# MANAGEMENT OF GALLSTONE ILEUS WITH STONE IMPACTED IN THE ASCENDING PART OF DUODENUM

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SUMMARY – Gallstone ileus with impaction of gallstone in distal duodenum is an extremely rare complication of cholecystolithiasis. Gallstone ileus in itself accounts for less than 1% of these complications with 800 cases described so far. However, there are less than 15 cases described with the impaction of gallstone in distal duodenum. We report a case of an 84-year-old male patient in whom gallstone impacted in distal duodenum was found by ultrasonography and confirmed by computed tomography. Cholecystitis and a remaining large gallstone in the gallbladder were found intraoperatively, which made us opt for one-step procedure, i.e. lithotomy and fistula repair with cholecystectomy. Due to the rare position of impacted gallstone, we believe that cases like this should be reported in detail in order to generate enough data for establishing optimal treatment options.

Key words: *Cholelithiasis, complications; Intestinal obstruction – diagnosis; Intestinal obstruction – etiology; Intestinal obstruction – surgery; Ileal diseases – etiology; Ileal diseases – surgery; Case report*

## Introduction

Gallstone ileus is a rare complication of cholelithiasis encountered when a fistula between the gallbladder and the duodenum or stomach is formed and gallstone is propelled to different parts of the intestine. If it blocks duodenal bulb, it is referred to as Bouveret's syndrome. Most often, the gallstone is impacted in terminal ileum and rarely in colon or in duodenum. Since there are less than 15 cases, to our knowledge, of its impaction in duodenum described in the literature to date, we believe that each new case contributes to better understanding and evaluation of treatments administered.

Gallstone ileus accounts for less than 1% of complications of cholelithiasis. Over 90% of gallstones pass through their natural route *per rectum* without causing any symptoms. However, in the population over 60 years of age the incidence rises above 12%. Furthermore, it is claimed responsible for 3.7% of intestinal obstructions[1,2].

Riegler's triad consisting of pneumobilia, gastrointestinal obstruction and dislocated gallstone is usually sufficient for making the diagnosis. It is believed that the stone needs to be over 2.5 centimeters to cause such symptoms. Native abdominal x-ray along with ultrasonography (US) may indicate the diagnosis. However, computed tomography (CT) best distinguishes gallstone ileus from other differential diagnoses, which include diverticula, foreign bodies, fibrotic ulcers and neoplasia.

Therapy is primarily surgical, either one-step enterolithotomy and fistula closure with cholecystectomy, or a two-step procedure. Lately, there have been reports of lithotripsy and endoscopic removal in Bouveret's syndrome, and laparoscopic approach in distant impaction.

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Although reduced in recent years, the mortality (12%-7.5%) and morbidity (up to 57%) remain high, perhaps because of the elderly population (average 76 years) being burdened with comorbidities[3,4].

## Case Report

An 84-year-old male presented to emergency room with frequent hiccups after meals and vomiting, he did not have stool for the past four days, until then it was normal. He lost about 10 kilograms in the past year. He was under therapy for arterial hypertension and had symptoms of chronic obstructive pulmonary disease.

Physical examination showed distension and tenderness in the right upper quadrant and in the epigastrium. Peristalsis was weak. No succession splash was evident. No free air under the right hemi-diaphragm was noted on native abdominal radiograph. Digitorectal examination showed normal stool remnants and enlarged prostatic gland. Whole blood count, liver function tests, urea and electrolytes were within the normal range, except for creatinine (215 μmol/L).

On US, aerobilia was seen without dilatation of biliary ducts, with gastric retention and suspected gallstone in the projection of duodenum, which was difficult to verify because of meteorism. A nasogastric tube was inserted.

Computed tomography (without contrast due to creatinine of 215 μmol/L) confirmed aerobilia within normal caliber of biliary ducts along with retention of Gastrografin in the stomach. There was a communication between the gallbladder and duodenal bulb and a 5x3 cm gallstone impacted in the duodenum just proximally to Treitz ligament.

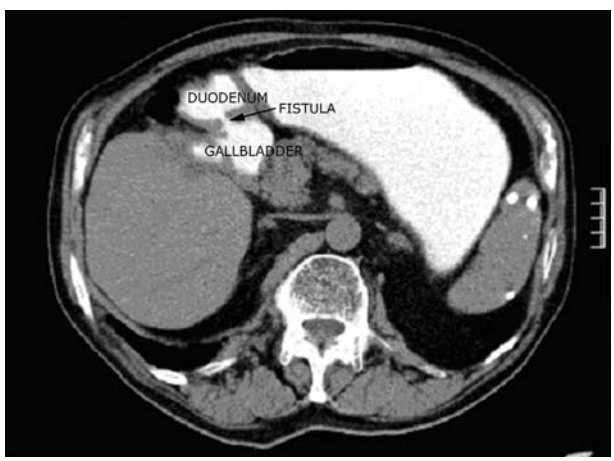


*Fig. 1. Axial CT scan shows communication between the gallbladder and digestive system.*


*Fig. 2. Multi-slice reconstruction CT scan shows a 'mixed stone' with lamination and facets. Low content of calcium. Gastrografin surrounds the stone.*

The patient was referred to the surgeon. He was assessed as ASA II E. Superior median laparotomy was performed. Gallbladder was attached to the descending part of the duodenum just above the papilla; upon its detachment, a fistula of 2.5 cm in diameter was found. There were a few remaining gallstones of up to 1 cm in diameter, which were extracted from the gallbladder and cholecystectomy was preformed. Biliary ducts were flushed through to the duodenum and sludge was evacuated when proximal ducts where lavaged. The impacted gallstone was milked proximally and evacuated through the opening of the fistula. The duodenum was sutured and a drain was placed subhepatically. The operating time was 110 minutes.

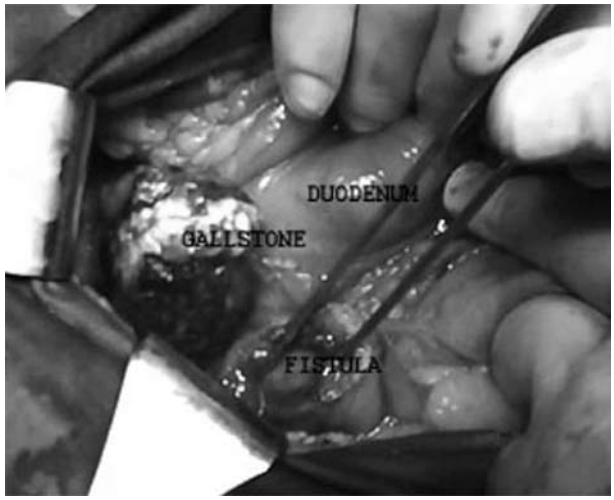


*Fig. 3. Intraoperative image of the bilioduodenal fistula opening upon gallstone removal.*

The histopathologic diagnosis was chronic cholecystitis in exacerbation and acute pericholecystitis.

Postoperatively, the patient was extubated after 12-h stay at intensive care unit, and was hemodynamically stable. On postoperative day 2, he was transferred to the ward where he was stable with periodical bouts of temperature up to 38 °C, which regressed on antipyretics. Despite good general condition and laboratory findings in regression, on day 15 he was reoperated for wound dehiscence. Recovery was uneventful and he was discharged from the hospital on postoperative day 7.

There were no surgical complications reported at follow up one month later. He was referred to internal medicine office for treatment of his comorbidities.

## Discussion

The growing elderly population makes gallstone ileus a more frequent diagnosis than previously considered. Correct preinterventional diagnosis is rare, achieved in only 30% of cases, since Riegler's triad may not always be present. One case of gastrointestinal hemorrhage caused by bleeding ulcer of descending duodenum due to erosion of an impacted gallstone has also been reported[5].

Treatment options are dictated by the placement of the gallstone; if it is in the stomach or in the first part of the duodenum, lithotripsy and endoscopic removal can be tried[6,7]; if aboral from the ligament of Treitz, enterolithotomy is the procedure of choice with optional conservative treatment; if there are remaining gallstones in the gallbladder, elective cholecystectomy and later fistula repair are sound options. High-risk patients, shorter operative time and better patient preparation stand in favor of the latter. In such cases, a biliodigestive fistula may close by natural scarring or become a harmless alternative route for biliary drainage. It may also require reoperation because of recurrent cholangitis[8]. In most patients, the retained gallbladder shrinks, undergoes atrophy, and becomes non-functional; however, one of 25 patients developed gallbladder carcinoma within 55 months of surgery[9].

The one-step procedure is preferred in low-risk patients that can withstand longer operation and in those with acute cholecystitis, gangrenous gallbladder, or large residual stones[9,10]. Gallstones impacted in descending duodenum and proximally to the ligament of Treitz, as in our case, are so rare that no treatment consensus has been reached. Treatment is dictated by the conditions encountered *in situ*. Since the gallbladder was inflamed and two large remaining stones in its lumen were verified, we opted for detachment and cholecystectomy as one-step procedure. The fistula diameter in this case was equal to the transverse diameter of the stone, which made milking the stone orally a feasible option. By doing this, we avoided creating another opening in the duodenum.

In conclusion, due to the small number of cases, the conditions encountered in the operating room remain the decisive factor in treating gallstones impacted in duodenum. A greater number of cases reported in detail may in due time support a certain mode of treatment.

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Sažetak

## ILEUS SA ZAGLAVLJENIM ŽUČNIM KAMENCEM U DISTALNOM DUODENUMU

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Ileus sa zaglavljenim žučnim kamencem u distalnom duodenumu je izrazito rijetka komplikacija kolelitijaze. Odgovoran je za manje od 1% komplikacija kolelitijaze uz oko 800 opisanih slučajeva. Samo je u 15 slučajeva opisan kamenac zaglavljen u distalnom duodenumu. Predstavaljamo slučaj 84-godišnjeg bolesnika u kojega je žučni kamenac u duodenumu potvrđen pomoću ultrazvuka i kompjutorizirane tomografije. Intraoperacijski je nađen kolecistitis i zaostao žučni kamenac u žučnjaku, što nas je usmjerilo prema jednostupanjskom postupku: ekstrakciji kamenca iz duodenuma i popravku fistule te kolecistektomiji. Smatramo da zbog izrazito rijetkog položaja zaglavljenog žučnog kamenca ovakve slučajeve treba podrobno opisati kako bi se prikupilo dovoljno podataka za donošenje odluke o optimalnom liječenju.

Ključne riječi: *Kolelitijaza, komplikacije; Crijevni zastoj – dijagnostika; Crijevni zastoj – etiologija; Crijevni zastoj – kirurgija; Ileusne bolesti – etiologija; Ileusne bolesti – kirurgija; Prikaz slučaja*