INTRODUCTION

Nutritional support is essential to meet the metabolic requirements of the body. Malnutrition is a state in which there is a deficiency or excess of energy, protein and other nutrients causing measurable adverse effects on tissue/body form, function and clinical outcome. It is common in elderly and/or polymorbid patients. It has a strong association with adverse outcomes including, quality of life, morbidity and mortality. Consequences of malnutrition include reduction in muscle mass, impairment of immune function, poor tissue viability, poor clinical response and psychosocial effects. Malnourished patients require nutritional support. This can be provided in different forms including dietary modification, dietary supplements, enteral feeding (standard 1 kcal/mL; with or without fibre) or higher energy (1.2 - 2.0 kcal/mL; with or without fibre) or parenteral feeding. The development of parenteral nutrition in the 1960’s meant that feeding was possible even in patients who did not have a functioning gastrointestinal tract. Enteral feeding being the preferred route, has been used to deliver either supplementary or complete nutrition to patients who are unable to maintain adequate nutrition by oral route. For short term management, the most commonly used method is nasogastric (NG) tube placement. Long term enteral feeding has been used in patients who are unable to take orally for more than 30 days. Different methods for long term enteral feeding have been used like Percutaneous Endoscopic Gastrostomy (PEG) tube placement, Trans-nasal Percutaneous Endoscopic Gastrostomy (TPEG), Percutaneous Endoscopic Gastro-jejunoscopy (PEGJ) tube placement, and Direct Percutaneous Endoscopic Jejunostomy (DPEJ) tube placement. For long term enteral feedings, PEG has become the procedure of choice when oral access is not possible. Common indications of PEG placement include patients with brain injuries, stroke, cerebral palsy, neuromuscular and metabolic disorders, impaired swallowing, buccal sub-mucosal fibrosis, head and/or neck cancer (H&NCA) and head and/or neck trauma. Oral PEG tube placement becomes problematic in these patients so trans-nasal approach has been used. Approximately 4 - 7% of H&NCA patients are unable to undergo per oral percutaneous gastrostomies. In some countries, trans-nasal esophagogastroduodenoscopy (TN-EGD) has become one of the most frequently used methods of upper gastrointestinal endoscopy.

ABSTRACT

Objective: To evaluate the safety of trans-nasal percutaneous endoscopic gastrostomy (TPEG) placement for nutrition in patients where oral approach is not possible.

Study Design: Case-series.

Place and Duration of Study: April 2010 to April 2016 in the Department of Gastroenterology at Liaquat National Hospital, Karachi.

Methodology: Patients underwent trans-nasal PEG placement and were included in this study. Inclusion criteria were either gender of any age and patients referred for PEG tube placement in whom oral PEG tube insertion was not possible. Ultrathin gastroscope (outer diameter of 5.9 mm) was passed through a nostril after assessment and lubrication, the pull technique was used for tube placement. Primary outcome variable of study was the safety of the procedure. The secondary outcome variables were procedure related complications during and 72 hours after the procedure.

Results: TPEG placement was successful in all 46 cases. Thirty-one (67.4%) were males. The mean age was 56.63 ±12.62 years. Dysphagia was the main indication in all cases. Head and neck cancer was the most common indication present in 38 (82.6%) patients. In 36 (78.2%) cases, the procedure was performed under local anesthesia. PEG site infection occurred in one (2.1%) patient.

Conclusion: TPEG is a safe procedure in patients with oro-pharyngeal obstruction, and it should be considered as an alternative approach.

Key Words: Percutaneous endoscopic gastrostomy. Enteral feeding. Gastrostomy. Head and neck cancer.
Patients of H&NCA with complex anatomical location and pathologies require long term nutritional support during treatment, awaiting chemotherapy, radiotherapy or surgery. Surgical gastrostomy was only way of providing nutrition in those who are unable to undergo peroral percutaneous gastrostomies. Surgical gastrostomy has post-surgical complications, anesthesia relation complications and require prolonged hospital stay; whereas, TPEG placement on other hand can be performed with conscious sedation or without sedation. Trans-nasal endoscopy is an option for PEG placement in selected patients.

The objective of this study was to describe the clinical indications, epidemiological characteristics, of patients undergoing TPEG placement in our institution and evaluate its safety and outcomes.

**METHODOLOGY**

The study was conducted in the Department of Gastroenterology, Liaquat National Hospital, Karachi, after approval by institutional review board (IRB). Patients who underwent PEG placement from April 2010 to April 2016 were evaluated for this study after taking informed consent. Out of them, 46 (20.3%) underwent TPEG placement and were included in further analysis. Inclusion criteria were patients of either genders of any age, and patients referred for PEG tube placement in which oral PEG tube insertion was not possible.

The data was collected retrospectively by sorting the medical records and endoscopic charts of patients who underwent PEG placement in the specified time. The primary outcome variable of study was the safety of the procedure. The secondary outcome variables were procedure related complications during and 72 hours after the procedure.

An ultrathin gastroscope with a outer diameter of 5.9 mm, was passed through a nostril, after assessment and lubrication. The pull technique was used for placement of a tube size of 20 French. All aseptic measures were taken into account. Instructions and demonstrations were given to the caregivers regarding daily dressing and cleaning of PEG site.

After TPEG, all patients were observed for two hours in recovery room before shifting to the ward. All patients were admitted in the ward to rule out post-TPEG complications for three days post-procedure.

Statistical package of social science (SPSS.17) for windows was used to analyze data. Mean + standard deviation were calculated for quantitative variables like age and duration of symptoms. Frequencies and percentages were calculated for qualitative variables like gender, presence or absence of oral mass. Ratio (M : F) was computed to compare gender proportion.

**RESULTS**

Out of the 46 patients who underwent TPEG, 31 (67.4%) were males. The age ranged from 5 to 75 years with a mean age of 56.63 ±12.62 years. All patients were unable to take orally. Major indication was H&NCA present in 38 (82.6%) patients (Table I). In 36 (78.2%) cases, the procedure was performed without sedation, as only local anesthetic on skin being used at site of TPEG insertion. Five (10.9%) patients had general anesthesia for procedure, and remaining 5 (10.9%) underwent procedure by using conscious sedation, i.e. injection Midazolam 2 mg (intravenous) and injection Nalbuphine 2 mg (intravenous). Procedure was successful in all the 46 cases. Forty-three (93.4%) patients had no post-procedure complications; whereas, epistaxis and nasal pain occurred in 2 (4.34%) patients, which were managed conservatively, PEG site infection occurred in only 1 (2.2%) case, which was treated according to culture and sensitivity; though all cases were given post-procedure antibiotic coverage. There was not a single case found of nasal and/or abdominal perforation, and/or bleeding during three days of hospital stay and one month follow-up in the outpatient clinic.

**DISCUSSION**

PEG tube placement has rapidly replaced surgical gastrostomy as the procedure of choice in patients requiring long term enteral feeding. Problem occurs in cases of difficult intubation of oral and/or pharyngeal cavity by a video gastroscope and its advancement into the esophagus for gastrostomy tube placement. In these cases, oro-pharyngeal cavity has to be bypassed and video gastroscope is to be intubated through trans-nasal (nostril) route. Dumortier J, et al. has showed successful placement of trans-nasal PEG in 91% patients.9 Vitale, et al. showed that 12 of 155 (7.74%) patients had no oral access and trans-nasal PEG placement was successfully performed without complications.10 Peristomal wound infection after an oral gastrostomy tube placement has been reported to be fairly common11,12,13, occurring in 5 - 25% of cases in cohort studies. Lin LF has reported pseudomonas aeruginosa being common when using trans-nasal approach.14 But in our study, we had only one case of PEG site infection and culture showed pseudomonas aeruginosa. Prophylactic antibiotics were administered to all patients as per guidelines (Intravenous Cefazolin, 30 minutes before the procedure).15 Later on,
the antibiotic was switched according to the culture and sensitivity report.

The indications for the trans-nasal approach include severe trismus because of neurologic disorders, oropharyngeal obstruction secondary to advanced (H&NCA), dental misalignment, maxillary fractures, and postsurgical changes.1 In our study, 38 (82.6%) patients were diagnosed with advance H&NCA, 3 (6.5%) neurological dysphagia with submucosal fibrosis, 2 (4.3%) head & neck trauma, 2 (4.3%) submucosal fibrosis, and 1 (2.2%) mental retardation.

Keeping in view the increasing incidence of oropharyngeal carcinoma and sub-mucosal fibrosis due to betel/areca nut and tobacco chewing, mouth opening becomes limited. Hosein M, et al. has also shown the increasing incidence of sub-mucosal fibrosis in Asia-Pacific region and significant association between daily frequency of eating areca nut and degree of mouth opening.16 In such cases, TPEG remains the only alternate option as nutritional support for these patients becomes essential; while waiting for more definite option like surgery, chemotherapy or radiotherapy.

An important concern that applies to patients of H&NCA is tumor seeding at the time of TPEG placement.17 The hazard of this adversative event is very minor, still the underlying pathophysiology is not well understood. So far as there have been no case reports regarding the tumor seeding and tract formation, this might be related to the limited number of procedures performed.

Our study showed overall success of TPEG with minimal complications in few cases. To our knowledge, this is the first study in Pakistan enrolling 46 cases and assessing complications in few cases. To our knowledge, this is the first study in Pakistan enrolling 46 cases and assessing safety of this procedure. But still, larger multicenter prospective studies are needed to recommend this procedure as a routine. Important points to consider in TPEG placement are adequate patient selection and type of sedation, which depend on the endoscopist and endoscopy unit protocols.

CONCLUSION

TPEG is safe and feasible and should be considered in cases where oral approach is not possible.

REFERENCES


