

Gastrostomy placement : when fluoroscopy helps the endoscopist

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Abstract

Background and study aims : Percutaneous endoscopic gastrostomy is the most common therapeutic procedure performed by the digestive endoscopists in the upper gastrointestinal tract. It aims to feed patients presenting denutrition and/or insufficient oral intake. Percutaneous endoscopic gastrostomy feasibility is about 95-100 % although in some cases it is impossible to achieve it, leading to ask for a surgical placement. Even though the feasibility of the surgical approach is excellent its complications are quite higher than percutaneous endoscopic placement, it requires general anesthesia and sometimes these patients could be non eligible for it due to their comorbidities (malnutrition, cardio-vascular diseases etc.). Another alternative technique is the percutaneous radiological gastrostomy but this procedure is rarely available in our country. **Patients and methods:** We described four cases in patients with previous failure of PEG, in which we used an hybrid approach between radiological and endoscopic techniques, allowing the placement of gastrostomy tube, without general anesthesia. **Results:** This was successful in all patients and there was no complications related to the procedure.

Conclusions : This technique offers an additionnal opportunity to avoid general anesthesia and surgical complications in patients with unfavorable conditions. (*Acta gastroenterol. belg.*, 2018, 81, 525-527).

Key words : percutaneous endoscopic gastrostomy ; fluorosocopy ; hybrid.

Introduction

Percutaneous endoscopic gastrostomy (PEG) is the most frequent therapeutic procedure performed by digestive endoscopists in the upper gastrointestinal tract. PEG, when it is placed in the context of enteral feeding, allows to feed the patients suffering from denutrition and/or impaired swallowing. Its feasibility is around 95-100% (1) but in case of failure, surgical gastrostomy (SG) placement is needed. Although the technical success of SG is around 100%, its complications are quite higher than PEG (42,9% versus 74,3%) (1-2). Moreover, surgical placement requires general anaesthesia, which could be contra-indicated in patients with severe comorbidities and low performance status.

Another alternative to endoscopy consists in percutaneous radiological gastrostomy (PRG). This procedure does not require general anesthesia but is not widely performed in all centers in Belgium.

We will describe four cases in which we used an hybrid approach between radiological and endoscopic techniques, allowing the placement of a gastrostomy, without general anesthesia, in patients with previous failure of PEG placement.

Case series

Four patients were referred for percutaneous endoscopic, radio-assisted, gastrostomy attempt due to failure of “classical” PEG placement. In two patients, the previous attempt of PEG failed due to a lack of transillumination and in the two others, the failure was related to the interposition of hollow digestive structures between the stomach and the abdominal wall. All of them had a recent history of stroke leading to impaired swallowing and inability to be fed orally. They were sent to surgery but all of them were refused for general anesthesia due to their comorbidities (arteriopathy, COPD, malnutrition, obesity...).

Two patients were obese with a BMI higher than 35 kg/m². The median BMI was 30,75 kg/m² (20-41). The median age was 69,2 years old (45-91).

The patients were placed in supine position as for a “classical” PEG. They received a light sedation (midazolam 1-3 mg IVD), a spasmolytic agent (butylhyoscine 10-20 mg IVL) and an antibioprophylaxis (Cefazolin 2g IVD). All the procedures were performed following the “pull technique”, without any gastropexia, using a CH 20 Freka® PEG Gastric Set (Fresenius Kabi), and under CO₂ insufflation. When the endoscope was in place, the stomach was insufflated and the optimal location for puncture was defined based on finger indentation and aerogastria (Fig.1).

The four attempts were successful. There were no immediate or late complications.

We obtained a median follow up of 12 months (range: 3-22): three patients are still alive but one died 3 months after the procedure from an acute cholecystitis.

Discussion

We described that, in four patients with previous failure of PEG placement, the combination of endoscopic and radiologic approaches lead to a successful insertion of gastrostomy tubes. In those patients, this technique

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Table 1.

N°	Age	Gender	Co-morbidities	Indication for enteral nutrition	Altered anatomy	BMI (kg/m ²)	Reason for PEG failure
1	45	F	Stroke Obesity	Impaired swallowing	Laparotomic Vertical Banded Gastroplasty	39	No transillumination Insufficient finger indentation
2	91	F	Stroke Obesity COPD Epilepsy	Impaired swallowing	No	41	No transillumination Insufficient finger indentation
3	67	M	Stroke Atrial fibrillation	Impaired swallowing	Billroth II Gastrectomy	20	Interposition of digestive structures
4	74	M	Stroke Abdominal aorta aneurysm	Impaired swallowing	No	23	Interposition of digestive structures

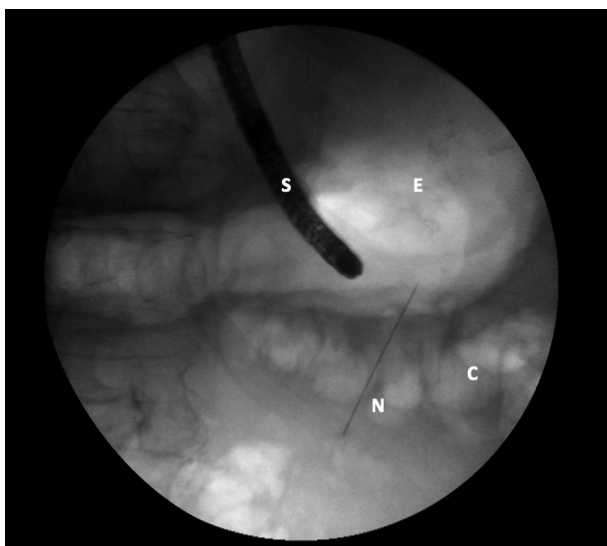


Fig. 1. — Aerogastria on X-Ray. E = stomach ; N = needle ; C = colon, S = scope.

allows an adequate identification of the stomach (Fig.1), when there is no transillumination, or helps to avoid any interposed digestive structures.

Two patients had had previous digestive surgery (Billroth II and major abdominal surgery complicated by a severe wall defect). This could explain the inability to puncture the stomach at the first attempt. Modified anatomy of the upper digestive tract and abdominal wall defects are well known as relative contraindications for PEG. So, it seems that our technique could play a role in the localisation of the best site for puncture in those particular cases.

Our technique was successful in all patients and we had no complications.

Even if large series have shown no difference in complications rates between endoscopic and fluoroscopic techniques (3-4), endoscopic control allows the detection of the needle when it penetrates the gastric wall, thus it decreases the risk of accidental puncture of a digestive loop (which is recognised as the major complication of PRG (1%) (5)). In those particularly difficult cases, we paid a specific attention to avoid interpositions of loops of bowel between the stomach and the abdominal wall. Ponsky advised to carefully look at the presence of air

in the syringe without any visualisation of the needle while the anesthetic needle is inserted into the stomach (6-7). This hybrid technique should then be safer than the radiologic one.

Minor complications (including catheter obstruction, leakage, catheter migration) occur in 35% with small tubes as used in PRG (12-14-Fr.), and in 2% with larger tubes as used in PEG (15-24 Fr.) (8). This technique offers then an additional opportunity to use larger tubes and to decrease the risk of catheter related complications. We did not register the X-ray dose which was administered during the procedures but considering that they were mainly done under endoscopic control alone, and that the median operative time was short (range: 5-20 minutes), we supposed that X-ray administration is lower than in the radiologic technique. Evenmore, a single needle puncture is performed during the combined technique, instead of three in PRG (need of gastropexy) leading to less X-ray exposure.

Finally, all those patients were not eligible for general anesthesia due to their comorbidities. The procedures were then performed under light sedation (midazolam 1-3 mg) with an excellent comfort and a good tolerance. This lead to avoid complications associated with general anesthesia and laparotomy.

Conclusion

In case of failure of PEG placement due to lack of transillumination and/or modified anatomy and/or interposition of hollow digestive structures and/or large abdominal wall defect, percutaneous endoscopic, fluoroscopically-assisted, gastrostomy placement could be an interesting alternative to SG or PRG.

This procedure allows the placement of large tubes, avoids laparotomy and could be done under sedation only.

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