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CASE REPORT

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An interesting case report of delayed presentation of post-cholecystectomy benign biliary stricture

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Abstract

Background The most common cause of benign biliary stricture is bile duct injury after cholecystectomy. Benign biliary strictures are associated with a broad spectrum of signs and symptoms, ranging from subclinical disease with mild elevation of liver enzymes to complete obstruction with jaundice, pruritis, and cholangitis ultimately leading to biliary cirrhosis. The average duration for stricture development after cholecystectomy is around 7 months. This is a case report of a benign biliary stricture presenting 14 years after laparoscopic conversion to open cholecystectomy without the development of recurrent cholangitis and secondary biliary cirrhosis.

Keywords Benign biliary stricture, Laparoscopic converted to open cholecystectomy, Delayed presentation, Roux-en-Y hepaticojejunostomy

Case presentation

A 48-year-old lady presented with complaints of jaundice with highly colored urine and pruritus for 1 month. There was no history of fever, clay-colored stools, loss of appetite, or loss of weight. Past history revealed laparoscopic converted to open procedure due to a difficult cholecystectomy (14 years back), and a T-tube was placed. The drain was also placed, which was draining 80–100 ml of bile per day which gradually decreased and was removed on day 10. After a period of 1 month, a T-tube cholangiogram was done which showed normal biliary anatomy (Fig. 1) without any leakage with free flow of contrast into the duodenum and hence the tube was removed. After that, the patient was symptom-free.

For the above symptoms patient was evaluated with contrast-enhanced computerized tomography abdomen (Triple phase) which showed bilobar intrahepatic biliary radical dilatation with focal narrowing just distal to the confluence of the hepatic duct. The narrowed segment measuring 4 mm is seen near the second part of the duodenum with the rest of the common bile duct(CBD) appearing normal. MRI with MRCP showed abrupt narrowing just below the confluence with bilobar intrahepatic biliary radical dilatation suggestive of Strasberg Type E3 (Fig. 2). She was planned for Roux-en-Y hepatico-jejunostomy.

Operative findings

There was moderate perihepatic omental and duodenal adhesion present. Adhesiolysis was done. CBD was dilated (9 mm). Common hepatic duct stricture was visualized at the level of confluence (confluence was intact) type E3. Hilar plate was taken down and the left hepatic duct was mobilized. Common hepatic artery and left and right hepatic artery pulsations were intact. Ductotomy was done at the hilum that was extended to the left duct. Retrocolic Roux-en-Y hepatico-jejunostomy (Fig. 3) (side to side) was done in a single layer with PDS 4-0,

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Fig. 1 T-Tube cholangiogram in the immediate post-operative period

Fig. 2 MRCP showing benign biliary stricture

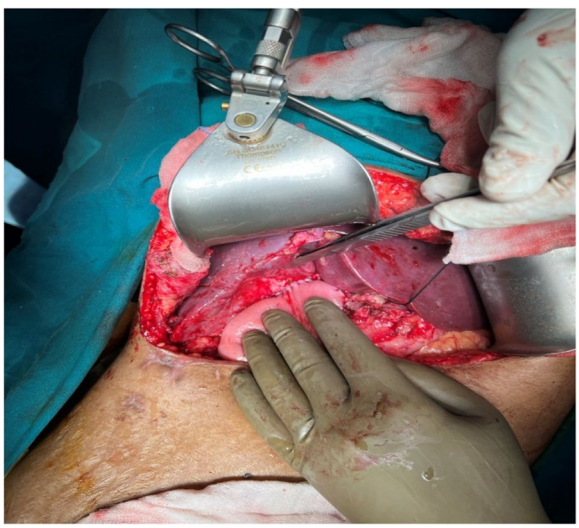

Fig. 3 Roux-en –Y hepaticojejunostomy (intra-operative photo)

interrupted sutures. Jejuno-jejunostomy was done in 2 layers, inner PDS 3-0, outer prolene 3-0, continuous.

Discussion

Laparoscopic cholecystectomy (LC) is one of the most frequently performed procedures in general and gastro intestinal surgery. It is now the gold standard treatment for gallstone diseases. Bile duct injury (BDI) is one of the disastrous complications after cholecystectomy, with an incidence of 0.2–0.4% with laparoscopic procedures and 0.1–0.3% in open cholecystectomy [1]. Benign biliary strictures are associated with a broad spectrum of signs and symptoms, ranging from subclinical disease with mild elevation of liver enzymes to complete obstruction with jaundice, pruritis, and cholangitis and ultimately leading to biliary cirrhosis [2]. Bile duct injury may present from minor bile leak to major bile duct injury followed by stricture and its manifestation months to even years after surgery. Various factors such as the complexity and location of the injury, anatomical variation, the degree of inflammation, the presence of ongoing infection or sepsis, and the expertise of the surgeon determine the successful management of bile duct injury [3].

We managed our patient, a 48-year-old lady with benign biliary stricture who presented 14 years after laparoscopic converted to open cholecystectomy, with Roux-en-Y hepatico-jejunostomy. She was completely asymptomatic until 1 month back following index cholecystectomy. Possible explanations for the development of delayed biliary strictures include ischemia if the operating surgeon dissects too close to the bile duct and in so doing disrupts the microvascular supply of the bile duct by damaging the arterial plexus around the bile duct. A bile leak may trigger an initial inflammatory response which heals by fibrosis around the bile duct causing stricture [2].

A patient can be asymptomatic for a long duration. However, symptomatic patients can present with pain, jaundice, pruritus, recurrent cholangitis, or simply alteration in liver function tests. Dilation of the intrahepatic biliary tree or the CBD can be found on an ultrasound/MRCP. MRCP can accurately delineate the biliary anatomy and the site and length of the stenosis and it is most useful before planning further treatment [4]. Alternatively, a rendezvous method in the setting of failure of an ERCP and a successful percutaneous transhepatic cholangiography (PTC) can offer the possibility of dilation and stenting, but there will be a chance of restricture and need for multiple interventions. So, considering the treatment options, availability, and technically demanding nature of endoscopic treatment, along with the need for repeated interventions, failure rate, costs, and geographical difficulties, one-time definitive treatment in

the form of elective Roux-en-Y hepatico-jejunostomy is preferred [5, 6]. The use of an endoscopic stent as definitive management of BDI is not recommended due to the above-mentioned reasons [6].

According to a study by Sikora et al., the average duration for stricture development was around 7 months [7]. According to another study, the median time to development of delayed biliary strictures post-cholecystectomy was 510 days (IQR 154–900) [2].

As time passes, the majority of patients develop complications either in the form of portal hypertension or spontaneous bacterial peritonitis. The longest duration of stricture development following cholecystectomy is uncertain to say, but in our patient, it was 14 years. In patients with biliary strictures, symptoms are often delayed. Cholestatic jaundice with choluria, fecal acholia, and pruritus are the most common clinical signs and symptoms. If cholangitis develops, fever with chills is typically associated with jaundice. Recurrent cholangitis is one of the catastrophic complications of bile duct stricture, hepatic injury leading to atrophy and dysfunction from complete bile duct occlusion. Sepsis and multi-organ failure can develop in both clinical settings. Indeed, the clinical course of undiagnosed or unrepaired BDI can evolve into benign biliary stricture further causing secondary biliary cirrhosis with portal hypertension, liver failure, and even death [2].

Biliary strictures are classified as per the Bismuth classification according to the level at which healthy biliary tissue is available for surgical repair [8]. The Bismuth classification was developed prior to the widespread use of laparoscopic cholecystectomy and is related to bile duct strictures. This classification is simple and has been accepted universally for use in the classification of biliary injury, especially in the complete injury of the bile duct, and is the basis for the more widely used Strasberg classification [9].

When the stricture is below the confluence (Bismuth type I or II), a direct anastomosis to the hepatic duct stump is usually straightforward. However, when the stricture reaches up to the confluence of the right and left hepatic ducts (type III) or extends proximally so as to isolate the ducts right or left (type IV A/B), the repair becomes more complex, and good results are more difficult to achieve. In type V, sufficient exposure of both the right and left ducts and the injured aberrant right duct is required for adequate repair. Surgery is associated with better outcomes in terms of morbidity, mortality, quality of life, and improved survival. Early identification and prompt management of benign biliary stricture can prevent devastating sequelae such as recurrent cholangitis, and biliary end-stage liver disease which might require transplant. Long-term follow-up is essential after the repair of a benign biliary stricture because recurrence can develop several years after repair.

Conclusion

Iatrogenic injury to the bile duct can present as bile duct stricture following laparoscopic cholecystectomy. BBS can present even after several years and without the development of secondary biliary cirrhosis, recurrent cholangitis, and derangement in liver function tests. Benign biliary stricture should be repaired electively by an experienced hepatobiliary surgeon by performing a Roux-en-Y hepatico-jejunostomy.

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Authors' contributions
NG analyzed the patient data and was a major contributor to writing the manuscript. KH performed the definitive procedure. NG was an assistant in the operative procedure. GH and SB were responsible for post-operative care and rehabilitation of the patient. All authors read and approved the final manuscript.

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Availability of data and materials
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Declarations

Ethics approval and consent to participate
Written informed consent was taken from the patient after ethical clearance was taken from the National Institute of Medical Sciences and Research.

Consent for publication
Written informed consent was taken from the patient for publication of this case report and intra-operative images and investigations.

Competing interests
The authors declare that they have no competing interests.

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