

Retained Common Bile Duct Lithiasis at a Patient with Periapillary Duodenal Diverticulum

Ionuț Simion Coman¹, Elena-Violeta Radu¹, Vasile Șandru², Ionuț Cristinel Bârsan¹,
Cristinel Dumitru Badiu^{1,3}, Gabriel Constantinescu^{2,3}, Valentin Titus Grigorean^{1,3}

¹General Surgery Department, "Bagdasar-Arseni" Clinical Emergency Hospital, Bucharest, Romania

²Gastroenterology Department, Bucharest Clinical Emergency Hospital, Romania

³"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania

Rezumat

Litiază restantă de cale biliară principală la o pacientă cu diverticul duodenal periampular

Diverticuli duodenali periampulari se asociază cu prezența litiazei de cale biliară principală, fiind întâlniți mai frecvent odată cu înaintarea în vârstă. Prezentăm cazul unei paciente de 76 de ani, la care se intervine în urgență pentru colecistită acută gangrenoasă litiazică perforată și la care se practică colecistectomie și drenaj biliar extern pe tub transcistic. Examinările imagistice și endoscopice preoperatorii și post-operatorii certifică prezența unui diverticul duodenal peri-ampular, iar colangiografia postoperatorie pe tubul transcistic ridică suspiciunea unei litiaze restante de cale biliară principală. Se efectuează o colangiopancreatografie endoscopică retrogradă, nereușindu-se inițial canularea căii biliare principale. Se efectuează sfincterotomie de presecționare tehnica fistulă folosindu-se drept reper un ghid introdus pe tubul transcistic și se evacuează sludge biliar de la nivelul căii biliare principale, cu evoluție ulterioară favorabilă. Asocierea dintre litiaza de cale biliară principală și un diverticul duodenal periampular poate reprezenta o provocare terapeutică, din pricina riscului crescut de eșec al tratamentului endoscopic.

Cuvinte cheie: diverticul, periampular, litiază, CBP, CPER

Abstract

Periapillary duodenal diverticula are associated with the presence of common bile duct stones, being encountered more frequently with the increase of age. We present the case of a 76 years old female patient, who undergoes emergency surgery for a perforated lithiasic gangrenous acute cholecystitis and for whom we perform a cholecystectomy and an external biliary drainage using a transcystic tube. Both preoperative and postoperative imaging and endoscopic examinations certify the presence of a periampullary duodenal diverticulum. Postoperative cholangiography performed on the transcystic tube raises the suspicion of retained common bile duct lithiasis. An endoscopic retrograde cholangiopancreatography is performed, initially failing to cannulate the common bile duct. A precut sphincterotomy fistula technique is performed, using as reference a guide inserted on the transcystic tube, with the extraction of biliary sludge from the common bile duct, and with subsequently favorable development. Association between common bile duct lithiasis and a periampullary duodenal diverticulum may represent a therapeutic challenge because of the increased risk of failure of the endoscopic treatment.

Key words: diverticulum, periampullary, lithiasis, CBD, ERCP

Corresponding author: Elena-Violeta Radu, MD, PhD
General Surgery Department
"Bagdasar-Arseni" Clinical Emergency Hospital
Berceni Street No 10-12, 4th District, Bucharest,
Romania
E-mail: elena_violeta2000@yahoo.com

Introduction

Periampullary or juxtampullary duodenal diverticulum is an extraluminal protrusion of the duodenum, situated within a radius of 2-3 centimeters (cm) compared with the ampulla of Vater (1). Periampullary duodenal diverticula prevalence increases with age (2-4), the literature data indicating their association with the common bile duct (CBD) lithiasis (5-10). Periampullary duodenal diverticula are found, after various studies, between 9% and 32,8% of the patients of whom an endoscopic retrograde cholangiopancreatography (ERCP) is performed (3).

Case report

We present the case of a 76 years old female patient, admitted to the General Surgery Department of the "Bagdasar-Arseni" Clinical Emergency Hospital from Bucharest for pain started in the right hypochondrium and subsequently irradiated diffuse in the abdomen, nausea, vomiting and jaundice. From her medical history we note asthma and hypertension, both conditions under treatment. The patient presents a computer tomography (CT) of the abdomen performed in another medical service one day before that identifies a gallbladder with an increased global size, of 130/77 milimeters (mm) containing multiple small stones as well as slight dilatation of the intrahepatic biliary tree, with the CBD having a diameter of 13 mm. It is noticed on the CT the presence of a periampullary duodenal diverticulum, with hidroaeric content, with axial dimensions of 21 mm, that contributes furthermore to the dilatation of the upstream CBD (Fig. 1).

Abdominal ultrasound performed on admission reveals liver steatosis, very distended gallbladder with thickened walls, with double outline, recounting the presence of gallbladder sludge and small stones in the infundibular region. It also identifies the presence of liquid in the space between the liver and the right kidney and between the intestinal loops.

Biologically on admission: alanine-amino-transferase (ALT) value of 290 units (U)/ liter (L), serum amylase value of 39 international units (IU)/L, aspartate-amino-transferase (AST) value of 320 U/L, direct bilirubin value of 4,18 miligrams (mg) /deciliter (dL), total bilirubin value of 5,63 mg/dL, creatinine value of 2,52 mg/dL, "international normalized ratio" (INR) value of 1,77, white blood cells count 8860/mm³, hemoglobin value of 9,48 grams (g) / dL, the number of platelets 141000/mm³.

After a short biological rebalance, we proceed to open emergency surgery, finding a moderate amount of intraperitoneal bile, evacuating it. We identify a gallbladder with gangrenous walls, with a "faded leaf" aspect, perforated, containing multiple small stones. Because of the difficulty identifying the CBD (important local inflammatory changes), as well as the critical state of the patient, the surgical procedure is limited to cholecystectomy and an external biliary drainage using a transcystic tube.

Postoperatively, the patient presents a slowly favorable surgical outcome, influenced by the occurrence of a broncho-



Figure 1. CT image of the periampullary duodenal diverticulum

pneumonia, resolved under medical treatment. 11 days after the surgical procedure, we perform a cholangiography on the transcystic tube, with the abrupt termination of the contrast substance in the retroduodenal CBD, which rises the suspicion of a retained CBD lithiasis (Fig. 2).

Upper digestive endoscopy, that had not been performed preoperatively because of the surgical emergency, certify the presence of a duodenal diverticulum of about 2 cm in diameter, the duodenal papilla being situated entirely inside it.

An abdominal magnetic resonance imaging (MRI) and a colangio-MRI are performed, finding a diverticulum situated



Figure 2. Cholangiography aspect on the transcystic tube

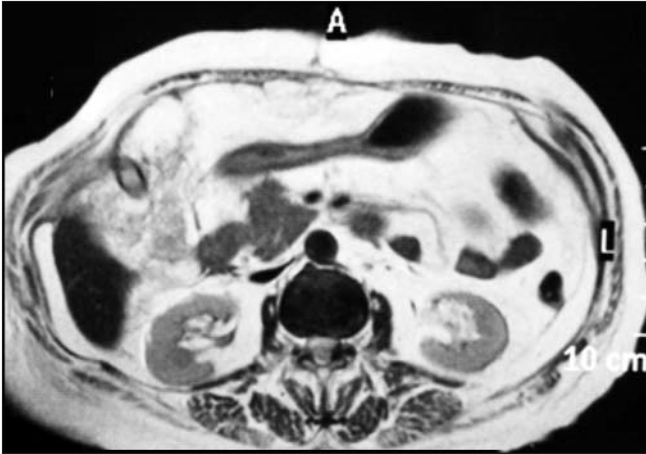


Figure 3. MRI aspect of the periampullary duodenal diverticulum

on the inner side of the descending duodenum, measuring 21 mm in diameter and presenting a hidroaeric level, as well as a CBD with sudden decalibration, seeming to mold a stone (Fig. 3).

An ERCP is indicated, visualizing the papillary orifice situated on the left wall of the duodenal diverticulum. Repeated attempts of cannulation of the CBD using a sphincterotome with guide are made, but without success. Saline is injected through a needle to facilitate the approach, but only a pancreatogram is obtained. Decision is made to inject the contrast substance in the transcystic tube, viewing a CBD of 13 mm in diameter, with distal decalibration. Simultaneously, a guided wire is advanced through the transcystic tube, identifying the hypothetical path of the CBD. A precut sphincterotomy fistula technique is performed in the point of maximum projection of the guide in the duodenum, in the proximity of the papillary apparatus, and the guide from the transcystic tube is advanced in the created orifice. It is cannulated using sphincterotome with guide, beside the guide advanced through the transcystic tube, performing retrograde sphincterotomy. The common bile duct is controlled with a balloon, with the extraction of biliary sludge, ultimately inserting a biliary stent of 10 French, 11 cm long, for protection (Figs. 4-8).

Following this procedure, the patient has a favorable outcome, with the extraction of the biliary stent 30 days after performing the ERCP.

Discussions

The retained CBD lithiasis represents a problem whose solution is not always easy to achieve. With the possibility of a new operation, difficulties of surgical approach, associated anesthetic risks and following the development of therapeutic endoscopic means, extraction of retained CBD lithiasis by performing an ERCP represents the method of choice. Nevertheless, there are particular situations caused by complex local anatomical conditions, as in our case, where the CBD lithiasis is associated with the presence of a periampullary duodenal diverticulum, making the endoscopic approach of



Figure 4. Transcystic tube cholangiogram

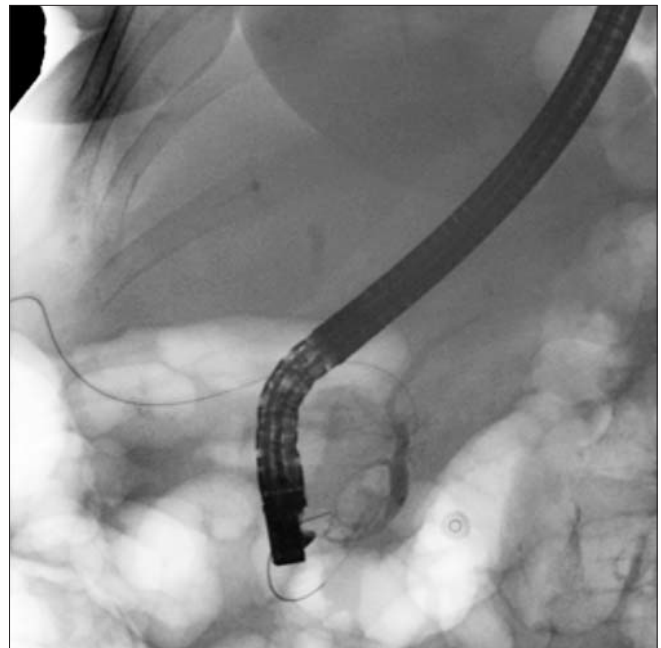


Figure 5. The guide advanced on the transcystic tube in the duodenum after advancing through the precut orifice (it is also observed the wirsungogram obtained transpapillary). Meeting with the duodenoscope

CBD very difficult. It has been demonstrated that patients presenting a periampullary duodenal diverticulum have a failure rate of ERCP higher compared with patients that don't present this type of diverticulum (11-13).

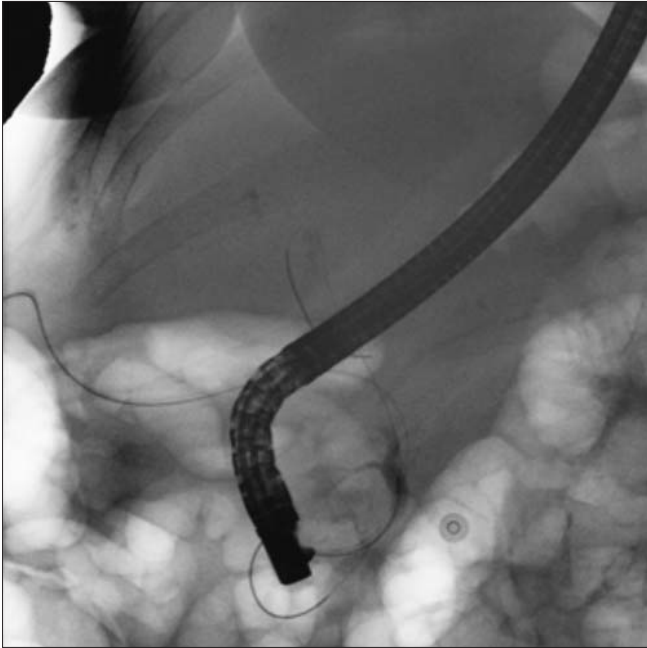


Figure 6. The guide advanced on the transcystic tube in the duodenum and the guide advanced in the intrahepatic biliary ducts after cannulation of the precut orifice with the sphincterotome beside the guide advanced on the transcystic tube

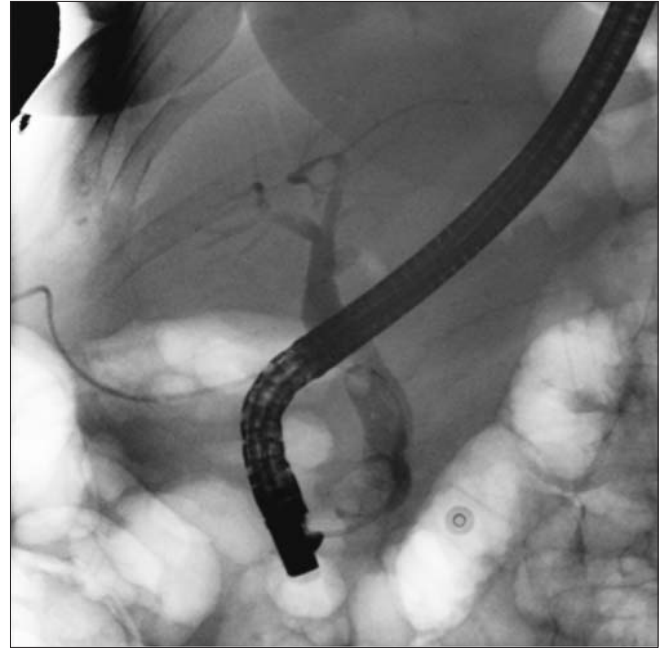


Figure 7. Cholangiogram on the sphincterotome, after the extraction of both guides

There are described three types of periampullary duodenal diverticula according to the position of the large duodenal papilla at ERCP examination – inside the diverticulum, on the edge of the diverticulum or outside the diverticulum up to a distance of 3 cm (14). Our patient presented a duodenal papilla located entirely inside a duodenal diverticulum (on its left wall), the endoscopic approach being accomplished with great difficulty. Thus, it was resorted to advancing a guide on the transcystic tube, which helped identify the direction of the CBD and subsequently achieving the approach of the CBD, by using the precut sphincterotomy fistula technique.

Commonly used in the ERCP tertiary centers, the endoscopic approach of the CBD using the precut sphincterotomy fistula technique is realized in the hypothetical direction of the CBD, „blindly”, things becoming more complex in the presence of a duodenal diverticulum with a significantly risk of perforation (15). This technique rarely benefits, in the context of the presence of an unapproachable intradiverticular papillary apparatus, of the possibility of identifying the CBD using a guide introduced through a transcystic tube or a Kehr tube previously placed in a surgical operation, as in our case, which is exactly the particularity of our case report.

Conclusions

1. The presence of a duodenal diverticulum may represent a disease of its own, often without clinical expression, its discovery being usually incidental, when it is associated with another vicinity disease.
2. The association between a CBD lithiasis and the presence of a duodenal diverticulum may require an interdisciplinary collaboration between the surgeon and gastroenterologist, sometimes representing a therapeutic challenge due to the increased risk of endoscopic failure.
3. In case of a periampullary duodenal diverticulum, the difficulty degree of the endoscopic approach of the CBD

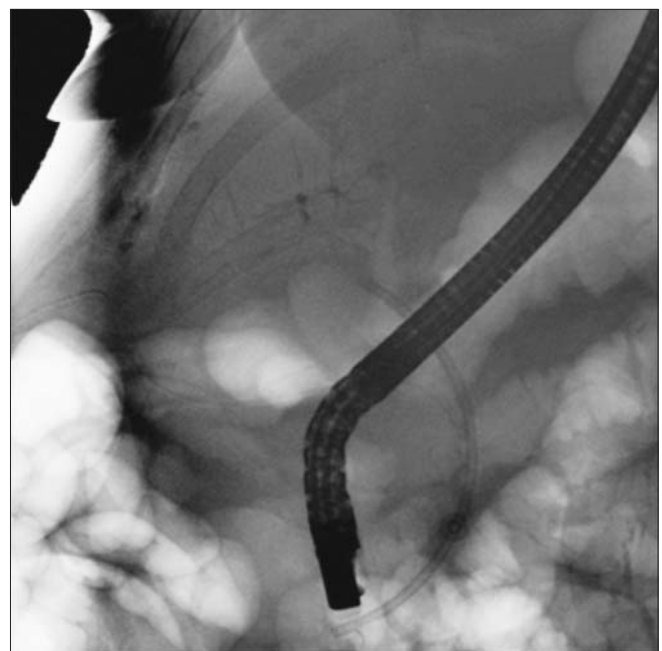


Figure 8. Biliary stent in the final of the procedure

depends on the location of the duodenal papilla in relation to the diverticulum.

4. In case of an intraoperative suspicion of retained CBD lithiasis, with the impossibility of making an intraoperative cholangiography or coledocoscopy, placing an external biliary drainage using a transcystic tube or a Kehr tube can increase the success chances of an ERCP performed postoperatively, by facilitating the approach of the CBD.

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