

# Bowel Perforation by Wire-Bristle Grill Brush: Is It Finally Time to Ban Them?

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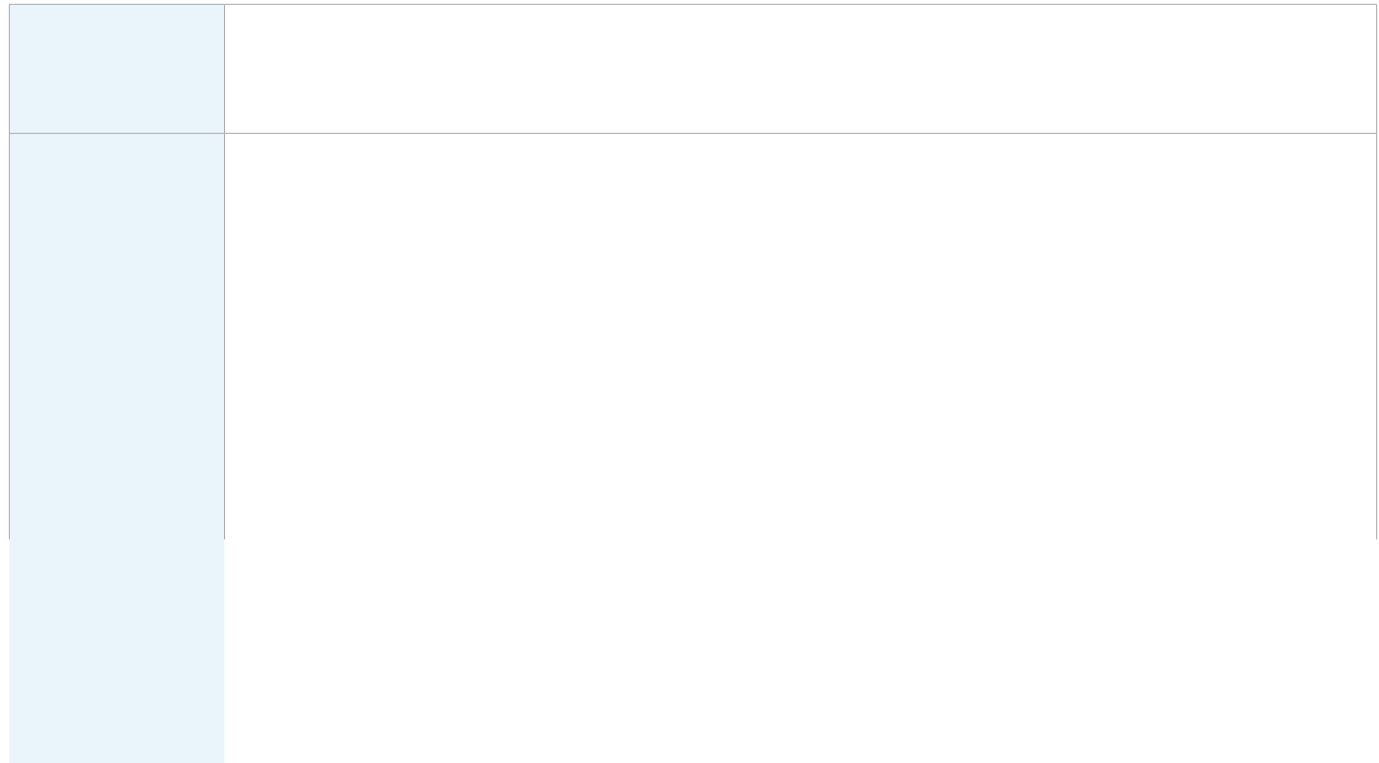
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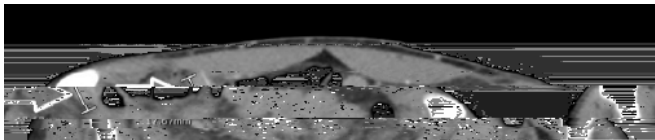
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## Case Description

A 47-year-old female presented to the emergency department with a three-day history of waxing and waning right lower quadrant abdominal pain after eating a hamburger cooked on a home grill. She was afebrile, hemodynamically stable, with a white blood cell count of 5400 cells/ml. The patient had no evidence of peritonitis or free air, and a perforation was not suspected. CT imaging of the abdomen and pelvis demonstrated a metallic foreign body in the terminal ileum, without abscess or free air to suggest perforation (Figure 1).

**Figure 1.** CT Scan of Abdomen and Pelvis Depicting Metallic Foreign Body. Published with Permission



The patient was admitted to the hospital for observation; however, she did not improve with conservative therapy over 48 hours. Since the foreign body was located in the distal-terminal ileum, an attempt was made at endoscopic removal. At colonoscopy, the terminal ileum was successfully intubated; however, the foreign body could not be visualized. The next day, the patient continued complaining of right lower quadrant pain, and repeat CT imaging confirmed no progression of the foreign body within the gastrointestinal tract. At this point, the decision was made to proceed with diagnostic laparoscopy. The peritoneal cavity was entered using a 5 mm optical trocar in the left upper quadrant. The ligament of Treitz was identified, and the small bowel was run distally. At the terminal ileum, a filamentous metallic foreign body was identified protruding from the bowel wall approximately 20 cm from the ileocecal valve. The object was removed laparoscopically, and the site of perforation was repaired with imbricating sutures of 3-0 Vicryl in a Lembert fashion.

Postoperatively the patient recovered without complications. Her right lower quadrant pain subsided, and she was able to tolerate a normal diet once bowel function returned. The patient was discharged home on postoperative day 2.

## Discussion

Injuries from foreign body ingestion are rare in adults, with over 95% of cases resulting from accidental ingestion of fish bones, chicken bones, or toothpicks.<sup>3</sup> Ingestion of grill brush wire bristles causes over 130 emergency room visits per year<sup>1</sup> and is most commonly associated with injuries to the oral cavity and oropharynx. However, more severe injuries, including gastrointestinal perforations, have been reported.<sup>2,6</sup> The first small bowel perforation was documented in a cross-sectional analysis from 2002 to 2014 by Tiany et al. using the National Electronic Injury Surveillance System (NEISS).<sup>1</sup> They reported cases of small bowel perforations secondary to wire bristles demonstrated an increase from 2009 to 2016, coinciding with the sales of grill and barbecue products.<sup>5,8</sup> Interestingly, Providence, RI, has had multiple case reports of dislodged wire bristles, resulting in mostly oropharyngeal complications, with some cases of gastrointestinal perforations requiring operative intervention.<sup>7,8</sup>

Reports of injuries from ingesting wire bristles have been presented with varying frequency, with more than 100 articles published in the MEDLINE database over the last decade. Most involved injuries to the oral cavity and oropharynx; however, approximately half of them presented with gastrointestinal perforations. Small bowel perforations represented one-third of all gastrointestinal perforations (Table 1). All cases required surgical intervention, utilizing a mix of laparoscopic and open approaches.



