

## Computed Tomographic Demonstration of Ingested Press-Through Packages Causing Small Intestinal Perforation

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### ABSTRACT

Press-through packages (PTPs) are regularly used to enclose drugs, and are increasingly seen in cases of ingested foreign bodies in the alimentary tract. Most cases of ingested PTP-induced bowel perforation are difficult to diagnose. We herein present a case of preoperative computed tomography (CT) demonstration showing ingested PTP-induced small intestinal perforation. An index of high suspicion and early exact diagnosis by high-resolution CT are requisite to avoid deterioration of the patients' condition and to improve outcome.

**Key words:** Press-through package; Small intestinal perforation; Computed tomography

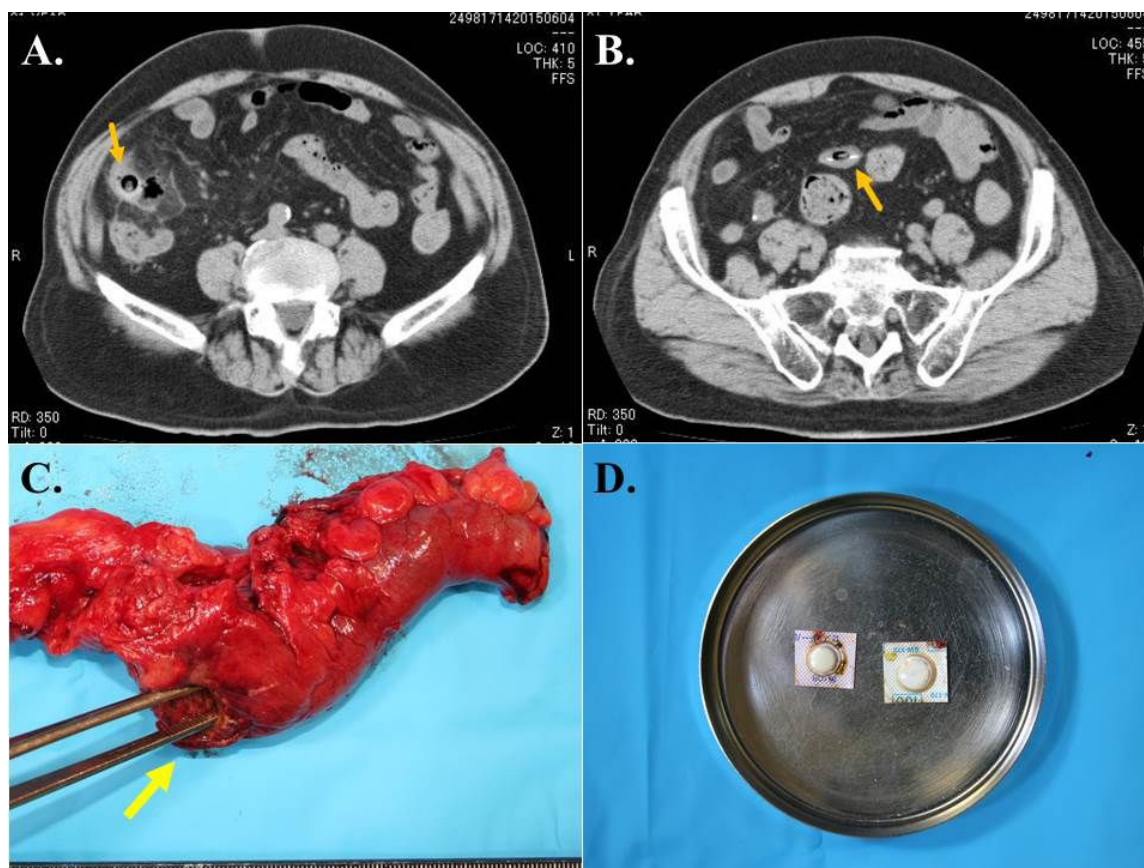
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### LETTER TO THE EDITOR

An 81-year-old Japanese male presented with abdominal pain. Right lower quadrant tenderness was detected on palpation and serum biochemistry revealed severe leukocytosis. High-resolution abdominal plain CT showed free air around the small intestine (Figure 1A). The images also demonstrated a round low-density shadow with an internal high-density part inside the small intestine (Figure 1A) and another similar low-density shadow accompanied by linear high-density parts (Figure 1B), both of which were compatible with certain foreign bodies. On repeated questioning, she had accidentally ingested press-through packages (PTPs), and thus a diagnosis of small intestinal perforation resulting from ingested PTPs was made. The patient underwent an emergency laparotomy, revealing a laceration of the middle ileum due to a PHP (Figure 1C). Exploration of the more distal part of the ileum also revealed another PHP by palpation. Extraction of two PHPs followed by partial resection of the lacerated ileum was performed (Figure 1D). His postoperative course was uneventful and was discharged in stable condition.

PTPs are regularly used to enclose drugs, which consist of a dome of polyvinyl chloride and a rupturable aluminum lid. They are increasingly seen in cases of ingested foreign bodies in the alimentary tract, and their sharp edges may occasionally cause perforation of the intestine<sup>[1-3]</sup>. Most cases of ingested PTP-induced small bowel obstruction or perforation are difficult to diagnose<sup>[1,3,4]</sup>, but some reports showed that PTPs were sometimes detected on CT<sup>[2,5]</sup>, and the possibility of exact diagnosis might be increasing by high-resolution CT, like the current case. The specific characteristics of their CT images, such as a round low-density shadow with an internal high-density part (Figure 1A) or low-density shadow accompanied by linear high-density parts (Figure 1B), might be helpful for diagnosis. An index of high suspicion and early exact diagnosis by high-resolution CT are mandatory to avoid deterioration of the patients' condition and to improve outcome.



**Figures 1** (A) High-resolution plain CT scan of the abdomen demonstrated free air around the small intestine at the right lower abdomen and a round low-density shadow with an internal high-density part inside the small intestine. (B) Another similar low-density shadow accompanied by linear high-density parts was also seen. (C,D) On emergency laparotomy, a laceration of the middle ileum due to a press-through package (PHP) was found (a yellow arrow). Extraction of two PHPs followed by partial resection of the lacerated ileum was performed.

## CONFLICT OF INTEREST

The authors declare that they do not have conflict of interests.

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