A regional gastrostomy audit exploring factors influencing mortality and complications

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On behalf of the Northern Nutrition Network

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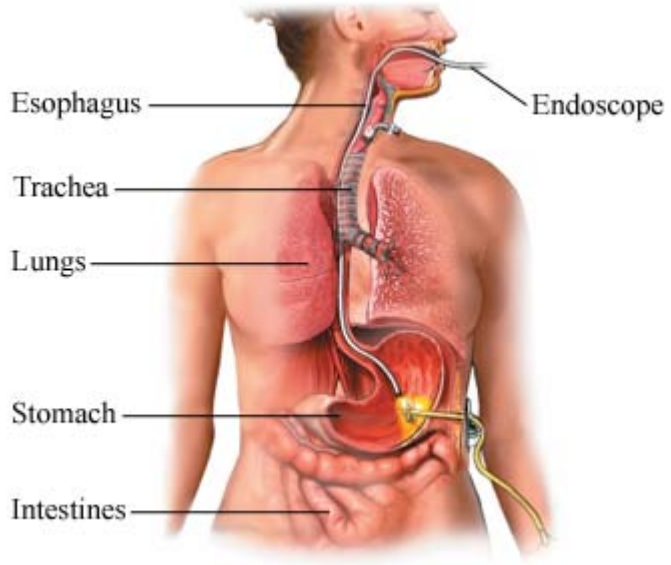
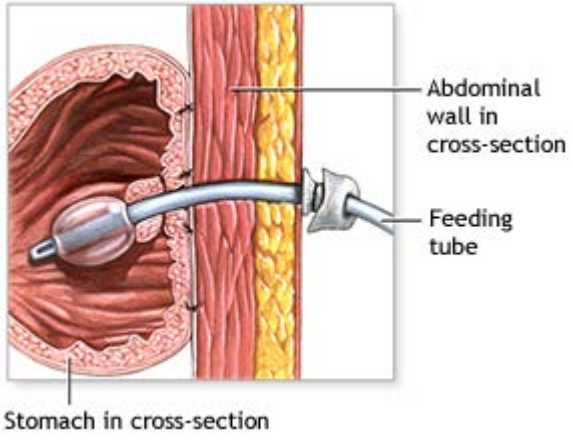
Introduction

- Percutaneous Endoscopic Gastrostomy (PEG) procedure under ‘conscious sedation’, but occasionally under general anaesthetic.
- Radiologically Inserted Gastrostomy (RIG) with CT guidance only, where endoscopic approach is not possible or not recommended.
- We will use the term ‘PEG’ to encompass both procedures





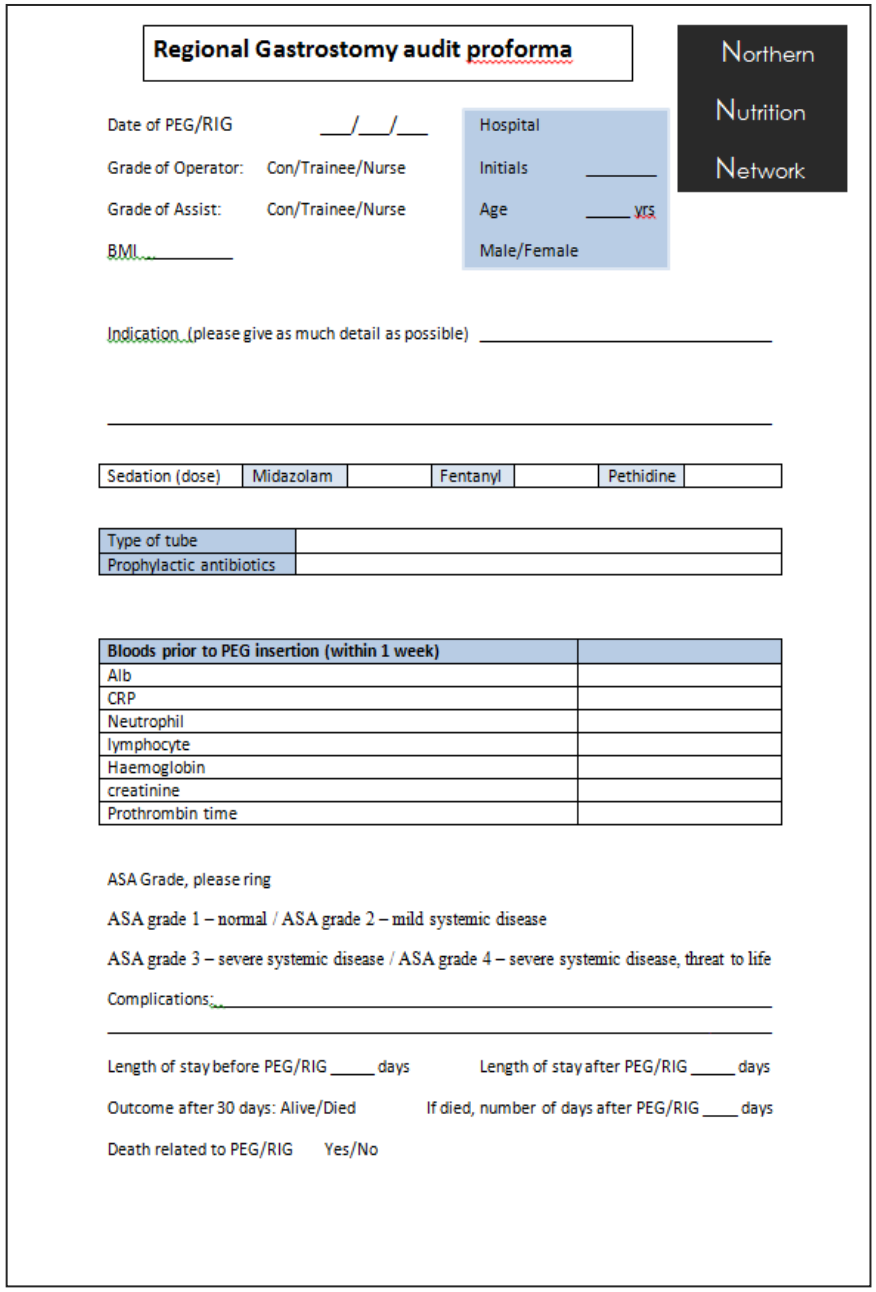
Indications for PEG (NCEPOD 2004)[5]

Indication	Example
Neurological disorders of swallowing	Stroke, multiplesclerosis, motor neurone disease, Parkinson'sdisease, cerebral palsy, HIV encephalopathy
Cognitive impairment and depressed Consciousness	Head injury, brain tumors
Mechanical obstruction to swallowing	Oropharyngeal or oesophageal cancer, radiationenteropathy, head and neck cancer
Long term partial failure of intestinal function	Short bowel, fistulae, cystic fibrosis, malignant bowel obstruction

Background

- Region-wide Northern Nutrition Network (NNN)
- 9 acute trusts
- 3 month period between Sept-Nov 2016 with, 3 month follow-up period
- 32 pieces of data collected for all patients undergoing PEG/RIG during this period
- Collected by dieticians/nutrition nurse specialists
- Collated centrally and presented at NNN meeting
- Statistical analysis by Dr Jim Orr, with thanks

Data Collection Form



Regional Gastrostomy audit proforma

Northern Nutrition Network

Date of PEG/RIG ___/___/___

Grade of Operator: Con/Trainee/Nurse

Grade of Assist: Con/Trainee/Nurse

BMI _____

Hospital

Initials _____

Age ____ yrs

Male/Female

Indication (please give as much detail as possible) _____

_____

Sedation (dose)	Midazolam		Fentanyl		Pethidine	

Type of tube	
Prophylactic antibiotics	

Bloods prior to PEG insertion (within 1 week)	
Alb	
CRP	
Neutrophil	
lymphocyte	
Haemoglobin	
creatinine	
Prothrombin time	

ASA Grade, please ring

ASA grade 1 – normal / ASA grade 2 – mild systemic disease

ASA grade 3 – severe systemic disease / ASA grade 4 – severe systemic disease, threat to life

Complications: _____

_____

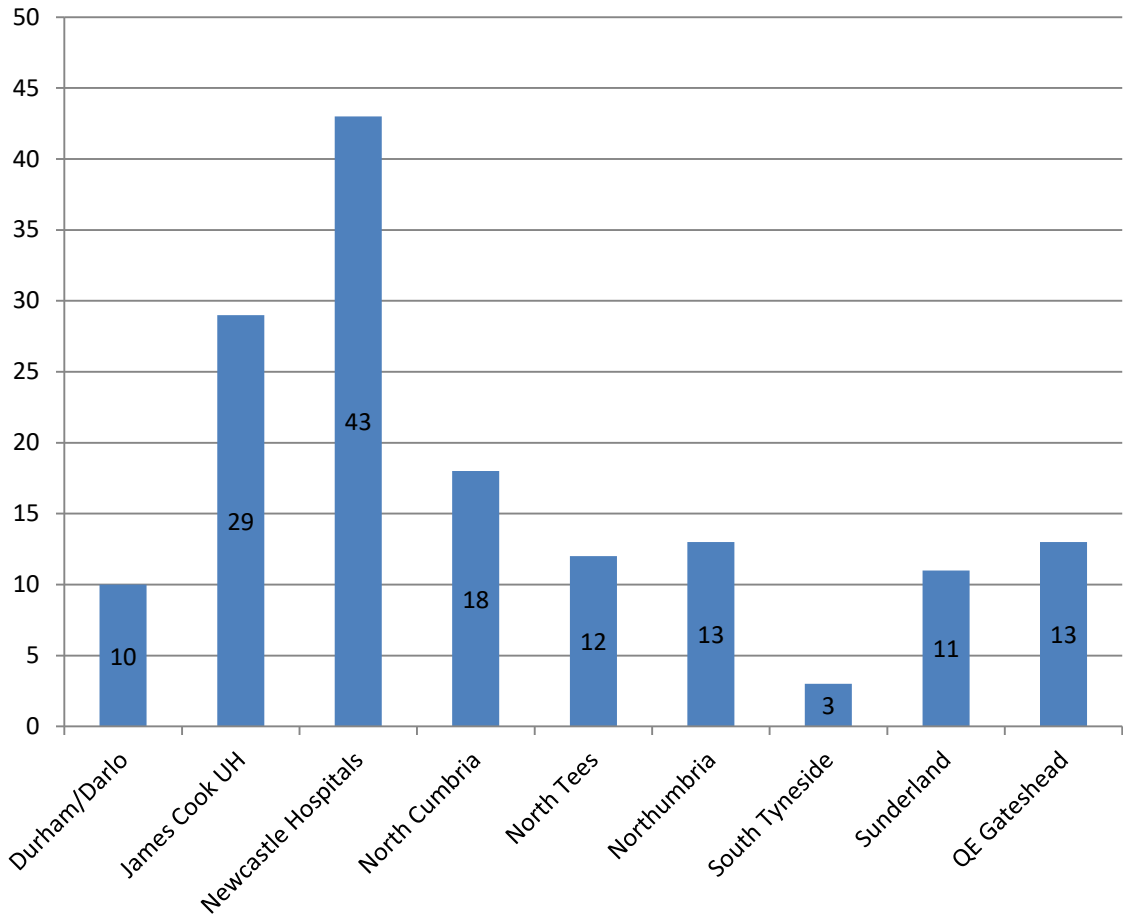
Length of stay before PEG/RIG ____ days Length of stay after PEG/RIG ____ days

Outcome after 30 days: Alive/Died If died, number of days after PEG/RIG ____ days

Death related to PEG/RIG Yes/No

Where We Are & What We Do

Where We Are & What We Do



Number of gastrostomies per site

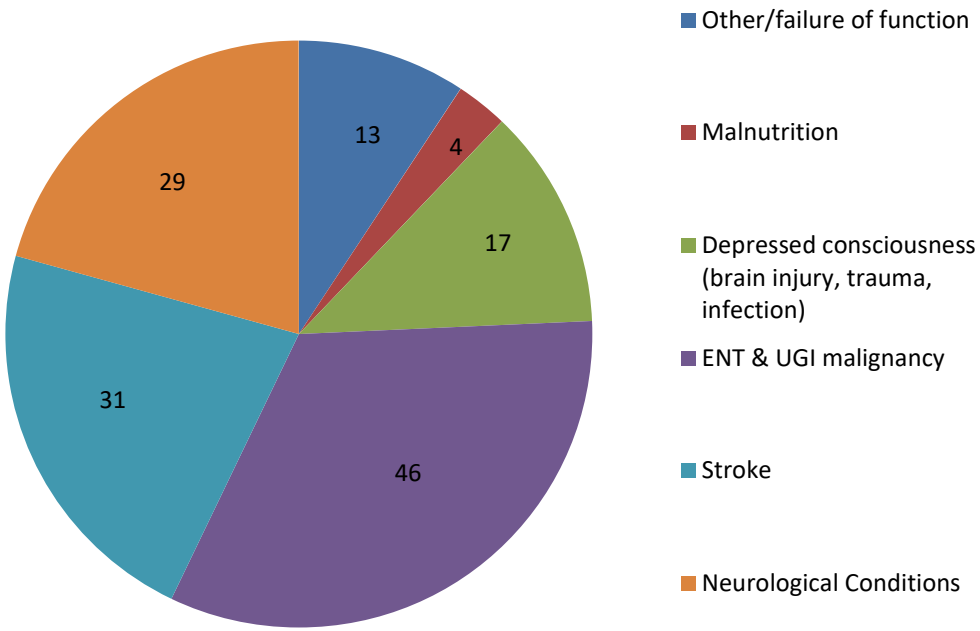
Results- demographics

- 146 patients underwent PEG insertion during the audit period
- The cohort comprised of 56 males and 88 females
- Average age of 66 years.
- Mean body mass index (BMI) 23.5
- Mean albumin level 37

Results- indications

- The most common indication for PEG was mechanical obstruction (ENT/UGI)
- 46/146 (31.5 %) patients, comprising ENT cancer (43) & gastrointestinal malignancy/ obstruction (3)

- The second most common indications were stroke (31/146) and neurological conditions (29/146) – combined these represent 41% of the cohort



Number of PEG procedures per indication

Overall Mortality Rates

- 7-day mortality was 3/146 (2%)
  - reported as a direct result of the procedure
- 30-day mortality was 12/146 (8.2%)
- 90-day mortality was 26/146 (17.8%)
- Comparison to 30-day mortality in previous studies:
  - 24% (Grant, *et al.,* 1998)
  - 19% (Mitchell & Tetroe, 2000)
  - 6.5% (Zopf *et al.,* 2011*)*
- NCEPOD (2004) 30-day mortality was 6% (2002-03 data)

- Mortality in our region was similar to that reported in other studies[1-4]

30-day Mortality

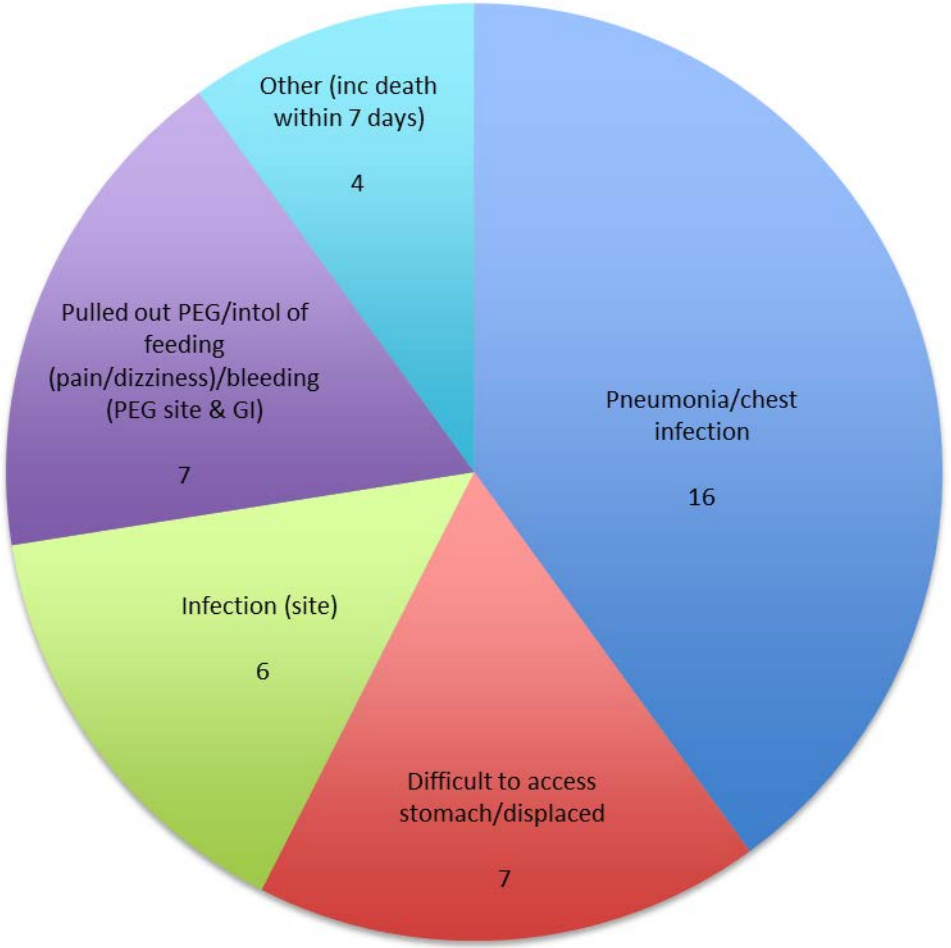
- 12/146 (8.2%) with 25% (3) of the deaths attributed to PEG insertion
- The most common indication for PEG insertion in this group was stroke (6/12) comprising 50% of all indications.
- Compared to the cohort mean the 30-day mortality group had:
  - higher mean age (76.7 vs. 66 years)
  - lower BMI (18.5 vs. 23.5)
  - higher ASA (3.1 vs. 2.7)

Complication Rates

The overall complication rate was 27% (40/146)

The most common complication was pneumonia/chest infection (16/40, 40%)

This accounted for 11% (16/146) of complications across the whole cohort



Complication Rates and Implications on Mortality

- The 30-day mortality rate in those who had a PEG complication was 17.5% (7/40)
- Compared to 8.2% (12/146) overall mortality and 4.7% (5/106) in the cohort with no complications
  - p value = 0.012 (Chi Squared)
- The 90-day mortality for patients with complications was 30 % (12/40)
- Compared to 17.8% overall mortality (26/146) and 13% (14/106) in the cohort with no complications
  - p value = 0.018

Complication Rates and Implications on Mortality

	Complications n = 40		No Complications n = 106		P value (<0.05)	Whole Cohort n = 146	
30-day mortality	7	17.5%	5	4.7%	0.012	12	8.2%
Further deaths	5		9				
90-day mortality	12	30%	14	13%	0.018	26	17.8%

The Implication of Sedation

- 109 patients were sedated with midazolam, 26 received GA, 11 were un-sedated
- Average dose of 2mg per patient
- In the sedated group the rate of pneumonia following PEG insertion was 13.7% (15/109) vs. 11% in whole cohort (16/146)
- In the un-sedated group (n=11) only 1 patient was reported to have post-PEG pneumonia (1/11)
  - pneumonia rate of 9%
- GA group had no pneumonic complications reported

Conclusions

- Stroke, other neurological conditions and ENT cancer are the most common reasons to place a PEG
- Our mortality rates revealed approximately a 2% risk of dying in the first 7 days and 8% risk of dying in first 30 days
- Almost 20% chance of dying in the 90 day period following the procedure
- Increasing age, decreasing BMI and poor functional status (ASA) could increase these risks
- The most common complication of PEG insertion in our study group was pneumonia, with a rate of 11% - our data suggest that sedation may be an important factor with regards to this
- Complications increased the risk of dying:
- 3.7 fold increase in chance of dying by 30 days (17.5% vs. 4.7%) (p=0.012)
- 2.3 fold increase in chance of dying by 90 days (30% vs 13%) (p=0.018)

Many thanks…Visit the North East…Questions…

References:

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2. Mitchell SL, Tetroe JM. Survival after percutaneous endoscopic gastrostomy placement in older persons. J Gerontol A Biol Sci Med Sci 2000; 55(12):M735-9
3. Zopf Y, Maiss J, Konturek P et al. Predictive factors of mortality after PEG insertion: guidance for clinical practice. JPEN J Parenter Enteral Nutr. 2011 Jan;35(1):50-5
4. Grant MD, Rugberg MA, Brody JA. Gastrostomy placement and mortality among hospitalized Medicare beneficiaries. J Am Med Assoc; 1998 Jun 24;279(24):1973-6.
5. NCEPOD Report; Scoping our Practice 2004, p 5-6. http://www.ncepod.org.uk/2004report/