Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case Report

Combined surgical and interventional radiological treatment for biliary leakage following iatrogenic biliary obstruction☆

Paladini Andrea[a,*], *Borzelli Antonio*[b], *Beomonte Zobel Daniela*[a], *Paladini Luigi*[c], *Corvino Fabio*[b], *Silvestre Mattia*[b], *Frauenfelder Giulia*[d], *Giurazza Francesco*[b], *Niola Raffaella*[b]

[a] *Università Cattolica del Sacro Cuore, Roma – Fondazione Gemelli - Dipartimento di Bioimmagini e Scienze Radiologiche, Rome, Italy*
[b] *AORN "A.Cardarelli", Napoli – UOSC Radiologia Vascolare ed Interventistica, Napoli, Italy*
[c] *Università Cattolica del Sacro Cuore, Roma – Fondazione Gemelli, Rome, Italy*
[d] *Policlinico Universitario Campus Biomedico – Roma, – UOC di Diagnostica per Immagini e Radiologia Interventistica, Rome, Italy*

ARTICLE INFO

Article history:
Received 2 April 2018
Revised 25 April 2018
Accepted 30 April 2018

Keywords:
Biliary leakage
Combined treatment
Complication
Laparoscopic cholecystectomy

ABSTRACT

Biliary leakage is a challenging complication when managing the bile duct strictures. The etiology of benign strictures of the biliary tree may have different etiologies but iatrogenic is the most common, with relevant increase after introduction of laparoscopic procedures.

Interventional radiologist plays a key role, both in diagnosis and treatment of biliary strictures and leakage.

We report on a case of a 39-year-old woman affected by abdominal pain and jaundice after laparoscopic cholecystectomy; jaundice was caused by surgical clipping of the common bile duct. The combined management by surgeon and interventional radiologist, consisting of removal of surgical clip and percutaneous management of biliary leakage, successfully resolved the leakage with clinical success.

Introduction

The treatment of bile duct strictures is challenging from both a surgical and interventional point of view, due to the difficult technical coefficient and the high complication rate.

The interventional radiologist is involved both in diagnosis and treatment of patients affected by post-surgical biliary tract stenosis or biliary leakage. The etiology of benign strictures of the biliary tract is: iatrogenic, outcome of sclerosing cholangitis, liver transplantation or chronic pancreatitis [1].

☆ Conflict of interest: The authors have declared that no competing interests exist.

* Corresponding author.
E-mail addresses: andreapaladini1988@gmail.com (P. Andrea), antonio.borzelli@libero.it (B. Antonio), luigipaladini2006@libero.it (P. Luigi), g.frauenfelder@unicampus.it (F. Giulia), raffaellaniola@tiscali.it (N. Raffaella).

https://doi.org/10.1016/j.radcr.2018.04.029

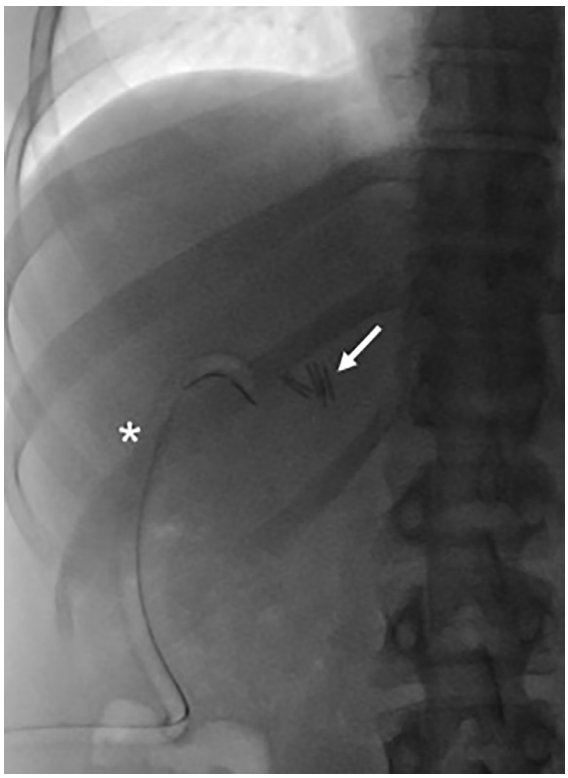

Fig. 1 – The abdomen x-ray before treatment showed the presence of a surgical drainage (asterisk) tube and surgical clips in right hypochondrium. Two clips (arrow) caused iatrogenic and pathological occlusion of the common bile duct.

The last 3 causes, however, are less common and do not need an interventional radiological treatment.

Historically, the incidence of iatrogenic lesions in the biliary ducts increased significantly after the introduction of laparoscopic procedures, mainly laparoscopic cholecystectomy [2]. In literature, the complication rate ranges between 0% and 4% with an average of 0.5%. In 75% of cases, the lesions occur in correspondence of the main ducts and the main confluences; in 25% of cases the cystic duct or minor ducts are involved.

The main causes of iatrogenic lesions are [3]: poor visualization of the hepatic pedicle, anatomical variants of the gallbladder, technical error.

Case

A 39-year-old woman was referred to our center for abdominal pain, fever, and severe jaundice (bilirubin level: 15 mg/dl) 7 days after laparoscopic cholecystectomy for lithiasis. Any intraprocedural complication was documented during surgery. As first level diagnostic imaging, the radiologist performed a liver ultrasound (US) which revealed dilatation of intrahepatic bile ducts and free fluid collection in the abdomen. US-guided fluid drainage was conducted, resulting in biliary fluid collection; a percutaneous drainage was so positioned.

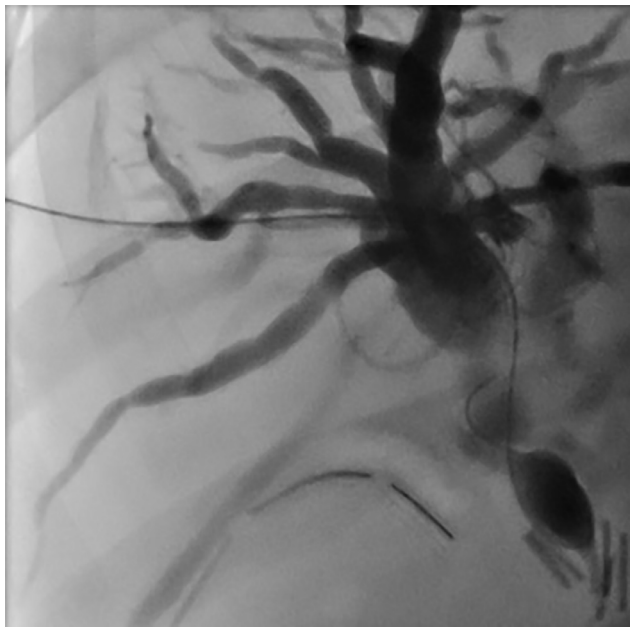

Fig. 2 – Intrahepatic biliary hemisystems were dilated with complete occlusion of the common bile duct. At the cholangiogram passage of contrast medium in duodenum was not appreciated. The interventional radiologist tried unsuccessfully to overcome the iatrogenic occlusion (surgical clips: arrow) with a 0.018-inch hydrophilic wire. As a consequence, the interventional radiologist positioned an external biliary drainage (8.5 Fr).

The radiologist decided to perform a magnetic resonance cholangiography which revealed severe enlargement of the intrahepatic biliary tree and occlusion of the middle segment of common bile duct caused by 2 surgical clips, this documented an accidental surgical clipping of the common bile duct after laparoscopic cholecystectomy.

A percutaneous drainage of the biliary system was so agreed.

Before treatment, abdomen x-ray confirmed the presence of surgical clips in right hypochondrium (Fig. 1). The right bile ducts were accessed from the midaxillary line under fluoroscopic guidance. The entry site was at the level of the inferior portion of the right hepatic lobe and along the superior margin of the rib in order to reduce complications risk, as pleural involvement or intercostal neurovascular injury. Left bile ducts were spared because right and left biliary main ducts were in physiological communication. A micropuncture kit (Neff Percutaneous Access Set, Cook Medical) was adopted to access the right biliary ducts; under fluoroscopic guidance, a micropuncture 21 gauge needle was advanced into the liver and slowly withdrawn, while iodinated contrast agent was slowly injected to opacify the bile duct. When bile ducts were evident, a 0.018-inch wire was advanced, after the wire was passed to a secure position in the biliary tree, the needle was removed and a coaxial system was passed over the wire; the 2 inner components (wire and inner coaxial dilator) were removed to accept the larger wire (0.035 inches). The interventional radiologist tried to overcross the obstruction, but the surgical clip