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doi.org/10.1590/S0004-2803.24612024-006

Percutaneous cholangioscopy and laser biliary lithotripsy for biliary intrahepatic stones management: case report

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HIGHLIGHTS

- Intrahepatic biliary stone disease is a difficult condition to treat, with high recurrence rates, with potential short- and long-term complications.
- Removal of biliary stones via intraductal access can be achieved endoscopically or percutaneously, with preference for cholangioscopy-guided laser lithotripsy in complex cases.
- The authors present a case of cholangioscopy with percutaneous laser biliary lithotripsy for the treatment of intrahepatic biliary stone disease associated with biliary stricture following biliodigestive anastomosis due to bile duct injury following cholecystectomy.

Received: 11 January 2024
Accepted: 26 March 2024

Declared conflict of interest of all authors: none
Disclosure of funding: none
Declaration of use of artificial intelligence: none
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E-VIDEO: https://youtu.be/qjw3ScL2mCk

ABSTRACT – Intrahepatic biliary stone disease is a difficult condition to treat, due to anatomical complexity of biliary tract, association with colestasis, and high recurrence rates, with potential short- and long-term complications, such as cholangitis and secondary biliary cirrhosis. Removal of biliary stones via intraductal access can be achieved endoscopically or percutaneously, with preference for cholangioscopy-guided laser lithotripsy in complex cases. The surgical approach, despite its prolonged results, is a more invasive and risky procedure. The authors present a case of cholangioscopy with percutaneous laser biliary lithotripsy as an option for the treatment of intrahepatic biliary stone disease associated with biliary stricture following biliodigestive anastomosis due to bile duct injury following cholecystectomy, a safe and effective alternative with low morbidity and satisfactory outcomes in follow-up.

Keywords – Cholangiography, lithiasis, lithotripsy.

INTRODUCTION

Intrahepatic biliary stone disease (IHBS) is a difficult condition to treat, due its location proximal to the confluence of the bile ducts, and the association with cholestasis[1], with a high recurrence rate (30%)[2]. IHBS can manifests as recurrent cholangitis, sepsis, loss of liver function, consequently secondary biliary cirrhosis. The therapeutic approach involves complete removal of biliary stones while ensuring bile flow[3]. Removal of biliary stones via intraductal access can be achieved endoscopically or percutaneously, with preference for cholangioscopy-guided laser lithotripsy in complex cases[4,5]. Surgical approach is an option with longer lasting results, but more invasive and risky, by involving major biliary manipulations, choledochotomy and liver resections[6], which can be combined in a single procedure[7]. The authors present a case of cholangioscopy with percutaneous laser biliary lithotripsy as an option for the treatment of intrahepatic biliary stone disease associated with biliary stricture following biliodigestive anastomosis due to bile duct injury following cholecystectomy.

Clinical case

Female patient, 58, transferred to the General Surgery department of a tertiary hospital due to biliary obstruction and episodes of cholangitis due to post-surgical biliary stricture. In 2017, she had an iatrogenic injury to the common hepatic duct during elective laparoscopic cholecystectomy which was identified intraoperatively and being converted to laparotomy and emergency biliary drainage. Subsequently she was referred for biliodigestive anastomosis. This developed into an anastomotic fistula, hepatic necrosis and abscesses, requiring two new interventions and resulting in a biliobronchial fistula, treated conservatively. In February 2020, she underwent a percutaneous biliary approach to treat a biliary stricture, resulting in external-internal biliary drainage. Obtained images demonstrated patent bilioenteric anastomosis and without stenosis, moderate dilation of the intrahepatic bile ducts, with the presence of 2 large stones (30 mm and 15 mm) next to the confluence of the hepatic duct, proximal from the anastomosis, associated with other small filling defects in the intrahepatic biliary tree (FIGURE 1). Four biliary drain exchanges were carried out in the following months, and attempts were made to mobilize and fragment the stones through balloon cholangioplasty and exchange for a larger-caliber biliary catheter, without success (FIGURE 2). It was then decided for percutaneous cholangioscopy with laser lithotripsy resulting in complete removal of the intrahepatic gallstones (FIGURE 3). She underwent percutaneous cholangioscopy with laser lithotripsy in September 2022, resulting in complete removal of the intrahepatic gallstones (E-VIDEO).

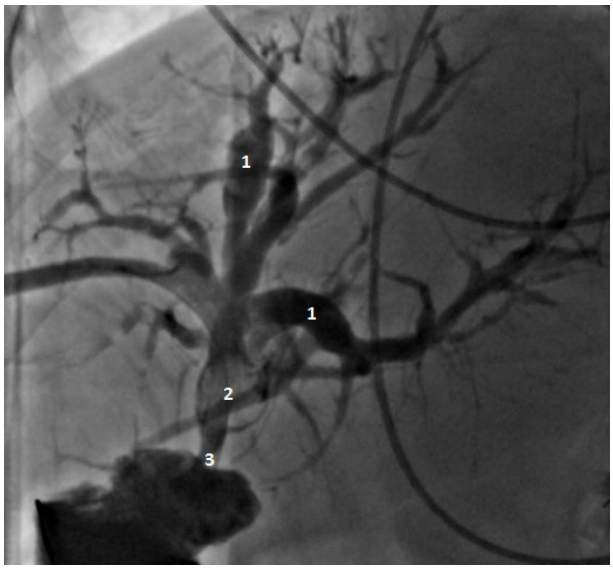

FIGURE 1. Percutaneous cholangiogram. 1: dilatation of intrahepatic bile ducts; 2: gallstone measuring 30 mm in hepatic ducts confluence; 3: anastomotic common bile duct stricture.

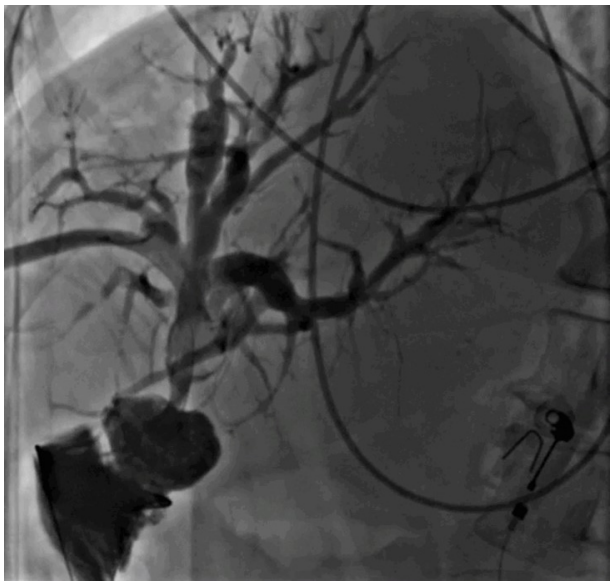

FIGURE 2. Percutaneous cholangiogram before the procedure demonstrating large stones and slowing of bile flow to the duodenum.

The patient had complete resolution of the stones and cholangitis outbreaks, undergoing new biliary dilation sessions (FIGURES 4 AND 5), with drain removal scheduled for March 2024.

FIGURE 3. Percutaneous cholangiogram after the procedure with complete removal of biliary stones and effective bile flow.

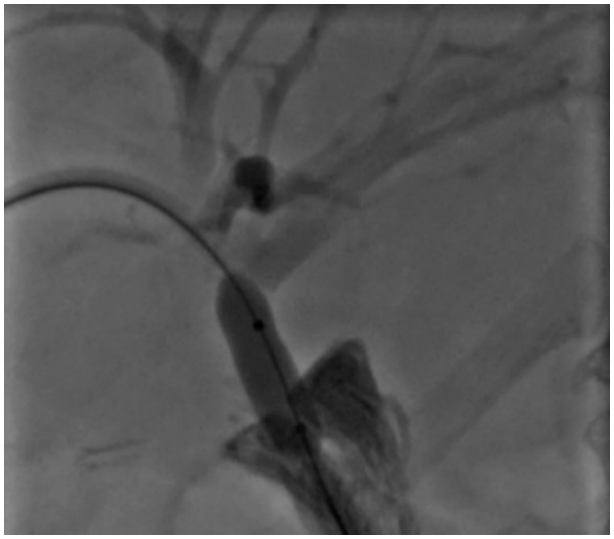

FIGURE 4. Percutaneous cholangiogram depicting anastomotic common bile duct stricture balloon dilatation during follow up after lithotripsy.

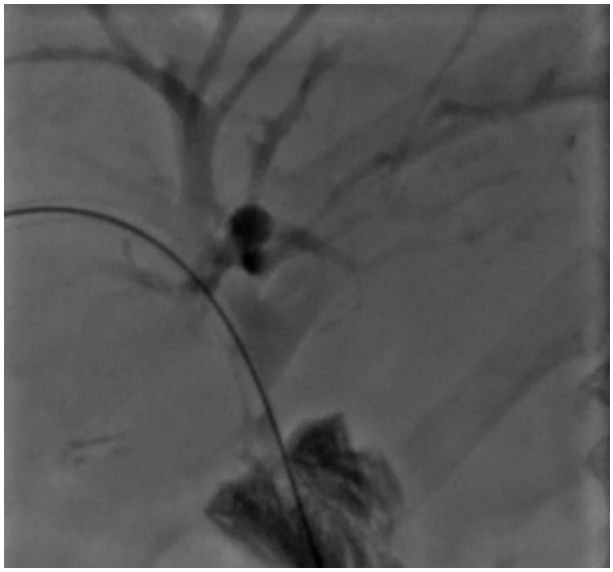

FIGURE 5. Percutaneous cholangiogram depicting anastomotic common bile duct stricture without biliary stone before final biliary drain removal.

Authors' contribution

Aguiar AJ, Moreira PH and Cunha FB conceptualization, data curation, investigation, methodology, resources, writing, original draft, writing, review, editing. Bacarin JV and Santini PHB: conceptualization, data curation, investigation, methodology, resources, supervision. Bonin EA: conceptualization, data curation, investigation, methodology, project administration, resources, supervision, validation, writing – original draft, writing – review & editing (equal).

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Aguiar AJ, Moreira PH, Cunha FB, Bacarin JV, Santini PHB, Bonin EA. Colangioscopia com litotripsia biliar percutânea a laser para tratamento de cálculos biliares intra-hepáticos: um relato de caso. Arq Gastroenterol. 2024;61:e24006.

RESUMO – A litíase biliar intra-hepática é uma condição de difícil tratamento, pela complexidade anatômica, pela associação à estase biliar e pelas altas taxas de recidiva, com potenciais complicações a curto e a longo prazo, como quadros de colangite de repetição e cirrose biliar secundária. A remoção de cálculos biliares por acesso intraductal pode ser obtida por via endoscópica ou percutânea, com preferência por litotripsia a laser por colangioscopia em casos complexos. A cirurgia, apesar de apresentar resultados prolongados, apresenta o contraponto de ser mais invasiva e com maiores riscos. Os autores apresentam um caso, e suas imagens, de colangioscopia com litotripsia biliar percutânea a laser como opção para tratamento de litíase biliar intra-hepática associado a estenose biliar secundária a anastomose biliodigestiva por lesão de via biliar pós colecistectomia, uma alternativa segura e eficaz, com baixa morbidade e um resultado satisfatório no seguimento.

Palavras-chave – Colangiografia; litíase; litotripsia.

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