Abstract

Background: The obstruction of the main bile duct by a foreign body, followed by lithogenesis at that level, is rarely encountered in the literature especially when the foreign body is a plastic biliary stent. We have not found referrals concerning the stone formation as a complication at the level of a biliary stent. Case report: A 59-year-old female patient was referred with abdominal pain and jaundice. The patient had had a biliary prosthesis inserted 42 months earlier for treatment of biliary stenosis and fistula, complications that occurred after a laparoscopic cholecystectomy. Imaging investigations evidenced the presence of obstructive jaundice and the biliary stent with gall stones adherent on its surface. After the failure of an endoscopic extraction attempt, surgical intervention ensured the removal of the stent and the gallstones formed on its surface. Conclusion: The particularity of the case consists of the rarity of such a complication after biliary stenting. At the same time, it emphasizes the need for postoperative follow-up, in order to avoid this kind of complication, potentially fatal.

Key words

Bile duct lithiasis – biliary stent – foreign body.

Introduction

Endoscopic common bile duct (CBD) stenting is recommended as the treatment of choice in the case of iatrogenic bile duct stenosis with a success rate comparable to surgical treatment (72% vs. 83%). This kind of procedure can solve even a possible biliary fistula, a complication that can appear after a laparoscopic cholecystectomy [1]. The biliary stenting is performed either with plastic or metal stents, studies recommending their replacement after 3-6 months [2-5], in order to avoid complications such as: occlusion, migration of the stent or cholangitis [5]. Common bile duct obstruction by a foreign body is a rare cause of obstructive jaundice, especially when it occurs due to a biliary stent on which \textit{de novo} gallstones have formed.

Case presentation

A 59-year-old woman was hospitalized in the 3rd Surgery Clinic, Cluj-Napoca in June 2011, complaining of upper abdominal pain, progressive jaundice, light stools, dark urine. The patient’s history confirmed a laparoscopic cholecystectomy that had been carried out in another hospital 42 months earlier for acute lithiasic cholecystitis complicated with biliary fistula and CBD stenosis. This was the reason for a Cook 10 Fr stent being inserted into the CBD (on day 8 after surgery) via an endoscopic procedure. After surgery, the patient mentioned recurrent episodes of cholangitis that had been resolved with conservative treatment. Past history and medical documents submitted by the patient did not indicate an extraction or replacement of the biliary stent. Apart from signs of thrombosis at the level of the left portal vein, ultrasound investigations carried out before and after cholecystectomy did not report other changes at the hepatoporo-biliary level.

When admitted to the hospital, the diagnosis of obstructive jaundice was supported by the biochemical tests which indicated increased values of bilirubin, cholestasis and moderate liver citolysis (total bilirubin = 5.4 mg/dl; conjugated bilirubin = 2.6 mg/dl; alkaline phosphatase = 3073 U/L; γ glutamyl transferase = 303 U/L; AST U/L = 106; ALT = 76 U/L). Serum cholesterol level was elevated (275 mg/dl).

Abdominal ultrasound revealed significant intrahepatic...
bile ducts dilatation due to the obstacle at the level of the CBD. Furthermore, the investigation indicated atrophy of the left lobe of the liver, with hypertrophy of the first hepatic segment. Nuclear magnetic resonance cholangiography showed the presence of a foreign body in the CBD (stent) and lacunar defects that suggested stones inside the CBD up to the proximal segment of both hepatic ducts; the left portal branch was filiform (Fig. 1).

It was decided to perform an endoscopic intervention but the attempt to retrieve the biliary stent failed, because of the “cemented” new structure formed by the stent and the stones inside the biliary tree. Hence, a surgical procedure was necessary. The intraoperative exploration of the liver revealed atrophy of the left hepatic lobe and an enlarged caudate lobe. The hepatoduodenal ligament was dissected and the CBD identified; it was enlarged (15 mm), with important locoregional inflammatory reaction. A longitudinal choledochotomy was performed and pigment, of increased consistency gall stones were detected, which were tightly adherent to the surface of the plastic stent (Fig. 2). In “block” extraction of the biliary prosthesis and of the gallstones from the bile ducts was performed (Fig. 3). The surgical procedure was completed by choledochoraphy and a T tube (Kehr) placed inside the CBD.

The patient had an uneventful postoperative evolution with complete symptom resolution. The repeated laboratory analysis revealed normalized liver function tests. The patient was discharged on the 14th day after the suppression of the external biliary drainage tube.

**Discussion**

Cholangitis is the most common complication after biliary stenting. Due to its recurrent character, the risk of liver abscesses, secondary sclerosing cholangitis and biliary cirrhosis is increased. It also may develop as an icterouremic cholangitis, that is potentially fatal. In the case of biliary fistula caused by iatrogenic lesions type A and D

![Fig 1. MR cholangiography: foreign body in the common bile duct.](image1)

![Fig 2. Lithiasis on biliary plastic stent; intraoperative aspect](image2)

![Fig 3. Lithiasis on plastic stent; aspect after removal from the common bile duct](image3)

(classification of Strasberg-Soper), maintenance of the stent is not needed for more than a few weeks. In case of CBD stenosis, the healing process may take a while. Therefore, in young patients or in patients with repeated episodes of cholangitis, the surgical biliodigestive reconstruction surgery (choledochojejunostomy anastomosis with à la Roux loop) is preferred [6-8].

A literature review revealed a small number of similar cases in which fragments of drainage tubes, fish bones or other food scrap materials, metal clips, unresorbable suture materials or parasites were the matrix cores for lithogenesis, that ultimately led to the occlusion of bile ducts [9-23]. We did not find referrals concerning the lithiasis formation as a complication at the level of a biliary stent when we searched for case reports, published abstracts and reviews to date, using the following MeSH terms: biliary stent, cholelithiasis, jaundice, foreign bodies, biliary calculi.

Extraction of these foreign bodies is usually done endoscopically; surgery is rarely necessary [24, 25].

In the case of our patient, the endoscopic stenting solved the iatrogenic complication that occurred after cholecystectomy. However, inadequate follow up of the postoperative and postendoscopic period led finally to the need for another surgical procedure. Without this surgical procedure the life of the patient could have been jeopardized by complications secondary to biliary obstruction: liver
cirrhosis, liver failure. In our patient, the lithogenic process was initiated on the remnant biliary stent that had not been replaced or extracted and caused repeated episodes of cholangitis. The thrombotic complication of the left portal branch led to atrophy of the left hepatic lobe, but this was compensated by the hypertrophy of the un-affected hepatic parenchyma, so that liver function remained in normal range.

Although rare, bile duct obstructions by a foreign body with secondary lithogenesis at this level is possible. Endoscopic and surgical extraction of these bodies is mandatory, in order to avoid the complications of obstructive jaundice.

References