

Determine of Frequency of Local Infection Following Peg Tube Insertion in Cancer Patients

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ABSTRACT

Background: Malnutrition is common in cancer patients, especially in patients with head and neck cancer. Percutaneous endoscopic gastrostomy (PEG) is one of the most commonly performed gastrointestinal procedures, which is also associated with many risk.

Aim: To determine the frequency of local infection following PEG tube insertion in cancer patients

Methodology: This descriptive case series was conducted at the department of Gastroenterology, Shaukat Khanum Memorial Cancer Hospital and Research Centre, Lahore with 280 patients of head, neck and esophageal cancers. PEG tube insertion was performed and Local infection relating to PEG tube insertion occurring within the next one month was recorded.

Results: In our study, the mean age of patients was 41.63±10.85 years, 57.5% were male while 42.5% were females. Frequency of local infection was recorded as 26(9.29%).

Conclusion: The frequency of local infection is high following PEG tube insertion in cancer patients. So, it is recommended that every patient who is inserted a PEG tube, should be actively educated about PEG tube site care and followed for local infection.

Keywords: Cancer patients, insertion of PEG tube, local infection, frequency

INTRODUCTION

Percutaneous endoscopic gastrostomy (PEG) tube insertion has been around for the last 34 years. The very first PEG tube was inserted in 1979 in a few months old infant in USA^{1,2}. Since then it has come a long way and has gained widespread acceptance as a safe and effective procedure for feeding patients at risk of malnourishment who can't manage feeding otherwise. It is primarily used to provide nutritional support to patients with severe neurological impairment (e.g. stroke, severe dementia) and cancer patients undergoing chemoradiotherapy^{3,4}.

Cancer patients have an increased risk of nutritional deficiencies as compared to patients with other chronic diseases^{4,5}. Chemoradiotherapy is one of the major reasons for this as it leads to severe mucositis, nausea and vomiting, greatly limiting oral intake. This is especially true for patients with head and neck cancers undergoing chemoradiotherapy who already have dysphagia and consequently poor nutritional status⁶. Nutritional support of these cancer patients in the form of PEG tube insertion is recommended by many oncologists before starting chemoradiotherapy^{7,8}. At Shaukat Khanum Memorial Cancer Hospital and Research center, we routinely

perform prophylactic PEG tube insertions in head, neck and esophageal cancer patients for providing nutritional support in keeping with the international recommendations⁹.

Other forms of enteral support available include nasogastric tube (NG) tube insertion, radiologically inserted gastrostomy tube (RIG) & surgical gastrostomy tube insertion. Numerous studies have shown PEG tube to be either superior or equally effective to these other modalities with significantly less risks of aspiration, local infection as well as other minor and major complications including mortality.¹⁰⁻

¹² Therefore the American Gastroenterological Association recommends that PEG tubes be used for patients who will require tube feeding for a period of more than one month, which is usually the case with cancer patients¹³.

PEG tube insertion is a safe and effective procedure with success rates of over 99% and mortality rates of less than 1%¹⁴. However, like any other procedure PEG tube insertion is not without its complications. Minor complications like peri-stomal infections are observed in around 6-7.1% of procedures¹⁵⁻¹⁷ and major complications like peritonitis are seen in 2.7-2.8%^{18,19,20,21}. Antibiotic prophylaxis is now routinely used to reduce the risk of local infection²¹.

However all this data comes from the western literature and their conclusions may not hold true for our health setup. On review of the literature it is seen that there are no representative studies available from Pakistan. Thus the true incidence of

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complications and the safety of PEG tube insertion in our medical facilities is anybody's guess. Similarly no data is available for cancer patients undergoing this procedure. The aim of this study will be to determine the rate of complications of this procedure in cancer patients in our population, thus providing the first set of data of its kind to quote and to compare with the international rate.

MATERIAL AND METHOD

This descriptive case series was conducted at the department of Gastroenterology, Shaukat Khanum Memorial Cancer Hospital and Research Centre, Lahore during a period from June 2013 to December 2013. 280 patients calculated using the WHO sample size calculator, with 95% confidence level, 3% margin of error and taking expected percentage of complications (local infection) 7%. Non probability purposive sampling technique was used. Patients of age >18 years with head, neck and esophageal cancers who gave informed consent was included in the study. While patient with absolute esophageal obstruction, ascited and neutropenic were excluded from the study.

Methodology: Patients fulfilling the inclusion and exclusion criteria were enrolled into the study after obtaining a written informed consent. Demographics including age & gender, relevant history and physical examination were recorded for all the patients. PEG tube insertion was performed by a Consultant Gastroenterologist under conscious sedation. 280 patients to undergo the procedure was educated to report to the hospital in case of local infection either via telephone or in person. PEG tube is a feeding tube inserted percutaneously into the stomach with the help of an endoscope. Local infection relating to PEG tube insertion (which is defined as inflammation with purulent discharge from the PEG tube insertion site) occurring within the next one month was recorded for data analysis and stratified according to effect modifiers like age, BMI, comorbidities e.g. Diabetes mellitus and size of PEG tube used.

Data analysis: All data was processed and analyzed using SPSS 19 for Windows. Mean and standard deviation was calculated for age, BMI and size of tube. Frequency and percentages were calculated for gender, type of malignancy and local infection. Data was stratified for age, BMI, comorbidities (e.g. Diabetes mellitus) & size of PEG tube used.

RESULTS

In this study, the mean age of patients was 41.63±10.85 years, 126(45%) were aged 18-40 years and 154(55%) were aged between 41-60 years.

There were 161(57.5%) male while 119(42.5%) females (Table 1). Frequency of local infection was recorded as 26(9.29%) while 254(90.71%) had no findings of local infection (Fig 1).

Data was stratified for age of patients. In 26 infected patients, 11 were between 18-40 years and 15 were between 41-60 years of age, (p value =0.77). Data was stratified for gender of patients. In 26 infected patients, 16 were male and 10 were females, (p value=0.66). Data was stratified for Diabetes mellitus. In 26 cases of local infection, 21 had diabetes mellitus while 5 did not have diabetes mellitus, (p value=0.37). Data was stratified for BMI. In 26 cases of local infection, 15 were obese and 11 were non-obese, (p value=0.01) (Table 2).

Table 1: Baseline characteristics of patients

Age	41.63±10.85 years
18-40 years	126 (45%)
41-60 years	154 (55%)
Gender	
Male	161 (57.5%)
Female	119 (42.5%)

Fig 1: Frequency of local infection

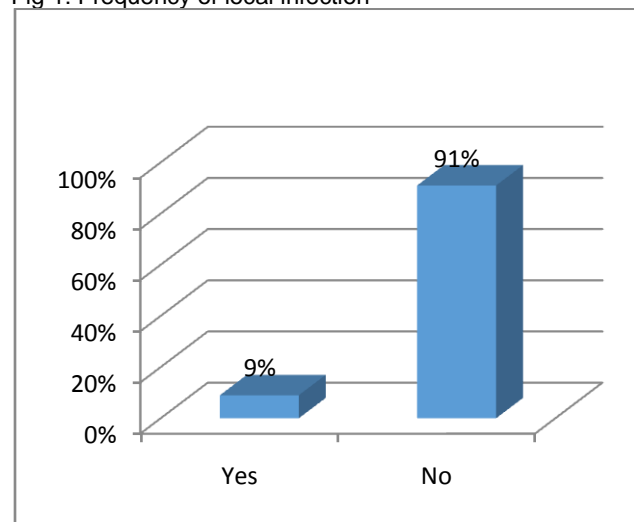


Table 2: Local infection in different groups

	Local Infection		P value
	Yes	No	
Age group			
18-40years	11	115	0.77
41-60years	15	139	
Gender			
Male	16	145	0.66
Female	10	109	
BMI			
Yes	21	184	0.377
No	5	69	
Obese	15	85	0.01
Non-obese	11	169	

DISCUSSION

Malnutrition is common in patient with head and neck cancer and may be multifactorial in origin, being due to prior alcohol and/or tobacco use, dysphagia from the tumor, or treatment-related decreases in appetite and swallowing function. Severe weight loss is seen in more than half of patients with head and neck cancer undergoing chemoradiation without concurrent nutritional support. PEG is one of the most commonly performed gastrointestinal procedures, despite absence of benefit in many patients and risks associated with the procedure. Increased education of primary care physicians about the shortcomings of PEG may allow for better selection of patients to be referred for PEG placement.

This study was planned with the view that data regarding complications of PEG comes from the western literature and their conclusions may not hold true for our health setup. There are no representative studies available from Pakistan.

In our study, 126(45%) were between 18-40 years while 154(55%) were between 41-60 years of age, mean+sd was calculated 41.63+10.85 years of age, 161(57.5%) were male while 119(42.5%) were females. Frequency of local infection was recorded as 26(9.29%).

The findings of our study are in agreement with previous study showing that minor complications like peri-stomal infections are observed in around 6-7.1% of procedures^{15,16,17}.

Ahmad et al. are of the view that PEG insertion is associated with a wound infection in up to 18% of patients who did not receive periprocedural antibiotics.²² Antibiotic prophylaxis reduces the infection rate to about 3%.^{20, 22-24} Meta-analyses of randomized trials clearly show the benefits of systemic antibiotic use to reduce the incidence of parastomal infection^{20,25}.

Methicillin resistant *Staphylococcus aureus* (MRSA) has emerged as an important cause of PEG-site infection, and a strategy of nasopharyngeal decontamination of patients with MRSA (in addition to standard prophylactic antibiotics) has been reported to significantly reduce the incidence of wound infections²⁶.

Lee JH and colleagues recorded that patients with diabetes, obesity, poor nutritional status, and those on chronic corticosteroid therapy are at an increased risk for infection²⁷, in our study we found that obesity was associated with a significantly higher rate of infection, while patients with diabetes mellitus did not show a significant higher infection rate as compared to patients without diabetes mellitus.

The administration of prophylactic antibiotics prior to PEG placement reduces the risk of infection.

Several trials have demonstrated the benefit of a single, broad-spectrum antibiotic immediately prior to PEG placement. The use of prophylactic antibiotics is cost-effective as well. It is general practice to administer a single dose of a first or third generation cephalosporin 30 minutes prior to the procedure. Prophylaxis is not necessary in those patients already receiving comparable antibiotics for other reasons at the time of PEG placement. An adequate skin incision, 1–2 mm larger than the feeding tube, which can allow egress of bacteria and gastric secretions, may also reduce infection risk. If diagnosed early, oral broad-spectrum antibiotics for 5–7 days may be all that is required for a PEG site infection. If there are more systemic signs, intravenous broad-spectrum antibiotics coupled with local wound care, a nil by mouth and nil by PEG strategy are necessary. Should the patient with local site infection develop signs of peritonitis, surgical intervention may be required. However, the findings of the current study are primary and further trials are required to validate the findings of our study.

CONCLUSION

The frequency of local infection is high following PEG tube insertion in cancer patients. So, it is recommended that every patient who is inserted PEG, should be followed for local infection. However, it is also required that every setup should have their surveillance in order to know the frequency of the problem.

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