

# Percutaneous Endoscopic Gastrostomy: Four Years of Experience of General Surgery Department at a Tertiary Care Center at Surat

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## Abstract

**Introduction:** For long-term nutritional support, enteral feeding is the mainstay of management and percutaneous endoscopic gastrostomy (PEG) has shown better results in terms of quality of nutrition provided and fewer complications.

**Objective:** The main objective of this study is to evaluate the efficacy of PEG tube placement and its management in the last 4 years in General Surgery Department at a tertiary care center at Surat.

**Patients and Methods:** All patients who underwent PEG from January 2012 to March 2016 at New Civil Hospital and Government Medical College, Surat. The indications, technique, usefulness, complications, and follow-up were reviewed.

**Results:** A total of 47 persons underwent this procedure. There were 38 (80.85%) males and 9 (19.14%) females. Age ranged from 15 to 78 years. 46 (97.87%) patients had post roadside accident cerebrovascular injury and 1 (2.12%) esophageal malignancy. PEG procedures were successfully done in all cases and no procedure-related mortality was noted. Mild PEG site infections were encountered in 7 (14.89%) patients, which were managed with local treatment. Two (4.25%) patients had severe tube site infection and needed parenteral antibiotics. None of the cases tube dislodgement was noted. The 30-day follow-up was uneventful with regard to the tube.

**Conclusion:** PEG had proved a viable means of enteral nutrition in patients with neurological impairment. Complications were insignificant. However, patient and his attendant education could be improved for more effective tube management and prevention of PEG insertion site infection.

**Key words:** Cerebrovascular injury, Endoscopy, Enteral feeding, Nutritional support, Percutaneous endoscopic gastrostomy

## INTRODUCTION

For the patients who require long-term nutritional support, enteral nutrition is the mainstay for last several decades and the nasogastric tube feeding is most commonly used for short durations. However, for the patients who require nutritional support for long duration, percutaneous endoscopic gastrostomy (PEG) is more preferred since

its introduction in 1980.<sup>1</sup> For last many years, experience with gastrostomy tube is satisfactory.<sup>2-5</sup> Although PEG has several complications such as aspiration pneumonia, PEG site sepsis, leakage, tube dislodgement, and several others, PEG has been established as most preferred method of providing enteral nutrition to the patients with difficulty swallowing either due to neurological impairment or on-going disease pathology ensuing mechanical obstruction in near future.<sup>5</sup> There are many medical and ethical aspects to be considered in these procedures.<sup>6,7</sup> A few researchers believe that PEG does not provide adequate nutrition, and it does not confer any physiological or nutritional benefit for the patients.<sup>6</sup> Moreover, post-PEG insertion mortality rates are high within 30 days in hospitalized patients. In spite of all these limitations, PEG is clinically accepted as useful method to provide enteral nutrition and hydration.<sup>2-4</sup>

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## PATIENTS AND METHODS

This is a retrospective study, in which all patients undergoing PEG placement from January 2012 to March 2016 at New Civil Hospital, Surat, were analyzed. Most of them had cerebrovascular injury following road traffic accidents with inability to swallow and anticipated complications of prolonged nasogastric feeding. Patients were evaluated for any medical illnesses before the procedure. Many patients had altered sensorium. Patients were assessed for suitability for PEG insertion and history of any abdominal surgery or other interventions were noted. Intravenous (IV) antibiotic in form of injectable ceftriaxone 1 g IV was given 1 h before the surgery. Patients were positioned in left lateral position. Minimal sedation was preferred and most patients needed only 2.5 mg of diazepam or 1 mg of midazolam intravenously. Some patients with altered sensorium were not given any sedation, and only local anesthetic spray was sufficient. The "pull" technique was used in all cases and is described below.

The upper gastrointestinal (GI) scope was inserted under direct vision using direct laryngoscope, and esophagus, stomach, antrum, and duodenum were visualized. Then, slowly the scope was withdrawn and we look for area of maximal illumination over anterior abdomen wall. Mostly, this area was just above and to the left of the umbilicus. The site of insertion was identified by pressing with the index finger at the illuminated area and indentation on the anterior stomach wall was noted through the endoscope. This area was marked on the anterior abdominal wall. The scope was withdrawn slightly with continued insufflation. A snare was introduced through the biopsy channel of the upper GI scope. Painting of the insertion site was done using povidone-iodine and draping done. A 24 French presterilized PEG tube was used. Approximately 5 mm incision was made on the marked site using stab knife no 11. Any bleeding was mopped with gauze piece. Through the incision, the cannula with trocar needle was inserted under direct vision through scope. After this, the trocar needle was removed from the cannula and the polythene coated metallic guidewire was inserted through it. On visualization of guidewire on scope, using the snare already present in the stomach, the guidewire was grasped. Then, the snare with the scope was withdrawn slowly, pulling the guidewire along with it, to pass from abdominal wall to the stomach, esophagus, oral cavity, and out through the mouth. The snare is separated from the guidewire and the PEG tube was tied to its end. With lubrication using lignocaine jelly, the guidewire was pulled through its end at anterior abdomen wall and the tube guided gently through the mouth, pharynx, esophagus, stomach, and through the abdominal opening. Sometimes, the opening needed to be slightly extended and tube was pulled out

through it and the inner bolster kept pulled on the anterior stomach wall. The tube was cut at required length and the outer bolster kept at external opening and secured in place using 2-3 interrupted sutures using non-absorbable material. The scope was inserted again and placement of the inner bolster against the gastric wall was confirmed. Dressing was carried out.

Feeding was started after 24 h once bowel sounds were present. Initially, only clear liquids were given. Gradually, feeding quality was improved, in form of blenderized diet, according to the patient's nutritional requirement and as per advice by treating physician. Daily dressings were carried out till the patients were discharged. We looked for any redness, inflammation, or signs of wound infection. We used povidone-iodine for local dressing. The tube care and feeding procedures were explained to patients' attendants. Patients were discharged once they stabilized neurologically. Patients' attendants were trained properly about tube care at home and were explained about regular follow-up.

## RESULTS

A total of 47 patients had undergone PEG placement during 4 years. There were 38 (80.85%) males and 9 (19.14%) females with age ranged from 15 to 78 years. The primary diagnosis was post-road traffic accident cerebrovascular injury in 46 (97.87%) patients and esophageal malignancy in 1 (2.12%). The procedure success rate was 100%. Patient's follow-up on average was 2-4 weeks with the longest being 2 months. The most common complication was mild PEG site infection which occurred in 7 (14.89%) patients. We used local antiseptic dressing to manage these patients. More severe infection occurred in 2 (4.25%) patients who warranted IV antibiotics and they recovered fully. No patients had dislodgement of the tube. Mild aspiration, which was manageable by conservative measures, was noted in 5 (10.63%) patients. We did not encounter any procedure-related mortality (Table 1).

**Table 1: Observations**

Variables	Observations
Total number of patient	47
Male	38 (80.85%)
Female	9 (19.14%)
Indications	
Cerebrovascular injury	46 (97.87%)
Esophageal carcinoma	1 (2.12%)
Complications	
Local sepsis (mild)	7 (14.89%)
Severe infections	2 (4.25%)
Aspiration	5 (10.63%)
Mortality	0
Mean follow-up	4 weeks

## DISCUSSION

Enteral feeding techniques have been utilized for nearly a century for artificial nutritional support and PEG had become a preferred method for last few years. Still, it is a difficult decision for the clinician to choose patients with neurological impairment for PEG tube insertion, especially in elderly and altered sensorium patients.

PEG has procedure-related mean mortality rate of 0.6 and 3-5% complication rate, in which aspiration pneumonitis and peritonitis were most common.<sup>6</sup> Common indications for PEG are mechanical obstruction (due to carcinoma esophagus), non-obstructive dysphagia secondary to neurological impairment either due to cerebrovascular injury or pseudobulbar palsy, protracted pseudodementia (patient unable to swallow without any terminal pathology), and nutritional support in terminally ill patients such as advanced malignancies.<sup>6</sup>

However, the patient selection for PEG tube insertion should also be done according to the nutritional requirements of the patient and whether the required physiological benefits can be provided by the procedure or not. All our patients had appropriate indications and adequate nutritional support, and hydration was delivered through PEG tube. We used "pull" technique which confers satisfactory tube insertion. We also confirmed tube placement by visualizing inner bolster at stomach wall at the end of the procedure through re-endoscopy. This, however, is solely the surgeon's choice and it is not recommended routinely.<sup>8-10</sup>

The complications and local infection rate in this study are comparable with other international studies.<sup>2,3</sup> We gave IV antibiotics in form of IV ceftriaxone just before the procedure which is a general recommendation.<sup>11</sup> Local site sepsis with methicillin-resistant *Staphylococcus Aureus* is becoming a major problem.<sup>12</sup> However, our study did not encounter any resistant organisms. PEG may be associated with high mortality rates, especially in the hospitalized patient.<sup>13</sup> This may be due to hypoalbuminemia which is more common in nutritionally deprived patients and which is a poor predictor of survival after PEG,<sup>14</sup> especially in elderly patients.<sup>15</sup> Quality of life and survival of the patients with neurological impairment have raised many ethical questions regarding patient selection and the outcome of the procedure.<sup>14</sup>

Despite all these considerations, studies have shown that the PEG insertion has been much safer and helpful in the past few years.<sup>16</sup> However, it has been recommended that the underlying disease process and risk-benefit ratio of PEG insertion against ultimate outcome of the

patient should be evaluated before embarking on PEG placement.<sup>6</sup>

Our experience in past 4 years with PEG placement has shown that this procedure is safe and has been helpful in providing enteral nutrition to severely neurologically impaired patients and has acceptable complications. Educating patient's attendant may further help in minimizing the encountered complications.

## CONCLUSION

The present study has not noticed complications such as tube dislodgement and food reflux as late complications. Most of the patients got benefited by PEG tube in the quality of life, survival, and usefulness of enteral nutrition. PEG is better over the nasogastric/nasojejunal tube as it is free from the significant risk of aspiration, tube blockage and managing it in position is relatively easy.

Due to limitations of our study, further study is required for assessment of effects of PEG on the quality of life and nutritional gain in patients requiring long-term enteral feeding.

## AUTHORS' CONTRIBUTION

All authors have contributed in data compilation and analysis. Dr. S Agarwal has contributed for manuscript reading.

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