BANGLADESH JOURNAL OF RADIOLOGY AND IMAGING 2024; VOL. 32(2): 153-157

Intra-abdominal fish bone Foreign body Abscess: Imaging Experience in a Tertiary Hospital

BIPUL KUMAR MAJUMDAR[1], BIDYUT KUMAR SAHA[2], MUHAMMAD RAKIB UDDIN[3]

Abstract:
The accidental ingestion of foreign body fish bones may sometimes cause penetration injuries. Peritoneal migration may occur with the fish bone to lie in the same or a different compartment or organ leading to complicating abscess formation. Patient usually present with the complains of nonspecific abdominal pain. Plain radiograph has low sensitivity. Computed tomography (CT) is the choice of investigation for definite diagnosis. Ultrasound is a widely used modality but not popular in the emergency setting of undifferentiated or GI abdominal pain. We present herein five patients referred with abdominal pain and tried to validate our experience for the use of ultrasound as an alternative diagnostic tool in most of cases of fish bone foreign body abscess.

Key words: *Fish bone, Intra-abdominal Abscess.*

Introduction:
Foreign body ingestion is often encountered in clinical practice. The accidental ingestion of foreign body fish bones may sometimes cause penetration injuries. Peritoneal migration may occur with the fish bone to lie in the same or a different compartment or organ leading to complicating abscess formation. Patient usually present with nonspecific complains of abdominal pain. Plain radiograph was not found to be an ideal modality to diagnose fish bone impaction. Computed tomography (CT) scan of the abdomen is helpful to determine the cause of unexplained and persistent abdominal pain with detection and localization of foreign body. Ultrasound is a widely used modality specially in emergency department. Though it is not popular in the emergency setting of undifferentiated or GI abdominal pain, may be a helpful tool for the diagnosis of intra-abdominal fish bone foreign body abscess. We present herein five cases referred with abdominal pain and tried to validate our experience for the use of ultrasound as a diagnostic tool in fish bone foreign body abscess.

Author of correspondence: Dr. Bipul Kumar Majumdar, MBBS, M.Phil. Associate consultant, Department of Radiology & Imaging, Asgar Ali Hospital, Dhaka. Mobile: +8801712172382. Email: drbipulkumarmajumder@gmail.com

Case report:
Five patients attended in emergency room with abdominal pain of variable degree and duration. Two of them associated with fever and one with vomiting. Laboratory data showed increased white blood cell count ranging from 15.15 -17.49 K/µl (neutrophils 74.7 – 84.2%) and elevated level of CRP ranging from 80.15 – 243.1 mg/L. One of the patients was with normal white blood cell count. The patients were sent in our department and plain radiograph suggests fish bone foreign body in abdomen in one of the patients (Fig. 1). Ultrasound examination was done with 5-1 MH transducer and revealed inflammatory phlegmon/ abscess in peritoneal cavity (Fig. 2,5,6) in three and liver abscess (Fig. 3,4) in two patients. In four patient linear bright echogenic structures were detected in phlegmon or abscess cavity and diagnosed as foreign body (fish bone) (Fig. 2, 4, 5 & 6). Abdominal CT was performedin all the patient and clearly revealed the inflammatory phlegmon or abscess cavity containing linear hyperdense object in all five cases (Fig. 8, 9). As a result of the CT findings and at the surgeon's suggestion, the patients decided to undergo an exploratory laparotomy. Surgery confirmed fragmented/full length fish bone embedded in the abscess in all of them (Fig. 7).

1) Associate Consultant, Department of Radiology and Imaging, Asgar Ali Hospital, Dhaka, Bangladesh. 2) Senior Consultant, Department of Radiology and Imaging, Asgar Ali Hospital, Dhaka, Bangladesh. 3) Senior Consultant, Department of General and Laparoscopic Surgery, Asgar Ali Hospital, Dhaka, Bangladesh.
Received: 10 January 2024 **Revised:** 22 January 2024 **Accepted:** 04 February 2024 **Published:** 01 July 2024

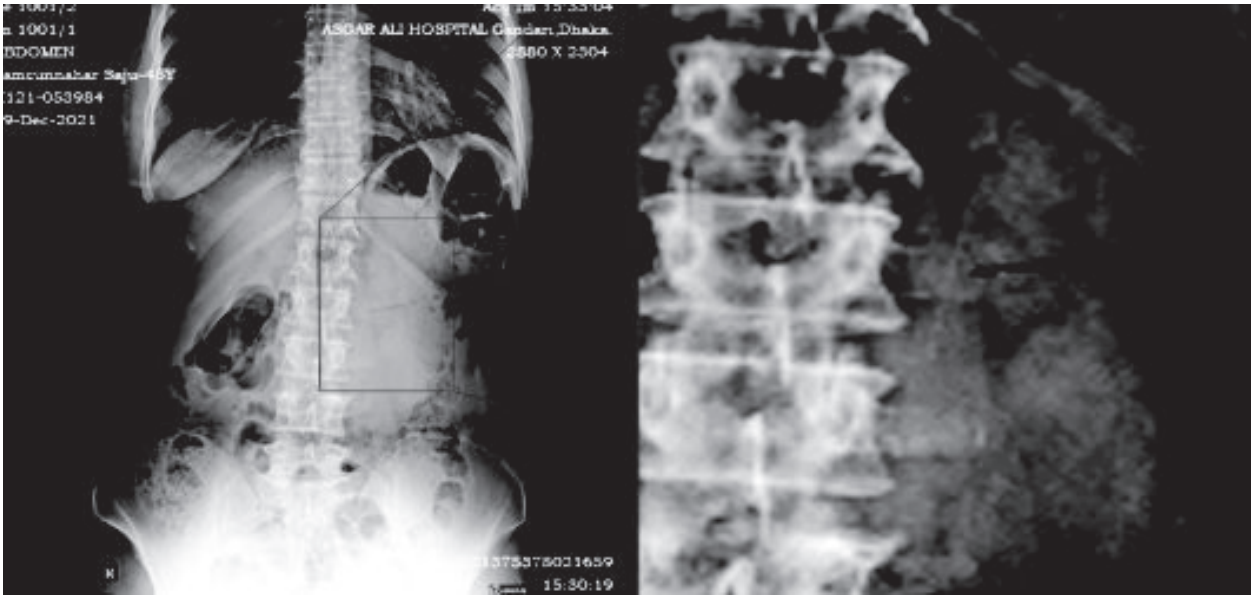

Fig-1: Plain X-ray abdomen (Left image) with magnification (Right image) showing linear radio-opaque fish bone like foreign body left lateral to upper lumber vertebra.

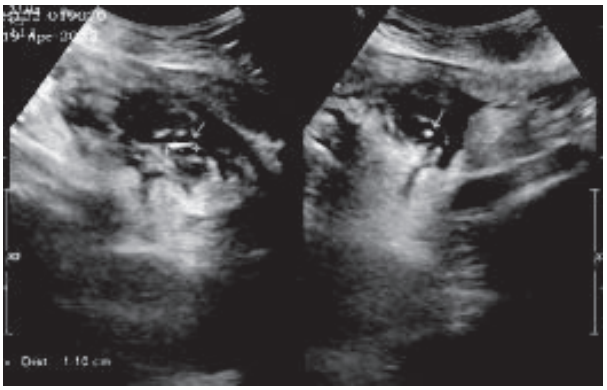

Fig-2: *Heterogeneous inflammatory mass with internal bright linear echogenic structure penetrating transverse colon.*

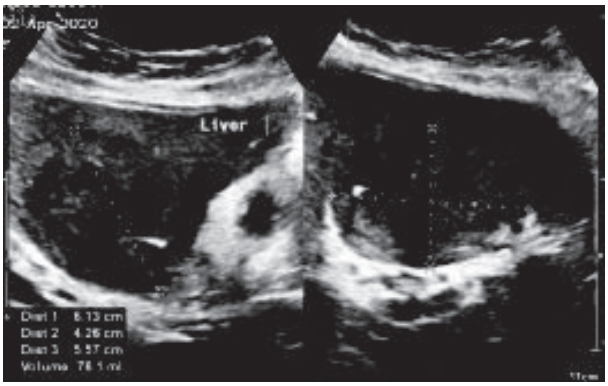

Fig-4: Hepatic abscess with internal bright linear echogenic structure in right lobe near the pylorus.

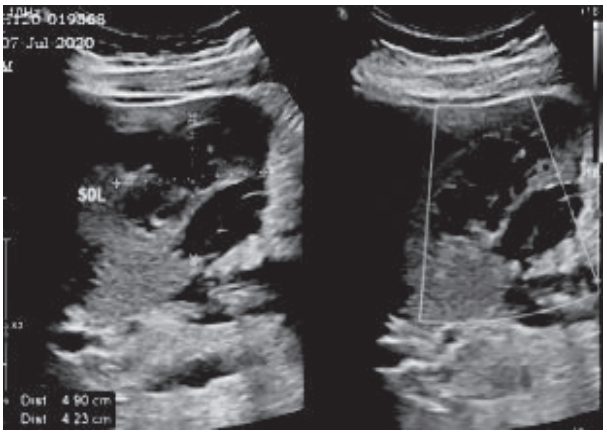

Fig-3: *Abscess in right lobe of liver.*

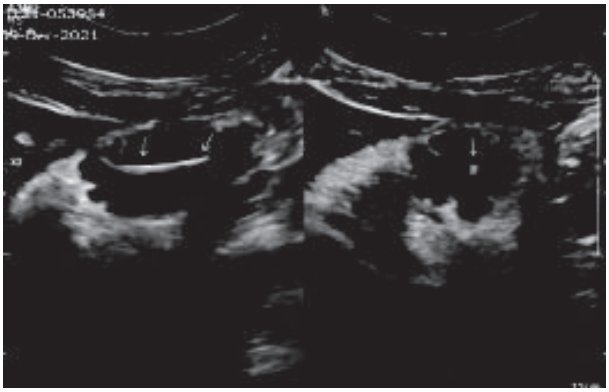

Fig-5: *Intraperitoneal abscess with internal foreign body adjacent to lesser curvature of stomach.*

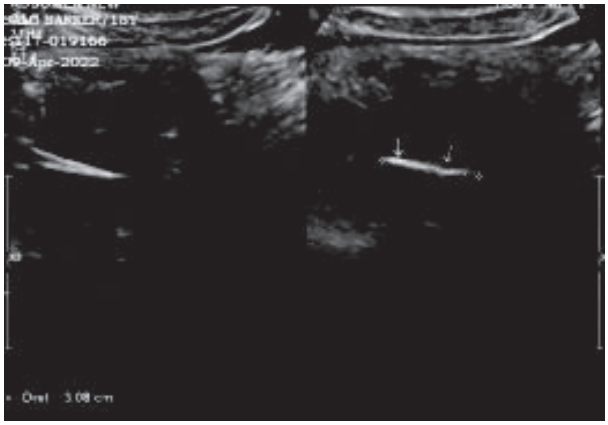

Fig-6: Heterogeneous intra-abdominal inflammatory lesion with internal linear bright echogenic structure adjacent to transverse colon.

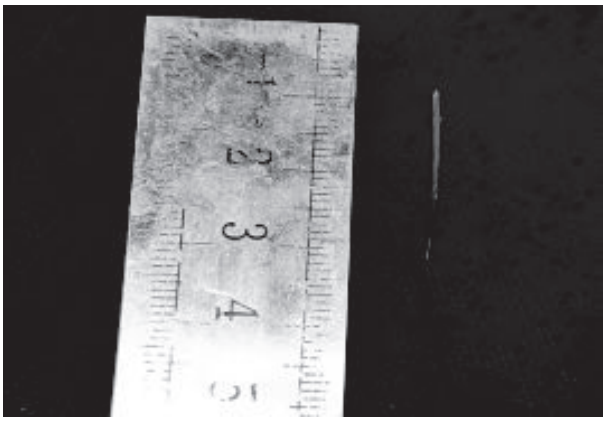

Fig-7: *Fish bone after removal.*

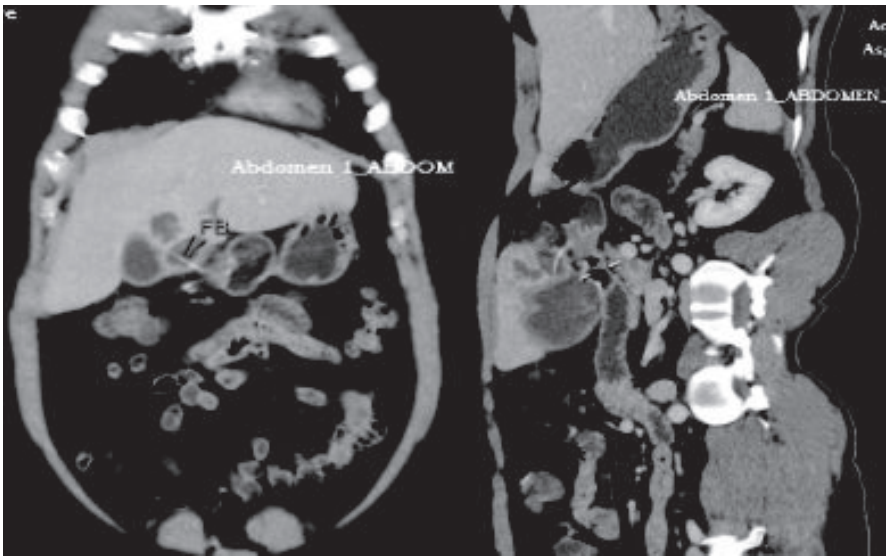

Fig-8: *Contrast enhanced CT coronal and sagittal reformatted image showing full thickness penetration at pyloric part of stomach with tip penetrating the liver causing abscess formation in right lobe.*

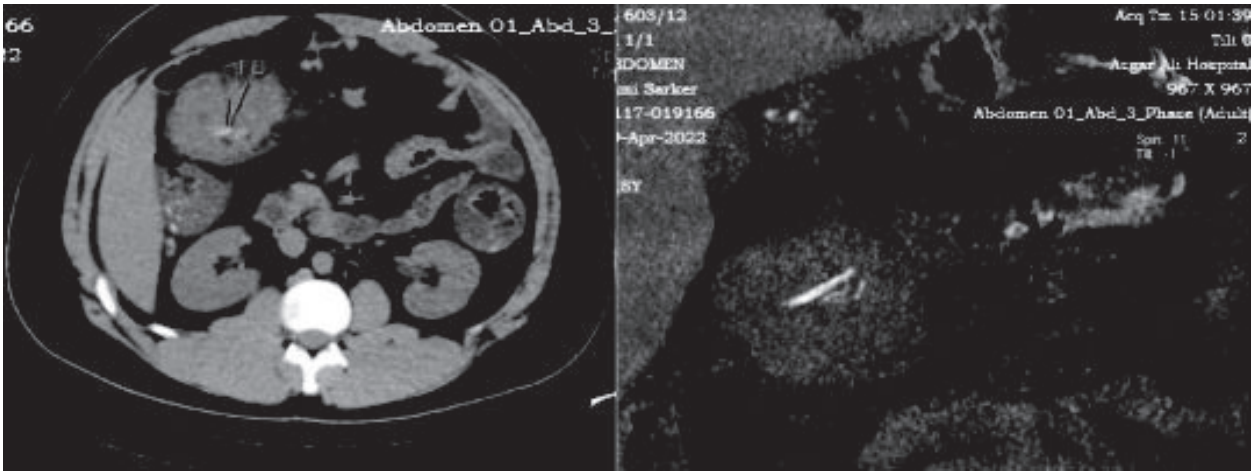

Fig-9: *Plain axial and MIP coronal CT showing impacted foreign body in transverse colon with concentric wall thickening and surrounding fat stranding.*

Discussion:

Fish bone foreign body (FFB) is the most common type (up to 84%) of ingested foreign bodies encountered in the emergency department.[1,2] It is more common in Asian countries, where the rate of fish consumption is higher. While the majority of ingested fish bones pass spontaneously 10–20% of cases fail to pass,[3,4] and in a small minority of 1% of ingested fish bone foreign body result in complications requiring surgery.[4,5,6]

Abdominal complications such as bowel wall impaction, full thickness perforation, with or without intra-abdominal abscess formation, and intraperitoneal dislodgement may occur with fish bone foreign body ingestion. Duration of impaction, sharpness, and length of the fish bone play an important role in subsequent development of complications.[7,8] Sharp, linear bones have a higher risk of mucosal laceration, perforation, and subsequent penetration into the adjacent tissues causing abscess formation.

Fish bone foreign body can get dislodged from the bowel to lie at a remote location within the same compartment or can pierce the fascial planes to lie in a different organ or compartment. The sites of such dislodgement include the liver, pancreas, anterior abdominal wall muscles, pelvic muscles or retroperitoneal muscle compartments. The site of involvement may be complicated by hematoma and abscess formation.

Laparoscopy or laparotomy and abscess drainage remain the mainstay of the treatment for patients with fish bone foreign body abscess. Localizing the abscess and planning the surgical approach is crucial.

Plain abdominal radiographs have low sensitivity in detecting abdominal fish bone, sensitivity ranging from 25% to 39%.[4,9,10] Definitive diagnosis of fish bone foreign body is established on CT by demonstrating a linear hyperdense foreign body. CT can detect calcified foreign bodies measuring as small as 0.5 mm [11]. Ultrasound may identify foreign bodies and it has the advantage of radiation-free assessment, real-time imaging combined with clinical palpation, and targeted attention to the symptomatic area. Although more operator dependent modality, ultrasound is easily available, less expensive and portable device. Its use is not popular in the emergency setting of undifferentiated or GI abdominal pain.

In our series four out of five cases of intra-abdominal abscess fish bone foreign body was clearly visualized by Ultrasound, confirmed by CT scan and subsequent laparotomy findings.

Symptoms are often nonspecific and the patient may not remember ingesting a foreign body. Preoperative diagnosis is difficult because of the rarity of the condition and the lack of a convincing history. A high index of suspicion is therefore invaluable. Ultrasonography is useful in localizing the abscess and detecting the foreign body in most of the cases thereby early planning for surgical approach where both sepsis control and foreign body retrieval can be performed safely.

Conclusion:

Fish bone foreign bodies are one of the most commonly ingested foreign bodies. Early accurate diagnosis is paramount for the removal of migrated foreign bodies such as fish bones causing intra-abdominal abscesses and Ultrasound may be a useful and alternative tool in most of the cases for early diagnosis and planning for surgical approach.

References:

1. Leong HK, Chan RK. Foreign bodies in the upper digestive tract. *Singapore Med J* 1987; 28: 162-165.
2. Kim HU. Oroesophageal fish bone foreign body. *Clin Endosc* 2016; 49: 318-326.
3. Kim JP, Kwon OJ, Shim HS, et al. Analysis of clinical feature and management of fish bone ingestion of upper gastrointestinal tract. *Clin Exp Otorhinolaryngol* 2015; 8: 261-267.
4. Goh BKP, Tan Y-M, Lin S-E, et al. CT in the preoperative diagnosis of fish bone perforation of the gastrointestinal tract. *Am J Roentgenol* 2006; 187: 710-714.
5. Young CA, Menias CO, Bhalla S, et al. CT features of esophageal emergencies. *Radiographics* 2008; 28: 1541-1553.
6. Paixão TSA, Leão RV, de Souza Maciel Rocha Horvat N, et al. Abdominal manifestations of fishbone perforation: a pictorial essay. *Abdom Radiol* 2017; 42: 1087-1095.
7. Velitchkov NG, Grigorov GI, Losanoff JE, et al. Ingested foreign bodies of the

gastrointestinal tract: retrospective analysis of 542 cases. *World J Surg* 1996; 20: 1001-1005.

8. Zhang X, Jiang Y, Fu T, et al. Esophageal foreign bodies in adults with different durations of time from ingestion to effective treatment. *J Int Med Res* 2017; 45: 1386–1393.
9. Qureshi TA, Awan MS, Hussain M, et al. Effectiveness of plain x-ray in detection of fish and chicken bone foreign body in upper aerodigestive tract. *J Pakistan Med Assoc* 2017; 67: 544-547.
10. Evans RM, Ahuja A, Rhys Williams S, et al. The lateral neck radiograph in suspected impacted fish bones - Does it have a role? *Clin Radiol* 1992; 46: 121-123.
11. Kaviani F, Javad Rashid R, Shahmoradi Z, et al. Detection of foreign bodies by spiral computed tomography and cone beam computed tomography in maxillofacial regions. *J Dent Res Dent Clin Dent Prospects* 2014; 8:166-171.