

## **Small Bowel Perforation Secondary to Fish Bone Ingestion**

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**Two cases of small bowel perforation due to fish bone injury were seen in the last 10 years in the department of surgery, the first was in 2004 and a further one in 2010.**

**The first case was a sixty-two year old Bahraini male who presented to the Emergency Department with acute lower abdominal pain of four hours duration. Abdominal examination revealed, generalized tenderness and distension. There was no guarding or rebound tenderness. Bowel sounds were audible. Abdominal CT scan was not helpful in diagnosis. Conservative treatment failed and the patient needed surgical intervention.**

**The second case was a seventy-five year old Bahraini male, known to have diabetes, hypertension and senile hypertrophy of the prostate. The patient was admitted with acute generalized abdominal pain of one day duration. Abdominal examination showed generalized abdominal tenderness and guarding with absent bowel sounds. CT scan of the abdomen showed free gas under the diaphragm and free fluid but did not show the site of perforation.**

**Both cases needed urgent laparotomy, identification of the bowel perforation, removal of the fish bone, and simple closure of the perforation.**

**The aim of this report is to increase the awareness of fish bone as a possible cause of small bowel perforation particularly in Bahrain, and to advise early surgical intervention and simple closure of the perforation after foreign body removal.**

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A variety of foreign bodies may cause perforations at a number of sites in the gastrointestinal tract. Advanced age, poor patient dentition, alcoholism, as well as mental debility constitute the main predisposing factors for swallowing foreign bodies. In a review of 24 cases, fish bones were responsible for 46% of intestinal perforations<sup>1</sup>. Foreign bodies other than fish bone which could cause perforation include chicken bone, pin, needle, grape seeds, wood splinters and costume jewelry.

Small bowel perforation by sharp foreign bodies is rarely diagnosed preoperatively as the clinical manifestations are non-specific and can mimic other surgical conditions such as appendicitis or diverticulitis<sup>2</sup>.

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Few reports of small bowel perforation following accidental ingestion of a fish bone were found in the English literature<sup>3,4</sup>.

The aim of this report is to increase the awareness of fish bone as a cause of small bowel perforation, particularly in Bahrain and to advise early surgical intervention with simple closure of the perforation after foreign body removal.

## **CASE ONE**

Sixty-two year old Bahraini male not known to have any past medical or surgical problem presented to the Emergency Department complaining of colicky lower abdominal pain of four hours duration. Later the pain became localized to infra-umbilical region. The pain was aggravated by movements and was not relieved by antispasmodics. It was not associated with fever, vomiting, change in bowel habits or rectal bleeding. There was no history of any genito-urinary symptoms.

On examination, the patient was uncomfortable in bed due to pain but there was no pallor, cyanosis or jaundice. Pulse rate was 106/minute; blood pressure was 165/96 mmHg, temperature was 37.1° C and respiratory rate was 20/minute.

Abdominal examination revealed, generalized distension, and tenderness, with maximum tenderness at lower half of the abdomen. There was no guarding or rebound tenderness. Bowel sounds were normal. Rectal examination revealed that it was empty, and no bleeding or masses were found.

Investigations showed: Hemoglobin 12.3 g/L, total leukocytic count 10.4<sup>10</sup>/L, and serum amylase 42 U/L. Liver, renal function tests and serum electrolytes were within normal.

Plain erect abdominal X-rays showed dilated small bowel loops, but no gas under the right hemi-diaphragm or gas-fluid level.

The patient was admitted with provisional diagnosis of subacute intestinal obstruction. He was kept fasting, on naso-gastric free drainage and on intravenous fluids and antibiotics.

Next day, his vital signs were stable but the naso-gastric tube drained 550 ml of blood stained fluid. The abdomen was still distended with generalized tenderness and guarding. Contrast CT scan of the abdomen and pelvis showed non-specific findings. There was no evidence of bowel perforation or free intra-peritoneal gas. The superior mesenteric artery was patent. The possibility of inflamed or ischemic small bowel loop could not be excluded.

In view of these findings and the failure of conservative management, a decision for exploratory laparotomy was made.

Examination of the abdomen under general anesthesia revealed a firm mass (about 10 x 12 cm) below the umbilicus. A laparotomy was performed through a midline incision centered over the mass. The mass consisted of a small bowel loop (about 60 cm) with thickened wall and mesentery. The bowel loop was surrounded by omentum and minimal purulent fluid. The greater omentum was displaced and on close inspection of the mass, a tiny sharp object was seen penetrating the wall of the small bowel, approximately at 2.5 meters from the ligament of Treitz, see figure 1. The foreign body was removed and proved to be a fish bone, see figure 2. The bone was about 3 cm in length and approximately 0.5 cm was protruding through the

bowel wall. The perforation was closed with 3/0 Vicryl, interrupted stitches. Thorough peritoneal toilet with normal saline was done.



**Figure 1: Inflamed Area of Small Bowel and a Tiny Sharp Object Penetrating Through the Wall**



**Figure 2: The Fish Bone Is Extracted from the Bowel**

The patient had uneventful postoperative course. Retrospectively, the patient gave history of feeling pricking pain in his throat 3 days prior to admission during eating a fishmeal.

## **CASE TWO**

Seventy-five year-old Bahraini male admitted with sudden generalized abdominal pain of one day duration. The pain was continuous, moderate to severe in nature. It was aggravated by movements but had no relieving factors. There was no nausea, vomiting or loss of appetite. There was no change in bowel habits. There was no fever, or urinary symptoms. The patient was known diabetic and hypertensive on regular medication. There was history of right inguinal hernia repair 35 years ago.

On examination, the patient had no pallor, cyanosis or Jaundice. Pulse rate was 106/minute, blood pressure was 100/63 mmHg. The temperature was 37.1°C and the respiratory rate was 19/minutes. Abdominal examination showed generalized tenderness and guarding with absent bowel sounds. There was no abnormality detected on rectal examination.

Investigations showed: Hemoglobin was 13.6 g/L, total leukocyte count was  $9.9^{10}/L$ , and serum amylase was 33 U/L. Liver, renal function tests and serum electrolytes were within

normal ranges. Plain erect abdominal radiograph showed gas dilated small bowel loops and no gas fluid level.

Abdominal CT scan revealed, dilated caecum and right colon, free fluid in the left paracolic gutter and around the liver, as well as few pockets of air under the right hemi-diaphragm. The diagnosis of perforated viscus was made and the patient was prepared for exploratory laparotomy under general anesthesia.

Exploratory laparotomy through a midline incision revealed moderate amount of turbid fluid, inflamed small bowel loops and a perforation in the jejunum 25 cm from the ligament of Treitz with a fish bone protruding through, see figure 3. The fish bone was about 4 cm in length; it was extracted from the bowel see figure 4. Simple closure of the perforation with interrupted 3/0 Vicryl sutures was done. Thorough peritoneal toilet with normal saline was done. Patient had uneventful postoperative course.



**Figure 3: Loop of Small Bowel Showing Perforation Caused by the Fish Bone**



**Figure 4: The Fish Bone after Being Extracted from the Small Bowel**

## DISCUSSION

The majority of the ingested foreign bodies pass through the whole gastrointestinal tract without complications. However, a minority of those, particularly the sharp ones may cause major problems. A review of the medical literature reveals that Persson in 1939 collected 15 cases of perforations of Meckel's diverticulum; a fish bone caused ten of the perforations<sup>5</sup>. In the last 3 decades, 68 cases of bowel perforation by fish bones have been reported in the Russian medical literature<sup>5-7</sup>.

Few cases have been reported in the French, Spanish and Polish languages<sup>8-12</sup>. To our knowledge, these are the first two cases of small bowel perforations caused by ingestion of fish bone to be reported in the Arabian Gulf area. In our institute, a report about perianal abscess contained fish bone was published in 2001<sup>13</sup>.

The first case reported in the English literature was a fish bone perforation of Meckel's diverticulum simulating a leaking abdominal aortic aneurysm<sup>2</sup>. Another case emphasized the effective preoperative diagnosis of sigmoid colon perforation, due to swallowing of a fish bone, by the use of three-dimensional computed tomography<sup>14</sup>.

Preoperative diagnosis of small bowel perforation caused by sharp foreign bodies is always difficult to reach. Most of the reported cases simulated acute appendicitis<sup>15</sup>. Other cases were discovered late during laparotomy for other pathology. A German case report described laparotomy for a cervico-sigmoidal fistula and a poultry rib was found in the fistulous track<sup>16</sup>.

The advent of new modalities has made the diagnosis of the alimentary tract perforations caused by ingestion of foreign bodies feasible. Recently two Japanese studies had confirmed the efficacy of three-dimensional computed tomography in the diagnosis of alimentary tract perforations<sup>14,17</sup>.

The diagnosis is difficult to reach preoperatively; a report from China suggested diagnostic laparoscopy to facilitate the diagnosis. The report has shown that laparoscopic diagnosis and management of small bowel perforation caused by a sharp bone is optimal<sup>18</sup>.

This report has confirmed that in the presence of conventional radiology the preoperative diagnosis of small bowel perforation caused by a fish bone is not possible without laparotomy.

In an Island like Bahrain where fish and other sea food are common meals consumed by the majority of people, careful history taking with specific leading questions about the type of food may give clue to the diagnosis. If the diagnosis was suspected preoperatively, the use of laparoscopy to confirm it and remove the fish bone would have been the ideal method of management.

## CONCLUSION

**Bowel perforation due to ingestion of fish bone is rare and not easy to be diagnosed. Modern modalities, as 3D CT, would help in making the diagnosis. The use of laparoscopic surgery could be the golden standard of management in the future.**

**In this study and many others, most patients were above 60 years, which could be due to edentulism in the elderly leading to improper mastication and due to hypochlorhydria<sup>19-22</sup>.**

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