Time-out on T-fasteners:
Case Report of Large Volume Pneumoperitoneum and Microperforation after PEG placement

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Introduction

- Percutaneous endoscopic gastrostomy (PEG) tube placement is the preferred route for long term enteral nutrition.
- Post-procedure pneumoperitoneum is common and not considered a surgical complication.
- One of the feared complications of PEG placement is early tube dislodgement.
- Historically, T-fasteners have been used to anchor the stomach to the abdominal wall prior to placement of "Push" style gastrostomy tubes.

Hospital Course

- A sixty-three-year-old female presented to our hospital in 2022 after suffering a cardiac arrest with an associated anoxic brain injury.
- She underwent bedside percutaneous tracheostomy and pull gastrostomy placement with no immediate post operative complications.
- Three t-fasteners were introduced around the bumper under direct visualization to secure the stomach to the abdominal wall.
- Unsurprisingly, an abdominal x-ray on POD 1 showed expected pneumoperitoneum.
- On POD 3, she developed severe abdominal distention. Imaging was ordered which showed large volume pneumoperitoneum (Fig 1, Fig 2.)
- She was taken for a diagnostic laparoscopy.

Operative details

- Diagnostic laparoscopy was performed, and the stomach was evaluated.
- The edges of the intraluminal T-fasteners were visualized to be eroding through the wall of the stomach and causing a micro-perforation (Fig 3.)
- The procedure was converted to an open laparotomy.
- The PEG was removed, and a stapled wedge resection of the prior gastrotomy site was performed.
- Another gastrostomy was performed at an alternate location on the anterior wall of the stomach.
- The stomach was anchored to the abdominal wall with sutures in triangular fashion.
- The abdomen was closed with no further complications experienced.

Radiology

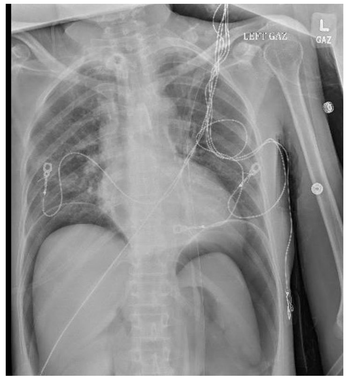


Fig 1. (Above) Upright X-ray demonstrating large volume pneumoperitoneum.

Fig 2. (Below) CT scan demonstrating pneumoperitoneum.



Discussion

- A major benefit of a PEG is the avoidance of general anesthesia with this less invasive approach and reduced costs compared to an open approach in the operating room.
- The most common indication for PEG placement is cerebrovascular disease resulting in dysphagia.
- Known complications associated with PEG placement include bleeding, inadvertent bowel injury, local wound infection, buried bumper syndrome, and tube dislodgement.
- The incidence of pneumoperitoneum after PEG was reported to be up to 55%.
- Mean resolution time of pneumoperitoneum was 2.7 days.
- Persistence after 72 hours may warrant further evaluation to rule out a bowel injury.
- T-fastener use for gastropexy during PEGs was initially described in 1986.
- Common complications included associated pain and/or skin excoriation at T-fastener sites.

Operative images

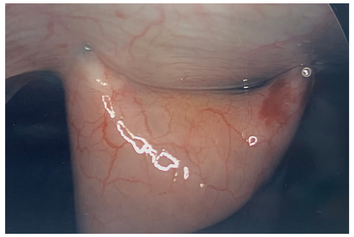
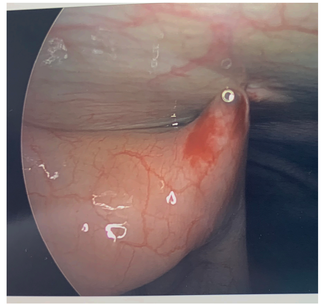


Fig 3. (Above and below) Laparoscopic view of micro-perforation from T-fasteners.



Discussion (Cont.)

- A recent study showed that with the use of T fasteners, gastropexy was intact at 4 weeks at 59.5% versus 35.5% not intact.
- Beyond 3 months, CT scans showed 48.6% of t-fasteners had detached.
- Of the remaining T-fasteners, 25% were in the abdominal wall, 1.4% within the subcutaneous tissue, 13.9% had migrated into the gastric wall, and 1% remained intraluminal.
- This study concluded that T-fasteners could not be assumed to be in the intra-luminal space within 4 weeks of placement.

Conclusion

- The literature is sparse concerning micro-perforations related to T-fasteners.
- To our knowledge, this is the first case report which directly relates symptomatic pneumoperitoneum with micro-perforation caused by T-fasteners.

References

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