Tube feeding in cancer surgery

Dr Paul O’Toole
Consultant Gastroenterologist
Royal Liverpool University Hospital
Aims

- To avoid operating on malnourished patients
- To prevent malnutrition post-op
- To produce specific therapeutic effects through the use of special formulations
Aims

- To avoid operating on malnourished patients
- To prevent malnutrition post-op
In such a way as to ...

- Avoid causing harm or exacerbating an existing problem
  
  (*Primum non nocere*)

- Keep things as physiological as possible
  
  (*Physiological is best*)
Applying the principles

- Avoid tube feeding the well-nourished pre-op

Use preoperative enteral nutrition preferably with immune modulating substrates (arginine, omega-3 fatty acids, nucleotides) for 5–7 days in all cancer patients undergoing major abdominal surgery independent of their nutritional status

Applying the principles

- Avoid tube feeding the well-nourished pre-op
- Use oral rather than tube feeding whenever possible
“Knee-jerk” tube feeding referrals

Oesophageal Cancer
Oesophageal Ca - Radiotherapy
M. Rousseau et al
Journal of Clinical Oncology, 2009; 27 (15S) 9613
ASCO Annual Meeting Proceedings

Head and Neck Cancer
Transoral laser microsurgery
Can PEG be avoided?
Enhanced Recovery Programme

Colorectal cancer surgery
Applying the principles

- Avoid tube feeding the well-nourished pre-op
- Use oral rather than tube feeding whenever possible
- Avoid “routine” tube feeding post-op unless at risk

General surgical patients should not have enteral tube feeding within 48 hours post-surgery unless they are malnourished or at risk of malnutrition and have inadequate or unsafe oral intake

NICE Nutritional Support in Adults 2006
**Primum non nocere**

- Tube feeding complications:
  - Misplaced NG tubes
  - PEG complications
  -Leaks from needle catheter jejunostomies
  - Small-bowel ischaemia
  - Reduced lung function due to abdominal distension
  - Delayed gastric emptying with increased length of stay
Early enteral tube feeding (ETF)

- No increased risk of:
  - Vomiting
  - Anastomotic dehiscence
  - Pneumonia
  - Intra-abdominal abscess
  - Wound infection
  - Mortality

*NICE Nutritional Support in Adults 2006*
Early enteral tube feeding (ETF)

- Support for ETF in GI cancer surgery
  - Improved fluid management
  - Reduced infection rates

  *Reid TD et al. Gut 2010 59; A70*

- Lack of studies in “at risk” subgroups

- Benefit may be in patients who develop complications

- Enhanced recovery in upper GI surgery
Applying the principles

- Avoid tube feeding the well-nourished pre-op
- Use oral rather than tube feeding whenever possible
- Avoid “routine” tube feeding post-op unless at risk
- Use enteral rather than PN whenever possible
A Mixed Bag

An enquiry into the care of hospital patients receiving parenteral nutrition

One third of patients (271/829)

“Inadequate consideration of enteral feeding”
Is the GI tract really inaccessible?
Direct Percutaneous Jejunostomy
Indications for ETF

- When correcting pre-op malnutrition
- When oral nutrition predicted to be difficult post-operatively
- When things go wrong!
Pre-operative ETF

- Malnourished:
  - BMI <18.5 kg/m²
  - Unintentional weight loss >10% within the last 3-6 months
  - A BMI<20 kg/m² and unintentional weight loss >5% within the last 3-6 months

- Unable to correct by ONS
Correcting pre-op malnutrition

- Malnutrition is an independent risk factor for:
  - Complications (Anastomotic leakage)
  - Mortality
  - Length of hospital stay
  - Higher care costs

Complications of abdominal operations for malignant disease.
Correcting malnutrition pre-op

- Naso-gastric tube
- PEG if tube feeding requirements likely to be > 4 weeks
- PEG may prevent gastric pull-up in distal oesophagectomy
Anticipating enteral feeding post-op

- At risk of malnutrition:
  - Eaten little or nothing for more than 5 days and/or likely to eat little or nothing for the next 5 days or longer
  - Poor absorptive capacity, and or high nutrient losses and or increased nutritional needs from causes such as catabolism

NICE
Predicted that the patient will:

- Be unable to eat for more than 7 days perioperatively
- Unable to obtain above 60% of recommended intake by oral route for more than 10 days
Head and Neck Cancer
Prophylactic PEG placement

- Major surgery or radiotherapy
- 2 weeks before operation
- Standard practice
- Outcome data lacking
- Consider technique
  - Potential for cancer seeding with pull-through technique
Seeding to PEG site

Pulling PEG bumper past tumour risks picking up cancer cells
Metastasis to PEG site

- 3-16 months after insertion
- Direct implantation
- 25+ cases in literature
- Seen in 5% of centres (1:5000)

PREVENTION

- Avoid “pull-through” technique
PEXACT (Endoscopic “Direct Puncture” PEG)
Aintree PEXACT experience

- 319 attempted placements since 2004
- 3 failures (99% successful)
- 2 complications
  - Splenic laceration
  - Intra-abdominal haematoma
- 0.9% site infection
The Kimberly Clark MIC Introducer
Upper GI cancer surgery
Needle-catheter jejunostomy
Needle Catheter Jejunostomy

- 5% complication rate
- Difficult to keep in longterm
- Blockage a problem
- “Life-line” if complications do arise
- Can be replaced by radiology / endoscopy
- Don’t miss opportunity if second-look
Witzel jejunostomy
When things go wrong ...

- Delayed oral nutrition
  - Septic complications
  - Prolonged “ileus” (gastroparesis)
  - Analgesic related motility disorders
- Mechanical obstruction
- Anastomotic leaks
- Fistula formation
A  
Stomach
Tumor
Pancreas and ducts
Duodenum

B  
Billroth II
Gastrojejunostomy

Jejunum
Jejunostomy

b'

b'
Fistula

- Enterocutaneous
  - High vs Low
  - Output
- Gastro(oesophago)-jejunal
- Jejuno-colonic (or rectal)
  - High vs low
- Colo/Recto-vaginal (or bladder)
Fistula management

INFORMATION

- Details of operation
- Extent of small bowel resection
- Anatomy of fistula
  - Connections
  - How much small bowel above and below
- Output
Fistula management

- Nutritional management vital
- Revision surgery often delayed
- Traditionally TPN
  - No nutrient stream (chyme)
  - Reduced gastrointestinal secretion
- Little evidence that reducing flow enhances spontaneous closure
- Enteral approaches possible
Enterocutaneous fistula

- Enteral vs parenteral nutritional
  - Decreases nosocomial infection rate, particularly fungal
  - Supports immunologic, hormonal and barrier functions of gut
  - Much cheaper
  - Fistula closure rates slightly less than TPN alone
Tube feeding in fistula management

- Oesophago-gastrectomy
  - Radiological tube placement beyond fistula

- High jejunal fistula
  - Deep NJ / DPEJ tube placement

- Low colorectal fistulae
  - Diarrhoea management

- Wound dehiscence / Open abdomen
  - Fistuloclysis
Fistuloclysis

A. Teubner et al
British Journal of Surgery 2004; 91: 625–631

- Replaced TPN in 11/12 patients without complications
- Used medium chain triglycerides without reinfusion of chyme
- Perative or elemental if not tolerated
- Target rate 90ml/h
- Cost savings £45/patient-day cf PN
Fistuloclysis

A. Teubner et al
British Journal of Surgery 2004; 91: 625–631
Radiology

Drainage still possible
Finally ...

- Remember
  - Parenteral nutrition preferable to starvation
  - Commencing PN doesn’t mean giving up on ETF altogether