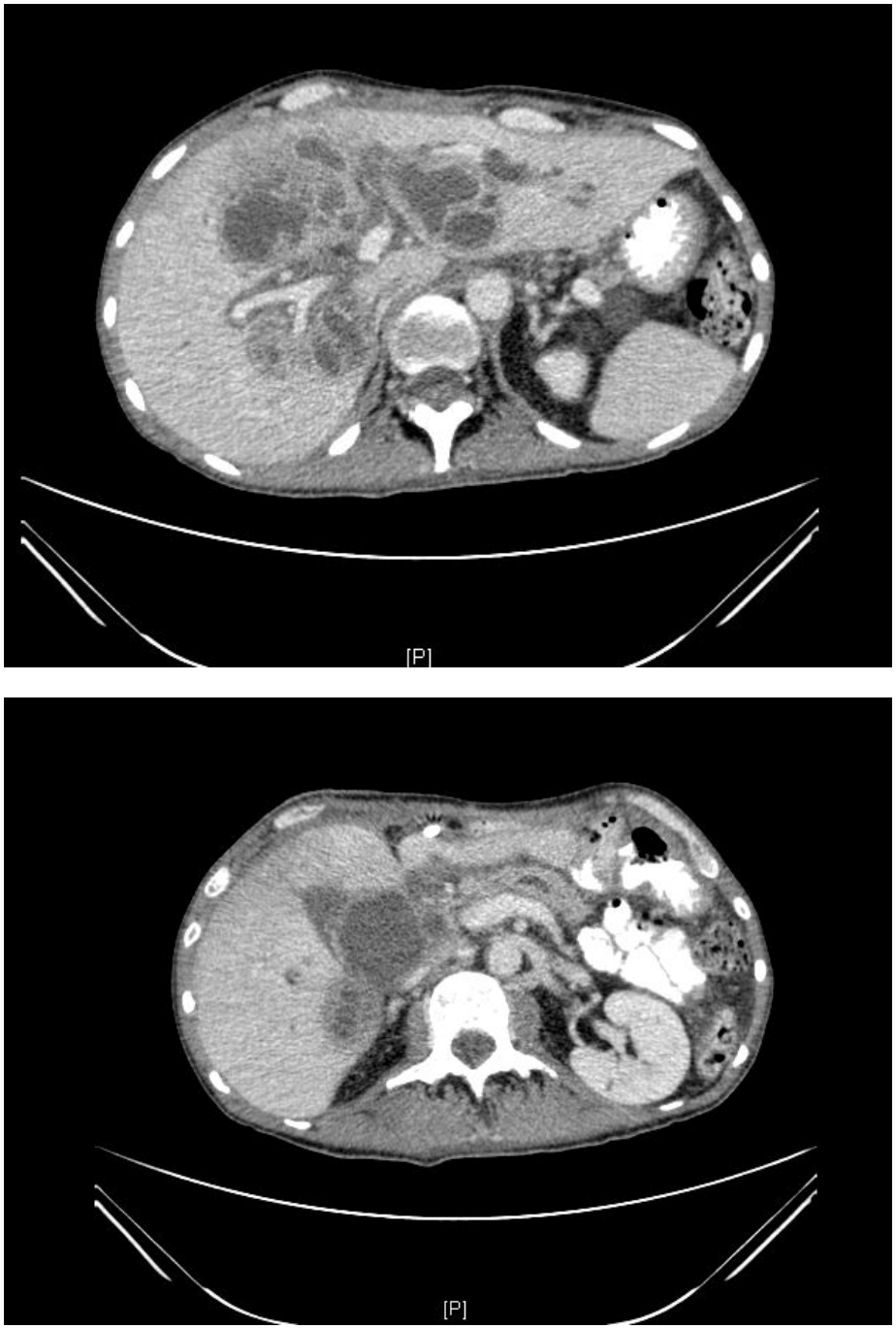


Figure 4

REPORT – There is a large complex multi-septated collection arising adjacent to the head of pancreas which extends into t he liver. The collection is causing greater intrahepatic bile duct dilatation than was present on the previous imaging. The common bile duct cannot clearly be identified. The pancreatic duct remains dilated.

Management plan

ABC/Resus – O2, IV Fluids

IV Antibiotics

?Further fistulogram and drain insertion through previous tract

?Percutaneous drainage of pseudocyst

?PTC and internal/external biliary drainage

Discuss definitive surgical management

Further delay before surgery to allow acute changes to resolve and to optimise nutrition

Whipples procedure

Fry's procedure

CASE 6

19 year old man crashes his quad bike at speed. Admitted to another hospital complaining of left chest and upper abdominal pain. HR 110/min, normotensive. Hb 13.2, amylase 256.

How would you manage this patient?

CT CAP performed, what can you see? (Splenic injury, pancreatic injury if look closely)

IMAGE

What patients are candidates for Non-operative management of splenic injury and which patients are likely to fail?

Is serum amylase a reliable indicator of pancreatic injury?

Is there a role for MRCP/ERCP?

What are your management options?

What did we do? Following discussion we transferred him to the regional HPB unit, Hb drifted to 10.4 but remained stable. Repeat CT was carried out for persistent vomiting. What does it show? (Large peripancreatic fluid collection compressing the stomach)

IMAGE

What are your options now?

Managed to eat and vomiting settled with anti-emetics, his pain settled and he was discharged to be readmitted for elective pseudocystgastrostomy at 5 weeks following a further outpatient CT.

CASE 7

A 42 year old lady developed abdominal pain, initially non-specific, 2 days post discharge after a laparoscopic cholecystectomy. Examination revealed slight abdominal distension, slight bruising around the port site wounds and slight RUQ tenderness. She was apyrexic.

What diagnosis should be considered?

? bile leak/biliary peritonitis (opportunity to discuss the often indolent nature and presentation of bile leak/peritonitis).

? sub-hepatic haematoma.

What are the appropriate investigations & management at this stage?

Analgesia + IV antibiotics

FBP

LFTS

USS/CT

?MRCP – to detect leak and ensure integrity of extrahepatic biliary tree.

A CT scan reveals a 1 cm rim of fluid under the right hemi-diaphragm, a small amount of fluid in Rutherford Morrison's pouch and in the pelvis. Hb normal. WCC 12.7. LFTS – slight elevation of bilirubin and obstructive enzymes. What is the likely diagnosis now.

Bile leak/biliary peritonitis.

What are the possible management options now?

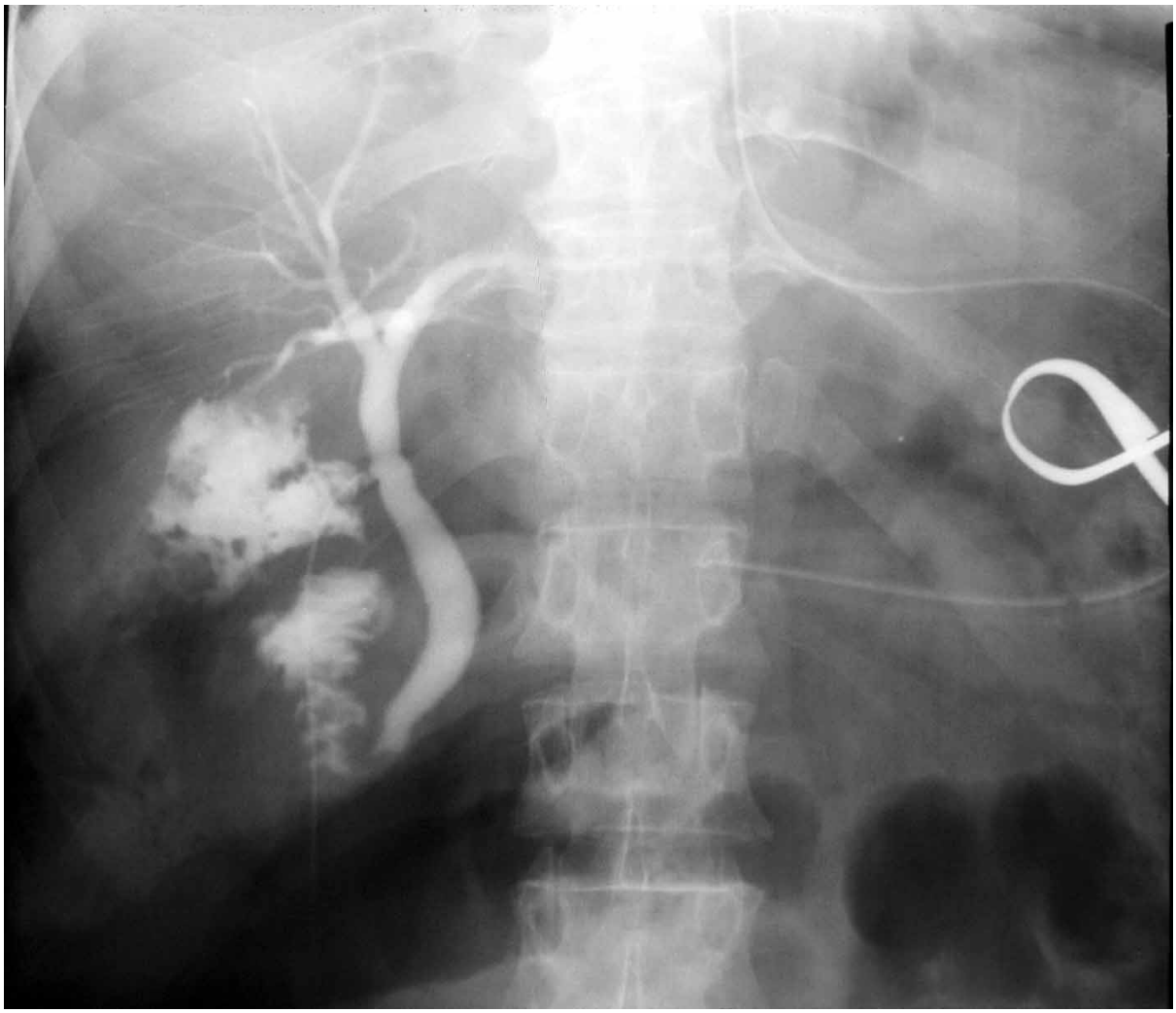
ERCP + sphincterotomy & stent (opportunity to discuss role of ERCP & stent – how it works to reduce/prevent bile leak).

Re-laparoscopy & washout (+ intraop cholangiogram if MRCP has not been available).

Her clinical condition actually deteriorated very significantly overnight. She had developed four quadrant tenderness , generalised peritonitis and haemodynamic signs of sepsis. A laparotomy was undertaken and revealed bile ++ in the peritoneal cavity. What could explain the significant deterioration?

Infection of the intraperitoneal bile collection which can change the situation relatively quickly from an indolent presentation to significant sepsis with systemic manifestations.

The abdominal cavity was lavaged and an intraoperative cholangiogram was taken. What does this demonstrate?



There is a bile leak from a small branch of the right duct system – most likely from the gallbladder fossa. The biliary tree is intact. There is no evidence of any distal obstruction which could have precipitated this, such as a stone.

How should this be managed?

If the leak site from the gallbladder fossa is evident it may be sutured and a drain placed. If not a drain should be placed.

What aspect of surgical technique during the laparoscopic cholecystectomy could have contributed to development of this leak?

Failure to get in the correct plane, leaving a layer of areolar tissue behind on the GB fossa, can result in hook dissection too deeply with disruption/gouging of the underlying parenchyma, thus increasing the risk of bleeding and bile leak.

If the cholangiogram had demonstrated a stone in the lower CBD, how could this have been managed?

CBD exploration and stone retrieval. Alternatively, if there was too much inflammation & induration of the hepatic pedicle to allow this to be done safely, a drain could have been placed to deal with the leak and a later ERCP could have been performed.

CASE 8

History and Clinical examination

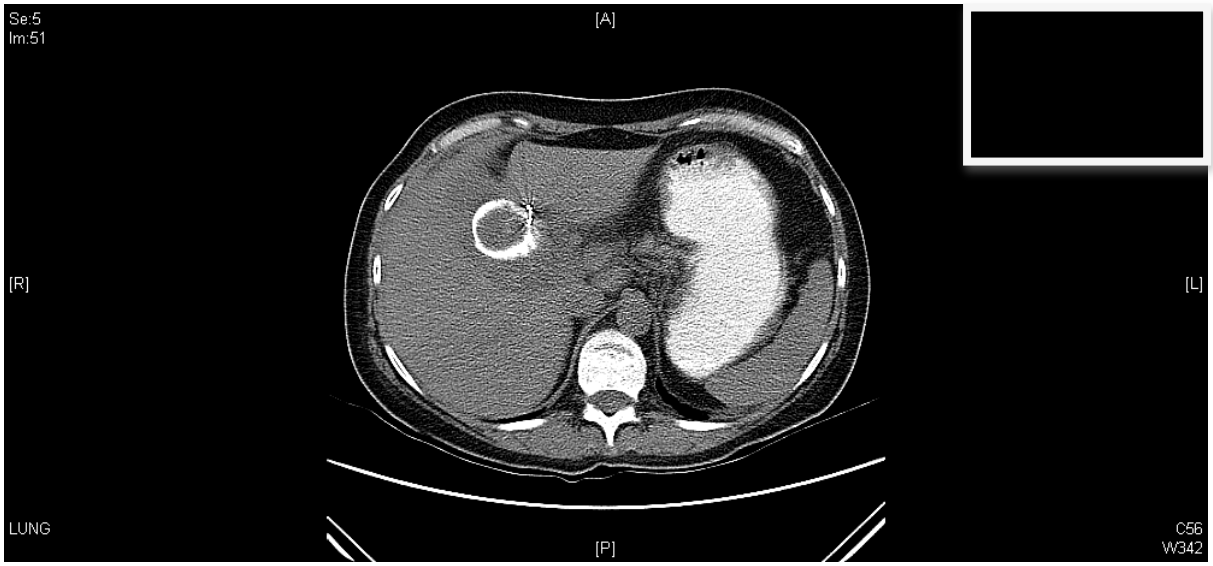
57 year old lady admitted with persistent vomiting, and no bowel motion or flatus for 3 days.

She had been discharged 2 weeks previously from the care of the physicians. She presented at that time with fresh red haematemesis from an upper GI bleed. They were unable to visualise the duodenum endoscopically due to what was thought to be old clot. Hence selective embolisation of the gastroduodenal artery was carried out to control a bleeding ulcer in D1. She was awaiting repeat OGD as an outpatient.

A CT scan during her first admission had shown a large GB stone (Figure 1)

On this occasion she was found to be dehydrated with a tachycardia of 120bpm, and respiratory rate of 25. She was apyrexial, with a soft non distended abdomen. There was local tenderness in epigastriuim/RUQ.

Figure 4



REPORT -
A larger laminated stone in the gallbladder is causing compression of the duodenum. There
is considerable inflammatory change involving the gallbladder wall and surrounding fat.

What is differential diagnosis and what are your management plans?

Diff. Diagnosis:

1. Gastric outlet obstruction - ? secondary to benign ulceration/stricture
2. Proximal small bowel obstruction - ? Gallstone ileus
3. Cholecystoduodenal fistula and Bouveret's syndrome
4. ? underlying malignancy

Initial Management:

ABC assessment/ CRISP principles.

O2, IVF, Nasogastric tube

Relevant Investigations.

CXR/AXR – (Figure 2)

FBC, U&E, LFT's

Liver Profile			
T.Bilirubin	12	umol/L	(3 - 18)
ALP	121	U/L	(35 - 120)
AST	21	U/L	(10 - 40)
GGT	161	U/L	(12 - 58)
ALT	29	U/L	(10 - 56)

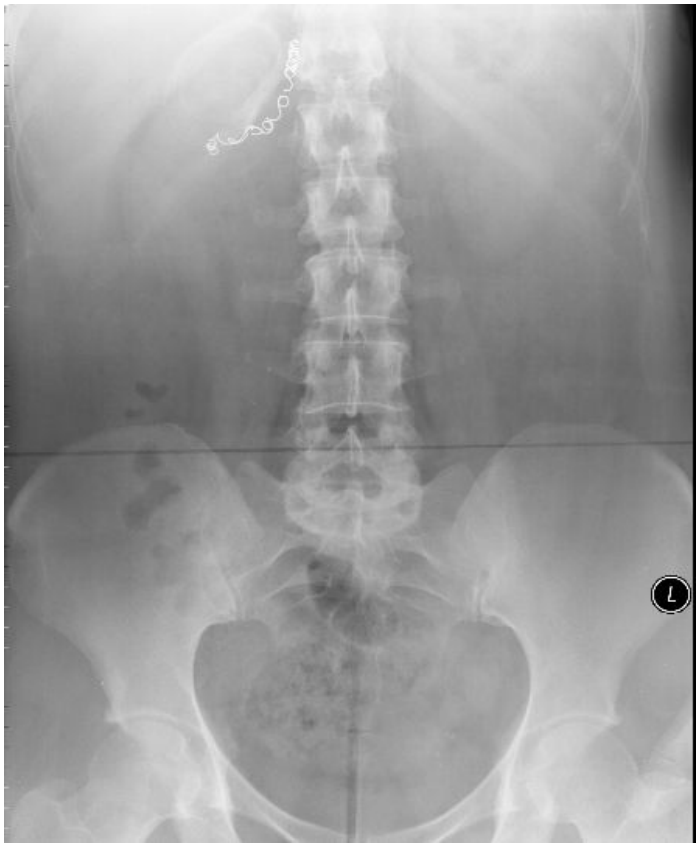
Repeat OGD: Large amount of food residue in stomach. Unable to visualise the duodenum clearly due to obstruction ?Ulceration and altered blood clot ?Large gallstone

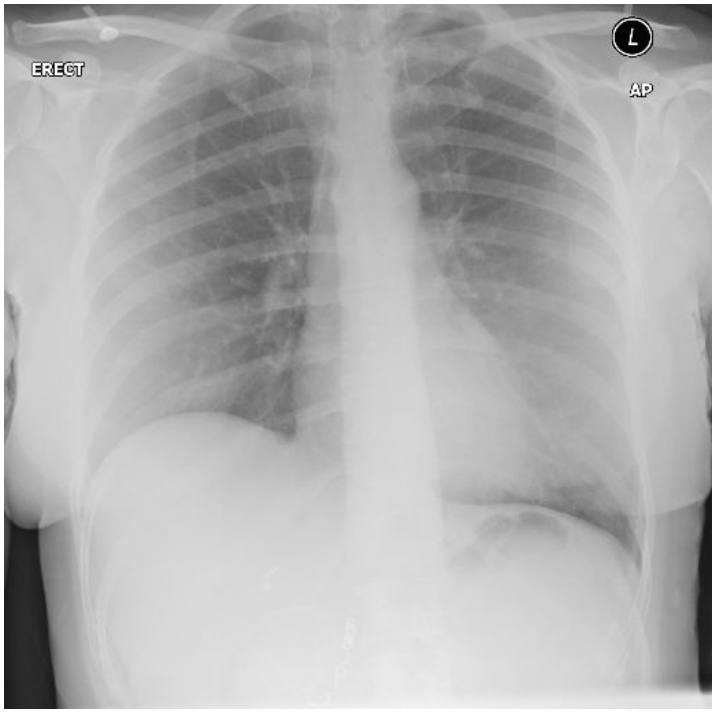
Barium meal - Not performed on this occasion

Repeat CT Scan (Figure 3)

MRCP (Figure 4)

Figure 2

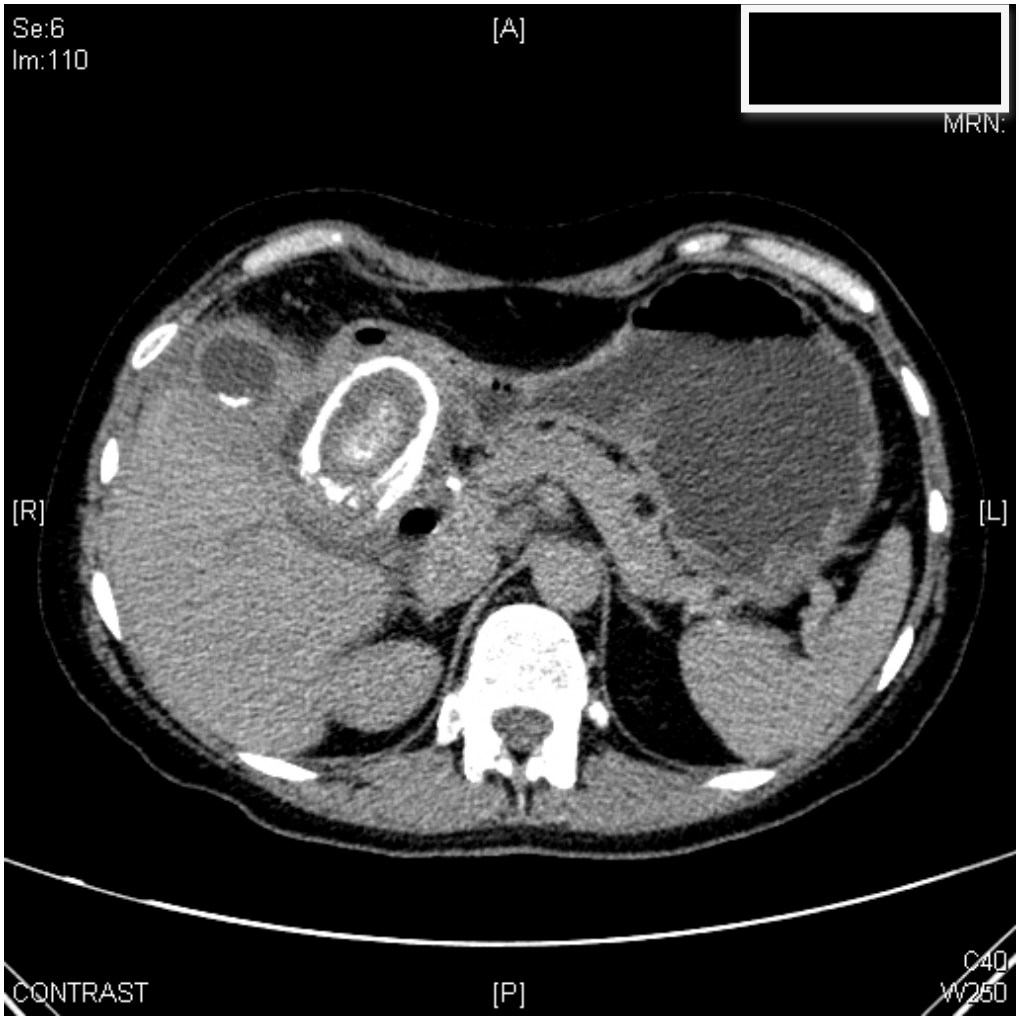




REPORT -
There are embolisation coils in the right upper quadrant. There is also a large l

aminated calculus in keeping with a gallstone projected medially in the upper qu adrant. No intrahepatic air, No free air,

Figure 3



REPORT -
There is a considerable amount of gas within the biliary tree. There is a small amount of gas within the gallbladder. The large laminated calculus appears to have eroded medially into the duodenum. There is fluid in the stomach but the upper small bowel loops appear relatively collapsed. Appearances suggest that the large calculus has likely eroded and impacted causing obstruction at the leve l of the second part of the duodenum

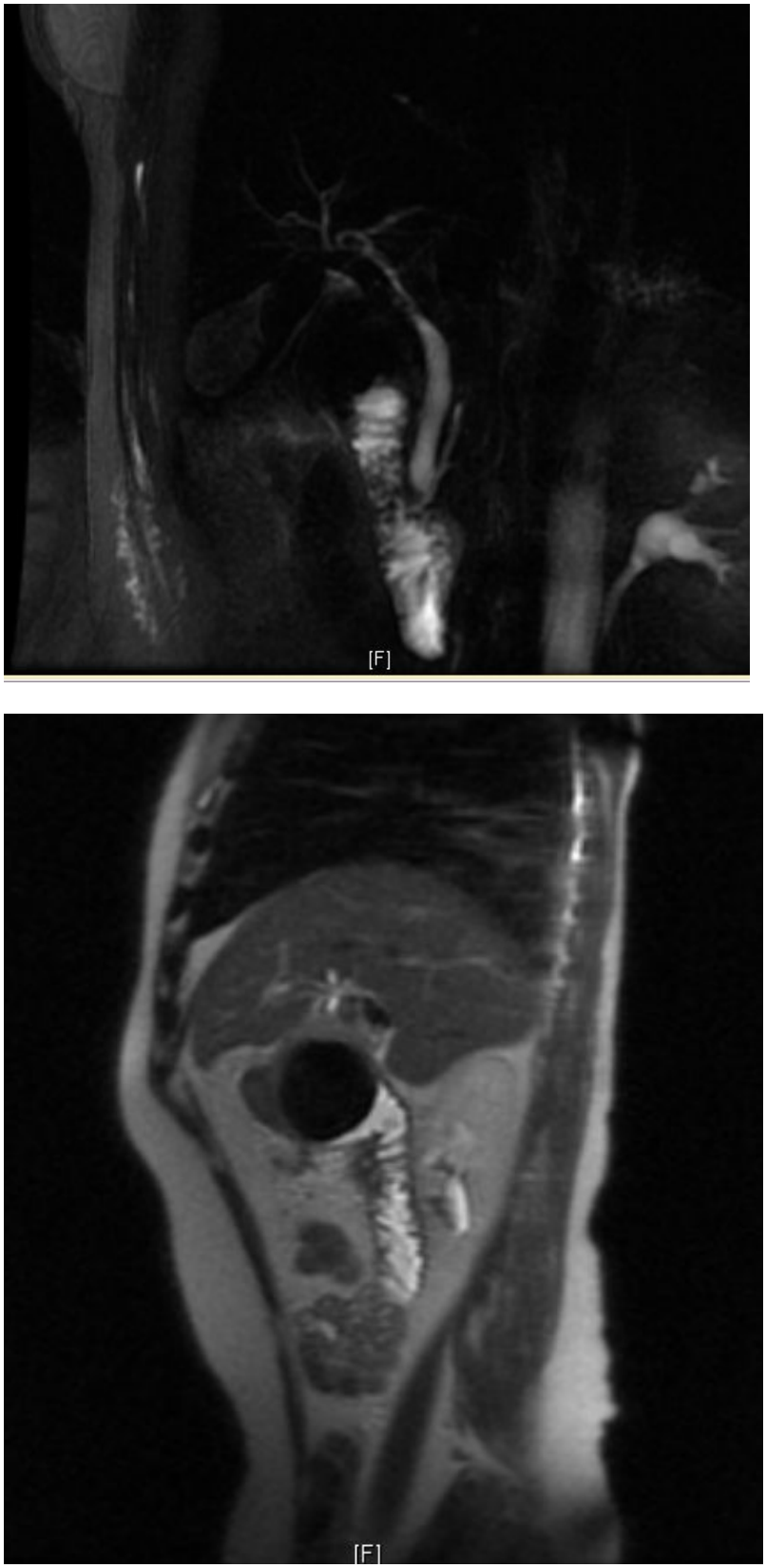


Figure 4

REPORT -
Massive gallbladder calculus which appears to have eroded into the duodenum wi

th resultant gas in the gallbladder. There is displacement of the common bile d uct but no intraductal calculus or obstruction.

Please review results and discuss diagnosis

Bouveret's syndrome with complete gastric outlet obstruction. Gallstone had eroded posteriorly into the gastroduodenal artery causing the previous Upper GI bleed.

Bouveret's syndrome occurs in around 3% of cholecystoduodenal fistulas, the majority will cause gallstone ileus.

Described by the French Physician Leon Bouveret in 1896

Operative management

Endoscopic visualisation and retrieval of stone (generally only 10% successful)

Cholecystectomy and duodenotomy

Cholecystectomy, duodenectomy and Roux-en-Y gastric bypass (Figures 5 and 6)

Given imaging and operative findings discuss Mirizzis syndrome.

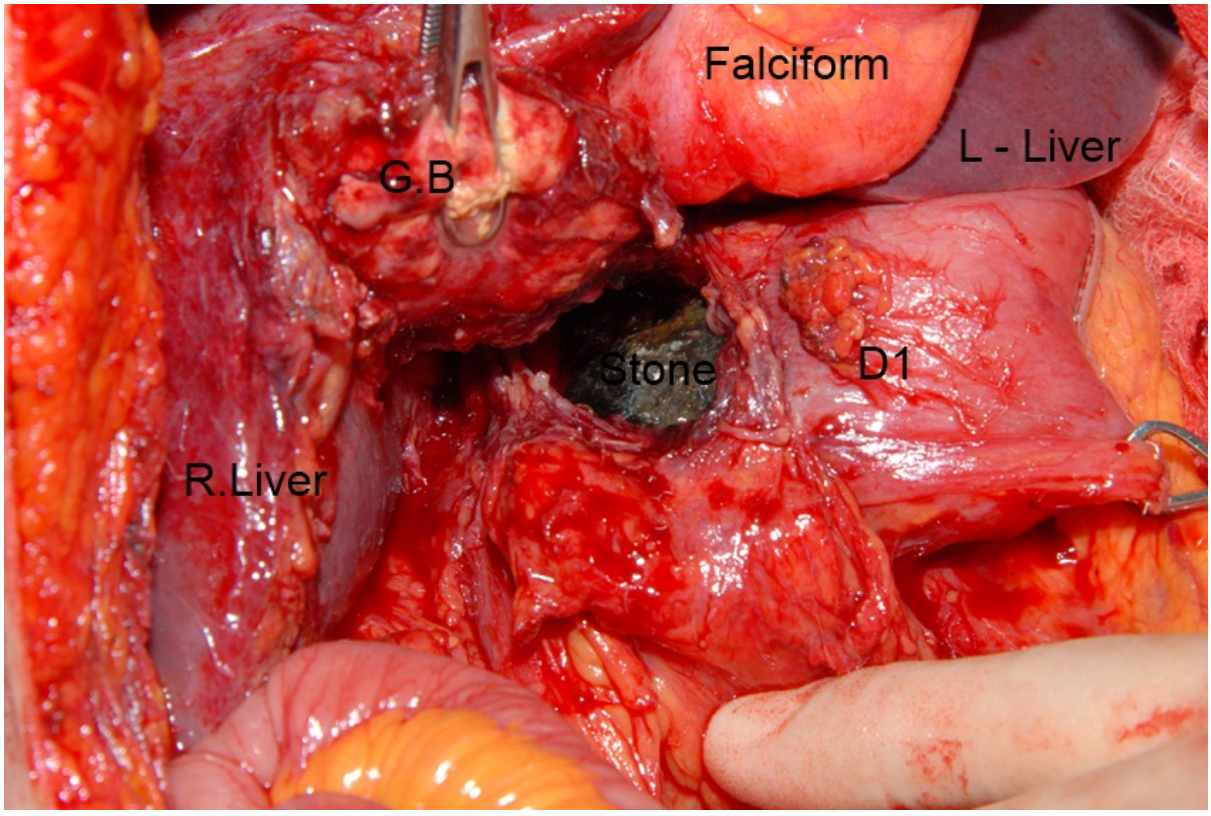
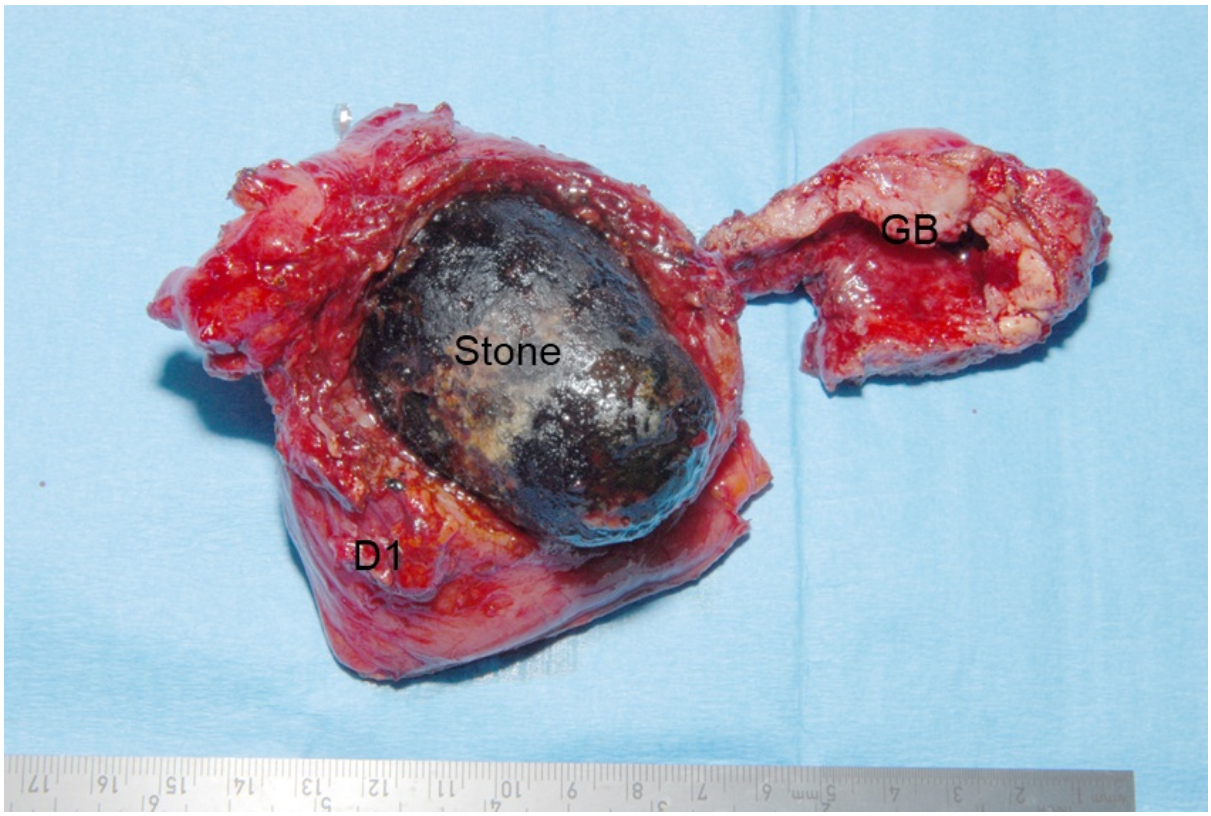


Figure 5 and 6

nd 6



CASE 9

A 23 year old female was admitted with severe epigastric pain and vomiting. She was mildly pyrexic with a temperature of 37.7^{0}C. Preliminary investigations revealed a mild leucocytosis [14 x10^9/ml] with a generalised disturbance in liver function [Bi 18, ALP 220, AST 133, GGT 122 and ALT 56] CRP was increased at 122 IU. Amylase was 44 IU.

What is the differential diagnosis and how would you investigate and manage this situation?

USS of abdomen revealed cholelithiasis, a mildly thick walled gallbladder with a CHD of 8 mm. No IHDD. Pancreas normal.

Next Step?

The patients MRC demonstrates a non obstructing CBD calculus.

What are the options now?

The patient underwent an uncomplicated LC and LCBDE. A 7Fr 7 cm endoprosthesis was inserted and the choledochotomy sutured with 3 X 3/0 vicryl sutures. The following day the patient complained of pain out of keeping with the condition. There was minimal drainage serosanguinous fluid in the passive drain – there was no bile in the drain.

What now?

The patient's amylase was 1220 IU and CRP was 200. WCC was 22 x10^9/ml and other Glasgow criteria were within normal limits. CT scan was performed – The patient had developed postoperative pancreatitis and the patient was managed expectantly. Her condition settled on conservative management.

Learning/Discussion points – This case typifies a common surgical emergency. Cholelithiasis vs choledocholithiasis? Investigation of condition and approach to choledocholithiasis. ERCP vs LCBDE with synchronous LC . Pros and cons for LC on the index admission vs Interval cholecystectomy. Surgical implications of Lap CBDE. Does one decompress the CBD post exploration or close the CBD primarily with impunity?

Case 10

A 52 year old legal secretary was admitted with an episode of acute pancreatitis and was discovered to have cholelithiasis with a normal extrahepatic biliary tree. LFT's were mildly deranged in a hepatitic fashion. She was managed expectantly and was discharged to have an interval cholecystectomy. As a consequence of the pancreatitis she developed a 4 cm pseudocyst. Her condition settled however she developed recurrent episodic epigastric pain radiating into her back and approximately 2 years following her primary presentation she developed an episode of jaundice.

What are the possible aetiologies? How would one refine the diagnosis?

The patient had evidence of extrinsic biliary compression on account of chronic pancreatitis and underwent a choledochoduodenostomy. The patients jaundiced settled completely and her general constitution improved with weight gain and an improved general performance status. Pain was still a problem.

What are the options for pain control in chronic relapsing pancreatitis?

The patient's pain was managed successfully with Oxycontin 20 mgs bd.

What other medications are of benefit in CRP? [antioxidants/ppi's/exocrine pancreatic supplements]

How would one confirm exocrine pancreatic insufficiency? [faecal 1 elastase measurement]

The patient required increasing doses of narcotic analgesia and 5 years into the illness developed a severe exacerbation of her condition with pain and generalised constitutional upset necessitating hospital admission. The patient remained in hospital for several weeks .

The follow imaging was performed.

What does it show and what are the options for treatment?

What are the long term complications associated with CRP?

CASE 11

History and Clinical Examination

A 79 year old lady was admitted as emergency with obstructive jaundice. She had a known history of gallstones and was already on the waiting list for laparoscopic cholecystectomy. She had been unwell for 3 or 4 days with nausea and reduced appetite. She denied abdominal pain. One year previously she had underwent a TAH and BSO followed by pelvic radiotherapy for endometrial carcinoma.

What is the presumptive diagnosis and what are your initial management priorities?

Presumptive Diagnosis

Obstructive jaundice secondary to gallstones

Management priorities

ABC assessment / CRISP principles

Pain relief

Management of jaundice (e.g. Hydration, Antibiotics, Coagulation)

What investigations are relevant?

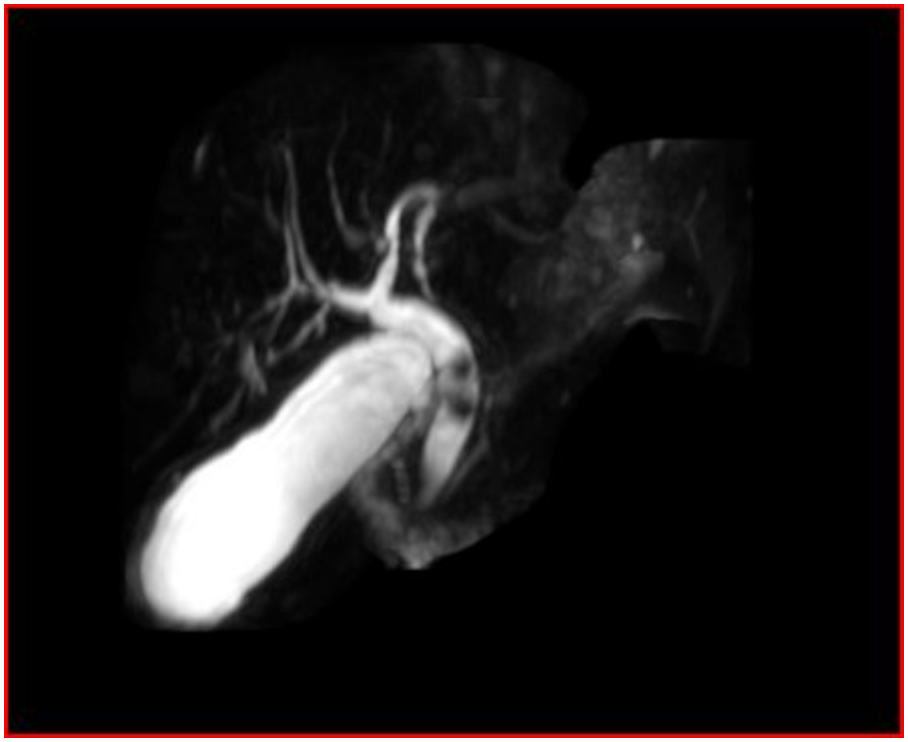
LFT's (below), other bloods normal (U&E, COAG, FBP)

Liver Profile			
T.Bilirubin	**167**	umol/L	(3 - 18)
ALP	**724**	U/L	(35 - 120)
AST	**108**	U/L	(10 - 40)
GGT	**978**	U/L	(12 - 58)
ALT	**158**	U/L	(10 - 56)
Albumin	**37**	g/L	(35 - 50)

USS Abdomen – Showed a thick walled distended GB containing stones. CBD was dilated to 1.3cm, unable to confirm CBD stones because of poor view.

MRCP – Figure 1

Figure 1



Report:

The gallbladder is distended and contains at least one calculus. The common bile duct is slightly dilated and contains at least two calculi. There is no dilatation of the intra-hepatic ducts. A simple cyst is seen in the liver.

Given the USS and MRCP results what are the management options?

Discuss ERCP/Laparoscopic CBD exploration – BSG guidelines

Laparoscopic CBD exploration

At the time of surgery, during initial laparoscopic inspection a firm mass was identified in the region of the Calots triangle and the mid CBD (photo below)

PHOTO TO BE SCANNED IN

What is the differential diagnosis?

- Inflammatory mass/Mirizzi's Syndrome
- Primary cholangiocarcinoma
- GB carcinoma with local invasion of CBD
- Secondary from previous endometrial CA

How would you proceed at this point?

- Continue with laparoscopic procedure
- Convert to open and try to dissect
- Take a trucut biopsy, abdominal drain and abandon surgery
- Abandon surgery without any further action

Trucut Biopsy Result

Histological examination confirms needle core biopsies of tissue which are almost entirely replaced by a poorly differentiated adenosquamous carcinoma.

The tumour cells show both glandular differentiation and squamous differentiation. There is a marked stromal desmoplastic reaction and focal perineural and lymphovascular spread.

Normal biliary epithelium from the lumen of the bile duct appears to be focally represented at the ends of the cores but a dysplastic origin for the tumour is not detected.

Whilst primary adenosquamous carcinoma can occur at this anatomical site, we note the previous history of endometrial carcinoma in 2009.

This was also an adenocarcinoma with squamous differentiation. It was an advanced endometrial cancer FIGO staging IIIc pT2bN1 with at least four involved nodes.

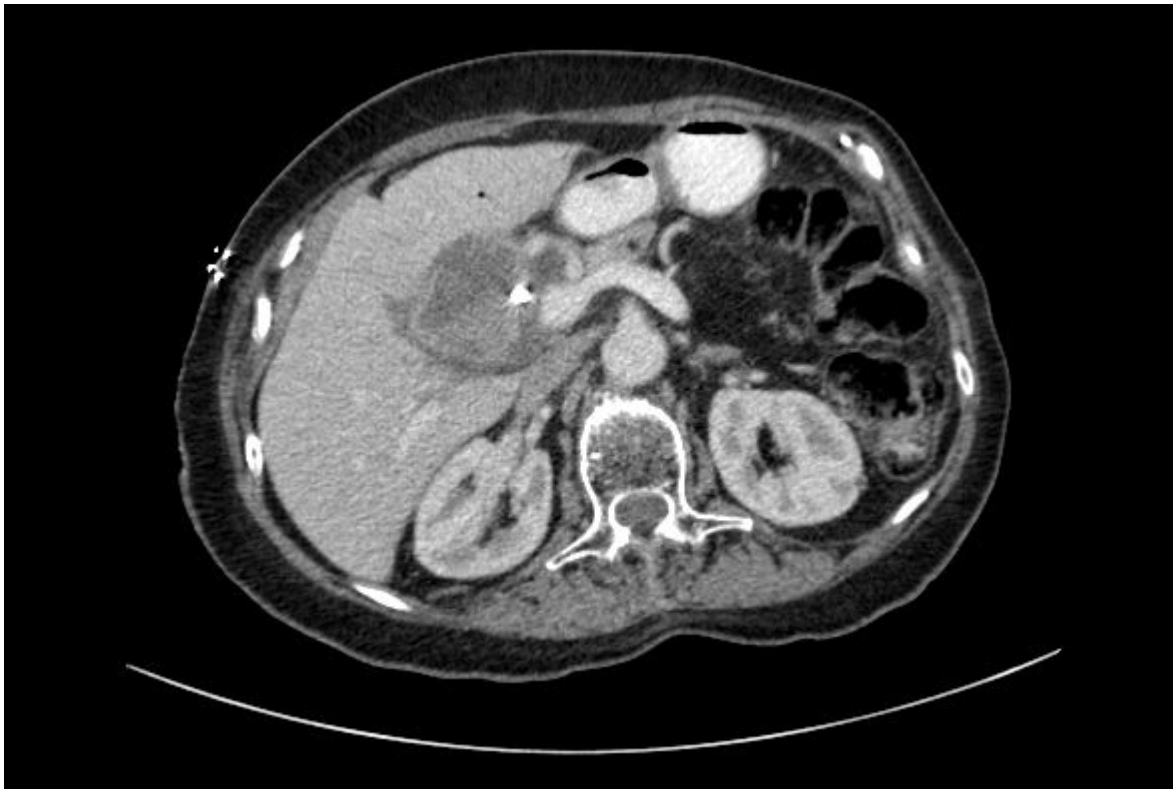
The possibility therefore that this represents metastasis from the endometrial cancer needs to be carefully considered.

A panel of immunohistochemical does not distinguish between these two possibilities as cholangiocarcinoma and endometrial adenocarcinoma could both show this pattern.

What are the next steps?

- ERCP +/- stent
    - *The CBD was easily cannulated. Two large stones were identified in the distal CBD. There was a long irregular stricture in the mid duct below the level of the hilum. The stricture was dilated and stented.*
- Staging CT (Figure 2)
- EUS assessment - ?required to assess operability
- Discussion at MDT – Unable to distinguish between primary cholangiocarcinoma, and metastatic endometrial carcinoma. Recommendation to proceed with trial resection.
- Preoperative fitness assessment

Figure 2



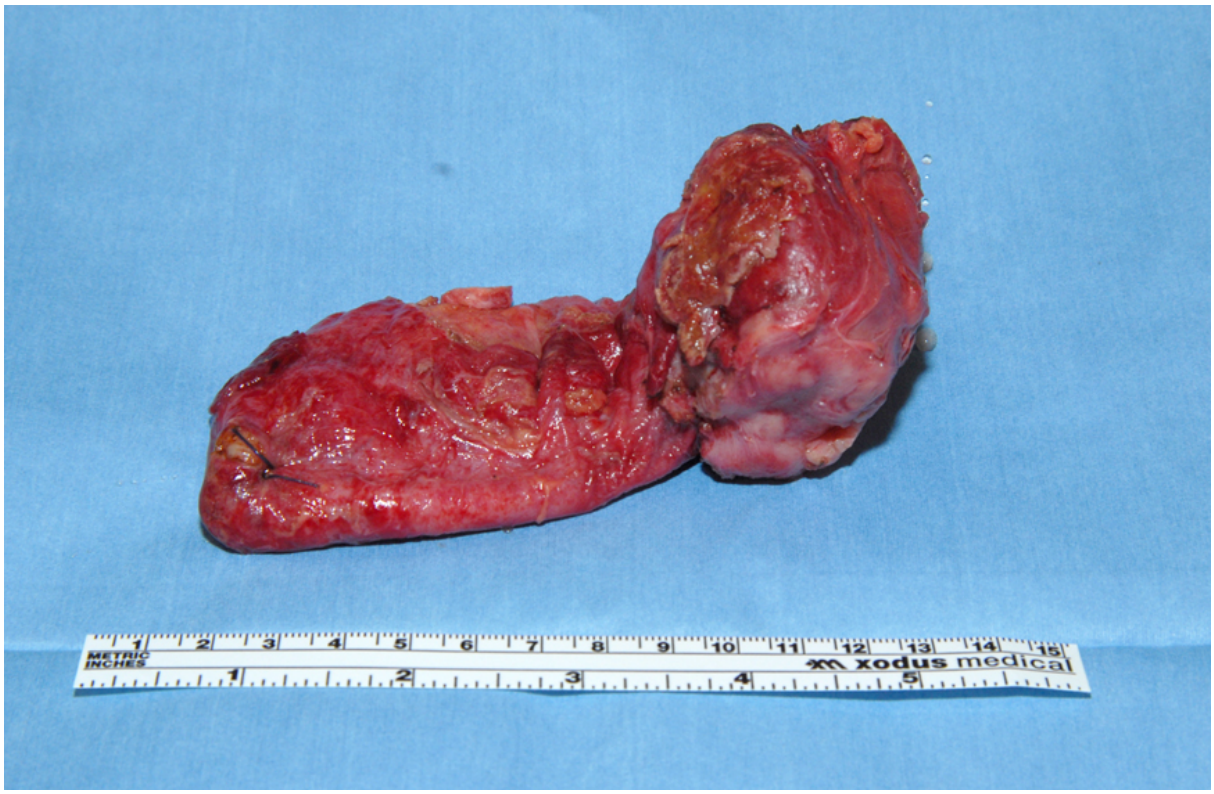
Superior to the gallbladder and adjacent to the stent there is a large area of lo w attenuation measuring 4.8 x 5.5 cm. This lies just anterior to the portal vein

which appears a little narrowed but patent. The common bile duct appears dilate d with the impression of some increased density within it. The pancreas appear s within normal limits.

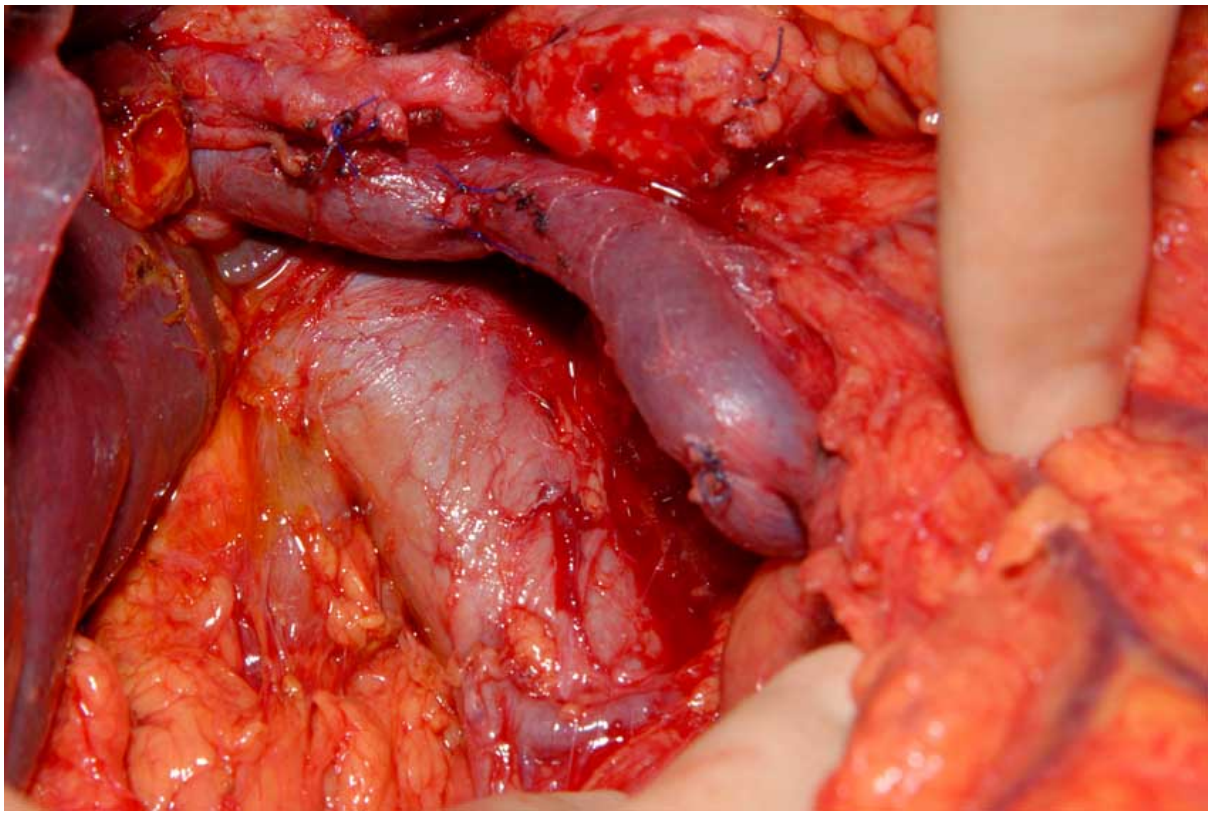
Definitive treatment

Operative findings showed a large mass involving the mid CBD, which extended laterally to involve the cystic duct and GB, and distally to involve D1. The patient went on to have a Whipples procedure and pathology confirmed a primary adenosquamous carcinoma arising from the common bile duct.

Specimen – Gallbladder and CBD

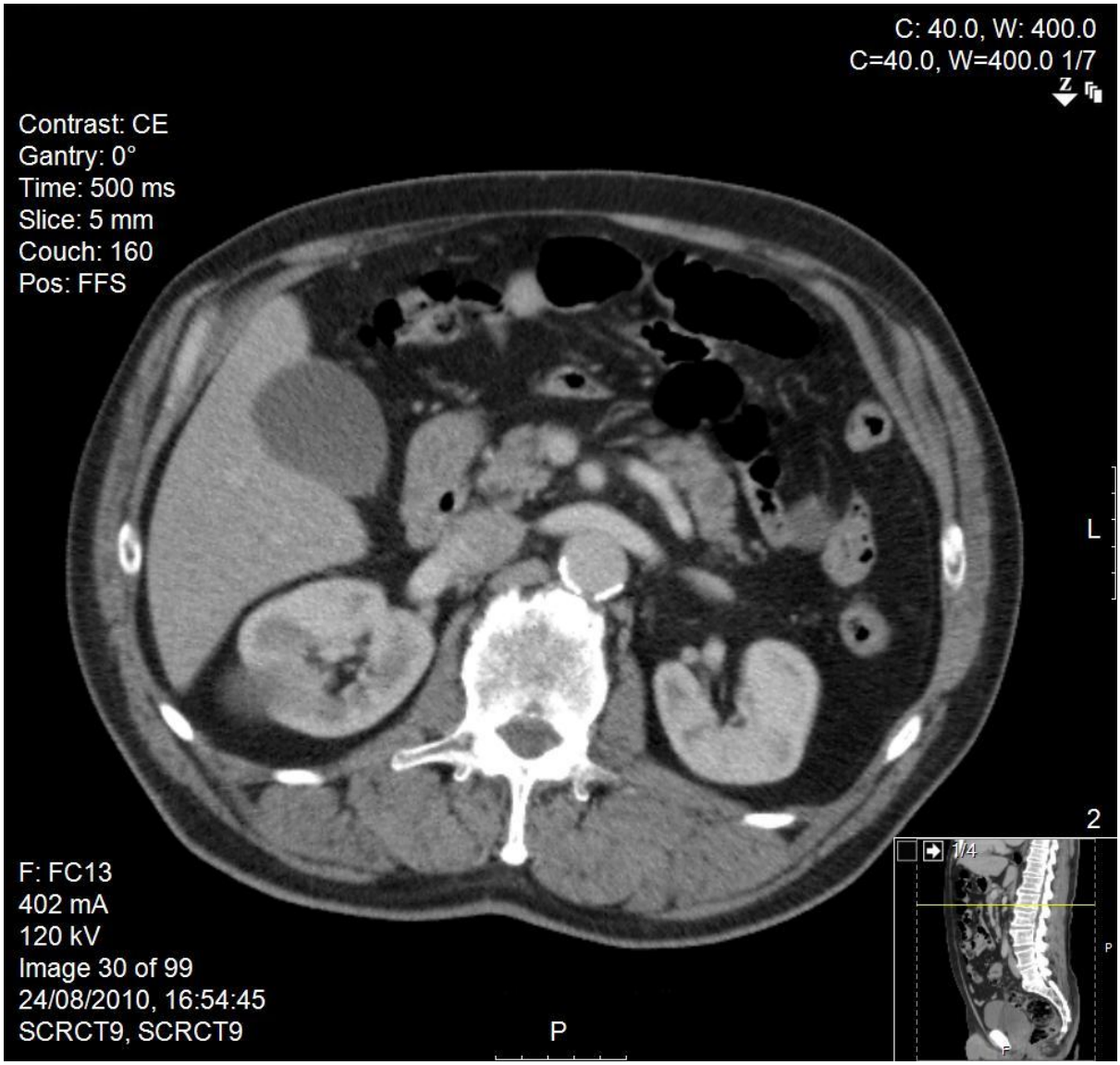


Operative image – after resection showing anatomy



CASE 12

A 64 year old man fell off a ladder at work. On warfarin for AF. No other significant past history. A CT chest/abdomen/pelvis was performed to rule out injury. No injury detected, but radiologist made note af an incidental finding:



What does this CT scan show? What would you do next?

Patient has EUS of pancreas:

What does this show?

Would you do anything else at the same time?

Patient has FNA at same time. Small amount of brown fluid obtained. What would you send it for?

No specimen for cytology. Specimen sent for tumour marker assay:

CEA 33075 CA19-9 11

What does this mean? At what level does cyst fluid CEA become 'significant'.

What is your differential diagnosis now?

What would you recommend?

After MDT discussion, patient advised to have radical resection due to risk of malignancy.

Proceeds to distal pancreatectomy and splenectomy.

How would you prepare a patient for this procedure? Do you know of any published guidelines regarding splenectomy?

Final histology:

Intraductal papillary mucinous neoplasm of central duct type. Widespread low grade dysplasia.

What is this lesion, and how is it classified? What is the risk of progression to invasive malignancy?

CASE 13

A 51 year old female presents with painless obstructive jaundice. An ultrasound is performed and shows dilated intrahepatic ducts, but normal diameter CBD. No gallstones.

What investigation would you perform next?

Patient has an MRCP

What does this image show?

What would you do next?

Patient has an ERCP:

A stent is inserted into the right hepatic duct with subsequent improvement in LFTs. Brushings show adenocarcinoma. Patient is referred for surgical opinion.

What is the diagnosis?

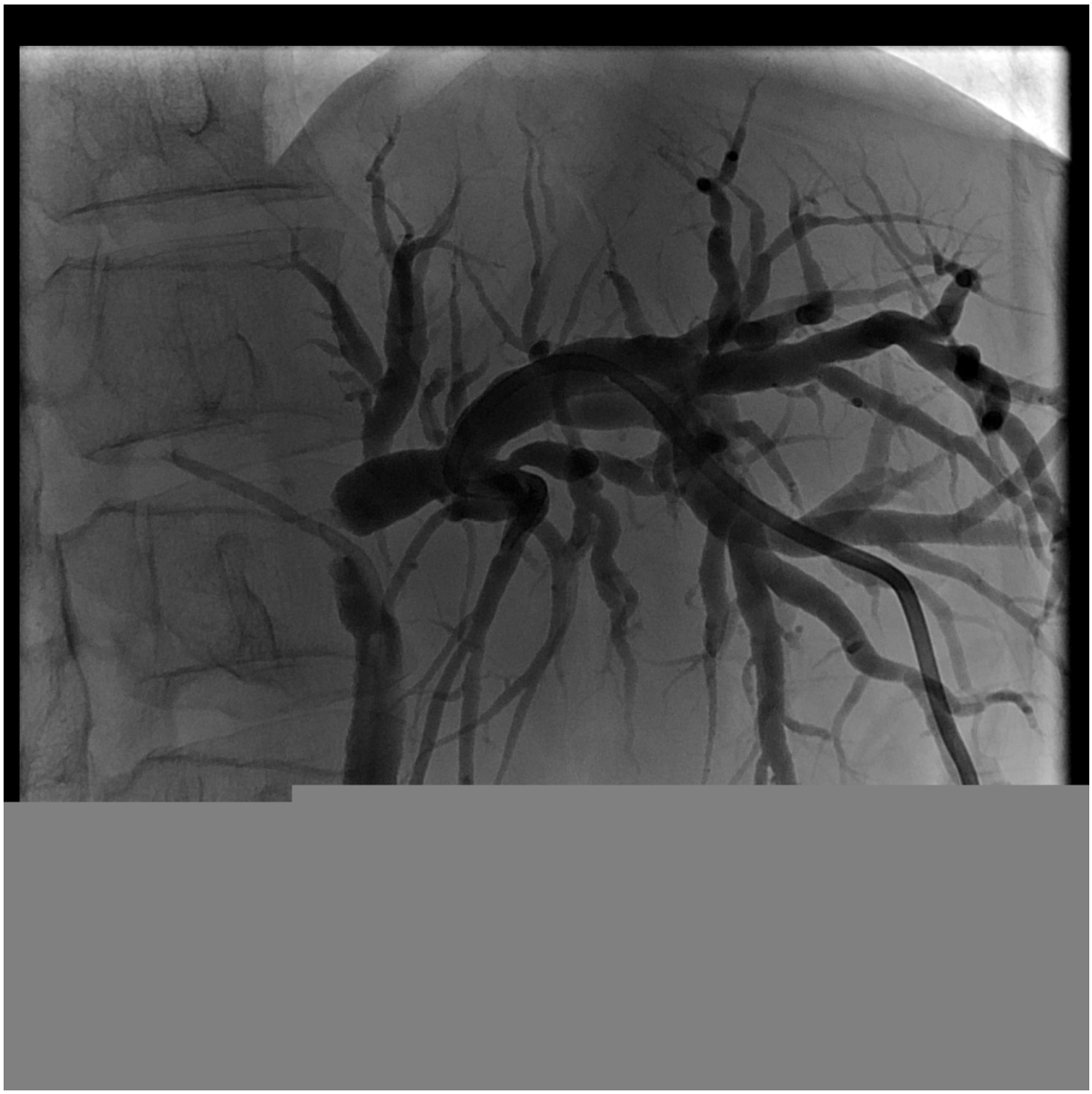
The jaundice is settling and the patient is comfortable. What is the problem with the management so far?

5 days after the ERCP the patient is admitted with septicaemia.

What has happened?

What would you do next?

The patient has a left sided PTC. Frank pus is drained from the left hepatic duct. Patients condition improves with drainage and antibiotic therapy.



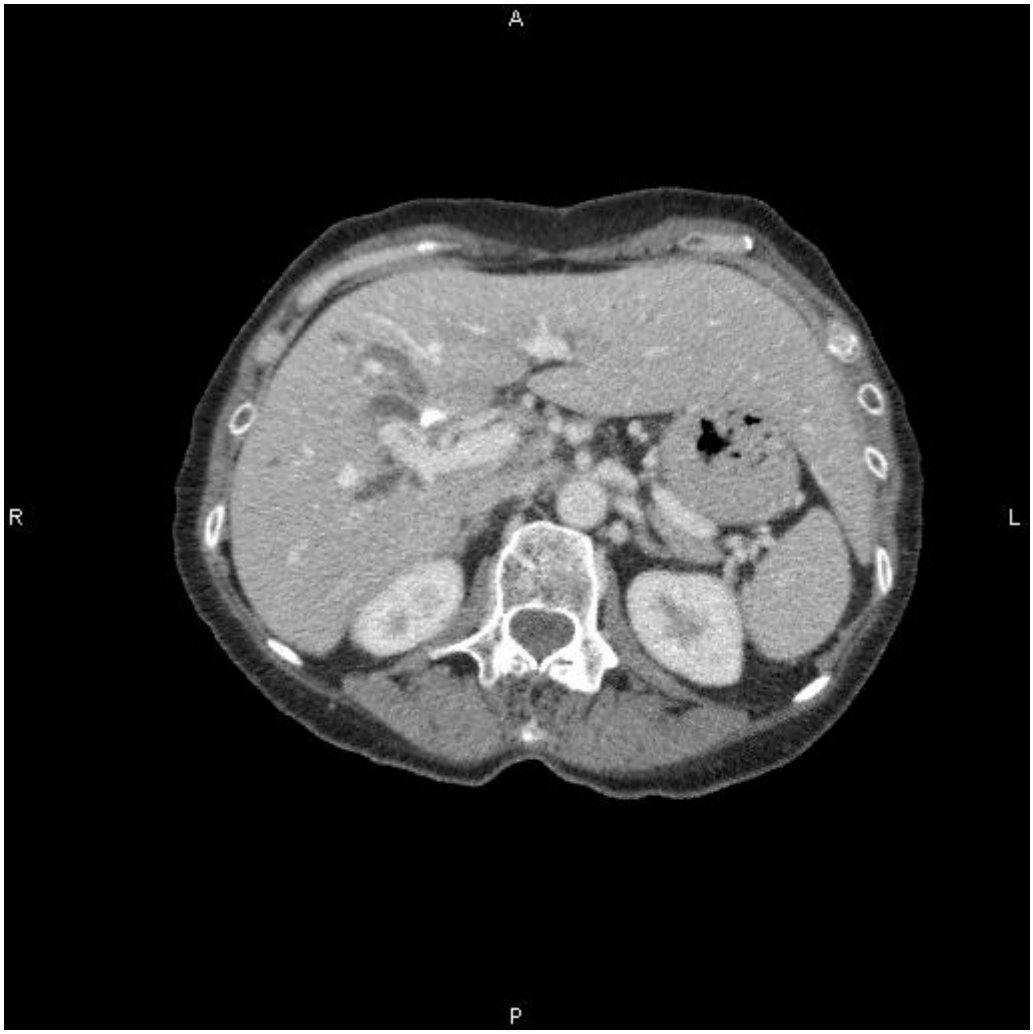
What does this PTC image show?

This radiological investigation was performed at the same time as the PTC. What is this test and what does it show?

Describe the classification of hilar cholangiocarcinoma (Klatskin tumour).

What type of hilar cholangiocarcinoma is this?

How would you assess it for resectability?



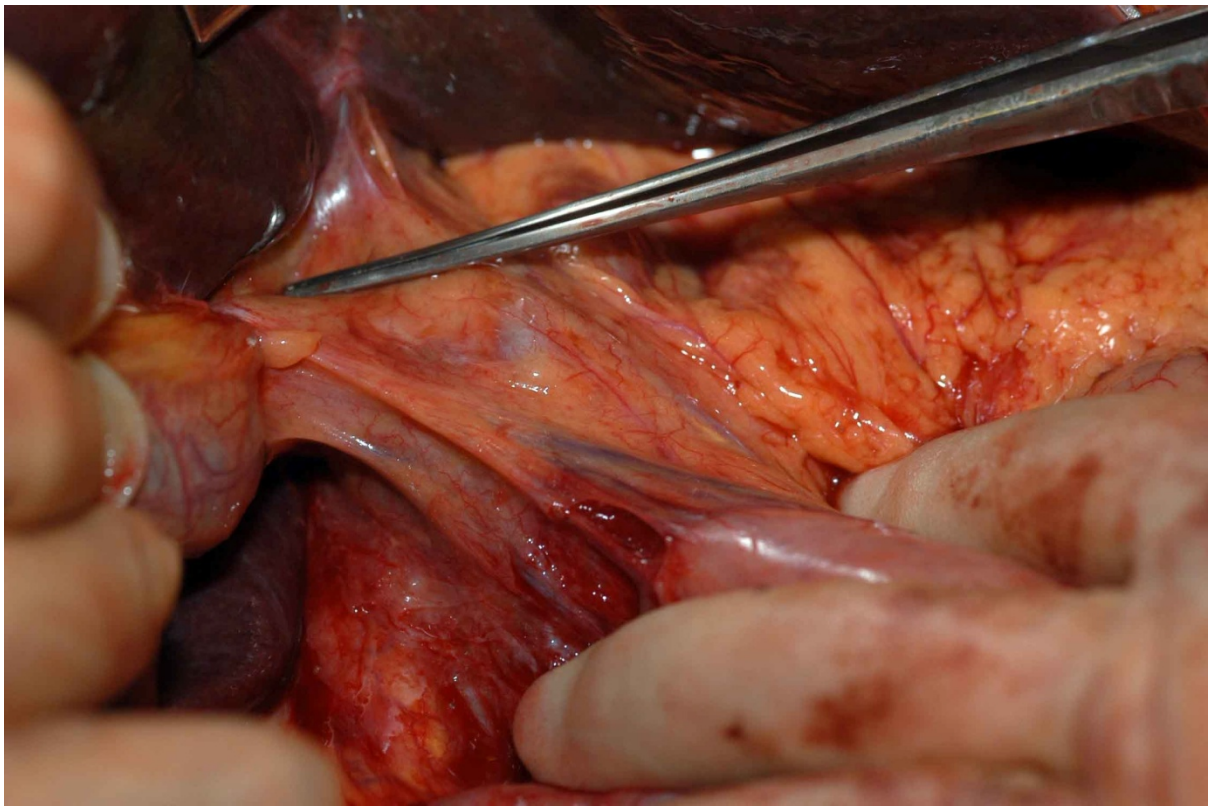
What features would you look for on CT?

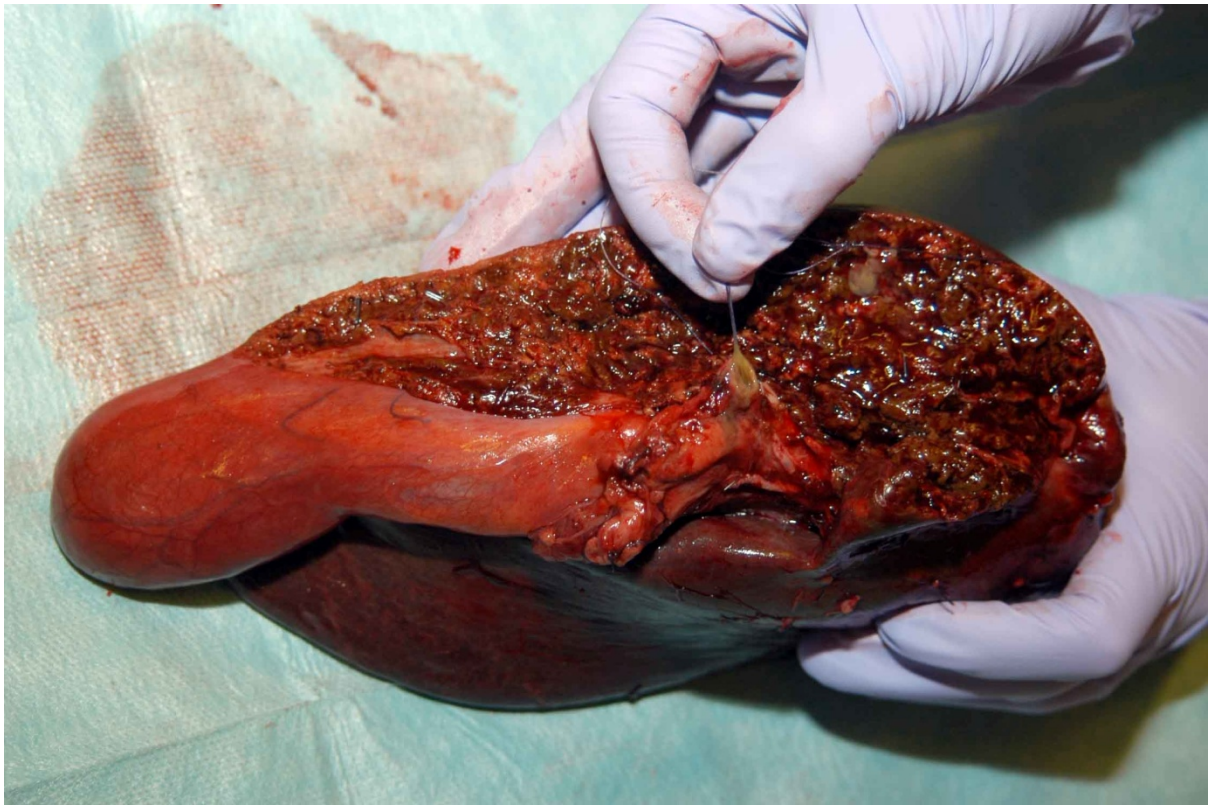
The patient also has a staging laparoscopy.

Summary: The patient has a type IIIa hilar cholangiocarcinoma with no evidence of vascular involvement and no evidence of distant metastatic disease. She is very fit and active and has no significant comorbidity.

What treatment would you recommend? Are there any other options?

The patient undergoes a right hepatectomy with en-bloc excision of the caudate lobe and extrahepatic bile duct down to the upper border of the duodenum. Frozen section analysis of duct margins intraoperatively confirms they are clear. Reconstruction is with a long Roux loop anastomosed separately to the segment 4 duct and the segment 2/3 duct.





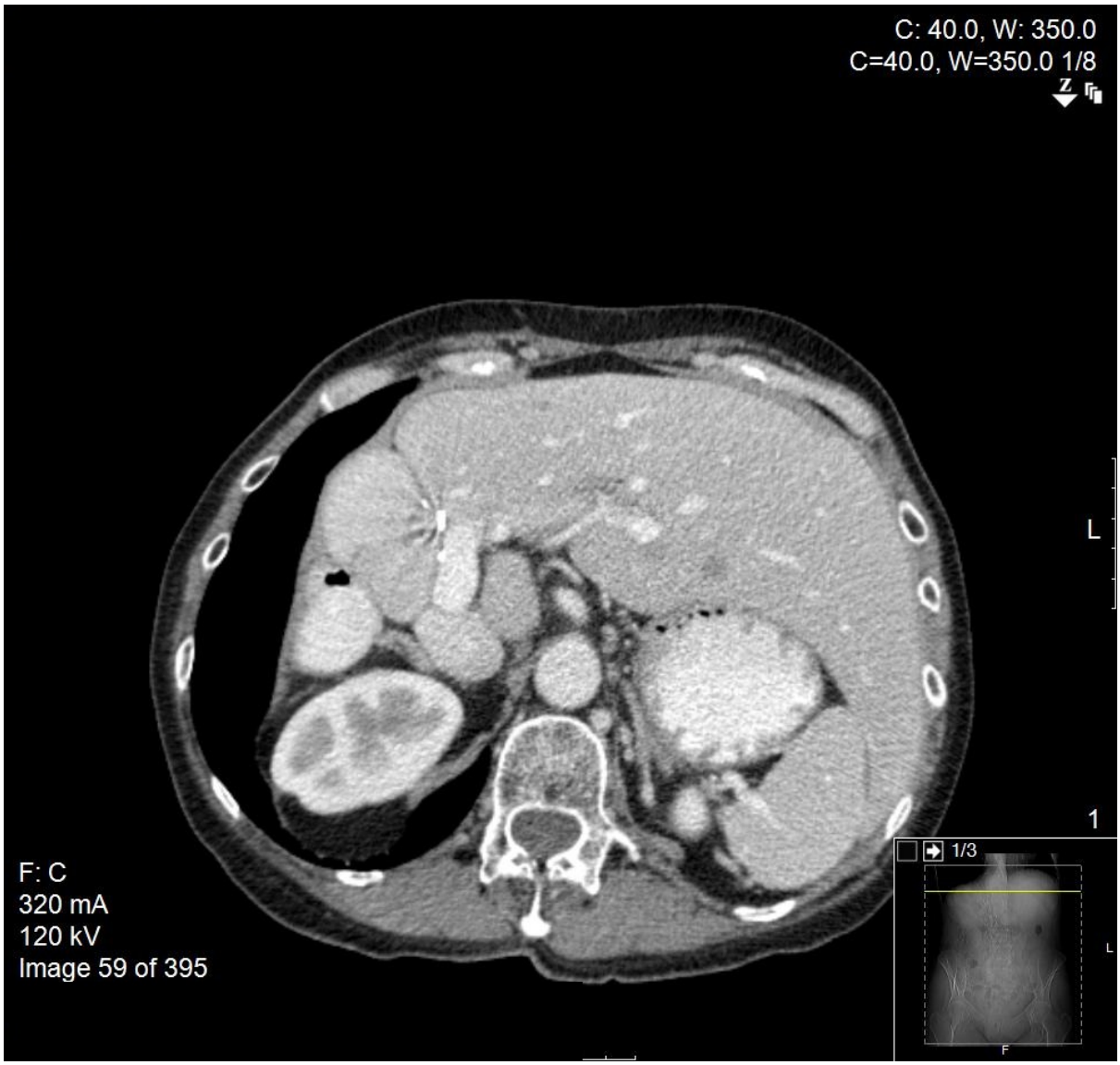
Final histology confirms cholangiocarcinoma. Nodes –ve. Nearest duct margin is 10mm. Circumferential margin is <1mm. Patient makes a rapid recovery.

Discuss the role of adjuvant chemotherapy in resected cholangiocarcinoma.

The patient receives postsurgical adjuvant chemotherapy with capecitabine outside of a clinical trial.

At 1 year tumour markers are normal, CT shows no evidence of recurrence.

At 18 months she returns with a 2 month history of weight loss and dull back pain.



CT shows multiple liver metastases, peritoneal disease and retroperitoneal nodal disease.

Commences palliative chemotherapy with gemcitabine.

CASE 4

This gentleman has had three operations for colorectal cancer. What potential operations have been carried out given the surgical incisions.

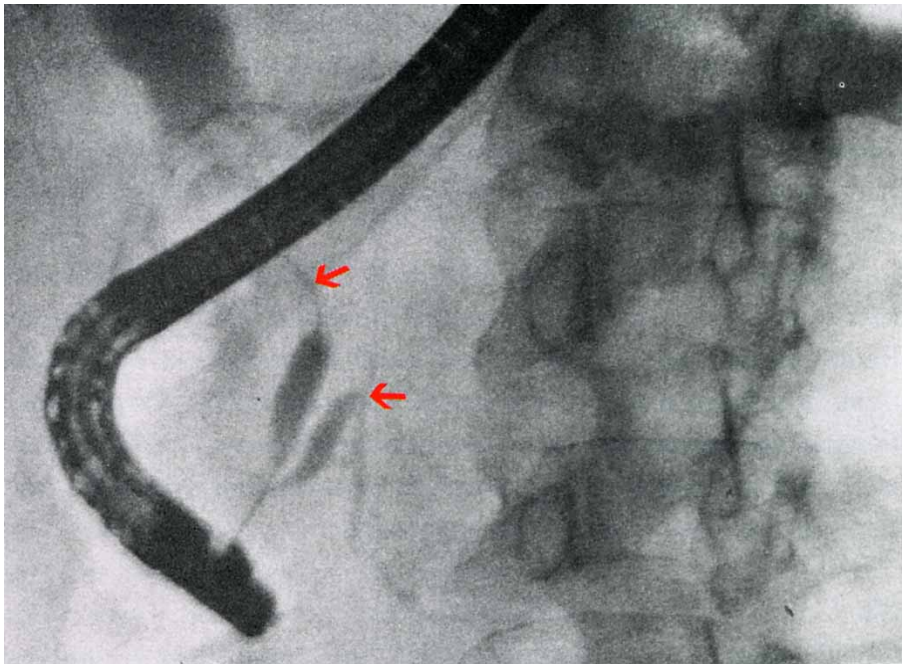
CASE 15

A 55 yr old man presented to A and E with painless obstructive jaundice

The Ct below demonstrates what sign

The Gentleman has a bilirubin of 405 and proceeds to ERCP and insertion of stent.

What does the ERCP demonstrate.



Prior to a stent being inserted he has an EUS. What does it show?

Once his jaundice has improved he proceeds to surgery.

What operation did he have.

Discuss the evidence for lymph node clearance in this operation

Discuss the implication of an R1 resection.

CASE 16

This patient also had a Whipples procedure.

What was the condition and how does one decide when surgery is indicated?

Any scoring systems that can be used.

Post operatively he developed this complication. What is it and how should it be managed.

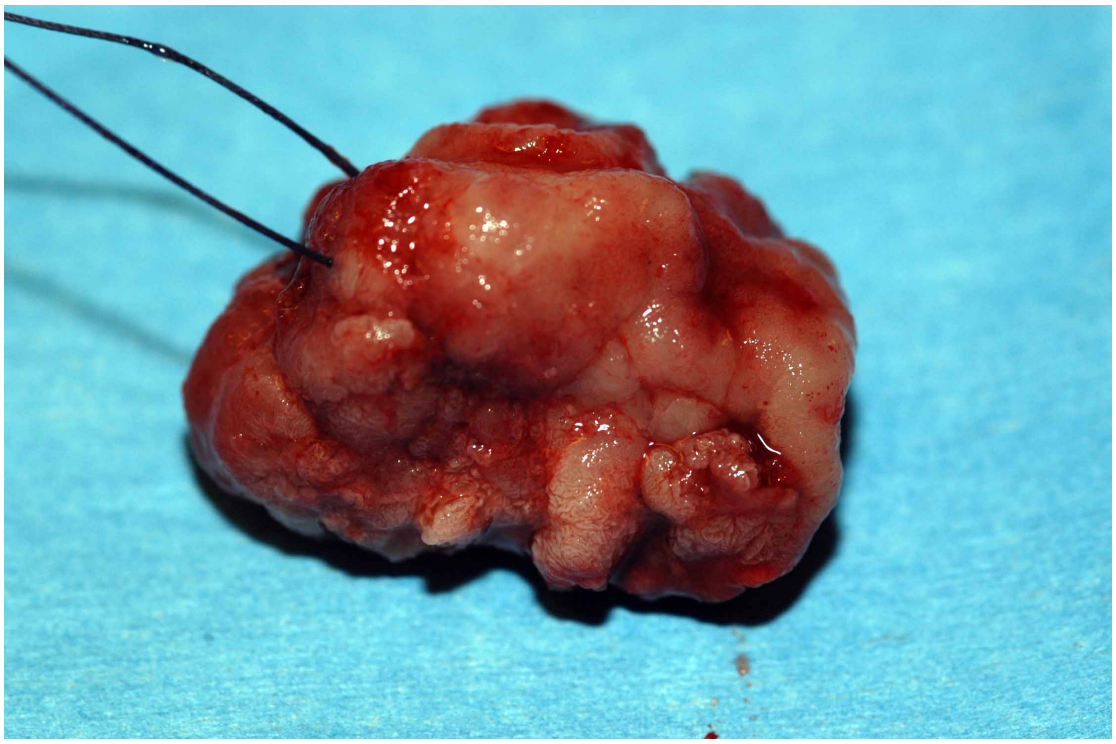

75 ml
50 ml
25 ml
APPROXIMATE VOLUME

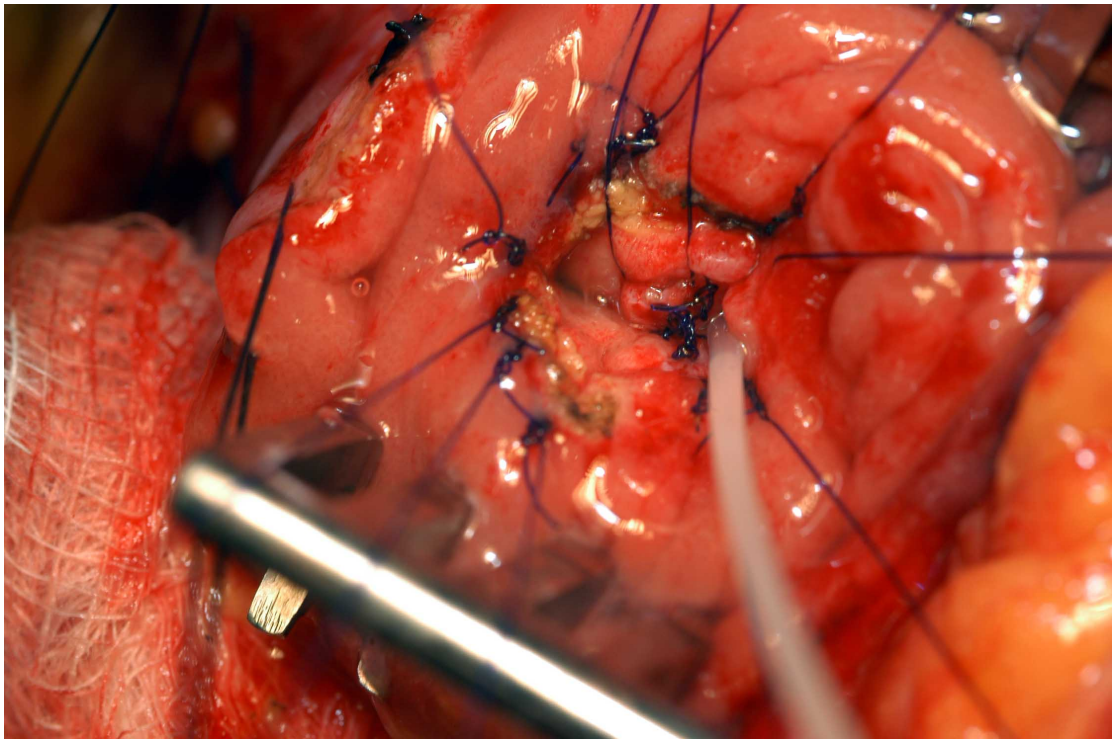
CASE 17

An elderly patient presented with Obstructive jaundice and was found on investigation to have a periampullary tumour.

What surgical procedure was carried out. What is the implications of such a procedure.

What is the prognosis dependent on in this operation.





CASE 18

72 year old lady investigated for anaemia. No abdominal mass. Colonoscopy reveals tumour in right colon. CT CAP was performed.

What does it show?

What other staging investigations would you consider? Discuss laparoscopy/MRI/PET-CT

What percentage of colorectal cancers have synchronous liver metastases at presentation?

What are your management options?

What did we do? Synchronous Right hemicolectomy and right hepatectomy. Uncomplicated recovery.