

Percutaneous endoscopic gastrostomy: Single-center experience

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ABSTRACT

Introduction: Percutaneous endoscopic gastrostomy (PEG) is a method used for long-term enteral feeding in patients with normal gastrointestinal function and who cannot be fed orally. In this study, we aimed to present the demographic and clinical features of our patients who underwent PEG.

Materials and Methods: The records of patients who had PEG tube inserted in the endoscopy unit or intensive care units in our hospital between August 2017 and December 2019 were reviewed retrospectively in this study.

Results: A total of 108 patients underwent a PEG catheter between August 2017 and December 2019. 58 (53.7%) of the cases were male, and 50 (46.2%) were female. It was observed that the PEG procedure was performed most frequently in patients with cerebrovascular disease. No major complications were observed in any case after the procedure. Early complications were observed in 15 (13.8%) patients and late complications in seven (6.4%) patients.

Conclusion: PEG is a safe and effective enteral feeding method. It is the type of nutrition that should be applied for long-term enteral nutrition in appropriate patients.

Keywords: Complication; indication; percutaneous endoscopic gastrostomy.

Introduction

Percutaneous endoscopic gastrostomy (PEG) is a nutrition technique used in patients who cannot be fed orally for any reason and whose gastrointestinal system functions are normal. It was performed for the first time in 1980 by Gauderer and Ponsky and was reported as an alternative to surgical gastrostomy.^[1] It is a frequently preferred enteral feeding method due to its good tolerance in the long term, superficial sedation without operating room condi-

tions, short procedure time and low risk of complications.

^[2] Nutrition with PEG should be considered in patients who need nutritional support for more than 30 days. Different techniques for placement of PEG have been reported. Gastrostomy tube placement with the pull method (Ponsky-technique) is the most frequently used method.

^[3] Complications that may occur after insertion of a feeding tube with the PEG method; peristomal wound infection, peristomal leak, pneumoperitoneum, aspiration, peritonitis, bleeding, ulceration, tube occlusion, gastric



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outlet stenosis, necrotizing fasciitis, gastrocolocutaneous fistula and Buried–bumper syndrome.^[4,5] In this study, we aimed to present the demographic and clinical features of our patients who underwent PEG.

Materials and Methods

The records of patients who had PEG tube inserted in the endoscopy unit or intensive care units in Şanlıurfa Training and Research Hospital between August 2017 and December 2019 were retrospectively analyzed. The study was carried out in accordance with the Helsinki Declaration. Patients' age, gender, primary disease (indications for PEG tube insertion), early and late complications, services where patients are followed (palliative service or intensive care unit), where the procedure was performed (endoscopy unit or bedside in intensive care unit) were recorded. Informed consent form was obtained from all patient relatives before the procedure. Before the procedure, routine preoperative laboratory examinations were examined and anesthesia consultations were completed. At least 8 hours before the procedure, patients' enteral feeding was stopped. Endoscopy procedure was performed in patients who can be transferred at the endoscopy unit. For patients who could not be transferred, endoscopy was performed at the intensive care unit. All patients were performed with propofol and/or midazolam for sedation before the procedure. During the procedure, prilocaine hydrochloride was used for local anesthesia. All endoscopic procedures were performed with Fujinon® (Fujinon, Willich, Germany) video gastroscopy devices. Boston Scientific® brand standard PEG sets in the range of 20–24 Fr were used for the procedure. All patients were examined with gastroscopy until the 2nd continent and any pathology preventing the insertion of PEG tube was evaluated. Proper sterilization of the entry site on the skin was performed before the procedure. After sufficient transillumination was achieved by gastroscopy, the PEG tube was inserted with the pull technique. After the PEG tube was placed in the stomach, the location of the PEG tube and the presence of bleeding were checked with a gastroscopy. 12 hours after the procedure, it was recommended to start enteral feeding at a low dose (20 cc/hour) in patients without leaking from the tube edge after water was given from the tube.

Statistical Analysis

Statistical Package for the Social Sciences (SPSS 21 Inc., Chicago, IL, USA) computer software was used for bio-

statistical analyses. When the data were presented as mean values their standard deviation values were given, when they were presented as median values their minimum–maximum values were also stated.

Results

Between August 2017 and December 2019, a total of 108 patients were placed with a PEG tube. 58 (53.7%) of the patients were male and 50 (46.2%) were female. The median age of the patients was 63 (min: 16–max: 87). When the primary diseases of the cases were examined, it was seen that the PEG procedure was most frequently applied in cerebrovascular disease and other neurological diseases. Of the patients with PEG, 64 (59.2%) were in the palliative service and 37 (34.2%) were in intensive care. 7 (6.5%) patients were given a daily appointment. 74 (68.5%) patients were treated at the endoscopy unit, and 34 (31.4%) patients were treated at the intensive care unit. A 20 Fr PEG tube was inserted in 105 (97.2%) patients and a 24 Fr PEG tube was inserted in 3 (2.7%) patients. Apart from these cases, the procedure could not be performed due to the failure to provide sufficient transillumination to 1 patient, and an anterior tumor in one patient during endoscopy. Our success rate was 98.1% (108/110). After the procedure, none of our patients had major complications such as bleeding, peritonitis, gastrocolocutaneous fistula, necrotizing fasciitis. Procedural mortality was not observed in any of our patients. In 15 (13.8%) of our cases, early complications related to the catheter (during the time of hospitalization) were observed. Peristomal wound infection developed in 7 (6.4%) patients. The wound infection of 5 (4.6%) patients regressed with antibiotic treatment and wound dressing. The PEG tube was withdrawn from 2 (1.8%) patients and after 2 weeks the PEG tube was inserted again. Eight (7.4%) patients pulled the PEG tube in the early period and these patients were re-inserted PEG tube. In the late period (after discharge), 7 (6.4%) patients had complications related to catheter. PEG tube was required to be re-inserted in 3 (2.7%) patients due to PEG tube displacement, and 4 (3.7%) patients due to PEG tube occlusion. The demographic and clinical features of the patients are summarized in Table 1.

Discussion

PEG is the process of inserting a tube into the stomach endoscopically to maintain the nutrition of patients who cannot be fed orally. Nutrition with PEG is a highly ef-

Table 1. Demographic and clinical features of patients

Variable	n	%
Age (Median, min–max)	63	16–87
Gender		
Male	58	53.7
Female	50	46.2
Primary disease (PEG tube indication)		
Cerebrovascular disease	59	54.6
Trauma	17	15.7
Hypoxic ischemic encephalopathy	8	7.4
Alzheimer's disease, Dementia	7	6.4
Cerebral palsy	4	3.7
Amyotrophic lateral sclerosis	3	2.7
Subacute sclerosing panencephalitis	3	2.7
Duchenne muscular dystrophy	2	1.8
Epilepsy	2	1.8
Intracerebral hematoma (After operation)	2	1.8
Brain tumor operated	1	0.9
Service where patients are followed		
Palliative service	64	59.2
Intensive care unit	37	34.2
Daily appointment	7	6.5
Where the transaction took place		
Endoscopy unit	74	68.5
Intensive care bed head	34	31.4
Complication		
Early complications 15 patients (13.8%)		
Peristomal wound infection	7	6.4
Tube displacement	8	7.4
Late complications 7 patients (6.4%)		
Tube obstruction	4	3.7
Tube displacement	3	2.7

fective and easy-to-use enteral diet. Although PEG is a more invasive method than nasogastric and nasoenteral methods, it is the method to be preferred in patients who

require long-term nutritional support due to low risk of complications, low cost and high efficacy. There are several methods of attaching the PEG tube.^[6] The most preferred technique is the Pull technique. The technique we prefer is the Pull technique. Cerebrovascular diseases, brain trauma, Alzheimer disease, Parkinson's disease, neurological diseases such as dementia, amyotrophic lateral sclerosis, cerebralpalsy, neuromuscular diseases, head, neck and esophageal tumors, multiple trauma, and long-term coma are among the indications of PEG.^[4] Most of the patients who undergo PEG are patients with neurological diseases. In the study of Takunaga et al.,^[2] this rate was found to be 75%. In our study, 91 (84.2%) of our patients were treated for PEG because of cerebrovascular disease and other neurological diseases, and 17 (15.7%) of our patients were due to multiple trauma. The exact contraindications of PEG are that the endoscope does not pass through the esophagus (for the endoscopic method), the presence of lesions in the anterior abdominal wall that will interfere and the life expectancy is short. Relative contraindications are massive acid, coagulopathy, gastric varicose veins, peritoneal dialysis, extensive hiatal hernia, hepatomegaly, morbid obesity, subtotal gastrectomy and gastric neoplasia.^[4,5] PEG is a preferred enteral feeding method because it does not require operating room conditions, it can be performed under local anesthesia and sedation, its complication rate is low and it can be performed in a short time.^[2,5] Although PEG is effective and reliable, complications can be seen during or after the procedure. Complications related to PEG; peristomal wound infection, peristomal leak, pneumoperitoneum, tube occlusion, aspiration, peritonitis, bleeding, ulceration, gastric outlet stenosis, necrotizing fasciitis, gastrocolocutaneous fistula and Buried-bumper syndrome.^[4,5] In the literature, procedure-related mortality rate is reported as 1–3%, major complication rate is 6%, and minor complication rate is between 12% and 55%.^[7] In a study conducted by Lin et al.,^[8] the minor complication rate was reported to be 10.7% and the major complication rate was 0.97%. None of our patients had serious major complications or procedure-related mortality after the procedure. In our study, 15 (13.8%) patients developed early-stage minor complications due to catheter and 7 (6.4%) patients developed late-stage minor complications related to catheter. Peristomal wound infection after PEG is a common complication. It is generally mild and regresses with intravenous antibiotic treatment. In the geriatric age group and in pa-

tients susceptible to infection, abscess or peritonitis may develop rarely with mortality. In the study conducted by Çakır et al.,^[9] who applied prophylactic antibiotics before the procedure, the rate of peristomal wound infection was found to be 7.1%. In our study, 7 (6.4%) patients developed peristomal wound infection. The wound infection of 5 (4.6%) patients regressed with antibiotic treatment and wound dressing. The PEG tube of 2 (1.8%) patients was withdrawn and PEG tube was inserted again after 2 weeks.

Conclusion

Although PEG is a more invasive method than nasogastric and nasoenteral methods, it is a simple, safe, low complication and effective enteral feeding method if performed by experienced team. It should be preferred in suitable patients with long-term enteral nutrition needs.

Disclosures

Ethics Committee Approval: Retrospective study.

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Conflict of Interest: None declared.

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