

Case Report

Laparoscopic cholecystectomy turning into a challenge case after aberrant circuit bilio-digestive anastomosis: A case report

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Abstract

This case illustrated the transformation of a routinely done procedure into a complex case. An aberrant Roux-en-Y bilio-digestive anastomosis was discovered per operatively after laparoscopic cholecystectomy. A step-by-step rectification of this aberrant circuit was performed. Critical view of safety and technical recommendations respect avoids therapeutic challenging cases.

INTRODUCTION

Laparoscopic cholecystectomy constitutes a routinely practiced procedure worldwide. In order to avoid bile duct injuries, critical view of safety had to be respected in all cases [1] as well as inflection point and bail out procedure's in front of per operative difficulties [2]. The occurrence of bile duct injury had to be managed in a tertiary referral hepatobiliary centers since surgical repair could be technically challenging especially in a stressful environment as in this complication per operative recognition [3]. Elsewhere, challenging therapeutic complications took place with life threatening conditions as in our case. The work has been reported in line with SCARE criteria [4].

PATIENT AND OBSERVATION

A 34-years old woman, with no medical history, was operated on in another department for symptomatic cholelithiasis. A conversion from laparoscopy to laparotomy was performed for per operative difficulties. A cholecystectomy with Roux-en-Y jejunal loop in extra-hepatic bilio-digestive anastomosis was done for a class III bile duct injury. She had a complicated post-operative course with a biliary leak treated conservatively with

a drying up three months after its onset. Then, a biliodigestive fistula was diagnosed with an output around 100 cc per day. She was admitted at our department six months after the primary surgery for a septic shock secondary to liver pyogenic abscess. Physical exam demonstrated two fistulous orifices via right subcostal scar and the previous drainage orifice with a tenderness in the right hemiabdomen. Biology showed a hyperleukocytosis at 21700 element/mm³, an elevated C-reactive protein of 199.8 mg/l, a low hemoglobin rate at 5.7 g/l, an anicteric cholestasis with elevated gamma-glutamyl transferase to 26 folds the normal range, a low prothrombin level of 20%, and a functional renal insufficiency with a blood creatinine level of 101 umol/l. After energetic resuscitation, Computed tomography was done. It confirmed the presence of the two fistulous orifices and revealed the presence of a pyogenic liver abscess in segments 7 and 8, a small bowel distension, and a distended Roux-en-Y jejunal loop (Figure 1). The patient was operated on after resuscitation by the previous right subcostal laparotomy. She had a surgical drainage for liver abscess drainage after bacteriological sampling as well as for the discovered biloma in front of the bilio-digestive anastomosis. The per-operative exploration revealed technical issues. At one hand, the trans-mesocolic Roux-en-Y jejunal limb



Figure 1 Computed tomography showing a fistula orifice through the right subcostal scar with an enlarged Roux-en-Y jejunal loop.

was distended with a twisted mesentery leading to venous stasis and intestinal distension. At the other hand, the lower part of the Y was anastomosed to the terminal ileum 30 cm before the ileocecal junction rather than the proximal jejunal (Figure 2). Hence, it corresponded to Roux-en-Y trans-mesocolic ileal loop in extra-hepatic bilio-digestive anastomosis rather than Roux-en-Y jejunal loop. This discovery corresponded to an aberrant bilio-digestive circuit. Critical thinking in front of this unusual and unexpected discovery allowed to choose the optimal therapeutic option at that moment. Disconnecting the biliodigestive anastomosis with re-anastomosis was difficult to perform for three reasons. First, it needed to go higher in the biliary tree to perform a new bilio-digestive anastomosis upon a well vascularized non scarry bile ducts with the risk of having more than one duct with a non-previously studied biliary anatomy. Second, intestinal sacrifice with multiple anastomoses was necessary magnifying postoperative morbidity. Third, the patient had a septic shock with an altered nutritional status. Hence, an out-of-the box solution was used: resection of the lower part of the twisted loop, ileo-ileal side-by-side isoperistaltic anastomosis constituting the lower part of the Y, as well as the anastomosis of the higher part of the Y; remaining connected with the biliary tree; with the second jejunal loop in side-by-side isoperistaltic manner. Bacteriological exams concluded to *Enterococcus Fecalis* and *Escherichia Coli* within the biloma and the liver abscess respectively. An Imipenem-Amiklin combination was administrated. Seven days after surgery, external biliary fistula was noticed again. Abdominal computed tomography concluded to fluids in the right iliac fossa. Percutaneous drainage of these fluids showed a clear aspect with a negative culture. Ten days later, a right pleural empyema was treated by infected fluids prompt evacuation with appropriate antibiotics. Thirty days postoperatively, bilio-digestive fistula reappeared with a daily output of 200-600 cc. After restoring a correct nutritional status, treating pleural empyema by prompt drainage associated to antibiotics, prescribing anti-depressive drugs for depressive status, and exploring the biliary tree, the third surgery was decided. Biliary magnetic resonance imaging revealed a normal intra-hepatic biliary ducts caliber with drainage of the right anterior sectorial duct into the common bile duct 5 mm above the bilio-digestive anastomosis corresponding to a selved confluence (Figure 3). Computed tomography with fistulography concluded to a dilated upper part of the Y in the

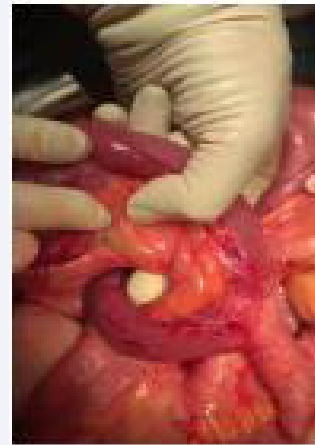


Figure 2 Per operative view demonstrating a technical issue with the confection of Roux-en-Y jejunal loop in extra-hepatic bilio-digestive anastomosis.

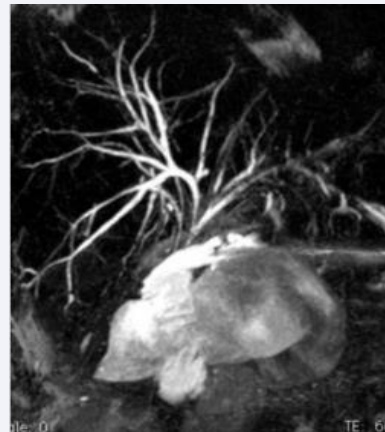


Figure 3 Biliary magnetic resonance imaging demonstrating a nonmodal anatomy: Drainage of the right anterior sectorial duct into the common bile duct 5 mm above the bilio-digestive anastomosis.

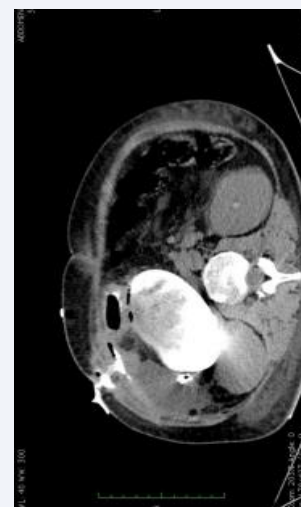


Figure 4 Computed tomography demonstrating the cause of the enterocutaneous fistula.

bilio-digestive anastomosis responsible for the enterocutaneous fistula (Figure 4). The surgery took place three months after the second surgery. It revealed that the enterocutaneous fistula was localized on the upper part of the Y, 60 cm above the lower part of the Y, under mesocolically. A disconnection of this fistula was done with excision of 5cm small intestine. A side-by-side isoperistaltic anastomosis was carried out. Thirty days later, enterocutaneous fistula reappeared associated to another localization upon the middle abdominal line. Biliary magnetic resonance imaging showed a centimetric parietal defect localized in the remaining portion of the bilio-digestive anastomosis and explaining all the enterocutaneous fistulae. In fact, the jejunal part remaining from the primary bilio-digestive anastomosis has a wrong orientation with a peristalsis from the right side to the left side. This peristalsis orientation corresponded to a reverse peristalsis leading to the stagnation of bile and intestinal fluids within this segment rather than its passage into the Y limb. This aberrance wasn't evident so far because the cause of the aberrant circuit was thought to be only the twisted mesentery and the wrong site of anastomosis in the lower part of the Y. In order to make a correct biliary drainage by restoring a correct peristaltic sense, a new upper part of the Y was performed and anastomosed to the remnant part of the initial bilio-digestive anastomosis after resection of the fistulated part. The postoperative course was uneventful. No enterocutaneous fistulae occurred after 14 months.

DISCUSSION

This case illustrated the serious consequences of the critical view of safety's non-respect during laparoscopic cholecystectomy transforming a routinely performed procedure into an aberrant circuit bilio-digestive anastomosis with snowball effect [5]. Mini-invasive laparoscopic cholecystectomy has replaced open cholecystectomy since early 1990s for symptomatic cholelithiasis, acute calculous cholecystitis, acalculous acute cholecystitis, chronic calculous cholecystitis, gallstone pancreatitis, biliary dyskinesia, gallbladder polyps and/or tumors [6]. The aberrant circuit bilio-digestive anastomosis occurrence was due to successive errors potentiating each other leading a snowball effect. In fact, the critical view of safety wasn't observed. Bail out procedures weren't taken under consideration leading to biliary duct injury class III [7]. When recognized per operatively, immediate repair was done instead of referring the patient to a tertiary referral hepatobiliary center. Hence, an aberrant circuit bilio-digestive anastomosis was performed with a neglected biliodigestive fistula responsible for a septic shock. The therapeutic strategy was first to overcome this life-threatening complication. The second step was to explore the biliary tree in order to determine if a redo biliodigestive anastomosis was possible or not. This possibility was judged not safe since biliary tree anatomic variant existed corresponding to selved confluence. Hence, rectifying this aberrant circuit was challenging and needed several steps in order to restore a technically well oriented bilio-digestive anastomosis. This biliary tree anatomic variant constituted a bile duct injury risk factor as well as obesity, biliary tract previous surgery, underlying liver disease, acute cholecystitis, surgeon's related factors such as during learning curve, fatigue, rush to finish the procedure [8].

CONCLUSION

Critical view of safety is mandatory for every laparoscopic cholecystectomy. Inflection point and bail out procedures had to be applied in front of per operative difficulties. In case of bile duct injury's per operative recognition, the patient had to be referred to a tertiary center rather than performing a hazardous bilio-digestive anastomosis.

AUTHORS' CONTRIBUTIONS

Sana Landolsi, Ben Othmen Mohamed Raouf: Substantial contributions to the conception and interpretation of data for the work.

Amine Abdelhedi, Hichem Rakkeh: Substantial contributions to the acquisition of the work.

Bel Hadj Anis, Fahd Khfacha : Substantial contributions to the analysis of data for the work.

Ridène Imen: Substantial contributions to the analysis of radiological data for the work.

Faouzi Chebbi : Final approval of the version to be published.

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