

Liver hilar abscesses secondary to gastrointestinal perforation by ingested fish bones: surgical management of two cases

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Abstract: Several hepatobiliary complications secondary to gastrointestinal perforation after ingestion of a fish bone have been described in the literature, the most common being liver abscess, which can be potentially fatal. Treatment involves removal of the foreign body if possible (endoscopically or surgically), drainage of the abscess (radiologically or surgically), and appropriate antibiotic therapy. To our knowledge, no cases of hepatic hilar abscesses secondary to gastrointestinal perforation by a fish bone have been described in the literature. We report surgical management of two cases of abscess localized in the hepatic hilum secondary to the ingestion of fish bones.

Keywords: Liver hilum abscess; fish bone; hepatobiliary surgery

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Introduction

Fish bones are the most common foreign bodies ingested accidentally during adulthood (1). These ingested foreign bodies are associated with the highest risk of gastrointestinal perforation, especially when their ends are thin and sharp (2,3). In addition to a nonspecific clinical presentation, most patients do not remember the fish bone ingestion, making the diagnosis difficult due to the delay between ingestion and symptoms (2,3).

Several hepatobiliary complications secondary to gastrointestinal perforation after ingestion of a fish bone have been described in the literature, the most common being liver abscess, which can be potentially fatal (4-6). Treatment involves removal of the foreign body if possible (endoscopically or surgically), drainage of the abscess (radiologically or surgically), and appropriate antibiotic therapy (4,7).

To our knowledge, no cases of hepatic hilar abscesses secondary to gastrointestinal perforation by a fish bone have been described in the literature. We report surgical management of two cases of abscess localized in the hepatic hilum secondary to the ingestion of fish bones.

Case reports

Case 1

A 63-year-old woman who had history of hypothyroidism and hypercholesterolemia was admitted to our department for a progressive increasing epigastric abdominal pain with fever for 10 days. Physical examination revealed a fever of 38.5 °C, a soft abdomen and tenderness in the epigastric and right upper quadrant regions with no palpable mass.

Laboratory tests revealed leukocytosis of 12.6 G/L with neutrophilia of 9.8 G/L. C-reactive protein increased to

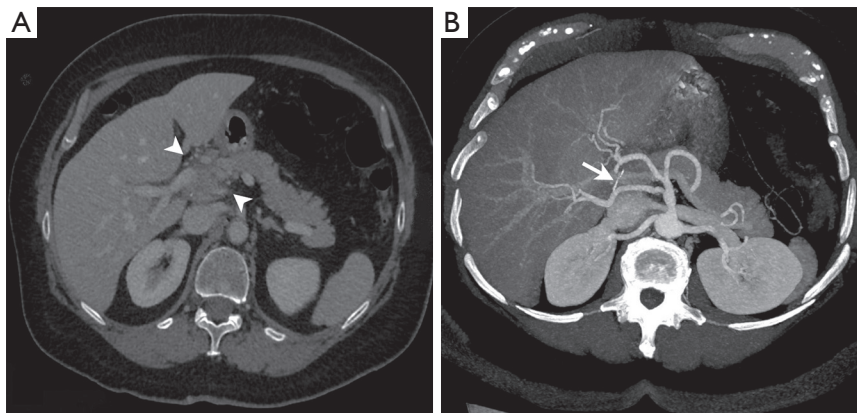


Figure 1 Axial cross-section of abdominal contrast-enhanced CT scan (portal time) brought to light a tissular density mass (arrow heads) at the level of hepatic hilum and surrounding portal vein and hepatic arteries (A). Reformatted CT images in maximum intensity projection (MIP) visualization mode showing a thin linear hyperdense structure (arrow) in close contact with hepatic vessels in the hepatic hilum region (B).



Figure 2 Photograph of the fish bone after removal (case 1).

74.9 mg/L and alkaline phosphatase was 147 IU/L. Lipase, aminotransferases, GGT, bilirubin, and the rest of the biological tests were within normal limits.

Hepatic ultrasonography showed a hypoechoic lesion in the hepatic hilum containing a hyperechoic linear structure at its center. Contrast-enhanced CT scan confirmed the presence of a heterogeneous tissue mass of 3.6 cm × 2.5 cm (*Figure 1A*), between segment I of the liver and portal vein at the level of the hepatic hilum in close contact with the hepatic artery (*Figure 1B*). Within this mass, a hyperdense linear structure was seen, suggesting the diagnosis of migration after gastrointestinal perforation by an ingested foreign body (*Figure 1*). The subsequent anamnesis of the patient did not confirm fish bone ingestion.

The indication for laparotomy was retained and

exploration of the hepatic pedicle highlighted an abscess of 40 mm × 30 mm from the liver hilum to the pancreas head. A 4-cm fish bone was isolated within granulation tissue (*Figure 2*). Otherwise, gastric and duodenal wall explorations did not show evidence of perforation. The fish bone was removed and the abscess drained. The postoperative course was uneventful. Abdominal contrast-enhanced CT scan was performed at day 7 and the improvement in clinical state allowed the patient leave our hospital at day 8. The contrast-enhanced abdominal CT scan at 6 months showed no abnormality or secondary complication, and the patient did not report abdominal symptoms.

Case 2

An 83-year-old woman, otherwise healthy, was admitted to our department for management of acute intestinal obstruction. Physical examination revealed a fever of 39 °C, a distended abdomen, diffuse abdominal pain, and tenderness in the right upper quadrant and epigastric regions at palpation with localized defense without contracture.

Laboratory tests showed leukocytosis of 17 G/L, creatinine of 130 μmol/L, and C-reactive protein levels of 400 mg/L. Abdominal contrast-enhanced CT scan required in emergency brought to light a linear hyperdense foreign body inside an abscess of the hepatic hilum extended to hepatic segment III (*Figure 3*). There was also a pneumoperitoneum and perihepatic and periduodenal collections. The subsequent anamnesis confirmed that the patient had eaten fish 4 days before.

The indication for laparotomy was decided. After

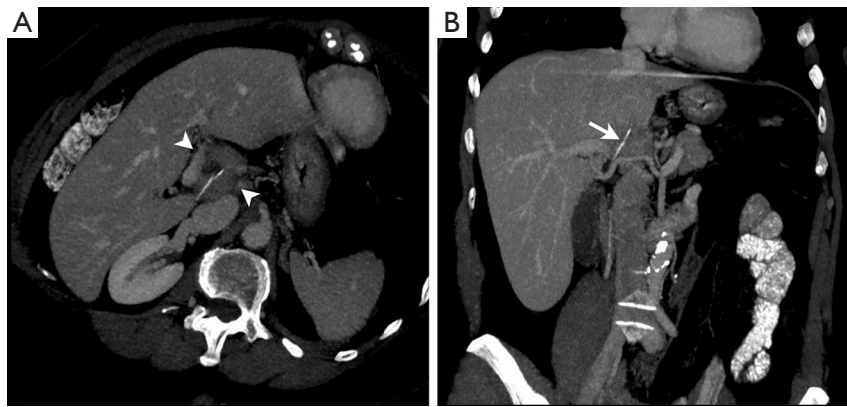


Figure 3 Axial cross-section of abdominal contrast-enhanced CT scan (portal time) brought to light a heterogeneous tissular density mass (arrow heads) containing a thin linear hyperdense foreign body at the level of hepatic hilum and surrounding portal vein and hepatic artery (A). Frontal cross-section showing prolongation of liver abscess of segment III from the hepatic hilum. The foreign body is also in this case 2 in close contact with hepatic vessels in the hepatic hilum region (B).

washing and draining perihepatic periduodenal collections, fish bone removal and liver abscess drainage were performed. A feeding jejunostomy was performed. The patient had an uneventful postoperative course. Abdominal contrast-enhanced CT scan performed at day 7 and clinical improvement allowed the patient to be discharged at day 9. Closure of the jejunostomy was performed at day 45 and recovery of oral feeding was allowed. The abdominal contrast-enhanced CT scan at 6 months did not show any abnormalities or complications, and the patient did not report any somatic abdominal complaint.

Discussion

Accidental ingestion of foreign bodies is a common clinical situation, especially in children or elderly patients with cognitive disorders, swallowing disorders or oral and dental alterations (1,2,8,9). In most cases, ingested foreign bodies are asymptomatic and pass through the gastrointestinal tract uneventfully within 1 week (2,9-11).

Gastrointestinal complications due to perforations usually occur when the foreign body is sharp or pointed (fish bones, chicken bones, toothpicks, etc.) and seem favored by a preexisting anatomical abnormality of the digestive tract (inflammatory bowel disease, bowel tumor, diverticular disease, etc.) (2,10,12). Perforation can occur at any site of the gastrointestinal tract, but the ileocecal and rectosigmoid regions appear to be the most commonly affected (2,10). Among the various foreign bodies ingested, the fish bone is not only the most commonly encountered (especially in

Asian countries where fish consumption is very common), but it is also one that presents a significant risk of gastrointestinal perforation requiring surgical exploration (8,12).

Numerous reports of ingestion of fish bones penetrating the aerodigestive tract and migrating to various parts of the chest or abdominal cavity have been reported. These may be responsible for various complications, which are most frequently represented by infectious complications: retropharyngeal, epidural, brain, pancreatic, hepatic, or perivesical abscesses; mediastinitis; and empyema (1,10,13-15).

Hepatobiliary complications secondary to gastrointestinal perforation by ingested fish bones are relatively rare. Liver abscess seems to represent the hepatobiliary complication secondary to fish bone migration in the hepatic region that is the most frequently reported in the literature (*Table 1*) (3,4,7,12,16-19). Few exceptional cases of symptomatic biliary tract lithiasis secondary to the presence of asymptomatic fish bones serving as a nidus for stone formation in the common bile duct have been described (10,20,21). A case of cholecystitis secondary to migration of a fish bone through the gastrointestinal tract has also been reported (11).

In our cases, only one patient remembered eating fish 4 days before and they did not remember the accidental ingestion of a fish bone. In this case, the onset of complications (reflex ileus and localized peritoneal irritation) appeared very quickly, only 4 days after ingestion. In the second case, the patient did not remember ingesting a foreign body. Moreover, the per-operative exploration

Table 1 Literature review of the clinical presentation and the management of liver abscess cases secondary to gastrointestinal perforation by ingested fish bones										
Reference	Number of cases	Age (years)	Sex	Country of origin	Clinical presentation	Diagnostic confirmation (method)	Abscess localization	Treatment	Discussion about therapeutic choice	Evolution
Case 1 (present study)	1	63	F	France	Increasing epigastric abdominal pain with fever	Hepatic hilum abscess containing fish bone (abdominal ultrasonography and CT)	Hepatic hilum abscess	Laparotomy: abscess drainage and fish bone removal	Anatomical location of the abscess (liver hilum) and the close relationship of fish bone with hepatic vessels	Complete recovery
Case 2 (present study)	1	83	F	France	Intestinal obstruction with fever	Hepatic hilum abscess containing fish bone (abdominal CT)	Hepatic hilum abscess extended to segment III	Emergency laparotomy: abscess drainage and fish bone removal	Anatomical location of the abscess (liver hilum), signs of complication (infectious syndrome and intestinal obstruction, pneumoperitoneum)	Complete recovery
Horri <i>et al.</i> (16)	1	61	M	Japan	Fever and right hypochondralgia	Hepatic abscess containing fish bone (abdominal ultrasonography and CT)	Hepatic abscess in segment IV A	Percutaneous drainage under ultrasonographic guidance, completed by percutaneous endoscopic removal of the fish bone	Hepatic abscess and fish bone accessible by percutaneous procedure	Complete recovery
Yang <i>et al.</i> (17)	1	40	M	Taiwan	Fever and intermittent chills	Hepatic abscess containing fish bone (abdominal ultrasonography and CT)	Hepatic abscess in segment II	Percutaneous drainage and antimicrobial therapy without removal of the fish bone	NS	Complete recovery, asymptomatic after 2 years of follow-up
Goh BKP <i>et al.</i> (13)	1	32	M	Singapore	Fever with chills and rigors	Pancreatic and liver abscesses containing a fish bone (abdominal CT)	Abscess of the pancreas head and abscess of the liver caudate lobe	Emergency laparotomy: both abscess drainage, fish bone removal from hepatic abscess, followed by postoperative antimicrobial therapy	Clinically deterioration and white cell count increased	Complete recovery
Liang <i>et al.</i> (18)	1	60	M	China	Recurrent upper abdominal pain for 1 month	Hepatic abscess containing fish bone (abdominal CT)	Hepatic abscess in segment III	Surgical management: abscess drainage and fish bone removal	NS	Complete recovery
Kadowaki <i>et al.</i> (7)	1	73	M	Japan	Fever and upper abdominal pain	Peritonitis caused by rupture of a hepatic abscess triggered by migration of fish bone (abdominal CT)	Hepatic abscess in segment III	Emergency laparotomy: abscess drainage and fish bone removal	Acute abdomen with peritoneal irritation signs and systemic inflammatory response syndrome (SIRS)	Complete recovery

Table 1 (continued)

Table 1 (continued)

Reference	Number of cases	Age (years)	Sex	Country of origin	Clinical presentation	Diagnostic confirmation (method)	Abscess localization	Treatment	Discussion about therapeutic choice	Evolution
Kim <i>et al.</i> (12)	1	64	M	Korea	Right upper and lower quadrant abdominal pain	Hepatic abscess due to fistula between right colon and hepatic abscess secondary to fish bone impaction (abdominal CT and colonoscopy)	Hepatic abscess in segment VI	Percutaneous drainage followed by extraction of the fish bone by colonoscopy	Hepatic abscess accessible by percutaneous drainage, fish bone removal possible by colonoscopy	Complete recovery
Yen <i>et al.</i> (4)	1	36	M	Taiwan	Abdominal pain and fever	Hepatic abscess containing fish bone (abdominal ultrasonography and CT)	Hepatic abscess in segment IV B	Surgical management	NS	Complete recovery
Chen <i>et al.</i> (19)	1	59	F	Taiwan	Persistent fever and abdominal pain	Hepatic abscess due to GI perforation by a fish bone (abdominal CT)	NS	Percutaneous abscess drainage and antimicrobial therapy, completed by surgical management	Duodenohepatic fistula	Complete recovery
Ng <i>et al.</i> (3)	1	59	M	Singapore	Syncopal episode and fever 2 day after hospital admission	Hepatic abscess due to GI perforation by a fish bone (abdominal CT)	Hepatic abscess in segment IV B	Antimicrobial therapy alone without removal of the fish bone	Surgery contraindicated (myocardial infarction, antiplatelet therapy) Endoscopic removal not feasible	Resolution of hepatic abscess, impacted fishbone unchanged, Asymptomatic during 1.5 years of follow-up

F, female; M, male; NS, not supplied; CT, computerized tomography; GI, gastrointestinal.

of duodenal and gastric walls did not show any signs of perforation, suggesting a significant delay between ingestion of the foreign body and the occurrence of symptoms.

Indeed, only a very small number of patients remember the ingestion of a foreign body. Furthermore, the time of symptom onset, ranging from 2 weeks to 1 year from ingestion, makes the anamnestic diagnosis clearly more difficult (1,2).

In case of hepatobiliary complications, abdominal X-ray is irrelevant and does not lead to the diagnosis when there is fish bone ingestion, because it is radiolucent (2,10). However, abdominal sonography was used to guide diagnosis objectifying, in case 1 the hepatic abscess. Abdominal contrast-enhanced CT scan with secondary reformatted images allowed us to confirm the diagnosis in our two cases, which is consistent with data found in the literature (3,7,10,14,22). Abdominal CT scan was also used to visualize the extent of the lesions, eliminate differential diagnoses, and retain the indication for surgery in both cases.

The optimal management of foreign body ingestion is widely debated in the literature. Velitchkov NG *et al.* [1996] proposed an algorithm for the management of ingested foreign bodies. In most cases, it seems reasonable to assume that accidental ingestion of an asymptomatic foreign body requires only simple monitoring (9). It is clear that the properties of the foreign body determine the risk of perforation. Obviously, thin and sharp objects such as fish bone should be considered at risk of further complications because they have a high risk of perforation. Ngan JH *et al.* [1990] recommend a flexible endoscopy for all patients complaining of fish bone ingestion because of potential secondary complications (8,9). When oral cavity examination does not allow detection of fish bones and furthermore, its removal, flexible endoscopy is required under local anesthesia and will be guided by the painful symptoms reported by the patient, which helps to determine the precise location of the fish bone, allowing its removal with forceps in most cases (8). However, when the perforation occurs and the patient becomes symptomatic with signs of peritonitis, intestinal obstruction or gastrointestinal bleeding, the data in the literature clearly document the indication for surgery (*Table 1*) (1,7,9,12). Moreover, in rare cases, liver abscess secondary to gastrointestinal perforation by a fish bone can be fatal when secondary sepsis occurs (5,6).

For these two cases, indication for surgical treatment by laparotomy was decided because of the liver hilum location of the abscesses and the close relationship of

fish bones with hepatic vessels, and also because of the signs of complications revealed by clinical examination or complementary examination such as blood test or imaging data, such as infectious syndrome, peritonitis, reflex ileus, or pneumoperitoneum. Indeed, medical treatment by antibiotics alone and/or radiological treatment by transhepatic percutaneous drainage for the management of liver abscesses secondary to the migration of fish bones have already been reported in the literature in patients whose surgery is contraindicated or not (*Table 1*) (3,4,12,16,17). However, surgical treatment with removal of the fish bone and abscess drainage seems to be the reasonable therapeutic option to choose, a fortiori in cases where liver abscesses present an inaccessible anatomical location to percutaneous drainage or present a high risk of vascular damage, such as hepatic hilar regions or the hepatic pedicle. This surgical management may be chosen for patients with clinical, biological, or radiological signs of severity that suggest gastrointestinal perforation: peritonitis associated with an infectious syndrome whose evolution could be potentially fatal.

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