

Laparoscopic-assisted percutaneous endoscopic gastrostomy: case report

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Abstract

Percutaneous endoscopic gastrostomy (PEG) is the choice technique to establish a feeding route for patients that requiring special nutritional support for more than 4 weeks; however, to be an intervention performed percutaneously, the inability to demonstrate transillumination of the abdominal wall and the failure to obtain convexity with the finger-pressure are usually considered contraindications for its realization.

This report is about a case in which spite of a major contraindication for PEG, it was performed under laparoscopic guidance, thus providing a minimally invasive alternative, avoiding the realization of an open surgical procedure.

Keywords

PEG, percutaneous endoscopic gastrostomy, laparoscopy

INTRODUCTION

Since its introduction in 1980, percutaneous endoscopic gastrostomy (PEG) has become the procedure of choice for establishing a feeding route for patients who require more than 30 days of special nutrition (1-3). The procedure is performed successfully in 95% of the cases (4).

Nevertheless, certain characteristics of a patient can absolutely contraindicate this procedure's performance. When it is impossible to move the anterior gastric wall until it makes contact with the abdominal wall, transillumination of the stomach is impeded for different reasons. These include obesity, severe scoliosis, peritoneal adhesions secondary to surgery, prior gastric resection, ascites and hepatomegaly (5, 6). Complications from this procedure are not infrequent and have been classified by Schapiro as major and minor complications (7). An example of a minor

complication is a leak through a stoma which is present in up to 78% of these cases (8). Major complications appear in 3% of cases (9, 10). They include aspiration, peritonitis, hemorrhaging, catheter migration, gastrointestinal cutaneous fistulas, and serious infections of lesions with necrotizing fasciitis. They also include rarer rare ones such as tumor seeding in stoma of patients with oropharyngeal neoplasias, aortic-gastric fistulas, intrahepatic catheter placement, gastric volvulus, subcutaneous emphysema and persistent pneumoperitoneum (11).

Even though there have been reports of laparoscopic-assisted PEG (12-16), various management guides do not contemplate this procedure as an alternative when there is no safe access to the gastric cavity. According to these guides, this procedure is contraindicated under these circumstances resulting in a recommendation of open surgical gastrostomies for these cases (1, 5, 17,18).

CASE PRESENTATION

The subject was a 23 year old male patient who had suffered multiple episodes of pneumonia. Patient records indicated they had been caused by bronchial aspiration due to neurological aftereffects of neonatal hypoxia. Nissen gastroesophageal antireflux surgery had been performed during his childhood. Physical examination showed a considerable xiphoid-umbilical scar (Figure 1).

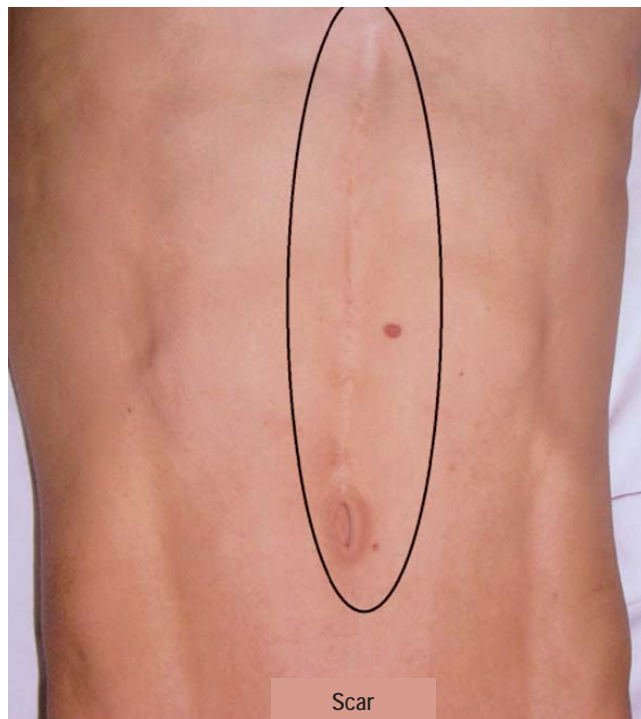


Figure 1. Xiphoid-umbilical scar.

Given the neurological condition of the patient, esophagogastroduodenoscopy was performed under general anesthesia. Finding no suitable site for safe trans-abdominal ultrasound-guided puncture, we decided to perform an infraumbilical incision by introducing 10mm trocar using the open technique. Next, the patient was insufflated with carbon dioxide to allow performance of a laparoscopy. This allowed us to detect that the left hepatic lobe had adhered to the abdominal wall and that there were other omental parietal adhesions that explained the difficulty of locating a safe puncture zone (Figure 2).

Under laparoscopic vision, we continued to proceed with another endoscopic approach to perform the PEG using the “pull” technique. We were able to see the puncture site in the abdominal wall without jeopardizing the liver of the patient which had been previously observed (Figure 3 and 4). The patient’s immediate postoperative evolution was

optimal, and the patient’s condition remained optimal during two monthly follow-up check-ups after discharge.

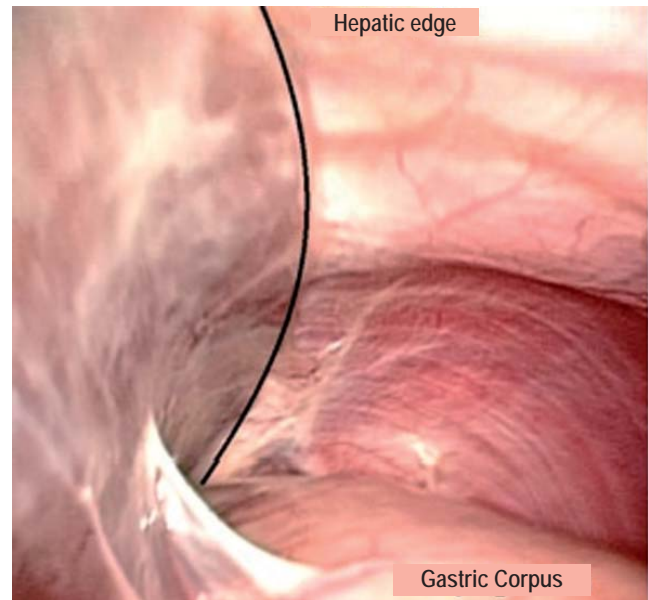


Figure 2. Laparoscopic view showing hepatic edge adhering to front abdominal wall.

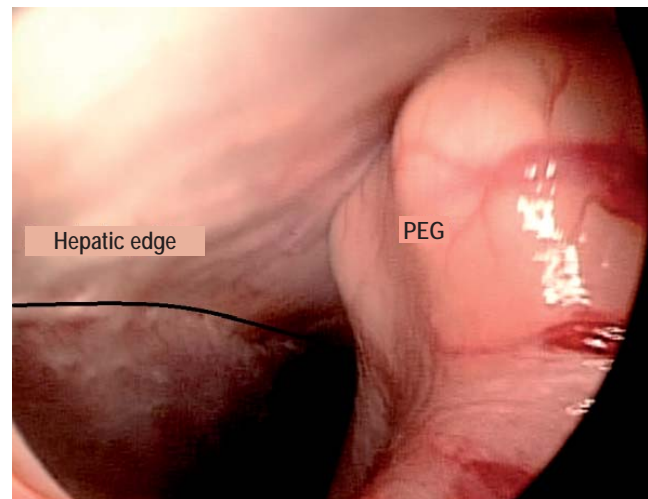


Figure 3. Laparoscopic view showing final location of gastrostomy.

DISCUSSION

Percutaneous endoscopic gastrostomy, despite being the procedure of choice for patients who require prolonged special nutrition, still presents morbidity rates which are far from negligible. Although the superiority of this procedure over the laparoscopic and open techniques is evident (3), certain groups of patients with anatomical alterations may be at high risk from this procedure (7).

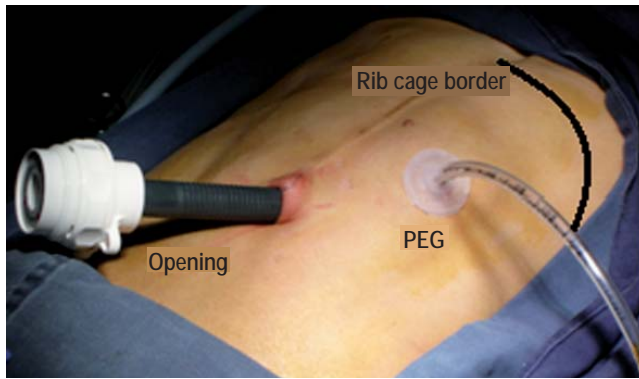


Figure 4. External view showing final location of gastrostomy.

In 1998, in response to the impossibility of providing illumination adequate for identifying a gastric puncture site, Stewart described a technique which consists of using a syringe with 10cc of saline solution to puncture and continually aspirate in a manner that prevents the entrance of air prior to the needle reaching the gastric cavity. This method allowed the puncture to be completed safely in a way that avoided puncturing any other organ prior to reaching the stomach, thus demonstrating that the absence of illumination should no longer be considered an absolute contraindication to performance of a PEG (19). Nevertheless, no controlled studies were ever conducted concerning this method. Moreover, since it is not infallible patients continue to be referred for conventional surgery.

The availability of different technical resources for treat organs within the abdomen, in this case a hybrid gastroscopic-assisted laparoscopic procedure, provides an advantage to patients, who do not have to be submitted to open surgical procedures with their high morbidity rates, extensive incisions in the abdominal wall, and resulting adhesions. Consequently, endoscopic-assisted intervention which once entailed the risks mentioned earlier in this article, is becoming a safer procedure, free of complications derived from a blind approach and with minimal invasive surgery.

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