

## Clinical audit

# Day-case percutaneous endoscopic gastrostomy: a viable proposition?

A Mandal, A Steel, A R Davidson, C Ashby

### Summary

**The aim of our study was to evaluate the success rate, complications, and long term outcomes following day-case percutaneous endoscopic gastrostomy (PEG). This retrospective study was carried out in a 650-bed District General hospital in Northamptonshire, UK. Thirty-six patients, aged 28-90 years, were included in the study, 21 males (58%) and 15 females (42%). Indications for PEG insertion included head and neck cancer, dysphagia as a result of primary disease, and AIDS-related malnutrition. Data were collected from the medical and dietetic records. The PEG procedure was successful in 33 patients (92%). In 32 cases (97%) the patient was discharged home. Twenty five of the patients (76%) suffered no complications whilst seven (21%) suffered complications within a month of the procedure. No patient required further surgical intervention. Five patients (15%) died of their primary disease within a month of the procedure. Patients had had their PEG tubes *in situ* for up to 2.5 years at the end of data collection. We conclude that PEG can be performed as a day-case procedure in stable patients with no increase in complication rate, morbidity, or mortality.**

**Keywords:** percutaneous endoscopic gastrostomy; audit

Percutaneous endoscopic gastrostomy (PEG) was first introduced into clinical practice in 1980.<sup>1</sup> Since then it has gained widespread acceptance because of its safety and low complication rate, and studies have shown it to be superior to nasogastric tube feeding.<sup>2,3</sup> It is now the preferred method for long-term enteral nutrition in patients who have a functional gastrointestinal tract but who are unable to take adequate nutrition orally.<sup>4-6</sup>

Most reports on PEGs have examined in-patient procedures performed in acute hos-

pitals. A few studies have included a small number of patients in whom a PEG has been performed as a day case, however not all of these patients were discharged home on the day of the procedure.<sup>4,7</sup> The feasibility of day-case PEGs has not been extensively investigated as an alternative to hospital admission.

We report our experience of PEGs as a day-case procedure, the aim of our study being to evaluate the success rate, complications, and long-term outcomes following insertion.

### Methods

A retrospective review was made of the medical and dietetic records of all 36 patients in whom a PEG was attempted as a day-case procedure between June 1994 and August 1997. No patient was excluded from the study.

#### DAY-CASE PEG PROCEDURE

Patients were referred by their general practitioner (GP), community physician, or hospital staff to the local gastroenterologists for a PEG. This was performed in our endoscopy suite after informed consent had been obtained and under intravenous midazolam sedation. A brief endoscopic examination of the upper gastrointestinal tract was made and a PEG procedure was performed by the 'pull through' method.<sup>1</sup> A second-look endoscopy was performed after the PEG insertion to check the position of the percutaneous feeding tube in the stomach and to confirm free flow of water down it. After the procedure the site was cleaned, sprayed with povidone iodine, and dressed with a sterile dressing. The patient was then observed in our recovery area for 3-4 hours. Any intra- or post-operative complications were noted. An assessment by the endoscopist was made before the patient was discharged to the community.

A few days before the procedure, the dietitian made a home visit to start the training and education of the patient, family and carers about the procedure, possible complications, and after-care, including use of the feeding pump. On the day of the procedure, specially trained nurses offered further advice and information. A home visit by the dietitian was arranged for later that evening and again the next day. Dietetic support continued until either the removal of the PEG or the death of the patient. Patients, carers and family members were advised to contact the Endoscopy Unit, dietitian, or their GP should any complications arise.

Kettering General Hospital NHS Trust, Kettering, Northamptonshire NN16 8UZ, UK  
 Directorate of Medicine  
 A Mandal  
 A Steel  
 A R Davidson  
 Clinical Effectiveness Unit  
 C Ashby

Correspondence to C Ashby, Clinical Effectiveness Team, Rockingham Forest NHS Trust, 1st floor, Thorpe House, Kettering General Hospital NHS Trust, Rothwell Road, Kettering, Northamptonshire NN16 8UZ, UK

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**Table 1** Diagnosis of patients undergoing PEG insertion as a day-case procedure

Diagnosis	Patients (n)	Indication for PEG
Head and neck cancer	15	Prophylactically before surgery or radiotherapy
Motor neurone disease	3	Dysphagia
Multiple sclerosis	3	Dysphagia (1 re-insertion)
Stroke	5	Dysphagia (1 re-insertion)
AIDS	2	Severe anorexia & malnutrition
Other	3	Dysphagia
	2	Malnutrition

**Table 2** Early complications of PEG insertion

Complications	Patients (n)	Treatment	Outcome
Abdominal pain and peristomal leakage	2	Admitted, investigated, and treated conservatively	Resolved
Tube fell out and subsequent haematemesis	1	Admitted, tube replaced under X-ray control, blood transfusion	Died at 27 days
Abdominal pain	1	Admitted, investigated, and treated conservatively	Resolved
Wound infection and small subcutaneous haematoma	1	Antibiotics and observation	Resolved
Wound infection	1	Antibiotics	Resolved

**PATIENTS**

We attempted PEG as a day-case procedure in 36 patients, 21 males (58%) and 15 females (42%). Their ages ranged from 28 to 90 years (mean 58 years).

The indications for the PEG procedure are outlined in table 1. Two patients required reinsertion of their PEG due to dysfunction, the initial procedures having been carried out in other hospitals.

**Results**

A PEG was successful in 33 patients (92%). In one case a PEG was not attempted as advanced gastric carcinoma was noted on endoscopy. In a further two cases endoscopy was unsuccessful due to oesophageal obstruction. The following data analysis is based on the 33 patients who underwent successful PEGs.

On the same day as the PEG procedure, 32 patients (97%) were discharged home. The remaining patient was discharged to a hospice bed. Twenty-five of the 33 patients (76%) suffered no complications following the PEG procedure, while six patients (18%) developed complications within one month of the procedure (table 2). Four patients (12%) needed hospital admission for complications within a month of their PEG, three with abdominal pain and one patient in whom the percutaneous feeding tube fell out. No patients required surgical intervention.

**MORTALITY**

Five patients (15%) died within 30 days of their PEG. Four of these deaths were due to the patients' primary disease. The fifth patient suffered displacement of his percutaneous feeding tube, which was re-inserted under X-ray control. He then had a haematemesis, which was thought to be due to gastric erosion related to the percutaneous feeding tube. In view of his very poor general condition and advanced cancer a further endoscopy was considered inappropriate and he died 27 days after the initial PEG procedure.

**PEG TUBE REMOVAL**

One patient with stroke regained swallowing after 15 months and his PEG tube was therefore removed. Six patients with head and neck cancer had their feeding tubes removed at the completion of their surgical treatment and/or radiotherapy prior to the completion of data collection. All PEGs were removed endo-

scopically and none of the patients in this study developed a permanent gastrocutaneous fistula.

**LONG-TERM OUTCOMES**

At the time of the completion of this study, the patients had had their percutaneous feeding tubes in for 3–30 months. Eighteen patients (55%) had their tube in for 1 year and two (6%) for 2.5 years.

**Discussion**

Since its introduction in 1980, the PEG has become a standard procedure in all acute hospitals and is the method of choice in virtually all patients requiring long-term enteral nutrition.<sup>8</sup> The nutritional status of patients is now recognised as important for their medical wellbeing, and all patients who cannot eat for prolonged periods should be considered for nutritional support.<sup>9 10</sup>

PEG is a safe procedure in malnourished patients and the length of in-patient stay has been reported as being up to 7 days.<sup>5</sup> This paper demonstrates that, in a small group of patients, a PEG procedure is easily carried out as a day case. The 92% success rate for PEG insertion in our patients is in agreement with other reports.<sup>7</sup> The nutritional status of patients referred for a PEG is invariably on the decline and one might expect a high complication rate. However, our complication rate of 21% is comparable with other studies, with only one major complication experienced.<sup>4</sup> Only four of our patients needed re-admission and none needed further surgical intervention. Our mortality rate (3%) is also comparable with other studies,<sup>3 6</sup> although it must be noted that this patient already had advanced cancer and his death was considered due to this.

The majority of PEG procedures are carried out in stroke patients whilst they are still in-patients.<sup>2 3</sup> However, we have demonstrated that there is a group of patients in whom it is safe to do this as an out-patient. The high number of head and neck cancers in our study reflects the poor nutritional status of these patients and their need for nutritional support both pre- and post-operatively. This is also in line with other studies.<sup>11</sup>

In all day-case PEGs, a team approach is vital, as discussed previously.<sup>12</sup> It is thanks to this team approach that the majority of our patients (97%) could go directly home on the day of the procedure.

## Conclusions

This study shows that PEG can be performed as a day-case procedure in stable patients with no increase in complication rate, morbidity, or mortality. This will reduce unnecessary admissions to hospital and thus reduce costs.

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- 1 Gauderer MWL, Ponsky JL, Izant RJ. Gastrostomy without laparotomy: a percutaneous endoscopic technique. *J Paediatr Surg* 1980;15:872-5.
- 2 Norton B, Homer-Ward M, Donnelly MT, Holmes GKT. A randomised prospective comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding after acute dysphagic stroke. *BMJ* 1996;312:13-6.
- 3 Park RHR, Allison MC, Lang J, *et al*. Randomised comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients with persisting neurological dysphagia. *BMJ* 1992;304:1406-9.
- 4 Larson DE, Burton DD, Schroeder KW, DiMagno EP. Percutaneous endoscopic gastrostomy: indications, success, complications & mortality in 314 consecutive patients. *Gastroenterology* 1987;93:48-52.
- 5 Hull MA, Rawlings J, Murray FE, *et al*. Audit of outcome of long term enteral nutrition by percutaneous endoscopic gastrostomy. *Lancet* 1993;341:869-72.
- 6 Russell TR, Brotman M, Norris F. Percutaneous gastrostomy: a new simplified and cost-effective technique. *Am J Surg* 1984;148:132-5.
- 7 Panos MZ, Reilly H, Moran A, *et al*. Percutaneous endoscopic gastrostomy in a general hospital: prospective evaluation of indications, outcome, and randomised comparison of two tube designs. *Gut* 1994;35:1551-6.
- 8 Tham TCK, Taitelbaum G, Carr-Locke DL. Percutaneous endoscopic gastrostomies: are they being done for the right reasons? *Q J Med* 1997;90:495-6.
- 9 Kings Fund Centre. *A positive approach to nutrition as treatment* (Chair: Professor JE Lennard-Jones). London: Kings Fund Centre, 1992.
- 10 McWhirter JP, Pennington CR. Incidence and recognition of malnutrition in hospital. *BMJ* 1994;308:945-8.
- 11 Gutt CN, Held S, Paolucci V, Encke A. Experiences with percutaneous endoscopic gastrostomy. *World J Surg* 1996;20:1006-9.
- 12 Hussain A, Geddes A, Woolfrey S, Massey J, Cox J. The team approach to percutaneous endoscopic gastrostomy feeding. *Br J Hosp Med* 1995;54:308-12.