Endoscopic Management of a Biliary Leak Following Surgery

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This is a report of a patient who presented to our unit with massive biliary leak after cholecystectomy. This was related to retained common bile duct stone. The patient was treated by endoscopic sphincterotomy, stone removal and stenting. The leak was sealed after 2 months and the stent was removed.

A biliary leak after surgery usually requires surgical management but the outcome is not favourable, especially in elderly patients and where adhesions and infection have occurred. Sometimes the poor condition of the patient does not permit repeat surgery. In these situations, endoscopic approaches have been successfully tried recently to seal biliary leaks.

In this paper, we report an elderly man who was referred because of a biliary leak and bile ascites following surgery. Endoscopic sphincterotomy followed by stenting achieved closure of the fistula.

Case Report

A 72-year-old diabetic patient was initially treated in a peripheral hospital and underwent laparotomy for gall bladder stones. It was reported that at laparotomy a mass-like lesion around the gall bladder was found. Nothing was removed and abdomen was closed. The general condition of the patient deteriorated and so he was transferred to another regional hospital. The patient underwent a second laparotomy after 3 weeks where the gall bladder was found to be shrunked and fibrotic.

Cholecystectomy was performed, the common bile duct (CBD) was not opened, and no drainage tube was inserted in the bed of the gall bladder. Following this operation the patient showed no improvement.

He complained of vomiting and the day after surgery, he developed abdominal distension and ascites. An ascitic tap showed bile. The patient was referred to our unit for further evaluation and management. On arrival, the patient was critically ill. He was febrile, wasted, dehydrated, and jaundiced with scratch marks. The abdomen was markedly distended with mild generalized tenderness and clean operation scars. A biochemical profile showed total protein of 61 g/l (Normal range: 65–84), albumin 24 g/l (Normal range: 38–51), bilirubin total 45 μmol/l (Normal range: 2–22), alkaline phosphate 416 U/l (Normal range: 36–125), ASP 29 U/l (Normal range: 11–55).

The blood count on arrival showed WBC 8.6 (10^3/l), Hb 13.2 g/dl, platelets 408 (10^3/l), prothrombin time 27/17, partial thromboplastin time 25/29. About a week after admission the patient developed septicemia and his results then were WBC 3.3 (10^3/l), Hb 7.5 g/dl, platelets 343 (10^3/l), prothrombin time 32/17. At that time his urea was 35.8 mmol/l (Normal range: 2.3–7.5), creatinine 492 μmol/l (Normal range: 40–115), total protein 56 g/l, albumin 28 g/l, bilirubin 128 μmol/l, alkaline phosphate 102 U/l, aspartate transaminase 14 IU/l.

Culture of the ascitic liquid grew Serratia marcescens sensitive to netilmicin and also a heavy growth of Pseudomonas aeruginosa which was sensitive to cefazidime and gentamicin. Appropriate treatment was instituted.

An ultrasound of the abdomen showed an extensive ascites filling the whole of the peritoneal cavity. The liver was difficult to examine but showed nothing remarkable.

An ERCP performed on the next day after admission showed stones in the lower CBD and there was a large leak of contrast from cystic duct stump (Fig. 1).
Endoscopic sphincterotomy and stone extraction was performed and a nasobiliary tube for drainage was placed. CAT of the abdomen shows a large bile ascites. Total parenteral nutrition (TPN) was started as the patient was anorexic and his general condition was still poor. Rapid accumulation of ascitic bile was observed despite the nasobiliary drain. A large nephrostomy tube for ascitic drainage was inserted into the peritoneum cavity and bile continued to drain. A repeat ERCP showed a persisting leak of contrast via the cystic duct, though the nasobiliary tree was still in situ. Thus it was decided to insert an endoscopic endoprosthesis (Fig. 2).

A few days after the placement of the stent, a 'hida' (technetium labelled hepatic iminodiacetic acid) scan was performed which showed a good flow of bile to the bowel. After 4 weeks, the patient's general condition had improved substantially. He tolerated his meals and gained weight. The TPN was stopped and the ascitic drain was removed as there was no further abdominal bile leak. Another ERCP was performed 8 weeks after stenting which showed the stent in place and complete sealing of the leak. It was then decided to remove the stent (Fig. 3). The patient was then discharged in a good condition.

**Discussion**

Biliary fistulae can develop after surgical intervention on the biliary tree and can also develop secondary to local pathology such as tumour. The repair of biliary fistulae in the past has been mainly surgical. Reports on endoscopic biliary drainage for correction of biliary fistulae have been published. In many instances this method has proved to be effective in the management of fistulae due to benign or malignant biliary diseases. 6-8

Most instances of biliary leakage due to benign conditions have occurred after operative intervention on the biliary tree especially after cholecystectomy or common bile duct exploration, (as
was the case in our patient). Leaks may develop after uncomplicated operations on the biliary tree when strictures develop in the extra-hepatic bile duct which result in increased bile duct pressure. Endoscopic sphincterotomy has proved in the last 15 years to be effective in removing common bile duct stones. The main advantage of endoscopic sphincterotomy is decompression and reduction of biliary pressure and hence improving the chances for the closure of the fistula.

In case of a large biliary leak the placement of an endoprosthesis above the fistula to bypass the leak permits closure of the fistula. The duration of stenting is a matter for the preference of the endoscopist but a repeat ERCP can be used to find out if the fistula has closed. Huibregste et al. advocated replacement of the stent every 3 months and if possible removal after 6 months while Ponchon et al. advocated the removal after 3 months. In the patient described here we repeated the ERCP with the stent in situ and since we found that the fistula had closed and the stent was removed on that occasion. The endoscopic placement of a stent is easy and in our opinion is superior to other methods for stenting by either the surgical or percutaneous route.

On the other hand endoscopic management cannot be used in cases of complete ligation of the bile duct or complete transection of the duct since in such circumstances the stent cannot be introduced into the proximal biliary tree.

The complications of endoscopic intervention are much less frequent than with other methods of treatment specially in cases of benign pathology. Endoscopic intervention has the advantage that it deals with the aetiology of the increased pressure in the biliary tree which is causing the fistula. Endoscopic sphincterotomy with either stone extraction or biliary drainage can relieve the obstruction. The main complication of stenting is cholangitis, which can develop after clogging of the stent. If this condition occurs the stent can be easily replaced.

References