

# Laparoscopic Management of Biliary Ascariasis: A Case Report and Review of Literature

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## Abstract

Acute pancreatitis due to *Ascaris lumbricoides* is a known etiology but very rare in Qatar. The diagnosis can be difficult because of the low index of suspicion. We report a case of 25-year-old Philippine patient living in Qatar who developed an acute pancreatitis due to *Ascaris lumbricoides* and was diagnosed initially as biliary pancreatitis. We proceeded with laparoscopic cholecystectomy and intraoperative cholangiogram which revealed *Ascaris* in the common bile duct. Transcystic extraction of a living worm from the common bile duct was done. This is the first case report of acute pancreatitis due to *Ascaris lumbricoides* which had laparoscopic transcystic extraction of a living worm from the common bile duct.

**Background:** *Ascaris lumbricoides* as etiology to acute pancreatitis has never been described in Qatar whereas in developing tropical and subtropical areas, *Ascaris lumbricoides* is found in human gastrointestinal tract with greater prevalence.<sup>1</sup> Although the infection can be asymptomatic, in some cases the adult parasite can invade the biliary or pancreatic ducts and cause obstruction with development of cholecystitis, cholangitis, and pancreatitis and hepatic abscesses.<sup>2</sup> We report a case of a patient with biliary ascariasis induced acute pancreatitis.

**Conclusion:** We recommend the use of this laparoscopic approach for treatment of such uncommon pathology, if surgical intervention is needed. The differential diagnosis of pancreatitis should be expanded to include ascariasis in patients who come from population at risk. Knowledge of clinical symptoms, complications, and diagnostic and therapeutic options are of paramount importance for all health professionals.

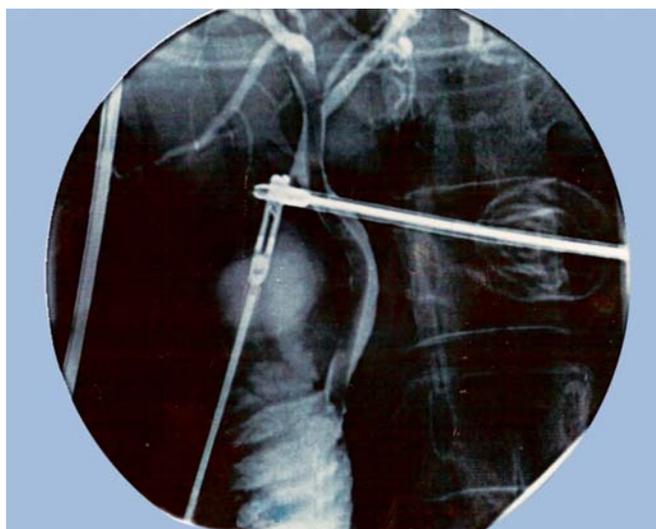
**Keywords:** Biliary ascariasis, Laparoscopy in ascariasis, Management of ascariasis.

## CLINICAL CASE

A 25-year-old Philippine lady was admitted with right upper quadrant pain of 2 days duration. Pain was accompanied by nausea, vomiting and radiation to the back. Laboratory examinations demonstrated elevation of pancreatic amylase (2980 IU/L), lipase (around 7000 IU/L); liver enzymes were mildly elevated, with no jaundice. Ultrasonography revealed thick-walled gallbladder filled with sludge and stone; common bile duct (CBD) was mildly dilated. Therefore, she was diagnosed as a case of biliary pancreatitis. Medical treatment was started and on the second day, the patient showed clinical and biochemistry improvement, and the plan was to post her for laparoscopic cholecystectomy and intraoperative cholangiogram in our first elective operation list.

During operation, intraoperative cholangiography through the cystic duct revealed a dilation of CBD (8 mm), and a longitudinal filling defect in the common bile duct, which raised the suspicion of presence of *Ascaris* (Fig. 1). Therefore, small extension of cystic duct incision was made at junction with the common bile duct, and the living worm

was extracted carefully, placed in a plastic bag and removed from the body (Fig. 2). A biliary drainage tube was not used and the cystic duct incision was sutured and cholecystectomy was finished laparoscopically. The



**Fig. 1:** Intraoperative cholangiogram showing *Ascaris* worm inside the CBD

postoperative period was uneventful and the patient was discharged fit on the fourth postoperative day after the full course of anthelmintic therapy (mebendazole) for three days. Patient was seen in surgical clinic and doing well.

## DISCUSSION

Ascariasis is a helminthic infection of global distribution with more than 1.4 billion persons infected throughout the world.<sup>3</sup> The majority of infections occur in the developing countries of Asia and Latin America. It is estimated that around 20,000 deaths occur per year because of severe clinical disease caused by ascariasis.<sup>4,5</sup>

Khuroo et al reported 500 cases in India of hepatobiliary and pancreatic diseases due to *Ascaris lumbricoides* from one center over the period from June 1983 to November 1989. Since then hepatobiliary and pancreatic ascariasis (HPA) has been reported more often than ever before from many centers in endemic areas.<sup>6</sup> Another 300 cases of HPA were reported in Syria by Sandouk et al.<sup>7</sup> *Ascaris* causes pancreatitis due to obstruction of papilla of Vater, invasion of common bile duct, or invasion of pancreatic duct and can occur with abdominal pain, back pain, emesis, fever, or jaundice.<sup>8</sup> However, the disease is now encountered with increased frequency in the western countries.<sup>9,10</sup>

The diagnosis of ascariasis pancreatitis requires a high degree of suspicion in population at risk. Ultrasonography is a simple, noninvasive test and the characteristic sonographic findings of worms in the ducts have been well described.<sup>8,11,12</sup> The worms move freely in and out of the biliary tree and ultrasonography cannot diagnose ascariasis in the duodenum, therefore more than half of the patients with HPA would be missed.<sup>6,7</sup> In our case, the ultrasound

was not helpful because of unfamiliarity of our radiology department staff with such conditions.

Anthelmintic therapy with mebendazole or albendazole is a part of conservative management, reported by some authors with a success rate upto 80% of patients and considered as the first line of treatment in the first few days.<sup>13,14</sup> The rationale for initial administration of anthelmintics is to paralyze the parasites within the intestinal lumen then worms are expelled by normal gastrointestinal peristalsis.<sup>6,8</sup> However, it is not advisable to have dead worms inside the ductal system, which might lead to stricture formation as a result of severe inflammatory reaction. In addition, the liberated ova or existence of fragmented *Ascaris* might act as a nidus for stone formation.<sup>1,15</sup> Therefore, for the above-mentioned reasons and in failed medical treatment of confirmed biliary ascariasis, endoscopic intervention is indicated.

ERCP has an advantage as a diagnostic tool as well as therapeutic modality. It allows better identification of worms in the duodenum and those across the papilla, and can be used for worm extraction from the ampullary orifice, biliary duct or pancreatic duct in 98% of patients.<sup>7,16</sup> Most worms were extracted by flushing the bile ducts, grasping forceps, or balloon catheters. Thus, ERCP has now become the investigation modality of choice. Surgical intervention with worm extraction from CBD combined with cholecystectomy should be advised for patients for whom conservative and endoscopic management has failed or complicated by cholangitis.<sup>13</sup>

Until recently, the conventional open method is the standard surgical treatment for biliary ascariasis involving a combination of cholecystectomy, extraction of parasites, and T-tube drainage.<sup>6,13</sup> Yoshihara S et al reported the first case in 2000 of a laparoscopic extraction of living worm from CBD through a conventional choledochotomy with primary suture of CBD opening without using drain.<sup>17</sup> Astudillo AJ et al<sup>18</sup> had a series of 13 patients diagnosed with biliary ascariasis diseases between February 1992 and February 2007. Six of those patients needed laparoscopic cholecystectomy and extraction of worms from CBD with insertion of T-tube, only one patient had primary closure of CBD. There is another reported case of laparoscopic extraction of worm without the need for T-tube drainage reported by Moirangthem GS et al.<sup>19</sup>

In our case, this is a first reported case of living worm being extracted laparoscopically through a cystic duct opening using intraoperative cholangiography with a few millimeters extension to the junction between cystic duct and CBD. In this case, the T-tube was not used and primary



Fig. 2: Extraction of *Ascaris* worm from CBD laparoscopically

closure was done for the cystic duct opening. Although the worm was incidentally discovered in CBD, our approach showed better advantages than conventional methods by shortening hospital stay, decreasing morbidity, and early return to normal activities. Care is required to keep the live worm in a laparoscopic visual field as it has tendency to move to narrow spaces, and to avoid a granulomatous reaction which might occur around *Ascaris* and fertilized eggs in peritoneal cavity.<sup>1</sup>

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