Bilioenteric bypass stricture type II with hepatolithiasis: A case report

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ABSTRACT

Introduction: Secondary hepatolithiasis can occur as a result of bilioenteric stenosis or biliary anastomosis stenosis. The incidence of secondary hepatolithiasis appears to increase with increasing rates of hepatobiliary surgery. Here we report the first reported case of secondary hepatolithiasis.

Case presentation: A 57-year-old female patient complaining of jaundice all over the body since two years ago. The jaundice was intermittent and progressive. There was a history of previous bilioenteric bypass hepaticojejunostomy Roux-en-Y due to common bile duct cyst. On investigation, we found obstructive jaundice due to stricture of biliary anastomosis type II after bilioenteric bypass hepaticojejunostomy Roux-en-Y with hepatolithiasis type II LR, according to the Takada classification. We did laparotomy found bilateral hepatic duct dilatation, we make incision and remove multiple stones. And then, we performed choledochoscope and confirm total occlusion of tract to distal common hepatic duct. We performed reconstruction Roux-en-Y hepaticojejunostomy with stenting. During the follow-up period, our patients were disease-free.

Conclusion: Stricture of bilioenteric anastomosis were successfully treated by surgical reconstruction Roux-en-Y hepaticojejunostomy and stenting. This management has a good outcome and could be an effective alternative to surgery.

1. Introduction

Surgery involving the hepatobiliary system, as in the case of choledochal cysts, can increase the risk of secondary hepatolithiasis [1]. Bilioenteric bypass procedures e.g., Roux-en-Y hepaticojejunostomy used in such cases, can cause complications such as biliary stricture at the site of the anastomosis. Bilioenteric stenosis or biliary anastomosis stenosis can cause secondary hepatolithiasis that results in obstructive jaundice [2]. The incidence of secondary hepatolithiasis appears to increase with increasing rates of hepatobiliary surgery and life expectancy [1]. Although usually benign, hepatolithiasis is associated with recurrent biliary stricture, cholangitis, hepatic abscess, hepatic atrophy, hepatic cirrhosis, and poor prognostic factors in intrahepatic cholangiocarcinoma [3]. To the best of our knowledge, and this is the first reported case of secondary hepatolithiasis. We reported the case in accordance to the SCARE 2018 guidelines [4].

2. Case report

A 57-year-old woman was admitted with jaundice all over the body in the last two years. The jaundice was intermittent and progressive. This complaint was accompanied by weight loss of around 20 kg in the last one year. There was no nausea, vomiting, abdominal pain, itching on the body, and fever. The patient reported dark urine, and pale stools manifested in the last six months. There was a history bilioenteric bypass hepaticojejunostomy Roux-en-Y due to common bile duct cyst, two years previously. There was no history of chronic disease. There was no family history of jaundice. Vital sign within normal limits.

Physical examination revealed a lack of nutritional status, the presence of anemic conjunctiva, scleral icterus, jaundice, and surgical scars in the abdomen (Fig. 1). On rectal toucher examination, a pale stool was found. From laboratory tests found a decrease in hemoglobin (7.6 mg/dl), negative results for serum HBsAg tests, and an increase in liver enzymes (AST 177 U/L and ALT 85 U/L), serum direct bilirubin 18.66 mg/dl, and total serum bilirubin level 20.15 mg/dl. Chest X-ray
examination within normal limits. On non-contrast MRCP showed di-
lated right and left intrahepatic duct containing multiple stones, and
striction of bilioenteric anastomosis (Fig. 2). The patient was diagnosed
with obstructive jaundice due to stricture of bilioenteric anastomosis
after bilioenteric bypass hepaticojejunostomy Roux-en-Y with hepato-
lithiasis type II LR according to the Takada clas-
sification.

Exploratory laparotomy bilioenteric anastomosis reconstruction was
then we decided to do (Fig. 3). During surgery, a bilateral subcostal
incision (Mercedes incision) and adhesiolysis was performed. We found
bilateral hepatic duct dilatation, we make an incision and remove
multiple stones. And then, we performed a choledochoscope and con-
firmed the total occlusion of the tract to the distal common hepatic
duct. We did reconstruction Roux-en-Y hepaticojejunostomy with
stenting from the left hepatic duct to the right
flank.

The postoperative management includes oral feeding administered
via nasogastric tube after 48 h of aspiration, H2 blockers, and
antibiotics drug, monitoring of complete blood count, and hepatic
function for the first four postoperative days. After discharge, clinical
conditions and liver function are monitored at 1, 3, and 6 months from
surgery. Liver morphological findings were assessed by assessed
radiography such as abdominal ultrasonography (US) and MRCP. Dur-
ing the follow-up period, our patients were disease-free.

3. Discussion

Obstructive jaundice is a condition where there is a partial or
complete blockage of the flow of bile and its components into the in-
testinal tract. Cholestasis classified into intrahepatic cholestasis, and
extrahepatic cholestasis [5]. Hepatolithiasis is one of the causes of
obstructive jaundice. Hepatolithiasis is associated with recurrent cho-
langiitis, biliary stricture, hepatic abscess, liver atrophy, liver cirrhosis,
and poor prognosis in intrahepatic cholangiocarcinoma [1]. The in-
cidence of this disease (hepatolithiasis) varies, but it is quite common in
East Asia, with an incidence rate of around 2–25%. In the Western
world, hepatolithiasis is rare, with incidents reported between 0.6% and
1.3% [3].

Secondary hepatolithiasis can occur as a result of bilioenteric ste-
nosis or biliary anastomosis stenosis [2]. The incidence of secondary
hepatolithiasis appears to increase with increasing rates of hepa-
biliary surgery and life expectancy [1]. Catena et al. reported an in-
cidence secondary hepatolithiasis due to biliary injury due to chole-
cystectomy was about 35.2% [6]. Nowadays, the incidence of bile duct
injury due to laparoscopic cholecystectomy near to 0.6% [2].

In this case, reported the most likely cause is stricture of bilioenteric
anastomosis after bilioenteric bypass hepaticojejunostomy Roux-en-Y
due to common bile duct cyst. Secondary hepatolithiasis that results in
biliary obstruction has clinical manifestations that are similar to pri-
mary strictures. Symptoms that can appear are jaundice, fatigue, fever,
abdominal pain, gastrointestinal bleeding, increased liver function, and
hyperbilirubinemia [2,5].

Abdominal ultrasonography (USG) and computed tomography (CT)
scans are the primary imaging modalities for hepatolithiasis. Magnetic
resonance imaging (MRI) and magnetic resonance cholangiopancrea-
tography (MRCP) can provide more explicit images of the bile duct and
can detect stones without exposing the patient to radiation [3].

Classification of hepatolithiasis according to Takada and colleagues.
It is divided into five types according to the location of stones and
strictures. Type I: no strictures in intrahepatic and extrahepatic biliary
tract, with mild dilation of the biliary system. Type II: biliary stricture
exists in the lower bile duct or ampulla of the duodenum, showing re-
markable dilation on the bile ducts. Type III: stricture at the hepatic
hilum. Type IV: biliary stricture in the unilateral hepatic lobe. Type V:
multiple biliary strictures in the bilateral hepatic lobe or bilateral
congenital biliary cysts [1]. Patients with stones both in the intrahepatic and extrahepatic bile duct as being type IE. In addition, patients were grouped by the location of stones as follows: left side: type L, right side: type R, right and left sides: type LR, and caudate lobe: type C. In this case, considering the symptoms, physical examination, and radiological examination, the most likely diagnosis was obstructive jaundice due to stricture of bilioenteric anastomosis after bilioenteric bypass hepaticojejunostomy Roux-en-Y with hepatolithiasis type II LR according to the Takada classification.

Meanwhile Bismuth classified biliary strictures according to the distance from the hilar structure (Table 1) [7]. In our cases, patient was diagnosed with obstructive jaundice due to stricture of bilioenteric anastomosis type II after bilioenteric bypass hepaticojejunostomy Roux-en-Y with hepatolithiasis (according to Bismuth classification).

The management of hepatolithiasis is complex, requiring a multidisciplinary treatment with the aim of removing stones and bile stasis. Hepatolithiasis management methods include non-surgical treatment (percutaneous transhepatic cholangioscopy lithotripsy) and

**Table 1**

### Bismuth classification of biliary structures.

| Type | Definition |
|------|------------|
| I    | Common hepatic or main bile duct stump ≥2 cm |
| II   | Common hepatic duct stump < 2 cm |
| III  | Ceiling of the biliary confluence is intact; right and left ductal systems communicate |
| IV   | Ceiling of the confluence is destroyed; bile ducts are separated |
| V    | Involves the aberrant right sectoral hepatic duct alone or with concomitant injury of CHD |

Fig. 3. Laparotomy bilioenteric anastomosis reconstruction: A) stricture of bilioenteric anastomosis (arrow); B) hepatolithiasis multiple with sludge (arrow); C) reconstruction Roux-en-Y hepaticojejunostomy (arrow).
surgery such as hepatectomy [3,8,9]. Surgery involving the hepato-
biliary system as in the case of choledochal cysts with cholecystectomy
surgery can increase the risk of secondary hepatolithiasis [1,2]. Bi-
olioenteric bypass procedures e.g., Roux-en-Y hepaticojejunostomy, are
the most frequent procedures and give the best outcome in terms of
outcomes for revision surgery [10].

Revision surgery is the first-choice treatment for recurrent biliary
striction after reconstructive surgery. The Hepp-Couinaud will be the
most adequate approach choice for this surgery. The extrahepatic main
duct can be easily resolved with this technique [2,11].

An alternative to surgery is the placement of a stent with balloon
dilation through a percutaneous or endoscopic approach [12]. Benign
anastomosis stricture after the bilioenteric bypass procedure raises
difficult management problems. Therapeutic options include re-
construction or surgeries with a minimally invasive approach [2,13]. As
in this case, the patient underwent laparotomy adhesiolysis found di-
latation bilateral hepatic duct. A reconstruction Roux-en-Y hepatico-
jejunostomy procedure was performed to repair biliary strictures and
remove the stone, and we combined this procedure with stenting by
large external-internal drainage (14 Fr), for more than four weeks to
drainage of the stones that were likely still remaining and reduce the
risk of stricture relapse.

One of the main complications of this Roux-en-Y technique, al-
though uncommon, is that biliary stricture can exist at the site of
anastomosis as an outcome of fibrotic healing. Post-op stricture for-
mation at the anastomotic site varies throughout the literature from 4
to 38% [14]. Younger age was associated with a decreased likelihood of
stricture formation. A more significant proportion of patients who un-
derwent an operation for hepatolithiasis due to benign biliary strictures
(BBS) were more likely to develop stricture because patients with ma-
ilignant obstructions due to malignancy have dilated ducts reducing the
likelihood of stricture development. Patients with malignancy disease
have poor survival rates, which likely die before this complication can
develop [2,14].

Although surgical reconstruction with Hepp-Couinaud approach is
considered the most definitive treatment, the morbidity rate is around
25%, with a reported mortality rate of 2%–13% [2,10,13] and a success
rate was 97% and 94% [2]. The majority of patients with failure of
biliary repair will begin to develop symptoms within 5–7 years post-
operatively. So prolonged follow-up is necessary [2,11,15]. Patients
must be routinely controlled 2–4 times during the first year after revi-
sion surgery. Evaluation should include clinical examination, liver
function tests (LFT), abdominal ultrasound (US), if necessary, with
abdominal CT scan. After that, follow-up can be done one to two times
per year for a minimum of 5 years [2].

4. Conclusion

Stricture of bilioenteric anastomosis were successfully treated by
surgical reconstruction Roux-en-Y hepaticojejunostomy and stenting.
This management has good outcomes and could be an effective alter-
native to surgery.

Provenance and peer review

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Ethical approval

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