A 61-year-old woman presented to the emergency department with midepigastric pain for the last 24 hours. Pancreatitis was initially suspected based on the patient’s history, physical examination results, and elevated serum amylase levels. However, computed tomography (CT) revealed the presence of a linear foreign body (FB) in the duodenum and air bubbles outside the intestinal lumen. Penetration into the medial aspect of the third portion of the duodenal wall was observed, but the FB could not be successfully removed. Hence, endoscopic removal of the fish bone was performed with gentle traction on the first postoperative day. The patient was completely relieved of the pain after the surgery and endoscopic removal of the fish bone. The strategic location of the penetration in the visceral wall was responsible for the gastrointestinal (GI) tract injury pattern. The patient was unaware of the FB ingestion. However CT and the retrospective alimentary question revealed the consumption of fish.

**Key words:** fish bone, peritonitis, duodenal perforation

**Introduction**

 Foreign body (FB) ingestion is a common phenomenon or clinical problem, especially in the senile population, encountered in emergency departments. Most FB ingestions among senile individuals are accidental. Meat and fish bones are among the most frequently accidentally ingested FBs in adults. But the clinical diagnosis is difficult due to nonspecific clinical presentation. We report that CT revealed the presence of a linear FB in the duodenum and air bubbles outside the intestinal lumen.

**Case Report**

An otherwise healthy 61-year-old woman presented to our emergency department with midepigastric pain for the last 24 hours. The onset of pain 4 hours after the patient had dinner was relatively gradual. However, the patient was unaware of the FB ingestion. The consistency of the pain and an increased body temperature (up to 37.8 ℃) compelled the patient to seek medical assistance. On arrival at the emergency department, the patient had a body temperature of 37.5 ℃, blood pressure of 100/70 mm Hg, pulse rate of 85 beats /min, and respiratory rate of 17 breaths /min. The patient was not receiving any specific medication, and no history of major diseases was noted. She did not smoke or drink alcohol. On physical examination, the abdomen was relatively soft; however, notable tenderness was observed during deep palpation of the midepigastrium. Signs of parietal peritoneum irritation, such as rebound tenderness and pain during abdominal percussion, were not observed. The patient had C-reactive protein (CRP) levels of 6.1mg/dl while white blood cell (WBC) count was 11,100 /mm³. Serum amylase levels were elevated up to 177 U/l, while liver enzyme serum levels were within the reference range. Based on the elevated serum amylase levels, pancreatitis was initially suspected. However, CT ruled out pancreatitis, which confirmed the presence of a
linear FB in the duodenum (Fig. 1A, 1C) and air bubbles (Fig. 1B) outside the intestinal lumen.

As an emergency operation, a laparotomy via a midline vertical supraumbilical incision was performed. At laparotomy, the peritoneal cavity appeared clear, without evidences of gross contamination. After mobilization of the right colonic flexure, the duodenum was clearly visualized. Thereafter, a Kocher maneuver was performed to ensure the adequacy of the duodenal inspection. An induration and a perforation were observed at the third portion of the duodenum. However, the sharp, thin FB consistent with a fish bone was not identified. The duodenal penetration was then closed in 2 layers, using an interrupted 3-0 absorbable suture material. Because the FB could not be successfully removed with the surgeon’s fingers, endoscopy was performed on the first postoperative day (Fig. 2A), and the linear FB, a fish bone measuring approximately 40 mm in length, was removed (Fig. 2B). The patient had an uneventful postoperative period and was discharged from the hospital on the 20th postoperative day.

Discussion
Fish bones are among the most commonly ingested FB and the most common cause of FB perforation of the GI tract. Most ingested FBs pass through the GI tract uneventfully within 1 week \(^2\), and GI perforation is rare, occurring in fewer than 1% of patients \(^3,4\). FB perforation occurs in all segments of the GI tract, although it tends to occur in regions of acute angulation. FB perforations of the stomach and duodenum tend to present with a longer and more innocuous clinical course than perforations located in the jejunum or ileum, with the former usually associated with the development of an abdominal mass or abscess and causing less systemic signs of infection \(^5\).

Increased risks of morbidity and mortality result from delayed diagnosis of complications and subsequent treatment \(^6\). The time interval between the ingestion and possible perforation can be rather prolonged, that is, longer than 10 days, making the “cause and effect” correlation between the 2 events especially difficult \(^5\). In this regard, imaging studies are, by definition, invaluable. Provided that precise information on the history of FB ingestion cannot be obtained, the use of modern CT is of paramount importance \(^7\). In our case, based on initial physical examination and laboratory test results, pancreatitis was suspected. The increased serum amylase levels in the preoperative setting proved especially misleading, confirming the limitation of using serum amylase levels as an indicator of acute
pancreatitis. However, CT revealed an offending radiopaque foreign object and air bubbles outside the GI tract, thus ruling out pancreatitis. Goh et al. reported the sensitivity of CT in detecting intra-abdominal FB to be 71.4% (5/7) on initial examination, which improved to 100% (7/7) on retrospective review. Use of thinner CT slices allows reviewers to better trace structures such as blood vessels and differentiate them from calcified FB. Therefore, CT may be a reliable diagnostic tool in the preoperative diagnosis of fish bone perforation.

A localized inflammatory reaction was induced by the microbial burden in the upper GI tract, and a systemic response manifested with fever, leukocytosis, and CRP level elevation. The perforation did not communicate freely with the entire peritoneal cavity, explaining the subtle clinical presentation. The satisfactory closure without the development of an intra-abdominal mass or abscess rendered the addition of a gastrojejunostomy unnecessary. Because the FB could not be successfully removed with the surgeon’s fingers, endoscopy was performed. Generally, endoscopic management is the treatment of choice and can be safely performed for fish bone ingestion.

Complicated fish bone ingestions may widely vary in clinical presentation. CT revealed the presence of a linear FB in the duodenum and air bubbles outside the intestinal lumen. Moreover, active suspicion and immediate correlation between the history of ingestion and physical examination findings are of paramount importance for timely diagnosis and treatment. Intestinal perforation by ingested FB should always be kept in mind in cases of acute abdominal symptoms.

References