FAST TRACK MANAGEMENT OF PANCREATIC CANCER

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Part 1. Fast Track Surgery for Pancreatic Cancer

Part 2. Fast Track Recovery (ERAS) after Pancreatic Surgery
Part 1. Fast Track Surgery for Pancreatic Cancer
What is Fast Track Surgery for Pancreatic Cancer

• Patients with pancreatic cancer usually present with obstructive jaundice

• Fast Track surgery is targeted at patients while they are still jaundiced
What is Fast Track Surgery for Pancreatic Cancer

- Conventional approach → drain the bile to relieve jaundice

- Fast track Whipples → avoid biliary drainage and perform early surgery

- Aim → minimise delay in treatment and avoid complications related to biliary drainage
Background: Pancreatic Cancer
Presentation of Pancreatic Cancer

- Non-specific symptoms: Feeling unwell for a few weeks - months
  - Anorexia
  - Malaise
  - Nausea
  - Fatigue
  - Epigastric discomfort
  - Back pain
  - Diabetes mellitus
- Weight loss
- Jaundice
Presentation of Pancreatic Cancer

Weight loss 92%
Jaundice 82%
Pain 72%
Anorexia 64%
Dark urine 63%
Light stool 62%
Nausea 45%
Vomiting 37%
Weakness 35%

• At presentation, majority of patients have weight loss and have obstructive jaundice

• Investigation (CT scan) → Panc Ca

• 15 – 20% resectable disease

Whipples Procedure
Whipples Procedure

• Major surgery, for the patient, the surgical team and the organisation
• 20-30% patients with Pancreatic cancer are suitable for Whipples
• 10-20% of this cohort end up with palliative procedures
  • pre-op patient factors
  • Per op irresectability
• Morbidity 35%
  Patients with High BMI, advancing age, significant PMHx and locally advanced (but resectable) disease are at higher risk
• Mortality 5%
Surgery in Jaundiced and non-Jaundiced Patients
Surgery in Jaundiced Patients

• Biliary tract obstruction is related to an increase in endotoxin levels and exaggerated **acute-phase response** (directly proportional to post op morbidity and mortality)

• Obstructive jaundice leads to **liver cell injury** and protein calorie **malnutrition** (↓pre-albumin & transferrin)

• Sub-clinical **renal, endocrine** and **myocardial** dysfunction

Surgery in Jaundiced Patients

• Higher rate of postoperative complications
  • Haemorrhage (during and after the operation)
  • Renal dysfunction
  • Sepsis (cholangitis, abscesses)
  • Anastomotic dehiscence
  • Impaired wound healing

• Relief of Jaundice is important

How to Relieve Obstructive Jaundice

Endoscopically:
Endoscopic Retrograde Cholangio-Pancreatogram (ERCP) and stent

Interventional Radiology:
Percutaneous Transhepatic Cholangiography (PTC) and Biliary Drainage (PTBD)
Caveats of Biliary Drainage

• Morbidity 1–25%
  • Haemorrhage
  • Pancreatitis
  • Cholangitis
  • Perforation
• Mortality 0.2–1%
• Successful drainage 90% (repeat procedures may be required)
• Occluded biliary stents (repeat procedures may be required)

Huibregtse.. Complications of endoscopic sphincterotomy...N Engl J Med. 1996;335:961–3
Bilbao... Complications of ERCP, A study of 10,000 cases. Gastroenterology 1976;70:314–20
Caveats of Biliary Drainage

- Complications of pre-operative biliary drainage may reduce survival following surgery for pancreatic and periampullary malignancy

- 50% of patients with a resectable pancreatobiliary tumour are disadvantaged by biliary drainage in terms of a complication, a failed procedure, early stent occlusion and delay in treatment

Mansfield SD. Complications of pre-operative biliary drainage.... Pancreatology. 2006;6:194
Devil vs Devil
Literature Review
Natural History of Pancreatic Cancer

• 100 patients with histologically proven pancreatic ca were prospectively examined with at least two CT scans and NO treatment

• Tumor diameter, volume, growth rates and volume doubling times (VDT) were calculated

• Included tumors were 1 to 6 cm (mean, 2.9 ± 1.3 cm) in diameter and 5 to 1200 cm³ in volume (mean, 120.6 ± 158.9 cm³) on diagnosis

• Tumor growth rates were -0.4 to 19.9 cm/year (mean, 4.2 ± 3.8 cm/year) in diameter, and 11 to 1300 cm³/year (mean, 727.8 ± 1609.5 cm³/year) in volume

• VDT was 20 to 976 days (mean, 132.3 ± 132.1 days)

SJ Ahan eta al. J Gastrointest Cancer. October 2016
Department of Radiology, Seoul National University Hospital, Seoul, South Korea
Natural History of Pancreatic Cancer

Conclusion

• The growth rate and VDTs of untreated pancreatic cancers can vary from less than a month (20 days) to more than 3 years.

• Small tumors tend to grow slowly and have low risk for developing metastasis

• The growth rate and development of distant metastasis was directly proportional to the initial diameter and volume
Historical Viewpoint

• All patients with obstructive jaundice should have biliary drainage (60-70s)

• Patients with mild to moderate jaundice (Bilirubin <100) do not need biliary drainage due to high complications of drainage procedure (80-90s)

• Patients with moderate jaundice (Bilirubin <200) do not need biliary drainage due to high complications of drainage procedure (90-00)

• Patients with moderate to severe jaundice (Bilirubin <300) do not need biliary drainage due to high complications of drainage procedure (00-10)

Biliary drainage Condemned

A Meta-analysis on the Efficacy of Preoperative Biliary Drainage for Tumors Causing Obstructive Jaundice

Y. Fang, K. S. Gurusamy, Q. Wang, B. R. Davidson, H. Lin, X. Xie, C. Wang

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Cited by: 19 articles

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Biliary drainage Condemned, Really???
**DROP Trial** (DRainage vs. (direct) Operation)

A multicenter RCT to provide evidence whether or not preoperative biliary drainage should be performed in patients with obstructive jaundice

- **180 Patients**
- **Mean time to surgery 1.2 vs 5.1 weeks (Early Surgery vs Biliary Drainage)**
- **75% patients were resected in ES vs 50% in the Drainage group (P = 0.20)**
- **Median survival was 12 months in the ES group vs 12.7 months in the PBD group (P = 0.91)**
- **Patients in Biliary Drainage Group had slightly lower morbidity and mortality.**

**CONCLUSIONS:** In patients with pancreatic head cancer, the delay in surgery associated with PBD does not impair or benefit survival rate

van der Gaag et al. Preoperative biliary drainage for.... *BMC Surg.* 2007 Mar 12;7:3
van der Gaag et al. Therapeutic delay and survival... *Ann Surg.* 2010 Nov;252(5):840-9
Birmingham Experience of Fast Track Surgery

- A reduced time to surgery within a ‘fast track’ pathway for periampullary malignancy is associated with an increased rate of Pancreatoduodenectomy

Roberts KJ et al. A reduced time to surgery within a ‘fast track’ .... HPB Aug 2017
• 61 patients underwent surgery after drainage procedure
• 32 patients underwent surgery without drainage (Bili ≤ 450)
• The time from CT scan to surgery was shorter in the no drainage group (16 vs 65 days, p < 0.0001)
• Significantly more patients underwent resection in the no drainage group (31/32 vs 46/61, p = 0.009) and venous resection (10/31 vs 4/46, p = 0.014)
Birmingham Experience of Fast Track Surgery

Conclusion

• Early surgery to avoid drainage procedure is possible within the NHS. By reducing the time to surgery it appears that more patients undergo potentially curative resection
Case Study
65y Mrs ABC

• Day 0: Honey, you look yellow! (yellow eyes to public when Bili >100)
• Pt had not been feeling right for a couple of months. She rang her GP who saw her 3 days later
• Day 3: GP found her bilirubin to be at 100 and referred her urgently
• Day 10: Pt was seen by a specialist who organized an urgent CT scan
• Day 17: CT demonstrated 3 cm mass HOP with no mets
• Day 24: Case discussed at MDT, mass deemed resectable; for surgery
• Day 31: Pt reviewed at clinic to discussed results. Bilirubin was found to be 350 (in patients with obstructive jaundice, bilirubin goes up by approx. 10 μmol/l everyday)

Mansfield et al. Increase in serum bilirubin ... HPB (Oxford) 2006;8:442–5
65y Mrs ABC

- Day 35: attempted ERCP failed
- Day 38: re-attempt at ERCP failed, and complicated by duodenal perforation. Patient admitted
- Day 40: successful PTC and drainage of peri-duodenal collection
- Day 45: Transferred to ITU with sepsis
- Day 50: Transferred back to the ward--Improving
- Day 70: CT shows metastatic disease
70 y Mr XYZ

- Day 0: Presented to GP with obstructive jaundice, Bili 150
- Day 3: CT shows 4 cm mass HOP
- Day 5: MDT discussion, resectable disease, no mets
- Day 7: Seen by specialist in office, Bili 200
- Day 15: Bili 260. Whipples Procedure
- Day 25: No post op complications, discharged and referred to oncology
50 y Mr XYZ

- Day 35: Oncology review: Pt not feeling well
- Day 45: CT scan shows multiple liver mets
Mr Lucky

- Day 0: Presented to GP with obstructive jaundice
- Day 3: CT shows 1.5 cm mass HOP
- Day 5: MDT discussion, resectable disease, no mets
- Day 7: Seen by specialist
- Day 10: Whipples Procedure (Bili 200). pT2NoR0Mx
- Day 20: No post op complications, Discharged
- Adjuvant chemo; well after 24 months
Summary

• Fast track surgery should be considered in suitable patients.

• Patient selection is the key
  • Bilirubin $\leq$ 300 $\mu$mol/l
  • Not septic
  • Nutrition and performance status
  • Fit for anaesthesia
  • Logistically feasible

• More evidence is required to justify Fast Track Surgery in All patients
Part 2. Fast Track Recovery (ERAS) after Pancreatic Surgery
• Fast Track Recovery after Surgery or Enhanced Recovery After Surgery (ERAS) is a multimodal evidence based perioperative care pathway that aims to achieve early recovery for patients undergoing major surgery.

• Enhanced recovery after surgery (ERAS or fast track) protocols have been shown to reduce hospital stay without compromising outcomes.
• ERAS protocols are designed to

  • decrease the systemic inflammatory response to surgical trauma

  • thus improving perioperative care and

  • accelerate postoperative recovery
• ERAS programs allow patients to recover much faster after their operation and this

• Reduces the hospital stay by about 30%

• Reduce post-operative complications by up to 50%

• Despite earlier discharge, readmissions did not increase

How Does ERAS Work?

- optimise pre-op conditions
- minimise stress responses during & after surgery
ERAS: Unique Challenges in Pancreatic Surgery

• High-risk surgery
• Mortality ~5%
• Morbidity 30-60%
• Prolonged hospital stay 2-3 weeks
• High incidence of malnutrition / cachexia
• Little data on Fast-track surgery for pancreas
Pre op

• Detailed Counselling and preparing for post op hard work
• Physio / OT involved at pre-op assessment
• Management of morbidities (Htn, DM, CKD etc)
• Reduce the length of pre-op fasting
• Carbohydrate loading
• No pre-meds
Per Op

• Mid-thoracic epidural, normothermia, avoid salt and water overload, one shot of antibiotics, thromboprophylaxis

• Laparoscopic surgery
  • Left Pancreatectomy

• Robotic Surgery
  • Left Pancreatectomy
  • Whipples Procedure
Post Op

- Prolonged epidural
- Avoid opioid PCA
- Remove NG day 1-2
- Allow clear fluids day 1, Soft-solid diet day 3
- Out to sit day 1, walk to toilet day 2, walk corridor day 3
- Early removal of catheter and central line
- Drain out Day 5
- Aim for discharge at 8-10 days
Summary

• Fast Track Recovery after Pancreatic Surgery or Enhanced Recovery after Pancreatic Surgery is feasible and safe

• Significant reduction in length of hospital stay

• No increase in morbidity, mortality, reoperation rate, readmission rate