

Direct Puncture Endoscopic Assisted Gastrostomy: An Alternative Technique, Case Report

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Submission: 📅 December 11, 2017; Published: 📅 January 10, 2018

Introduction

Enteral feeding benefits are worldly renown, severely ill patients and oncological patients have better outcomes, survival rates and improvement in-quality life standards [1-6]. Gastrostomy is the procedure ideal for management of these chronic and ill patients [7]. Within many available techniques PEG tube is an effective access to provide enteral feeding for patients with impaired oral intake, and now a day's oncologic patients have become a demand group for enteral nutrition [2,5,7-10], especially the ones coursing with head, neck and esophageal neoplasia. 33-69% of patients that need chemo-radiotherapy for upper aero digestive tract require PEG tube placement [11-13]. This group deserves particular attention since tumoral seeding in gastrostomy stomas have been reported [13-17], primary from the oropharynx, hypopharynx, oral cavity and larynx. Being the pull technique the most associated with metastases reports, reason why new methods for gastrostomy placement have been studied, especially for the ones that require pre-surgical feeding or for nutritional feeding after mayor head and neck surgical intervention [12,18,19]. With this purpose, general surgery and gastroenterology departments of the Fundación Santa Fé University Hospital of Bogotá Colombia presents an alternative technique: Direct puncture endoscopic assisted Gastrostomy reducing the risk of tumoral cell implant at the path and stoma.

Materials and Methods

Traditional technique for percutaneous gastrostomy PEG was described in 1980 by Gauderer et al. [7,20]. Various methods of PEG tube placement have been reported Gauderer-Ponsky, Sacks-Vine, Russell and radiologic-assisted techniques [21,22]. The "pull" placement technique is the most commonly practiced worldwide [7,23,24]. In this technique, the tube is moved through the endoscopy to be recovered by simple traction trough the abdominal wall (Pull technique) [21,23,25] (Figure 1 & 2). This Technique is widely standardized and used but has a disadvantage for head and neck and esophageal oncologic patients, since goes through the

primary lesion as an obligated pathway for the tube placement. Therefore, carries tumoral cells trough the path of the tube and secondary metastasis could be present [8,13-17].

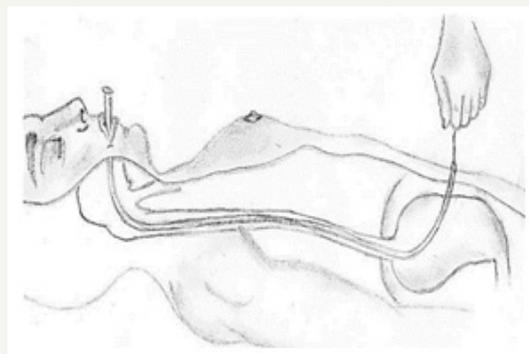


Figure 1: Puncture and capture of the metallic guidance at the abdominal Wall. guided through trans illumination by the endoscope.

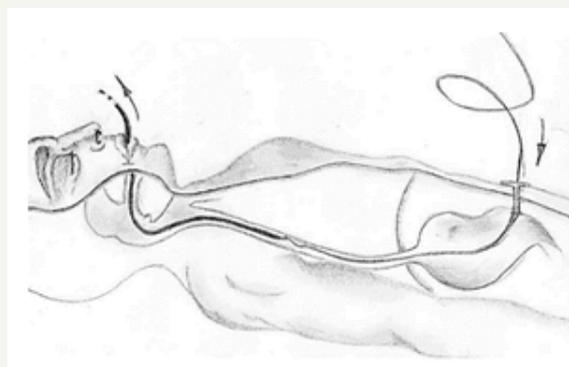


Figure 2: With the metallic guidance de tube is driven through the esophagus until abdominal Wall is reached.

With this purpose, we present the direct puncture endoscopic assisted Gastrostomy In this technique, the surgeon, with the

endoscopic help, uses an inverse technique, avoiding the pass of the tube through the head and neck tumor, reducing the risk of tumoral cell implant at the path and stoma. The technique has two principal steps: first set the gastric wall adjacent to the abdominal wall, second passing the tube through the gastric lumen (Figure 3 & 4). To illustrate this technique, we present the case of patient coursing with and squamous cell carcinoma of the piriform sinus (Figure 5), who was going to be taken to preoperative radiotherapy, with the spectated repercussion in food intake intolerance and secondary dysphagia, that required the placement of a gastrostomy tube prior to these interventions.

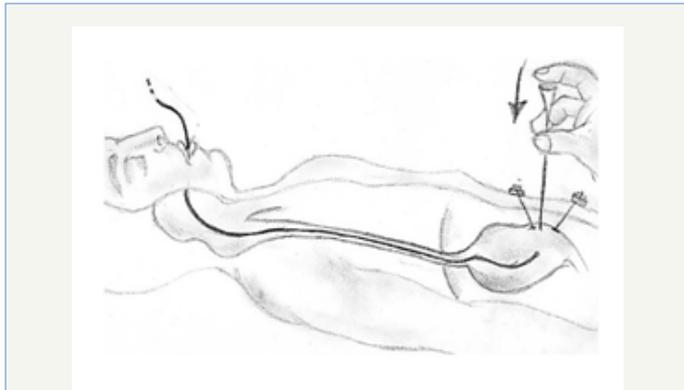


Figure 3: Setting gastric wall adjacent to the abdominal wall. Guided with endoscope.

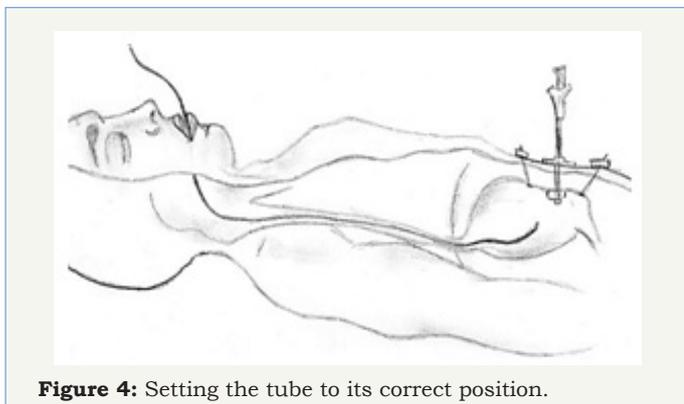


Figure 4: Setting the tube to its correct position.

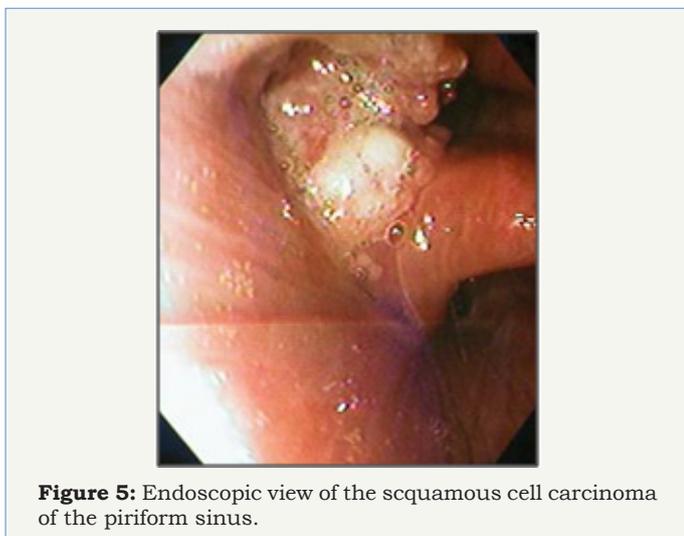


Figure 5: Endoscopic view of the squamous cell carcinoma of the piriform sinus.

Materials

1. Gastrostomy tube: pull gastrostomy kit. That can be changed by a changeable
2. High French diameter needles
3. laparoscopic trocar no.12mm. disposable endoscope
4. Basic surgery kit: scalpel, Kelly, material, and tissue scissors.
5. Propylene suture 0.

Procedure

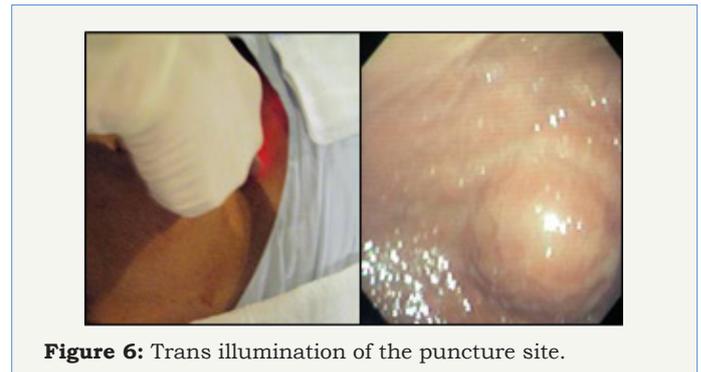


Figure 6: Trans illumination of the puncture site.

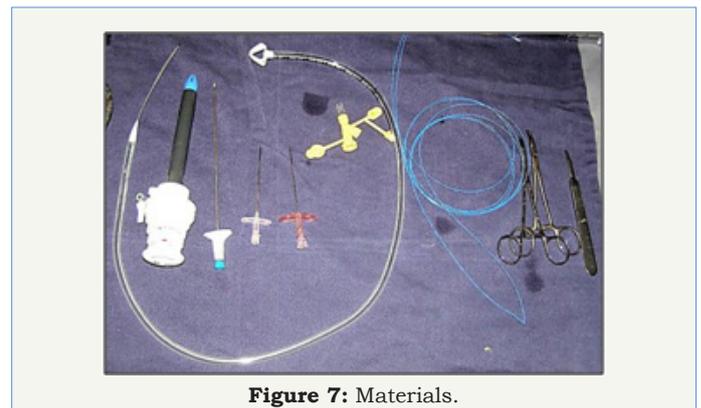


Figure 7: Materials.

Under general anesthesia, previous procedure asepsis and antisepsis was performed. Initial upper endoscopy revealed by trans illumination the puncture site, and local anesthesia with lidocaine was applied. As anatomical reference an imaginary triangle was used within the xiphoid process, belly button and the left costal margin with anterior axillar line (Figure 6 & 7). Second step consist in placing the gastric wall adjacent to abdominal wall. with endoscopic aid, the abdominal wall was puncture with 2 thick needles until reaching the gastric lumen, the propylene suture was inserted through one of the needles and with endoscopic wire loop recovered so an "U" stitched was used, passing the suture trough the other needle. The suture was stitched in the abdominal wall skin. (The wire loop function could be replaced by an endo catch) (Figure 8) The Abdominal and gastric wall suture can be with 2 or 4 stiches. In this case 2 stiches with 2cm of space within them was enough (Figure 9) taking into a count that 4 points to close together could affect vascular supply to the gastric wall; that could cause necrosis and a difficult stoma wound healing and as a long-term complication a gastro cutaneous fistula bigger than the tube diameter. In the third

step the laparoscopic trocar was placed through the skin reaching the gastric lumen, so the tube could be advanced. An incision in the skin was made and the trocar was pushed through the abdominal wall and gastric wall with the endoscope guidance to ensure the position between the stitches placed before (Figure 10).



Figure 8: Abdominal and gastric wall suture with a U stitch.



Figure 9: Gastric Wall with suture placement.



Figure 10: Laparoscopic trocar placement through gastric lumen between the stitches.

Finally, gastrostomy tube is pushed through the trocar and fixed to the abdominal wall as usual. Procedure time was 30 minutes;

time that surely can be shortened once an adequate learning curve is achieved. Nutrition was started 24 hours after procedure. Both functional as esthetic expectations were the ones desired for this type of procedures and this type of patients (Figure 11). After 2 weeks' patient went to ambulatory consult to stitches removal with no complications and with good feeding tolerance through the gastrostomy.



Figure 11: Gastrostomy in right position.

Discussion

Oncologic patients require in some cases preoperative radiotherapy, although necessary it exposes the patient to several risks as mucositis, dysphagia, parageusia, anorexia and dehydration [6,7,9,18,26]. Approximately 60% of patient's present weight loss and chronic malnutrition affects approximately 20-57% of patients with head and neck neoplasia, reason why and early enteral feeding must be started to avoid or at least reduce complications and comorbidities [1,11,12,18,19,26-29]. Nutritional assessment and intervention should be an integral part of treatment since this complication can lead to compromised treatment efficacy. Today the PEG technique has reduced the use of nasogastric tubes and open gastrostomy tube placement due to reductions in major complications, patient discomfort, days spent in the hospital, and costs [23,30]. Mortality is less than 1%, major complications as early tube extrusion, Buried bumper syndrome, PEG site metastasis, and visceral perforation represent 1% and minor complications as peristome infection, periostomal leakage, late tube extrusion, impacted lumen cellulitis, ileus, and hematoma represent 5% to 15% [31-35].

By 1989, Preyer and Thul reported the first case of upper aerodigestive tract cancer metastatic to a PEG site [16], since then several isolated case reports were described until 2007 were all existing cases were reviewed, Pathologically proven periostomal metastases were located in 44 patients specifically in the abdominal wall in 28 patients (63%), in the gastric wall in 3 (7%), and in both walls in 13 (30%) [17]. The latest literature review in 2013 showed stomal metastases after percutaneous endoscopic gastrostomy (PEG) in 42 patients being the oropharynx the most common site with (40%), hypopharynx (29%) oral cavity (17%), and larynx (14%), the method of PEG tube insertion was documented in 29 cases, with 28 (96.6%) reporting use of the ("pull") technique [13,36,37]. Recently Ellrichmann et al. [37] published a prospective



study of 50 cases of oropharyngeal and esophageal malignancies that showed malignant tumor cells present on 22.5% from PEG tube or brush cytology of the incision site immediately after PEG placement with pull technique [36,38].

Taking this into a count, there is the need to find a cost-effective and useful alternative, that avoids passing through the path of tumor site different from conventional open gastrostomy or laparoscopic, that have an important repercussion in costs, prolonged anesthesia time, need of a laparotomy, and prolonged hospital stay. Surgery innovations come as solutions to problems in the clinical practice that need to be solved. Indeed, the professional must look for new alternatives or modify existing ones so that limitations and deficiencies of existing ones can be improved. This is the case of the puncture gastrostomy, procedure that pretends to avoid the complication of tumoral seeding's of head and neck tumors in the path of the tube.

Procedure that could be used not only in this patients but in case of missing endoscopy kit resources, but having the elements of the open technique without the need of a laparotomy [13,24,30,39]. This technique is easily reproducible, cost are the same or below endoscopic or laparoscopic technique and any surgeon with endoscope help can perform this technique without major complications just by following basic security and skill used in any surgery. For example, eco-endoscope assisted puncture could aid to avoid vascular lesion in the gastric wall. That why this procedure has several advantages compared to open and endoscopic-gastrostomy.

Although in this case we recommended general anesthesia, surgical time is like endoscopic and surely less than open. Also, general anesthesia has de advantage of sedation and protecting the airway, what makes endoscopic approach easier, nevertheless once one technique is well developed and more experience is acquired, locally assisted anesthesia could be used. These procedures require to be developed in the operating room, facility that permits if needed converting the procedure to an open fashion in the context of a complication. Making it easier taking into a count that there is no need to move the patient or equipment to operating room. This method, as the open gastrostomy places the gastric wall adjacent to the abdominal wall, avoiding leaks that usually are present in endoscopic pull gastrostomy. Although patient goes through general anesthesia, this procedure can be considered as an ambulatory surgery, patient can be discharged the same day after a short period of observation and nutritional intake trough gastrostomy 24 hours after the procedure.

Conclusion

Tumoral seeding in gastrostomy stoma is rare and literature has largely been limited to isolated case reports. The small number of cases reported, and lack of existing large patient series or prospective studies has excluded adequate examination. Puncture gastrostomy is presented as an alternative to traditional technique in cases where complications as tumoral seeding in the stomas must be avoided; also it might be used in other cases where open gastrostomy and endoscopic advantages can be fusion. 4% of

patients diagnosed with PEG site disease either had simultaneous or subsequent loco regional or distant metastatic disease, suggesting that PEG site metastases may be a marker of aggressive tumor behavior. Since its implementation doesn't require big technical efforts apart from the basic supplies present in almost all institutions, it's a technique easily reproducible.

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