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Gastrointestinal and Surgical PN Case Studies

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Making your Assessment: Resources

- INDI NSRG
- ESPEN Guidelines on PN
- NICE pathway
- NCEPOD
- BAPEN

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ESPEN Guidelines on Parenteral Nutrition: Surgery

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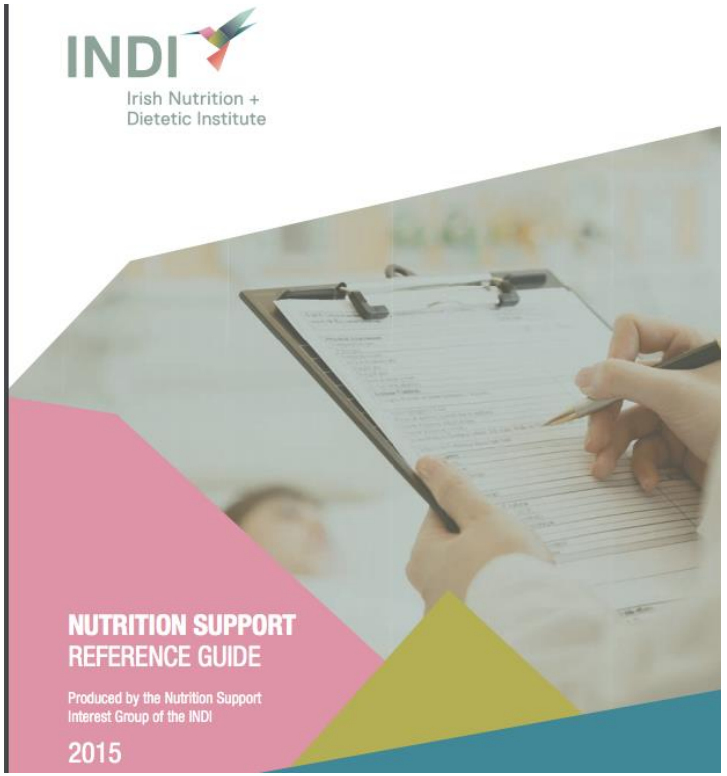


NCEPOD(2010) - PN “A Mixed Bag” Findings

- Good practice identified in 19% of adults
- Inadequate consideration of EN in a third
- Inappropriate indication in 29%
- Unreasonable delay in recognition of need in 16%
- Unreasonable delay in starting PN in 9% once need identified
- Deficiencies in assessment and monitoring in >50% (399/738)

NCEPOD(2010) - PN “A Mixed Bag” Recommendations

- PN should only be given where EN has been excluded as inappropriate or impractical
- The possibility of the requirement for PN should be recognised early
- PN should be started at the earliest opportunity but is rarely, if ever, indicated out of hours
- Patient assessment should be robust and goal and purpose of PN documented

ESPEN PN guidelines 2009: Summary of Statements - Surgery

- Interruption of nutritional intake is unnecessary after surgery in most patients

- Post-operative parenteral nutrition is beneficial in undernourished patients in whom enteral nutrition is not feasible or not tolerated

- In patients who require post-operative artificial nutrition, enteral feeding or a combination of enteral and supplementary parenteral nutrition is the first choice

ESPEN PN guidelines 2009: Summary of Statements - Gastroenterology

- CD:
  - PN should not be used as a primary treatment. Bowel rest has not been proven to be more efficacious than nutrition
  - Most common indication for long-term PN is short bowel
  - Use of PN in the perioperative period is similar to that of other surgical procedures
  - When indicated PN improves nutritional status and reduces the consequences of undernutrition, providing there is not continuing intra-abdominal sepsis
  - Specific deficits(vitamins, trace elements) should be corrected
  - Use of PN in patients with CD should follow general recommendations for PN
  - PN may improve quality of life in undernourished CD patients

ESPEN PN guidelines 2009: Summary of Statements - Gastroenterology

- UC
  - PN should only be used in patients who are malnourished or at risk of becoming malnourished before or after surgery, if they cannot tolerate food or an enteral feed
  - There is no place for PN in acute inflammatory UC as a means of enabling bowel rest

Management of acute intestinal failure: A position paper from the European Society for Clinical Nutrition and Metabolism (ESPEN) Special Interest Group (2016)

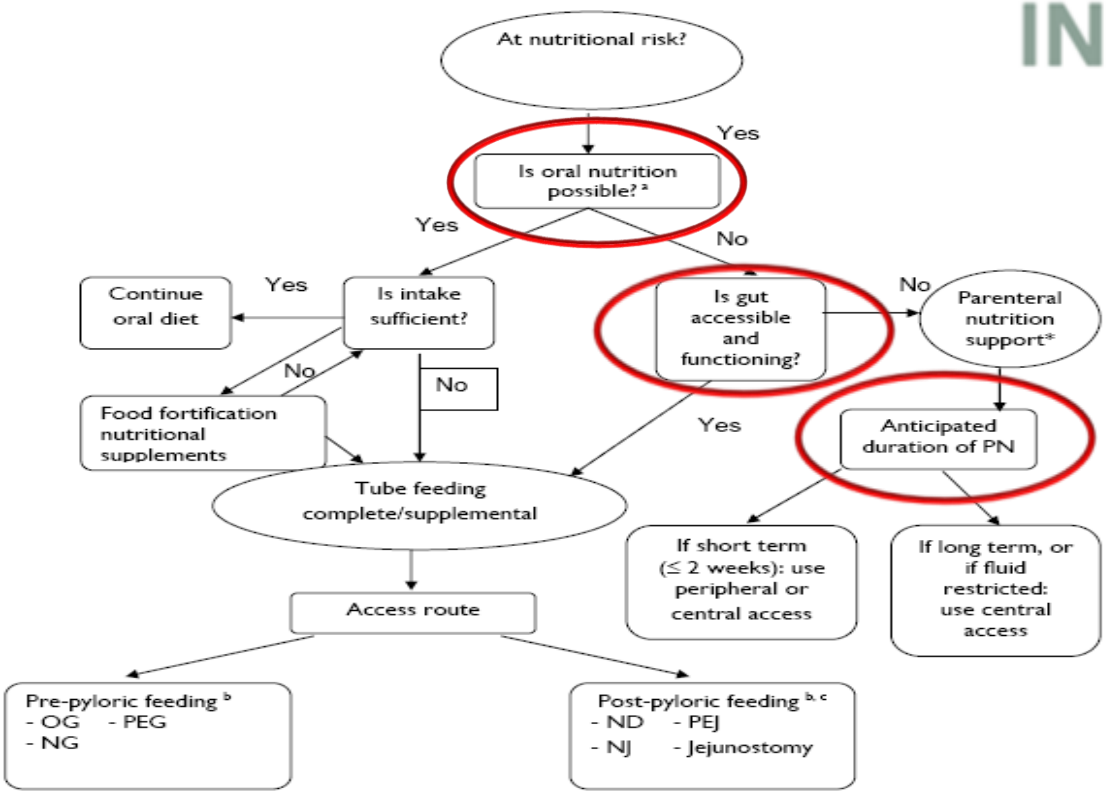
- Main aspects of the management of Acute Intestinal Failure: Parenteral Nutrition -
  - “Although enteral nutrition has proven to be the most beneficial in almost all patient populations, it is relatively rare that it is sufficient in AIF/ECF individuals because of the compromised integrity of the gastrointestinal tract. Therefore, parenteral nutrition often represents the main option, alone or in association with EN (supplemental PN).”

INDI:
Nutrition Support Reference Guide 2015

- Nutrition Support should be considered in:
  - Malnourished patients, i.e.
    - with BMI < 18.5kg/m2
    - Unintentional weight loss of > 10% within 3-6months
    - BMI < 20kg/m2 and unintentional weight loss >5%
  - At risk of malnutrition i.e.
    - Poor absorptive capacity and/or High nutrient losses and/or increased nutritional need
    - Eaten little or nothing for >5 days and or unlikely to eat little or nothing for 5days or longer
- Use of one feeding route does not preclude another feeding route

INDI:
Nutrition Support Reference Guide 2015

Figure 4.1 Choice of feeding route



NICE Pathways – When and how to give PN

- *Parenteral nutrition should be introduced progressively and closely monitored, usually starting at no more than 50% of estimated needs for the first 24–48 hours. Parenteral nutrition can be withdrawn once adequate oral or enteral nutrition is tolerated and nutritional status is stable. Withdrawal should be planned and stepwise with a daily review of the patient's progress*
- *There is no minimum length of time for the duration of parenteral nutrition.*

BAPEN

Putting patients at the centre of good nutritional care

- In general, PN should only be used when it is not possible to supply nutrition using the GI tract, i.e. when intestinal failure is present.

Deciding on PN

- Can the patient eat/drink or tolerate EN?
  - No, why not?; Yes, how much PO/EN
  - GIT length and viability("critical lengths")
- How long will they be fasting for?
  - 5-7 days or more(INDI 2015, ESPEN 2009)
  - Establish timeframe for PN
- Nutritional status to date
  - Refeeding risk, Obesity, Renal Failure, Liver Disease, Multiple Operations
- What are the specific nutritional needs of this patient?
  - Diabetes, wound healing, obesity, renal failure, liver disease, pregnancy
- Short-term vs long term vs home PN

Patient Cases

- Post- operative Ileus
- Pre-operative PN/Small bowel obstruction
- Obesity/ Diabetes/Refeeding Syndrome/Post-operative Ileus
- Complex Weaning to Enteral Nutrition/Oral Diet
- Complex Surgery

Post-operative Ileus - CASE

- Patient History:
  - 83 year old female admitted with retroperitoneal collection. Admission complicated by fractured Left Hip requiring Left hemi-arthroplasty. Recovery then complicated, at Day 7 following surgery, by Small bowel obstruction, extensive colitis and secondary ileus (diagnosed at CT).
  - Referred at Day 7 post-operative for TPN, urgent PICC line booked.

- Past Medical History
  - Chronic Abdominal pain due to Retroperitoneal collection

- Nutritional Assessment
  - Malnutrition Screening Tool on admission =1
    - Due to poor intake for >5days but no reported weight loss at that time
  - At time of referral, poor intake for 2 weeks of admission in addition to reduced intake 2 weeks prior to admission
  - BMI estimated as 20kg/m2;
  - 10% weight loss since admission (2 weeks)

- **What are the indications for PN in this case?**

- **What are your considerations for PN in this case?**

Post-operative Ileus - SOLUTIONS

- What are the indications for PN in this case?
  - Small Bowel Obstruction & Ileus (Type 1 IF): both preventing safe use of or access to the GIT
  - Colitis: may be an indication if adequate nutrition cannot be given safely via the GIT or in sufficient amounts to maintain nutritional status

- References to support this:
  - ✓ NCEPOD: "The possibility of the requirement for PN should be recognised early" & "PN should be started at the earliest opportunity..."
  - ✓ ESPEN: "Post-operative parenteral nutrition is beneficial in patients with post-operative complications impairing gastrointestinal function who are unable to receive and absorb adequate amounts of oral/enteral feed for at least 7 days"
  - ✓ INDI NSRG: "Is the gut accessible and functioning?"

    No, therefore start PN
  - ✓ BAPEN: "PN should only be used when it is not possible to supply nutrition using the GI tract, i.e. when intestinal failure is present"
  - ✓ ESPEN 2016: "...In AIF/ECF individuals because of the compromised integrity of the GIT... PN often represents the main option, alone or in association with EN (supplemental PN)."

Post-operative Ileus - SOLUTIONS

- Considerations for PN?
  - High Risk of Refeeding syndrome
    - Poor intake for 4 weeks in total, 10% weight loss
    - Therefore, work-up to full nutritional requirements over 4-7 days, i.e. 10kcals/kg, 15kcals/kg, 20kcals/kg, to Full requirements(see local refeeding policy)
    - A 'Part-bag' of PN is likely to be used in working up to full requirements
      - Use only where necessary as risk of over-feeding & infection risk if run over >24hrs, costs associated with wastage when discarding the remaining PN, and not meeting micronutrient requirements if full PN bag isn't infused(additional micronutrient supplementation may be required)

- References to support this:
  - ✓ IrSPEN(NICE): High Risk of refeeding syndrome – "Unintentional weight loss of >10% in the previous 3-6 months" & "Little or no nutritional intake for >5 days"; "Slow Initiation of feeding 10kcal/kg"
  - ✓ ESPEN: "After surgery in those patients, who are unable to be fed via the enteral route, and in whom total or near total parenteral nutrition is required, a full range of vitamins and trace elements is required"

Post-operative Ileus – CASE contd.

- Two days later, patient required Laparatomy + Small bowel resection(80cm)+ caecectomy(partial) with side to side anastomosis
- Two days following this surgery (i.e. Day 4 of TPN)
  - Tolerating free fluids orally, NGT drainage 0mls
- **<u>Now what is the indication for TPN?</u>**

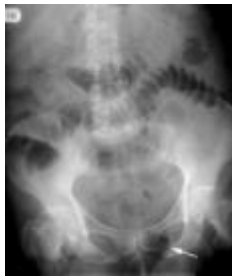
Post-operative Ileus – CASE contd.

- <u>Now what is the indication for TPN?</u>
  - No indication as GIT is functioning again & is accessible
  - Discussed with Team, agreed 'Light diet' can be commenced

- Post-operative Day 3 (i.e. Day 4 of TPN)
  - meeting 53% of energy + 56% of protein requirements orally & commenced ONS bd
  - TPN discontinued

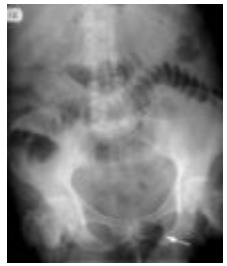
- <u>References to support this:</u>
  - ✓ESPEN: "Combinations of enteral and parenteral nutrition should be considered in patient in whom there is an indication for nutrition support and in whom > 60% of energy needs cannot be met via the enteral route"
  - ✓ESPEN: "Weaning from parenteral nutrition is not necessary"

Pre-operative PN/Small bowel obstruction - CASE



- Patient History
  - 53 year old female transferred from another Dublin Hospital with functional bowel obstruction, due to long segment of strictured small bowel. She was already commenced on TPN and was likely for surgery once inflammation settled. Main issues were Mild abdominal cramps & Diarrhoea (5 episodes/day with urgency)
- Past Medical History
  - Crohn's Disease, Ileocolic resection (1986), Small bowel resection (1994), Lap Cholecystectomy & division of adhesions(June 2016)
- Nutritional Assessment
  - No weight loss reported, within usual weight range
  - Allowed oral sips of water
  - Review of TPN showed it provided 28kcals/kg, 3.3mg/kg/min Carbohydrate Oxidation Rate, 0.91g/kg lipid
- Recent Biochemistry revealed Triglycerides normal (1.4) and ALP & GGT were increased

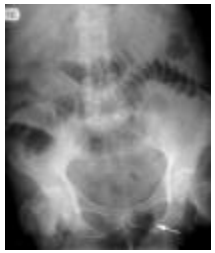
obstruction -SOLUTIONS



- What are the indications for PN in this case?
  - Functional bowel obstruction with long segment of strictured small bowel: preventing safe access to the GIT
  - Likely for surgery: not an indication in isolation but 'risk of malnutrition' in advance of surgery is an indication, coupled with inaccessible GIT
  - Crohn's Disease: refer to ESPEN guideline below
- References to support this:

✓ ESPEN: "PN is indicated for CD patients who are malnourished or at risk of becoming malnourished and who have inadequate or unsafe oral intake, a non(or poorly) functioning or perforated gut, or in whom the gut is inaccessible (e.g. obstructed gut or short bowel)"

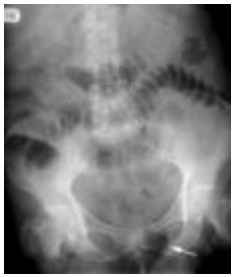
Pre-operative PN/Small bowel obstruction -CASE contd.



- Day 10 of Admission (i.e. Day 20 TPN)
  - Bowels opening 12 times/day (liquid stool)
  - Minimal Aspirates from NGT
  - Trial Jelly & Icecream

- Day 13 of Admission (i.e. Day 23 TPN)
  - PFA: no obstruction seen, but Gastroenterology review & MRI revealed Crohn's stricture present
  - NGT removed without nausea or vomiting
  - Ongoing diarrhoea (reduced to 8 episodes/day)
  - Allowed to progress further with oral diet -> meeting 100% of requirements for protein + energy
  - Weight stable throughout transition to Oral diet
- **Is there an indication for TPN now?**

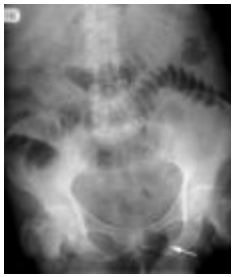
Pre-operative PN/Small bowel obstruction - SOLUTION + CASE contd



- Is there an indication for TPN now?
  - No indication as GIT now accessible and malnutrition isn't a risk
- 19 days later, surgery was performed (Adhesiolysis + Small Bowel Resection with primary anastomosis)
  - Tolerating oral diet for 2 days post operative
- References to support this:
  - ESPEN: "Interruption of nutritional intake is unnecessary after surgery in most patients"
- Then developed an anastomotic leak and collection, therefore return to theatre for Laparotomy & Small bowel resection with end ileostomy formation
  - NGT draining was draining only 150mls post-operatively
  - Recommenced TPN + trial trickle feeding via NGT
    - 10mls/hr x 24hrs, then 20mls/hr x 24hrs
    - TPN rate decreased accordingly
- References to support this:

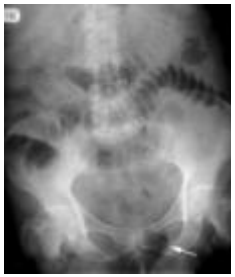
✓ ESPEN: "Combinations of enteral and parenteral nutrition should be considered in patient in whom there is an indication for nutrition support and in whom > 60% of energy needs cannot be met via the enteral route"

Pre-operative PN/Small bowel obstruction - CASE contd.



- Increased pain at incision site, drowsy, feeling of fullness, abdominal distension
  - NPO + Full TPN
- **<u>Is there an indication for TPN now?</u>**

Pre-operative PN/Small bowel obstruction - SOLUTIONS



- <u>Is there an indication for TPN now?</u>
  - Yes as post-operative complications mean the GIT is not accessible or functioning

- <u>References to support this:</u>

✓ ESPEN: "Post-operative parenteral nutrition is beneficial in patients with post-operative complications impairing gastrointestinal function who are unable to receive and absorb adequate amounts of oral/enteral feed for at least 7 days"

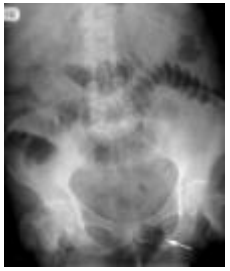
✓ INDI NSRG: "Is the gut accessible and functioning?"

No, therefore start PN

✓ BAPEN: "PN should only be used when it is not possible to supply nutrition using the GI tract, i.e. when intestinal failure is present"

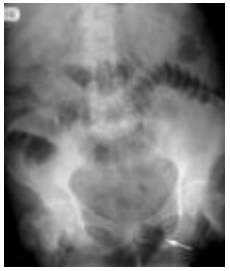
✓ ESPEN 2016: "...In AIF/ECF individuals because of the compromised integrity of the GIT... PN often represents the main option, alone or in association with EN (supplemental PN)."

Pre-operative PN/Small bowel obstruction - CASE contd



- Drain sited into collection
  - To remain NPO & Full TPN
  - Bilirubin 27, Alk phos 878, GGT 28, AST 101, ALT 57, CRP 290
    - Likely cause of deranged LFT's - Fluconazole, Tazocin, Amikacin, Oxynorm
    - Assess this in consultation with the team
- Ten days later
  - Allowed 'light diet'
  - But Weight reduced by 5kg in 1 week
  - Therefore continue Full TPN to supplement oral intake
- **<u>Is there an indication for TPN now?</u>**

Pre-operative PN/Small bowel obstruction - SOLUTIONS



- <u>Is there an indication for TPN now?</u>
  - Yes, due to malnutrition (weight loss & multiple post-operative complications) and inability to achieve nutritional requirements orally/enterally

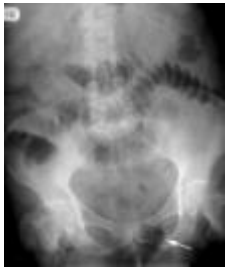
  OR
  - No, Enteral nutrition could be considered (in this case patient refused NG feeding)

- <u>References to support this:</u>

  ✓ ESPEN: “Combinations of enteral and parenteral nutrition should be considered in patient in whom there is an indication for nutrition support and in whom > 60% of energy needs cannot be met via the enteral route”

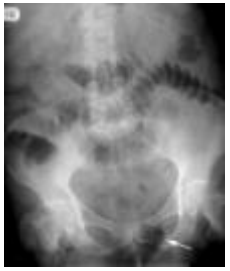
  ✓ ESPEN: “PN is indicated for CD patients who are malnourished or at risk of becoming malnourished and who have inadequate or unsafe oral intake, a non(or poorly) functioning or perforated gut, or in whom the gut is inaccessible (e.g. obstructed gut or short bowel)”

Pre-operative PN/Small bowel obstruction - CASE contd



- Nine days later
  - Drain removed
  - Oral diet progression to 53% energy, 26% nitrogen requirements orally
  - Weight stable again
  - TPN reduced gradually & discontinued over 8 days
- **Is there an indication for TPN now?**

Pre-operative PN/Small bowel obstruction - SOLUTIONS



- <u>Is there an indication for TPN now?</u>
  - No, oral diet progression with oral nutritional supplements mean patient is now able to achieve >60% of requirements orally

- <u>References to support this:</u>

✓ ESPEN: “Combinations of enteral and parenteral nutrition should be considered in patient in whom there is an indication for nutrition support and in whom > 60% of energy needs cannot be met via the enteral route”

Obesity/ Diabetes/Refeeding Syndrome/ Post-operative Ileus - CASE

- Patient History:
  - 56year old male admitted with sudden onset abdominal pain & vomiting on the background of 18month history of periumbilical hernia. At Day 7 of admission, he underwent Laparoscopy, converted to Laparotomy & Repair of Incarcerated Hernia with Small Bowel resection. Greater than 200cm Small bowel remaining & primary anastomosis
  - Developed post-operative AKI
  - Referred at Day 1 following surgery for TPN due to concern for anastomotic leak due to obesity and complex surgery. CVC line in situ.
- Past Medical History
  - Hypertension, Recent new diagnosis of T2DM, Obesity(BMI 48.9kg/m2)
- Nutritional Assessment
  - Eating well 1 week prior to admission, fasting since then
  - 10kg weight loss (5.6% x 1wk)
- **What are the indications for PN in this case?**
- **What are the Key concerns for Nutrition Support in this case?**

Obesity/ Diabetes/Refeeding Syndrome/ Post-operative Ileus - SOLUTIONS

- What are the indications for PN in this case?
  - Fasting for 7days pre-operatively, concern for anastomotic leak by surgeons, therefore malnutrition risk post-operatively

- References to support this:

✓ ESPEN: "Post-operative parenteral nutrition is beneficial in patients with post-operative complications impairing gastrointestinal function who are unable to receive and absorb adequate amounts of oral/enteral feed for at least 7 days"

✓ INDI NSRG: "Is the gut accessible and functioning?"

No, therefore start PN

✓ NCEPOD: "PN should only be given where EN has been excluded as inappropriate or impractical"; "The possibility of the requirement for PN should be recognised early"; "PN should be started at the earliest opportunity..."; "Patients

Obesity/ Diabetes/Refeeding Syndrome/ Post-operative Ileus - SOLUTIONS

- <u>Key concerns for Nutrition Support in this case</u>
  - Obesity
    - Refer to INDI NSRG Obesity requirements
  - Post-operative Recovery and Wound Healing
  - Blood Glucose Management
    - Refer to local policy and liaise with Endocrinology team
  - ? Refeeding risk
    - IrSPEN (NICE): Moderate Risk - “Little or no nutritional intake for >5 days”; 20kcal/kg

Obesity/ Diabetes/Refeeding Syndrome/ Post-operative Ileus –CASE contd

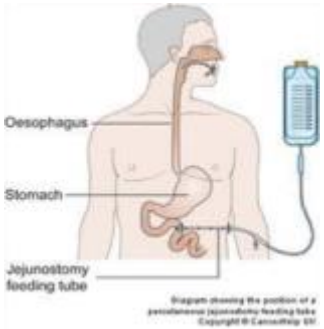
- 2 bags of TPN infused in 24hrs to meet requirements:
  - Providing 3489kcals(21kcals/kg), 375g CHO (1.6mg/kg/min)(15.6g/hr), 138g Fat (0.82g/kg), 26g N2(0.16g/kg)
- Endocrinology team were notified for insulin regimen
- Commenced 'Light diet' on Day 6 of TPN
  - Endocrinology notified to review insulin regimen
- TPN stopped 2 days later

Obesity/ Diabetes/Refeeding Syndrome/ Post-operative Ileus – SOLUTIONS

- Weaning TPN
  - Not routine practice in SJH to wean patients off TPN, unless issues with Blood glucose while patient is on and off TPN (but refer to local policy)
  - TPN weaned down in this case due to difficulty in meeting high nutritional requirements orally, for safe blood sugar management and due to concern for malabsorption of oral intake (significant diarrhoea)

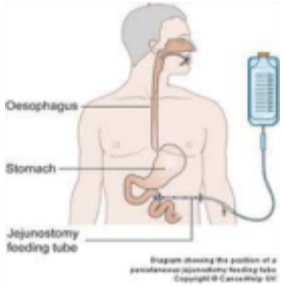
- References to support this:
  - ✓ESPEN: “Weaning TPN is not necessary”
  - ✓NICE “Withdrawal should be planned and stepwise”

Complex Weaning to Enteral Nutrition/Oral Diet –CASE



- Patient History:
  - 77 year old male transferred from his local hospital because of Small Bowel Obstruction due to rectal cancer recurrence. He underwent Laparotomy & Small bowel resections x2(30cm total) with anastomosis, extensive adhesions seen, tumour recurrence at area of previous sigmoid resection. Unresectable tumour, therefore Debulking & excision of paraaortic nodes, Ileostomy & ileal end mucus fistula
  - Referred for TPN at Day 2 following surgery, while in ICU
- Past Medical History
  - Sigmoid tumour – Hartmann's procedure (2013), Aortic Stenosis, Atrial Fibrillation
- **What is the Indication for TPN in this case?**

Complex Weaning to Enteral Nutrition/Oral Diet - SOLUTIONS



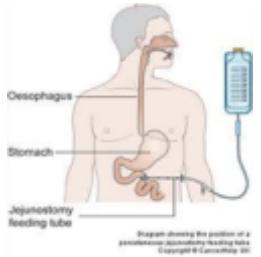
- Indication for TPN?
  - Liaise with team if referral unclear
  - In liaising with Surgeons, indication in this case was complex surgery requiring slower than usual progression to oral diet
  - No malnutrition noted prior to surgery therefore reasonable to monitor progress for 5-7 days

- Could try Enteral Nutrition or Oral diet?
  - Oral diet commenced 4days later (i.e Day 6 following surgery)
  - Poor appetite/Nausea/ Confusion limited progression and meant placement of NGT was not possible.
    - Therefore commencement of Supplemental PN
    - Important to maximise anti-emetics for success with oral/enteral nutrition

- References to support this:
  - ✓ ESPEN: "Post-operative parenteral nutrition is beneficial in patients with post-operative complications impairing gastrointestinal function who are unable to receive and absorb adequate amounts of oral/enteral feed for at least 7 days"
  - ✓ INDI NSRG: "Is the gut accessible and functioning?"

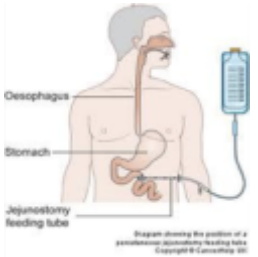
    No, therefore start PN
  - ✓ ESPEN: In patients who require post-operative artificial nutrition, enteral feeding or a combination of enteral and supplementary parenteral nutrition is the first choice

Complex Weaning to Enteral Nutrition/Oral Diet – CASE contd



- Day 10 of PN, wound dehiscence + Enterocutaneous Fistula :
- **<u>What to do with TPN?</u>**

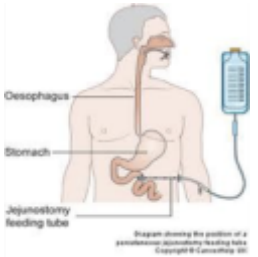
Complex Weaning to Enteral Nutrition/Oral Diet – SOLUTIONS



- What to do with TPN?
  - Back to full requirements via PN
- References to support this:
  - ✓ Br J Surg. 2006: Management of enterocutaneous fistula should initially concentrate on correction of fluid and electrolyte imbalances, drainage of collections, treatment of sepsis and control of fistula output. The routine use of somatostatin infusion and somatostatin analogues remains controversial; although there are data suggesting reduced time to fistula closure, there is little evidence of increased probability of spontaneous closure. Malnutrition is common and adequate nutritional provision is essential, enteral where possible, although supplemental parenteral nutrition is often required for high-output small bowel fistulas
  - ✓ ESPEN 2016: "...In AIF/ECF individuals because of the compromised integrity of the GIT... PN often represents the main option, alone or in association with EN (supplemental PN)."

Br J Surg. 2006 Sep;93(9):1045-55. Nutrition and management of enterocutaneous fistula. Lloyd DA, Gabe SM, Windsor AC.

Complex Weaning to Enteral Nutrition/Oral Diet – CASE contd



- Day 19 PN(TPN): Team feel Fistula is now behaving like a stoma and therefore recommenced Oral diet; Ileostomy active(120mls)
  - TPN held at Day 25 PN

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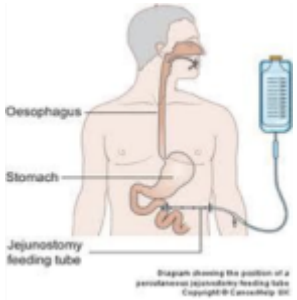
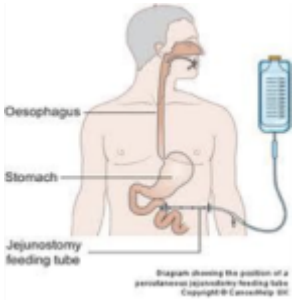
Complex Weaning to Enteral Nutrition/Oral Diet – CASE contd



- Wound bag containing faeculant material with solid pieces of food, due to leakage from fistula.
- Significant difficulties with wound management systems bursting + leaking, not possible to keep faeces from contaminating the wound
- **<u>What nutrition support is indicated now?</u>**

Complex Weaning to Enteral Nutrition/Oral Diet – SOLUTIONS + CASE contd

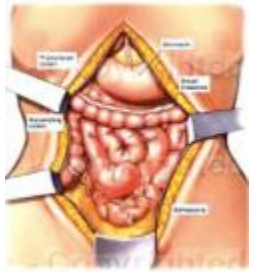


- **What nutrition support is indicated now?**
  - Consultation with Stoma Care Nurse Specialist and Surgeon re: aim for better and safer wound management
  - Decision made to reduce Oral diet to light diet + TPN recommenced

- TPN Day 29, decision made to take patient back to theatre for Excision of Fistula + Small bowel Resection(5cm)
  - Recommenced Oral diet 2 days post-op
  - Meeting 50% of requirements orally 3 days later
    - ONS commenced + TPN discontinued

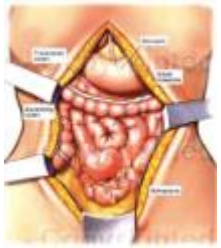
- References to support this:
  - ✓ BAPEN: "In general, PN should only be used when it is not possible to supply nutrition using the GI tract, i.e. when intestinal failure is present"
  - ✓ ESPEN: "Combinations of enteral and parenteral nutrition should be considered in patient in whom there is an indication for nutrition support and in whom > 60% of energy needs cannot be met via the enteral route"

Complex Surgery - CASE



- <u>Patient History:</u>
  - 45 year old male transferred from his local hospital with Small Bowel Obstruction. He underwent Laparotomy & division of adhesions in SJH. Developed Small Bowel Obstruction at Day 4 following surgery, with concern for ischaemic loops of small bowel versus collection
  - Referred for TPN on Day 4 following surgery. Awaiting PICC line placement.
- Past Medical History
  - PUD, Bowel resection(no details available – childhood surgery), Right Hip replacement, Vertigo, Hernia Repair, Thrombocytopenia, Hirschung's Disease
- Nutritional Assessment
  - Acute onset, well prior to admission to local hospital
- **<u>What is the Indication for TPN in this case?</u>**

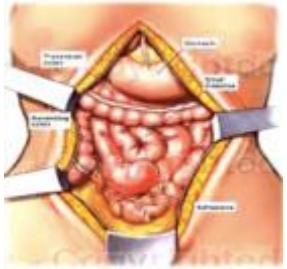
Complex Surgery - SOLUTIONS



- Indication for TPN?
  - Small Bowel Obstruction
  - Not usually indicated with a Collection
  - Liaison with surgeons revealed concern for slow return of bowel function due to Hirschung's Dx and previous bowel resection(unknown details – childhood surgery) which may delay progression to Enteral nutrition and Oral diet

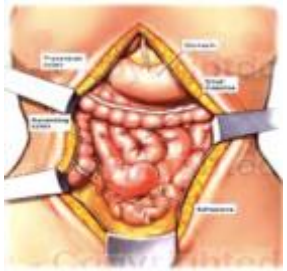
- References to support this:
  - ✓ Hirschungs Dx: congenital condition, as a result of missing nerve cells in the muscles of the baby's colon. A newborn who has Hirschsprung's disease usually can't have a bowel movement in the days after birth. Surgery to bypass or remove the diseased part of the colon is the treatment.
  - ✓ NCEPOD: "The possibility of the requirement for PN should be recognised early"
  - ✓ ESPEN: "...PN should only be used when it is not possible to supply nutrition using the GI tract..."
  - ✓ INDI NSRG: "Nutrition support should be considered in...patients at risk of malnutrition who have... Eaten little or nothing for >5 days and or unlikely to eat little or nothing for 5days or longer"
  - ✓ ESPEN: "Post-operative parenteral nutrition is beneficial in patients with post-operative complications impairing gastrointestinal function who are unable to receive and absorb adequate amounts of oral/enteral feed for

Complex Surgery – CASE contd



- Further complications: ICU admission with Bacteraemia, return to theatre reveals multiple adhesions (dissected) + decompressed
  - NGT draining 500-800mls (patient allowed 'sanity sips")
  - Bowels opening daily following daily enemas
  - TPN Day 16: commenced on soup, jelly&icecream, Oral nutritional supplements
  - TPN stopped on Day 18 of TPN as tolerating oral diet and oral nutritional supplements (meeting 50% of energy + protein requirements), was allowed to progress to full hospital diet
- **Is slow progression to oral fluids, then diet necessary? What informs your team's decision?**
- **Is weaning TPN necessary in this case?**

Complex Surgery – SOLUTIONS



- <u>Is slow progression to oral fluids, then diet necessary? What informs your team's decision?</u>
  - Bowels opening without enema
  - Reduction in NG drainage volumes and spiggotting/clamping of wide bore NGT without vomiting
  - Abdominal distension – stable/reducing/worsening
- <u>Weaning TPN</u>
  - Not routine practice in SJH to wean patients off TPN, unless issues with Blood glucose while patient is on and off TPN (but refer to local policy)
  - TPN was not weaned down in this case as blood sugar levels were stable while on and off TPN and patient was tolerating oral diet
- <u>References to support this:</u>
  - ✓ESPEN: "Weaning TPN is not necessary"
  - ✓NICE "Withdrawal should be planned and stepwise"