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Surgery for pancreatic cancer
Pancreatic Cancer
Surgical Management
Overview

- Anatomy
- Diagnosis, staging and workup
- Overview of management approach
- Surgical management
- Post operative care and complications
Anatomy / Histology

- Pancreatic Ductal Adenocarcinoma (PDAC) – ‘typical’ pancreatic cancer
- Others: pNETS, Adenosquamous etc.

Surgical management:
1) Periampullary / Head / Neck
2) Body
3) Tail
Anatomy / histology

“PERI-AMPULLARY” Lesion

PDAC
Cholangiocarcinoma
Ampullary tumour
Duodenal tumours
Anatomy / histology

PANCREATIC NECK/BODY TUMOURS

Less common
Rarely operable
Anatomy / histology

PANCREATIC TAIL TUMOURS

Less common
More are operable
Symptoms

The easier one.....
Symptoms / Presentation

Much more difficult....

1) Abdominal pain 40%
2) Constitutional symptoms
   Anorexia 54%, Weight loss 39%, Fatigue 32%
3) Upper GI symptoms
   Bloating 30%, Belching 19%, Heartburn 26%
4) Change in bowels 15%

Risk factors

Demographic
- Age over 55
- M>F
- African-American

Predisposing pancreatic lesion
- IPMN
- Chronic pancreatitis (18% incidence)

Genetic
- Cancer syndromes
  - Familial PDAC (>2 FDR = x32 risk)
  - Hereditary pancreatitis (x53)
  - Peutz-Jeghers (x132)
  - BRCA (x2-3)

Co-morbidities
- Obesity (x1.2)
- Diabetes (x2)
- New onset DM (x4-7)
Pancreatic Cystic Lesions

- Main duct Intraductal papillary mucinous neoplasm (IPMN)
- Side branch IPMN
- Mucinous cystic neoplasm (MCN)
- Pseudocyst
- Serous cystadenoma (SCA)

Increasing malignant potential
Staging and work up for PDAC

**WE NEED:**
STAGING – triple phase CT scan of chest/abdomen/pelvis
FITNESS – a clear indication of fitness/functional status/wishes

**WE (ALMOST) ALWAYS ORGANISE:**
HISTOLOGICAL CONFIRMATION – EUS FNA / ERCP brushings / Liver Bx
BILIARY DRAINAGE – ERCP / PTC

**WE MAY ALSO ARRANGE:**
PET-CT, MRI liver, Staging laparoscopy, ECHO, PFTs
If diagnosis unclear on pancreas protocol CT proceed to PET-CT or EUS FNA

EUS FNA to be performed if histological diagnosis needed
Histology versus no histology

10% benign resection rate
Chr. pancreatitis
IgG4 disease
TB
Sarcoidosis
NICE Guidelines – diagnosis and staging

- PET–CT to be offered to patients with localized disease prior to surgery or chemotherapy
- Consider MRI liver in patients prior to surgery or chemotherapy
Biliary drainage vs straight to surgery

Symptoms and fitness

Prompt diagnosis
Prompt staging
Prompt surgery

Complications from drainage
Pancreatic Cancer Staging

Tis
PanIN3
Intraductal Papillary Mucinous Neoplasms (IPMN)
Mucinous cystic Neoplasms (MCN)
Pancreatic Cancer Staging

T1 < 2cm
Pancreatic Cancer Staging

T1 < 2cm [a) <0.5cm, b) 0.5-1cm, c) 1-2cm]
T2 2-4cm
Pancreatic Cancer Staging

**T1** < 2cm [a) <0.5cm, b) 0.5-1cm, c) 1-2cm]

**T2** 2-4cm

**T3** > 4cm
Pancreatic Cancer Staging

\[ \text{T1} \quad < 2\text{cm} \quad [a) < 0.5\text{cm}, \ b) 0.5-1\text{cm}, \ c) 1-2\text{cm}] \\
\text{T2} \quad 2-4\text{cm} \\
\text{T3} \quad > 4\text{cm} \\
\text{T4} \quad \text{Major arterial involvement} \]
Pancreatic Cancer Staging

- **N0**: no nodes
- **N1**: 1-3 nodes
- **N2**: >3 nodes

**M0/M1**
RESECTABLE
T0 – 3
N0/1
M0

LOCALY ADVANCED
T4
N1
M0

METASTATIC
Tx
Nx
M1
RESECTABLE

T0 – 3
N0/1
M0

LOCALLY ADVANCED

T4
N1
M0

METASTATIC

Tx
Nx
M1

Neoadjuvant chemo/radiotherapy
CLINICAL TRIAL ONLY

Resection +/- Adjuvant Chemotherapy
Whipple resection
Whipple resection
Whipples reconstruction
Subtotal/distal pancreatectomy
Total pancreatectomy

- Central tumours
- Multiple tumours
- Malignant potential throughout pancreas
- Atrophic pancreas / pancreatitis
Resectable

T0 – 3
N0/1
M0

BORDERLINE RESECTABLE

T4
N1
M0

UNRESECTABLE

Tx
Nx
M1

Resection
+/- Adjuvant Chemotherapy

Chemo/radiotherapy (MONITOR RESPONSE)

Palliative chemotherapy (eg. Gemcitabine) or Best supportive care

Resectable

Locally Advanced

Metastatic
Locally advanced / Borderline resectable
Locally advanced / Borderline unresectable PDAC

OPTION 1

Straight to resection with vascular resection/reconstruction
Locally advanced / Borderline resectable

OPTION 2

Chemo +/- radiotherapy then reassess regarding resection
Locally advanced / Borderline resectable

OPTION 2

Chemo +/- radiotherapy then reassess regarding resection
RESECTABLE

T0 – 3
N0/1
M0

BORDERLINE RESECTABLE

T4
N1
M0

UNRESECTABLE

Tx
Nx
M1

LOCALLY ADVANCED

METASTATIC

Resection +/- Adjuvant Chemotherapy

Chemo/radiotherapy (MONITOR RESPONSE)

Palliative chemotherapy (eg. Gemcitabine) or Best supportive care
Palliative bypass and palliative stenting

If found to be unresectable during surgery consider:

1) Biliary bypass for jaundiced patient (even if already stented)

2) Gastric bypass (even if not currently suffering from gastric outflow obstruction)
Laparoscopic / Robotic
Post-operative management

- Nutrition / Exocrine replacement
- Antibiotics/antifungals
- Analgesia
- PPI (life-long)
- Diabetic management
- Thromboprophylaxis (28d post resection)
- Drains / NGT
Post operative course

- 75% complication free
- 25% complication resulting in significant delay in recovery
- 1-2% 30 day mortality
Complications after Pancreatic surgery

○ Early
  ○ Pancreatic anastomotic / stump leak (10 - 20%)
  ○ Delayed gastric emptying (20%)
  ○ Bleeding (1-5 %)

○ Medium/Late
  ○ Nutritional / Exocrine dysfunction (100%!)
  ○ Endocrine dysfunction
Treatment of pancreatic leak: Operative drain placement (paranoia!!)
Treatment of pancreatic leak: Effective drains
Treatment of pancreatic leak: CT guided drain placement
Pancreatic leak in the community

- Drains usually ‘cut and bagged’ (unless radiological)
- Often left in situ for up to 3 months
- May need regular flushing by DN/PN
- Many on long-term Abx and especially anti-fungals

- BLOOD IN THE DRAIN IS AN ABSOLUTE EMERGENCY
Pancreatic leak: Pseudoaneurysm

Pancreatic enzymes digest vessel wall

Typically have a minor herald bleed offering opportunity for imaging and intervention

Management is always with interventional radiology so needs to go to specialist centre
Delayed gastric emptying

- Patience > medicine >>>>>>> surgery
- Always consider in “failure to progress”, “not quite right” 1-3 weeks post op
- Severe cases usually diagnosed in hospital but most patients have a degree of DGE for several weeks
- May need prolonged admission with TPN
- If possible patients are discharged with NJ feeding
Adjuvant chemotherapy and surveillance

- Adjuvant chemotherapy improves overall survival in those fit enough to have it.

- CT and CA 19.9 every 6 months for 2 years then yearly for at least 3 years.

- Genetic referral for patients with strong family history, cluster cancers or very young onset.
On a positive note...

- Surgery is safer than ever
- New chemotherapy and radiotherapy regimens offer more hope
- Moving towards faster and more accurate diagnosis and staging
- Extensive research into biomarkers for early diagnosis and screening