

Original Article

Early report on percutaneous endoscopic gastrostomy at Owerri, Nigeria

Christopher Nonso Ekwunife¹, Kelechi E. Okonta¹, Stephen E. Enendu¹

¹Department of Surgery, Federal Medical Centre, Owerri, Imo State, Nigeria.



***Corresponding author:**

Christopher Nonso Ekwunife,
Department of Surgery, Federal
Medical Centre, Owerri,
Imo State, Nigeria.

chrisekwunife@yahoo.co.uk

Received : 08 November 2019
Accepted : 13 April 2020
Published : 03 January 2022

DOI

10.25259/SSJEP_2_2019

Quick Response Code:



ABSTRACT

Objectives: Percutaneous endoscopic gastrostomy (PEG) is a well-established endoscopic procedure that is used predominantly to create enteral access for feeding. Its use has not been widespread in Nigeria despite its efficacy. This study is done to review the early experiences in the use of PEG in Federal Medical Centre, Owerri and Carez Clinic, Owerri.

Material and Methods: This is a 4-year retrospective cross-sectional study of patients who had PEG from January 2015 to December 2018. The indications, complications, and outcomes of the procedure were analyzed.

Results: A total of 13 patients had pull-type gastrostomy during this period. Six (46.1%) patients had the procedure on account of neurologic disorders, 4 (30.8%) patients had esophageal tumors, while 3 (23.1%) patients had esophageal motility disorders. The overall success rate for PEG tube placement was 100%. The most common complication was superficial skin infection 30.8% (4/13). No mortality was attributable to the procedure.

Conclusion: PEG is still not commonly done in our setting, but it is a relatively safe procedure. Physicians should be encouraged to offer it to our teeming patients with neurologic disorders who may benefit from it.

Keywords: Gastrostomy, Endoscopic, Gastrostomy, Nigeria

INTRODUCTION

Artificial enteral tube feeding systems are usually considered for medium and long-term nutrition of patients, where oral intake is impossible or inadequate to meet their needs.^[1] In those patients with a functional gastrointestinal system, the enteral route is preferred over the parenteral ones. The most common type of enteral feeding is gastric tube feeding. Access to the stomach could be through surgical, endoscopic, or radiological means. Since it was first introduced in 1980, percutaneous endoscopic gastrostomy (PEG) has been proven to be superior to various types of surgical gastrostomy.^[2-4] PEG is a technically simple and cost-effective procedure with associated minimal complications. It has become one of the most commonly performed upper therapeutic gastrointestinal endoscopic procedures, giving rise to concern about its non-beneficial use in some clinical scenarios, particularly patients with advanced dementia and very short life expectancy.^[5] Conversely, there is a dearth of sufficient endoscopy capacity in Sub-Saharan Africa, even for basic endoscopic services.^[6] Therefore, publications on PEG emanating from this region of the world are quite scanty indeed.^[7-9] This manuscript aims to contribute to this body of knowledge.

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

©2022 Published by Scientific Scholar on behalf of Sub-Saharan Journal of Endoscopic Procedures

MATERIAL AND METHODS

We carried out a cross-sectional study with a retrospective review of all cases of PEG performed at Federal Medical Centre, Owerri and Carez Clinic, Owerri. These are the two centers known to have performed this procedure in the city within the specified period of January 2015–December 2018. The patient medical records were reviewed and the following information was extracted: The patient sociodemographics, indications, complications, and outcomes of the procedure. Supplementary information was gotten from phone calls to the patient or next of kin. Ethical approval for this study was obtained.

Two gastroscopes: Olympus CV-170 and Pentax FG-29 were utilized in performing the PEG, which were done under conscious sedation with midazolam coupled with abdominal skin infiltration with 1% lignocaine. The lead author performed all the procedures.

RESULTS

A total of 13 patients underwent PEG within the study period. The age range of the patients was 12–78 years. There were seven male and six female. The ASA physical status classifications were variable: II-IV [Table 1]. Six (46.1%) patients had the procedure on account of neurologic disorders, 4 (30.8%) patients had esophageal tumors, while 3 (23.1%) patients had esophageal motility disorders. The procedure was attempted in only cases, where the gastroscope could pass into the stomach. PEG was successfully carried out in all patients. In one patient with an obstructing esophageal tumor, the procedure succeeded after the gastroscope enabled dilation of the esophagus [Figures 1 and 2]. Among the cases of oesophageal motility disorders, is a 49-year-old patient presenting with achalasia and protein energy malnutrition. He had PEG before the definitive procedure. There was no procedure-related mortality. The patients were followed up

for a period ranging from 2 to 15 months. Three patients resumed oral intake within the follow-up period and the gastrostomy tube was removed. Peristomal superficial skin infections occurred in 30.8% (4/13) of the cases, while one patient had tube blockage which was successfully reopened with sodium bicarbonate.

DISCUSSION

PEG, when feasible, is the procedure of choice whenever gastrostomy is needed. Its popularity is due to certain unique features of the procedure. It is safer, faster, cheaper, easier to perform, and less prone to morbidity than open gastrostomy.^[3,5] It rarely requires general anesthesia and can be comfortably performed at patient's bedside. However, open surgical gastrostomy (OSG) is more readily resorted to in resource-sensitive countries, where access to endoscopic

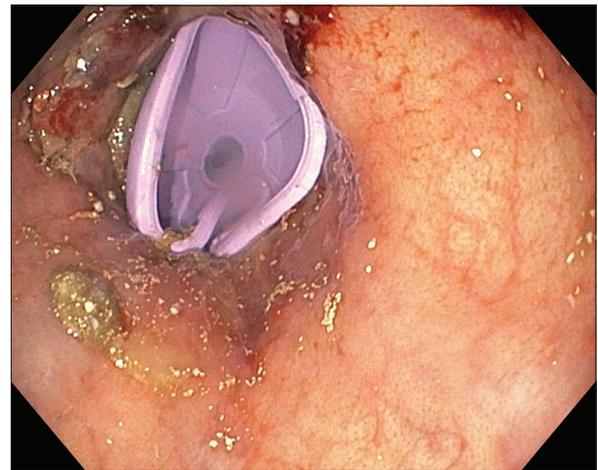


Figure 1: The internal bumper of percutaneous endoscopic gastrostomy tube deformed as it passes through an esophageal tumor.

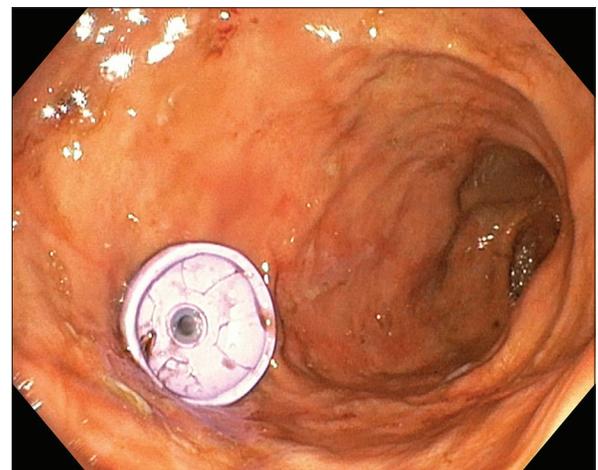


Figure 2: The internal bumper abutting on the gastric wall.

Table 1: Patient characteristics.	
Variable	n=13
Age (years)	54±17.14
Gender (Male/Female)	7/6
ASA classification (%)	
ASA II	1 (7.7)
ASA III	10 (76.9)
ASA IV	2 (15.4)
Indication for PEG (%)	
Oesophageal motility disorder	3 (23.1)
Esophageal tumor	4 (30.8)
Neurologic disorders	6 (46.1)
Complications	
Tube blockage	1
Peristomal skin infections	4

PEG: Percutaneous endoscopic gastrostomy

physicians and materials remains a challenge.^[10,11] It is also noteworthy that there is no appreciable difference in mortality outcomes between PEG and OSG. In fact, there may be an advantage for OSG in immunocompromised patients.^[12] Furthermore, a laparoscopic gastrostomy is also a feasible and safe, even if an expensive option that potentially has the capacity for decreased gastrointestinal complications.^[13] This is because the gastrostomy tube passage into the peritoneal cavity is done under direct vision.

Our study did not record any 30-day mortality. This is most likely attributable to the type of patients selected for PEG in our series. Procedure-related mortality is uncommon. Most series report 0% mortality, although it could approach 1%.^[7,14] In high volume centers with liberal and optimal access to PEG services, 30-day mortality may range from 9% to 31%.^[15,16] These are usually deaths from the advanced primary condition and underlying comorbidities. Moreover, in our series, the mean ASA class of the patients was 3.08. Only two patients had a classification of 4. It has been shown that a high ASA score is a short-term predictor of mortality post-PEG.^[17]

The wound infection rate of 30.8% in our series may seem high. However, we did not record any major complications. This may be understandable due to the limited number of cases that were done. Moreover, our limited experience may have led to less than optimal patient education on the care of the gastrostomy tube. The pull technique used in our study is associated with a higher infection rate, where the tube has to pass through contaminated obstructive aerodigestive lesions. A recent study of PEG in patients with head and neck cancers shows the overall complication rate to be 36.9%. Tumor implantation at the stoma site is a rare complication of PEG. Seeding from the contact of the internal bumper of the tube with tumor cells may account for the majority of cases, whereas the hematogenous and lymphatic spread of primary tumor may also be contributory.^[5,15] There was no case of tumor seeding in our series. This is due to the limited size of our study population and the short duration of follow-up. Reports suggest that it takes up to 9 months for this complication to manifest. However, it is suggested that the introducer technique of PEG insertion should be preferred over the pull-type in patients with large obstructive lesions.^[18] Placement of pre-operative PEG in patients with esophageal cancer is controversial, but it has also been shown that it does not increase postoperative complications and mortality in these patients. It could assist in neoadjuvant therapy for these patients. Access to esophageal stents and its management may also be problematic in resource-poor countries.

The proportion of neurologic indications of PEG TUBE was 46.1% which compared favorably with 48.7% from a report involving 359 patients over 7 years.^[15] However, it falls short of the 80–90% in larger series.^[7,19,20] It is suspected that there is inertia on patients' relatives consenting to

gastrostomy, especially when they may not readily appreciate its efficacy. This is in spite of evidence showing the safety and effectiveness of PEG over prolonged nasogastric tube feeding in patients with dysphagic stroke.^[21] The earliest time a patient with stroke had PEG insertion in our series is 7 weeks, in contrast to the recommendation that PEG feeding should be considered after 2–3 weeks of nasoenteric feeding.

A literature search showed that there has only been one publication of case series on PEG in Nigeria.^[7] This work should stimulate interest in carrying out prospective studies on this procedure in our environment. Ultimately, more informative local data on PEG will be generated.

CONCLUSION

Our results show that PEG is a safe procedure even in centers with a limited experience like ours. The onus is on our physicians to recommend it to a greater number of eligible patients. This also presupposes that endoscopy services should be expanded by the relevant authorities.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Löser C, Aschl G, Hébuteme X, Mathus-Vliegen EM, Muscaritoli M, Niv Y, *et al.* ESPEN guidelines on artificial enteral nutrition-percutaneous endoscopic gastrostomy (PEG). *Clin Nutr* 2005;24:848-61.
2. Grant JP. Comparison of percutaneous endoscopic gastrostomy with stamm gastrostomy. *Ann Surg* 1988;207:598-603.
3. Miller RE, Kummer BA, Tiszenkel HA, Kotler DP. Percutaneous endoscopic gastrostomy: Procedure of choice. *Ann Surg* 1986;204:543-5.
4. Gauderer MW, Ponsky JL, Izant RJ. Gastrostomy without laparotomy: A percutaneous endoscopic technique. *J Pediatr Surg* 1980;15:872-5.
5. Rahnemai-Azar AA, Rahnemai-Azar AA, Naghshizadian R, Kurtz A, Farkas DT. Percutaneous endoscopic gastrostomy: Indications, technique, complications and management. *World J Gastroenterol* 2014;20:7739-51.
6. Hassan C, Aabakken L, Ebigbo A, Karstensen JG, Guy C, Dinis-Ribeiro M, *et al.* Partnership with African countries: European society of gastrointestinal endoscopy (ESGE) position statement. *Endosc Int Open* 2018;6:E1247-55.

7. Alatishe OI, Komolafe MA, Agbakwuru EA, Adisa AO, Amusa YB. Percutaneous endoscopic gastrostomy in Ile-Ife, Nigeria: An initial report. *West Afr J Med* 2013;32:190-5.
8. Waweru J, Ojuka D, Jani P, Kiriatiu W, Onyango S, Okumu W. The practice of interventional gastrointestinal endoscopy at a tertiary referral hospital. *Ann Afr Surg* 2018;15:29-33.
9. Ikobah JM, Ngim OE, Adeniyi F, Ekanem EE, Abiodun P. Paediatric endoscopy in Nigeria humble beginning. *Niger J Paediatr* 2015;42:147-50.
10. Adejumo AA, Adeosun OA, Omoregie PO, Alayande B. Improvisation of surgical equipment in the surgical services of a developing country. *Niger J Surg Res* 2016;17:48-52.
11. Anselmo CB, Junior VT, Lopes LR, Neto JS, Andreollo NA. Surgical gastrostomy: Current indications and complications in a university hospital. *Rev Col Bras Cir* 2013;40:458-62.
12. Ambur V, Taghavi S, Jayarajan S, Gaughan J, Toyoda Y, Dauer E, *et al.* Comparing open gastrostomy tube to percutaneous endoscopic gastrostomy tube in heart transplant patients. *Ann Med Surg (Lond)* 2016;7:71-4.
13. Lantz M, Hultin Larsson H, Arnbjörnsson E. Literature review comparing laparoscopic and percutaneous endoscopic gastrostomies in a pediatric population. *Int J Pediatr* 2010;2010:e507616.
14. Park RH, Allison MC, Lang J, Spence E, Morris AJ, Danesh BJ, *et al.* Randomised comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients with persisting neurological dysphagia. *BMJ* 1992;304:1406-9.
15. Vanis N, Saray A, Gornjakovic S, Mesihovic R. Percutaneous endoscopic gastrostomy (PEG): Retrospective analysis of a 7-year clinical experience. *Acta Inform Med* 2012;20:235-7.
16. Light VL, Slezak FA, Porter JA, Gerson LW, McCord G. Predictive factors for early mortality after percutaneous endoscopic gastrostomy. *Gastrointest Endosc* 1995;42:330-5.
17. Jiang YL, Ruberu N, Liu XS, Xu YH, Zhang ST, Chan DK. Mortality trend and predictors of mortality in dysphagic stroke patients post percutaneous endoscopic gastrostomy. *Chin Med J* 2015;128:1331.
18. Cappell MS. Risk factors and risk reduction of malignant seeding of the percutaneous endoscopic gastrostomy track from pharyngoesophageal malignancy: A review of all 44 known reported cases. *Am J Gastroenterol* 2007;102:1307-11.
19. Luman W, Kwek KR, Loi KL, Chiam MA, Cheung WK, Ng HS. Percutaneous endoscopic gastrostomy-indications and outcome of our experience at the Singapore general hospital. *Singapore Med J* 2001;42:460-5.
20. Bravo JG, Ide E, Kondo A, Moura DT, Moura ET, Sakai P, *et al.* Percutaneous endoscopic versus surgical gastrostomy in patients with benign and malignant diseases: A systematic review and meta-analysis. *Clinics* 2016;71:169-78.
21. Gomes CA, Lustosa SA, Matos D, Andriolo RB, Waisberg DR, Waisberg J. Percutaneous endoscopic gastrostomy versus nasogastric tube feeding for adults with swallowing disturbances. *Cochrane Database Syst Rev* 2010;11:CD008096.

How to cite this article: Ekwunife CN, Okonta KE, Enendu SE. Early report on percutaneous endoscopic gastrostomy at Owerri, Nigeria. *Sub-Saharan J Endosc Proced* 2022;1:1.