

# A Rare Complication of PEG Tube Placement

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PEG tube placement is a frequently, and at times unnecessarily, performed procedure. Although the mortality related to the procedure is <1%, minor and major complications occur at 17-24% and 6-7% respectively. Intra-abdominal complications of PEG tube placement can occur with colon being the most commonly injured organ. Hepatic injury is a rare complication of PEG tube placement. We report a case of inadvertent transhepatic PEG tube placement with CT of the abdomen confirming the PEG tube traversing through the liver. Our patient was managed conservatively with subsequent removal of the PEG tube. We emphasize careful patient selection along with a thorough knowledge about indications, contraindications and procedure related techniques as the most important factors for avoiding undue complications of PEG tube.

## INTRODUCTION

**P**ercutaneous gastrostomy (PEG) tube placement is generally regarded as a safe and minimally invasive procedure.<sup>1</sup> First described in 1980, it is now a widely accepted procedure for patients at high risk of malnutrition, with inadequate oral intake over a long period and whenever they are likely to require enteral nutrition for more than 4-6 weeks. Despite its good safety record, PEG placement can be associated with significant complications.<sup>2</sup> Although the most common complication with PEG placement is peristomal wound infection, injury to intrabdominal organs may occur with the colon being the most commonly injured structure.<sup>3</sup> We describe a case of transhepatic placement of PEG tube, which was managed conservatively once diagnosed.

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## CASE PRESENTATION

A 57 year-old obese, Caucasian female (BMI of 31.6kg/m<sup>2</sup>) presented to the emergency department (ED) with sudden onset of altered mental status and difficulty breathing. Her past medical history was significant for a total hip replacement, anxiety, depression and chronic hepatitis C. She was found to be septic and the hospital's sepsis protocol was initiated. Her hospital course was complicated by acute respiratory failure, requiring mechanical intubation for 13 days and acute kidney injury, requiring temporary hemodialysis for two weeks. After fourteen days of treatment for sepsis, intubation and hemodialysis, her mental status slowly improved to normal. Despite this improvement in mental status, she complained of difficulty swallowing, most likely from her prolonged intubation. A video swallow study demonstrated aspiration. PEG tube placement was recommended.

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### A CASE REPORT

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A PEG tube was inserted with the pull method; antibiotics were given prior to procedure. The final position of the gastrostomy tube was confirmed by endoscopy and the skin marking was noted to be 3 cm at the external bumper (due to her obesity and generalized anasarca). She tolerated tube feeds six hours after PEG placement.

On the second post procedure day, her abdominal exam remained benign without any issue tolerating tube feeds. On the third day, in order to evaluate a temperature of 100.3 and diarrhea, a computed tomography (CT) scan of abdomen with contrast was performed. It showed the PEG tube traversing a small portion of the liver with surrounding non-specific induration as it progressed towards the stomach; the liver was otherwise within normal limits. An infectious diseases consult attributed the fever to oxacillin and she remained afebrile once the drug was discontinued.

Liver enzyme tests were normal throughout her hospitalization and her hemoglobin remained stable. A repeat video swallow study revealed that she no longer had evidence of aspiration. A week was given for the PEG tube tract to mature and it was removed endoscopically nine days later without medical issues. The patient was discharged to subacute rehabilitation.

### DISCUSSION

Percutaneous endoscopic gastrostomy placement is based on the concept of sutureless approximation of a hollow viscus (in this case the stomach) to the abdominal wall. The first PEG was successfully performed by Dr. Michael W.L. Gauderer in 1975 in the pediatric operating room of University Hospitals of Cleveland in a 4.5 month old child.<sup>4</sup> Since its inception, PEG tube placement has been widely used as an alternative route for providing enteral nutrition. In the United States alone, 100,000 to 125,000 PEG procedures are performed annually.<sup>5</sup>

The main indications for PEG placement are feeding access and gastric decompression.<sup>6</sup> This commonly includes patients with temporary or chronic neurologic dysfunction including those with brain injuries, cerebrovascular accidents, cerebral palsy, neuromuscular and metabolic diseases and impaired swallowing. Head and neck trauma and upper aerodigestive surgery are also important indications. In patients with advanced abdominal malignancies causing chronic obstruction or ileus, a PEG tube can decompress

the intestinal tract.<sup>2</sup>

Complications associated with PEG can be categorized as those related to upper endoscopy (cardiopulmonary compromise, aspiration, hemorrhage, perforation), related to the procedure itself (injury to intra-abdominal organs, bleeding) and post-procedural complications (wound infection, abscess, necrotizing fasciitis, buried bumper syndrome, clogged tube, dislodged tube).<sup>2</sup>

Mortality from percutaneous endoscopic gastrostomy placement is <1%. Major complications requiring surgical intervention occur in 6-7% while minor complications are reported in 17-24% patients.<sup>7</sup>

Liver injury as a result of a PEG placement is rare. Our literature search with PUBMED and MEDLINE resulted in seven reported cases in the last thirty-seven years. Of these, four required surgical intervention and removal of the PEG tube.<sup>1,8,9,10</sup> The other three were managed conservatively.<sup>11,12</sup> No mortality with PEG insertion through liver has been reported.

Our case describes a woman with inadvertent transhepatic placement of a PEG tube with successful endoscopic removal nine days later. PEG tube placement traversing the liver may be avoided by using careful technique and the usual precautionary steps. An additional method of verification is the "safe tract" technique, where a syringe attached to a needle is advanced slowly through the abdominal wall with retraction of the barrel. A "safe tract" is established by endoscopic visualization of the needle in the gastric lumen and simultaneous return of air into the syringe. Return of fluid or gas in the syringe without intragastric needle visualization suggests entry into bowel or a solid organ interposed between the abdominal wall and stomach.<sup>2</sup>

### CONCLUSION

An injury to the liver during percutaneous endoscopic gastrostomy placement, although rare, can cause acute decompensation requiring emergent surgery. At the same time, some patients can be managed conservatively. An abdominal exam with attention to hepatomegaly may be helpful. Careful selection of patients, reviewing indications and benefits before the procedure, is also important so as to avoid its overutilization and undue complications. Thorough knowledge of the indications, contraindications and fundamental principles of technique constitutes the most important safety factor.<sup>2</sup> In our patient despite

using the above technique of “safe tract”, appropriate transillumination and confirming air return, the PEG tube traversed the liver. This was thought to occur due to patient’s obesity, generalized anasarca, variant anatomy and chronic liver disease from hepatitis C. In obese patients or patients with generalized anasarca, we propose a potential use of abdominal ultrasound immediately prior to or post procedure to confirm and avoid this rare complication. ■

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