We present the first case documented in the literature of perforation of bowel due to drug tablet with package ingestion. A diagnosis of perforation was made by CT imaging revealing a staple-like foreign body with air-content in the distal ileum. Adjacent abscess with free air formation also noted. This is an unusual case of small intestine perforation due to a foreign body that was preoperatively diagnosed with imaging.

The ingestion of foreign bodies is rarely associated with intestinal perforation, even if a sharp object is swallowed. About 80-90% of ingested foreign bodies are passed spontaneously [1]. Although 10-20% of ingested foreign bodies fail to pass through the gastrointestinal tract, less than 1% cause perforation [2].

The variety of clinical manifestations of intestinal perforation in patients without a history of foreign-body ingestion makes this complication difficult to identify, but it should be considered in patients with unexplained peritonitis or intra-abdominal abscess. We present the first case documented in the literature of perforation of bowel due to drug tablet with package ingestion.

**CASE REPORT**

A 78-year-old man presented to our emergency department with a complaint of left lower abdominal pain lasting for 1 day. He had a surgical history for colon cancer 10 years before this presentation. Physical examination showed fever with a temperature as high as 38.2°C and tenderness over the left lower abdomen with no peritoneal signs. Laboratory data revealed leukocytosis (WBC 15,600/mm³, segment 84%, lymphocytes 12%) and elevated level of C-reactive protein (10.95 mg/dL; normal range, 0-0.5 mg/dL).

Abdominal plain radiography showed a small, round, radiolucent rim in the left lower abdomen (Fig. 1). A CT study obtained with oral contrast and intravenous contrast enhancement revealed a staple-like foreign body with air content in the lumen of distal ileum (Fig. 2). The oral contrast in the lumen of distal ileum made the foreign body appear prominent. Swelling of the intestinal wall with an adjacent dirty fat plane was also noted.

As the patient’s history was being rechecked, he mentioned that he might have swallowed a tablet of a common-cold drug without opening its aluminum-foil package several days ago. Given the impression
of foreign-body ingestion with complications, he was admitted for further observation and treatment. Because of progressive abdominal pain, CT scanning was repeated 3 days later. The images showed stasis of the foreign body in the distal ileum and abscess formation, with free-air accumulation in the left lower abdomen (Fig. 3). Immediate laparotomy was performed under the impression of small-bowel perforation. During operation, the tablet with its aluminum-foil package was found lodged in the wall of the distal ileum, about 30cm from ileocecal valve (Fig. 4). This was the cause of the perforation in distal ileum with localized abscess formation. Adhesion between bowel loops and the abdominal wall was also noted. After enteroclysis, the abscess was drain and segmental resection of terminal ileum is done. The patient’s postoperative course was uneventful, and he was discharged home in stable condition 2 weeks later.

Figure 1. Kidneys, ureters, and bladder radiograph shows a small, round foreign body with a radiolucent rim (arrowhead) in the left lower abdomen.

Figure 2. Abdominal CT scan obtained with oral contrast and intravenous contrast enhancement shows a staple-like foreign body with air content in the lumen of the distal ileum (arrow). Because of the surrounding oral contrast material, the foreign body shows prominent contrast.

Figure 3. Abdominal CT obtained 3 days after presentation shows localized abscess formation (arrow) with free air (arrowhead) in the left lower abdomen.

Figure 4. Surgical findings showed a tablet of common-cold medication with its aluminum-foil package lodged in the wall of the distal ileum. This caused perforation at the distal ileum with localized abscess formation.
**DISCUSSION**

Intestinal perforation due to the ingestion of foreign bodies is uncommon. About 80-90% of ingested foreign bodies traverse the gastrointestinal tract without problem [1]. Approximately 10-20% percent of ingested foreign bodies do not pass, but less than 1% led to intestinal perforation [2]. We present the first case documented in the literature of perforation of bowel due to drug tablet with package ingestion.

Pointed foreign bodies may increase the risk of perforation, not because they direct penetrate the bowel wall but because their passage through the gut tends to be arrest, a process that initiates necrosis of the wall [3]. Elongated or sharp objects are most likely to be lodged at areas of narrowing (such as bowel adhesions or strictures), or they are impinged at regions of anatomic acute angulation, such as the duodenal loop, the duodenojejunal junction, the appendix, or the region of the ileocecal valve [4]. As in our case, the tablet with package was small size about only 2cm in diameter. It was not elongated, but with mild sharp margin. During the operation, this small sized foreign body was lodged in the wall of distal ileum and cause bowel perforation with abscess formation. It was rare cause of bowel perforation. There is no mention in the literature of the use of the package causing bowel perforation, because the package should not be ingested with the drug tablet.

The clinical presentation of complicated foreign bodies ingestion covers wide spectrum and includes generalized peritonitis, localized abscess formation, inflammatory masses, obstruction, and even recurrent sepsis [5, 6].

The etiology of ingested foreign bodies varies. Carelessness (especially among children and elders), poor vision, mental infirmity, drug addiction, and rapid eating have been implicated [1, 7]. Of all factors, wearing dentures is the most commonly associated with foreign-body ingestion. Lack of normal palatal and gingival sensation probably plays an important role in accidental ingestion [8, 9]. As in our case, the 78-year-old patient mentioned that he might have swallowed a tablet of a common-cold drug without opening its aluminum-foil package. Thus, education and care for the drug compliance in elders is especially important.

Foreign bodies, which may be radiopaque on radiographs, include most metallic objects (except those made of aluminum), animal bones and some fish bones, foods, medications and poisons. Unlike most common metals, aluminum is relatively radiolucent. Therefore, ingested or inhaled aluminum objects are not easily detected on radiographs. In our case, the plain radiography showed a small, round, radiolucent rim in the left lower abdomen. Without the radiolucent ring, it would be hard to make the diagnosis of foreign body ingestion. The radiolucent ring was the air containing in the tablet package. The aluminum-foil package for the common cold tablet did not show radiopaque as most other metallic objects. In such cases, CT scans of the abdomen or chest with contrast medium may be helpful, particularly if an unusual area of opacity or lucency is found at radiography [10]. The CT images of this case showed that the oral contrast medium in bowel loops contrasts the staple-like foreign body more prominent. It was difficult to image such a small foreign body with size about only 2cm in diameter. However, careful examination of the radiographic findings and correlation with clinical history is critical for identifying foreign bodies [4].

Morbidity and mortality of foreign-body ingestion depends on the patient population, the nature of the object, and the management modality. When a foreign body is ingested, early endoscopic removal of the body before it passes into the stomach or intestine is recommended. If the foreign-body has passed into the intestine, it should be followed up on serial radiographs until its passes, usually within 3 days. Any evidence of a lack of its progression on serial radiographs until its passes, usually within 3 days. Any evidence of a lack of its progression through the gastrointestinal tract probably indicates a need for intervention. Bowel perforation, bleeding, or obstruction associated with foreign-body ingestion requires immediate surgery, with the expectation that minimal morbidity and mortality will occur [11]. We present the first case documented in the literature of perforation of bowel due to drug tablet with package ingestion.

In conclusion, further examination such as CT scans of the abdomen or chest with contrast medium should be performed, whenever an unusual area of opacity or lucency is found at radiography. Detailed imaging and careful history taking is critical for identifying foreign bodies. Aluminum is relatively radiolucent as compared with other metallic objects.

**REFERENCES**

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異物吞食造成的腸穿孔：病例報告

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這是第一個因為吞食有鋁箔包裝的藥片而造成小腸穿孔的病例報告。電腦斷層影像發現，在腫脹的迴腸腔中，發現一個倒“U”字形的異物，周圍的腸繫膜形成含有空氣成份的膿瘻。異物吞食造成的腸穿孔很少見。這是在開刀之前，就已經藉由影像分析得到正確診斷的少數病例。