Percutaneous Endoscopic Gastrostomy and Gastrostomy Tube Complications at a Rural Referral Hospital: Aetiology and Outcomes

Anecdotal reports of high complication rates after Percutaneous Endoscopic Gastrostomy (PEG) placement at Manning Rural Referral Hospital led to a decision to undertake this study. Medical Staff at Manning Rural Referral Hospital raised concerns during a Medical Mortality and Morbidity Meeting, however no evidence was available or documented on the rates and types of complications, and in particular the contribution of patient co-morbidities or risk factors to tube complications and no prospective audit had been considered.

Previous studies of PEG/Gastrostomy tube complication rates at hospital sites elsewhere reported rates of complications ranging from 2% to 70% depending on the definition of "complication", the patient population used, and the time period of the study (Lynch and Fang 2004, Paillaud, Bories, Merlier, Richardet, Jeanfaivre, and Campillo 2002, McClave and Chang 2004).

The aim of this study was to determine the rates and types of complications (both minor and major) for patients who had a PEG tube placed, were admitted (for any reason) with an existing PEG/Gastrostomy tube, had an existing PEG tube removed, had another PEG tube inserted, or who presented to ED with a PEG/Gastrostomy tube at Manning Rural Referral Hospital who over a five year period (1st October 2002 – 30th September 2007). Potential contributing factors to PEG/Gastrostomy tube complications were also investigated. Data was collected by the researcher using a retrospective medical file audit involving 54 individual patients (137 admissions to hospital and 20 Emergency Department presentations), and a staff questionnaire targeting 142 participants (37 non-nursing, and 105 nursing staff).

This study has determined baseline complication rates for Manning Rural Referral Hospital for patients. The overall complication rate was 28% (minor 15%, major complications 13%) (Table 1). For patients who underwent PEG tube placement at Manning Rural Referral Hospital the overall complication rate was 42% with minor complication rate of 26%, and major complication rate of 16% (Table 1).

Table 1: Frequency of major and minor tube complications for PEG/Gastrostomy patient groups diagnosed with a complication at Manning Rural Referral Hospital 1st October 2002 – 30th September 2007

PEG/Gastrostomy tube Complication	PEG Placed (n=19) n (%)	Another PEG Placed (n=4) n (%)	PEG Removal (n=9) n (%)	Existing PEG/ Gastrostomy (n=105) n (%)	ED Presentation (n=20) n (%)	Total (n=157) n (%)
Minor	5 (26)	-	1 (11)	10 (10)	7 (35)	23 (15)
Major	3 (16)	4 (100)	1 (11)	8 (8)	5 (25)	21 (13)
No Complication	11 (58)	-	7 (78)	87 (83)	8 (40)	113 (72)

The main complication type was the minor periostomal wound/site infection, however there are concerns that the hospital has a higher rate of the major complication buried bumper syndrome. Potential contributing factors of patient demographics (increased number of co-morbidities and risk factors, including age), no standardised selection criteria on patient suitability for PEG placement, no standard guideline on PEG tube management (including pre and post insertion), lack of patient weight monitoring, contraindicated medications, and lack of staff knowledge (self rated), with no designated Gastrostomy position. The type of complications and potential risk factors may be a potential problem for other rural hospitals.

Recommendations

Protocols and Procedures

1. Implementation of the updated Hunter New England Area guideline on the management of patients with PEG/Gastrostomy tubes to ensure standard care which is based on best practice and evidenced based protocols. This should include pre PEG placement patient care (for example mouth care), and post placement management (including standard protocol for initiation of enteral feeding)
2. Screening tool/checklist be developed and implemented for patients being considered for PEG placement to assist staff in determining patient suitability
3. Protocol for patients coming for PEG placement in day only surgery (PEG insertions and/or changes), including pre placement education and information provision by the multidisciplinary team including Gastrostomy Nurse, Dietitian, Speech Pathology, Social Work (and other disciplines as required).

Resources

4. Funding for a part time Gastrostomy Nurse to conduct clinics for patients pre and post PEG placement, including ongoing education, training and support for both patients and staff, and to change gastrostomy tubes
5. Develop and implement a standard PEG/Gastrostomy care form to prompt staff in the routine care required for a PEG/Gastrostomy tube, and so staff on the following shift can easily see what care is outstanding from the day. There is currently a similar standard care form for Tracheostomy tube management within the hospital

6. Implement the Hunter New England Enteral Feeding Prescription chart which is a form to allow clear and standard documentation of the enteral feeding regime of the patient

Education

7. Education by Gastroenterologist/Gastrostomy Nurse to all staff on PEG/Gastrostomy tube management (for example grand rounds presentation, Nursing grand rounds, Junior Medical Officer education)
8. Consideration of a training day on PEG/Gastrostomy tubes and Enteral Feeding to include MRRH Staff as well as Community Organisations and Aged Care Centre staff who also manage feeding tubes post discharge of patients from the hospital
9. Develop and implement a concise and clear troubleshooting guide on PEG/Gastrostomy tube problems to be placed in all patient notes with to assist staff in recognising problems and guide treatment. This guide should also be located in the Emergency department, and include information on when to swab the area.

Medication Management

10. Routine pharmacy review of all patients with PEG/Gastrostomy tubes to assess medication compatibility to prevent potential tube blockages
11. Consideration of prophylactic antibiotics at PEG placement

Weight Monitoring

14. All patients presenting to the hospital, regardless of PEG/Gastrostomy tube presence are to be weighed on admission, and at weekly intervals during the admission. Weights to be documented on the observation chart

Further Research

15. Ongoing audit of PEG tube placements is recommended across Hunter New England utilising the audit tool currently in use at John Hunter Hospital

References

Lynch, C.R., and Fang, J.C. (2004) **Prevention and management of Complications of Percutaneous Endoscopic Gastrostomy (PEG) Tubes** Practical Gastroenterology Nov;Series 22

McClave, S. and Chang, W.K. (2004) **Review Article: Complications of Enteral Access** Gastrointestinal Endoscopy (2004 ASGE Meeting May, New Orleans, Louisiana, Vol 58 (5)(Pages 739-750)

Paillaud, E., Bories, P.N., Merlier, I., Richardet, J.P., Jeanfaivre, V., and Campillo, B. (2002) **Prognosis Factors of Short and Long-term Survival in Elderly Hospitalised Patients after Percutaneous Endoscopic Gastrostomy** Gastroenterology Clinical Biology 26:443-7

Author: Michelle Murray, Dietitian, Manning Rural Referral Hospital
Michelle.Murray@hnehealth.nsw.gov.au

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