

Ruptured, weighted, enteral feeding-tube tip presenting as enteric foreign objects

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We present a patient who, upon radiographic examination, was found to have eight metallic-density foreign objects throughout her colon that were identified as pieces of the enteral feeding tube's weighted tip, which was no longer intact. Although this complication is rare, correct identification is important so that the defective feeding tube can be removed and replaced and so that the patient and clinician can be reassured that the metallic foreign objects present minimal risk of complications.

Introduction

Enteral feeding and percutaneous gastric and jejunal tubes historically had a second lumen with a balloon chamber at the tip that was filled with mercury for added weight (1). Several reports of these chambers rupturing caused manufacturing companies and medical practitioners to stop making and using products containing mercury (2, 3). Titanium disks are now in common use for weighting the tube tips. In one report, a nasoenteric tube with weighted tip was intentionally ruptured percutaneously after the spontaneous gas inflation of the chamber caused small-bowel obstruction, but the metallic disk weights remained confined to the balloon chamber (4). In our case, eight titanium disks were released from the weighted end of an enteral feeding tube, a malfunction in this product not before recorded by the company or reported in the medical literature.

Case report

A 23-year-old female was discharged from inpatient medical care following treatment for thyrotoxicosis with secondary electrolyte abnormalities. She returned 24 hours after discharge with recurrent vomiting and several episodes of nonbloody diarrhea, profuse drooling, and repeated falls when she attempted to stand or walk. The patient had not been able to tolerate any oral medications since discharge secondary to emesis. An admission CT scan revealed a small-bowel obstruction, possibly due to superior mesenteric artery syndrome. She was considered unstable for surgical management at the time and was treated conservatively, including placement of a nasogastric tube. On hospital day 16, a weighted-tip nasoenteral feeding tube (Corflo-Ultra NG, 8Fr x 43" 7gm, CorPak MedSystems, Wheeling, IL) was passed under fluoroscopic guidance beyond the obstruction. Subsequent feeds were well tolerated. A CT scan on the day of discharge demonstrated the radio-opaque weighted tip of the feeding tube in the proximal jejunum. She was discharged on hospital day 26 with the feeding tube for nightly feeds until her scheduled followup with the surgery service.

Thirty-eight days after discharge—47 days after placement of the nasoenteral tube—the patient returned for an outpatient KUB and upper GI series to re-evaluate the small-bowel obstruction. Fluoroscopy showed eight metallic-density foreign objects dispersed throughout the ascending and descending colon (Fig. 1). The weighted tip of the enteral feeding tube showed additional metallic-density disks malaligned within the casing and contour irregularity, suggesting a defect in the casing wall. The upper GI series showed resolution of the small-bowel obstruction.

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Figure 1. Fluoroscopy scout view showing the weighted tip of the enteral feeding tube with eight metallic-density foreign objects outside the feeding tube tip.

The company confirmed that the weighted tip of an intact enteral feeding tube contains 23 titanium disks. Although requested by the radiology service, the patient has not returned the defective tube for further evaluation. At the time of contact, she was not having further gastrointestinal difficulties.

Discussion

Radiographic confirmation of the correct placement of weighted-tip enteral feeding tubes is a common practice (5). It is often employed because, unlike a nasogastric tube, placement cannot be confirmed either by aspiration of gastric contents or by auscultation while introducing air through the tube. Radiographic confirmation is also used when a high rate of complication is expected (6). Properly placed, the weighted radio-opaque tip should be visualized in the stomach, duodenum, or jejunum, depending on the desired location.

Weighted disks from a ruptured enteral feeding tube should not be confused with ingested foreign objects. The titanium metallic disks are inert and biocompatible. And, because of their small size, they do not present a significant risk of complication such as obstruction and do not routinely require interventional removal. In a patient with known bowel obstruction, radiographic evaluation for the integrity of the tube tip can be made with the serial evaluation for resolution of the bowel obstruction.

A common test for intestinal transit employs Sitzmarks capsules (Konsyl Pharmaceuticals, Easton MD). These capsules contain 24 1.0mm-x-4.5mm barium sulfate-impregnated polyvinyl-chloride rings in a dissolvable cap-

sule. When compared photographically and radiographically (Fig. 2), the Sitzmarks test rings are similar in size to the titanium disks, suggesting that the titanium disks in the weighted enteral feeding tube are likely to have the same transit ease and time as the Sitzmarks rings.

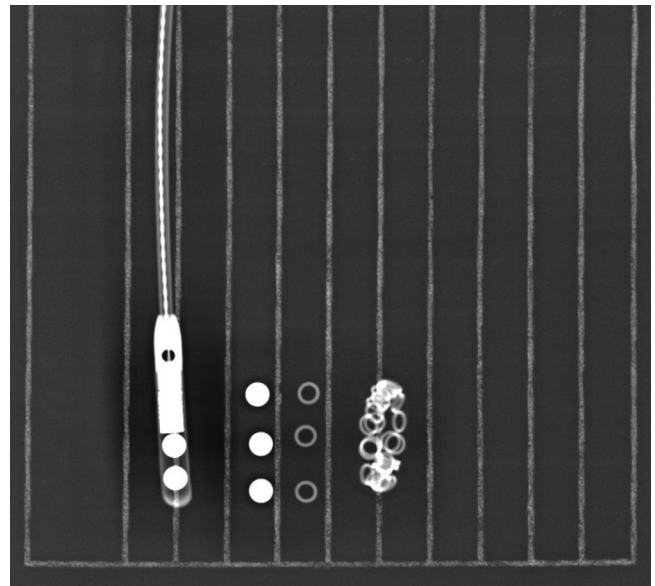
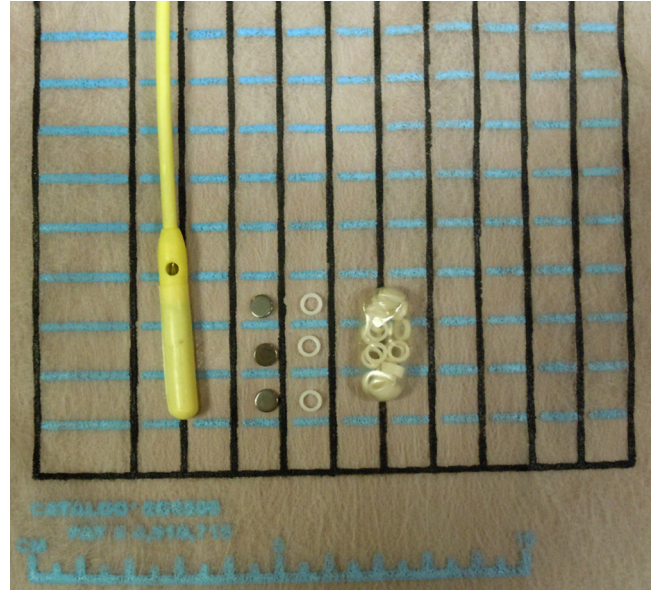


Figure 2. 23-year-old female with ruptured feeding-tube tip. Photograph (top) and radiograph (bottom) of a disrupted weighted tip enteral feeding tube with three of its 23 titanium disk weights on the left and a Sitzmarks capsule with three of its 24 barium-sulfate-impregnated PVC rings on the right. A Fast Find Grid™ with standard 1cm-by-1cm markings is in the background.

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