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ORIGINAL ARTICLE

Intraoperative choledochoscopy usefulness in the treatment of difficult biliary stones☆

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Abstract
Background: Choledocholithiasis presents in 5-10% of the patients with biliary lithiasis. Numerous treatment algorithms have been considered for this disease, however, up to 10% of these therapeutic procedures may fail. Intraoperative choledochoscopy has become a useful tool in the treatment of patients with difficult-to-manage choledocholithiasis.
Objectives: To determine the usefulness of intraoperative choledochoscopy in the laparoendoscopic treatment of difficult stones that was carried out in our service.
Patients and methods: A cross-sectional study was conducted. The case records were reviewed of the patients that underwent intraoperative choledochoscopy during biliary tree exploration plus laparoscopic choledochoduodenal anastomosis within the time frame of March 1, 2011 and May 31, 2012, at the Hospital General Dr. Manuel Gea González. Transabdominal choledochoscopies were performed with active stone extraction when necessary, followed by peroral choledochoscopies through the recently formed bilioenteric anastomosis. The data were analyzed with descriptive statistics and measures of central tendency.
Results: The mean age was 71 years, 57% of the patients were women, and the ASA III score predominated. Active extraction of stones with 7 to 35 mm diameters was carried out in 4 of the cases and the absence of stones in the biliary tract was corroborated in all the patients. The mean surgery duration was 18 minutes (range: 4 to 45 min).
Conclusions: Choledochoscopy is a safe and effective minimally invasive procedure for the definitive treatment of difficult stones.

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PALABRAS CLAVE
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Utilidad de la coledocoscopia transquirúrgica en el tratamiento de litos biliares difíciles

Resumen
Antecedentes: La coledocolitiasis se presenta en el 5 al 10% de los pacientes con colecistitis litiásica. Se han considerado múltiples algoritmos de tratamiento para esta afección; sin embargo, hasta el 10% de estos procedimientos terapéuticos pueden ser fallidos. La coledocoscopia transoperatoria se ha convertido en una herramienta útil en el tratamiento de pacientes con coledocolitiasis de difícil manejo.
Objetivos: Determinar la utilidad de la coledocoscopia transoperatoria en el tratamiento laparo-endoscópico de litos difíciles en nuestro servicio.
Pacientes y métodos: Se realizó un estudio transversal, en el que se revisaron los expedientes de los pacientes sometidos a coledocoscopia transquirúrgica durante exploración de la vía biliar más coledocoduodeno-anastomosis laparoscópica, en el periodo comprendido entre el 1 de marzo del 2011 y el 31 de mayo del 2012 en el Hospital General Dr. Manuel Gea González. Se realizaron coledocoscopias transabdominales, con extracción activa de litos en caso necesario, y posteriormente coledocoscopias transorales a través de la anastomosis bilioentérica recién formada. Se analizaron los datos con estadística descriptiva y medidas de tendencia central.
Resultados: La edad promedio fue de 71 años, 57% mujeres, con predominio de puntuación ASA III. Se realizó la extracción activa de litos con diámetros de 7 a 35 mm en 4 de los casos y en el total se corroboró ausencia de litos en la vía biliar. La duración promedio del procedimiento fue de 18 min (rango 4 a 45 min).
Conclusiones: La coledocoscopia es un procedimiento eficaz y seguro para el tratamiento definitivo de los litos difíciles, en el ámbito de los procedimientos de invasión mínima.

Introduction

Choledocholithiasis presents in 5 to 10% of patients with biliary lithiasis and up to 18% of patients with biliary pancreatitis. An estimated 21 to 34% of the stones spontaneously migrate from the biliary tract and up to 25 to 36% carry the risk for causing pancreatitis or cholangitis if they become obstructed. Numerous treatment algorithms have been considered, such as endoscopic retrograde cholangiopancreatography (ERCP) prior to cholecystectomy, intraoperative ERCP and postoperative ERCP. However, 5 to 10% of these procedures may fail due to access difficulty or stone extraction impossibility. Stones that are regarded as difficult are those that are larger than 15 mm, that cannot be trapped in a basket, stones that are located in the intrahepatic biliary tract, those associated with chronic biliary tract stricture, stones that are present in patients that have undergone surgeries modifying the continuity of the proximal digestive tract (Billroth II gastrectomy or gastric bypass), and those in patients with Mirizzi syndrome.[1] These conditions dramatically reduce the possibility of minimally invasive therapies. For instance, residual stones have been reported in 5 to 14% of the cases managed with laparoscopic biliary tract exploration. [1–3]

Choledochoscopy was described for the first time in 1891 by Bakes, who designed a rigid instrument with a valve and a mirror that used a frontal light source for seeing inside the bile ducts. It was not until 1941 that McIver described a rigid optic choledochoscope equipped with an irrigation channel and an external light source. In 1965, the American Cystoscope Makers introduced the first flexible choledochoscope into the market.[4]

Today, intraoperative choledochoscopy has become a useful tool in the intraoperative treatment of patients with difficult-to-manage choledocholithiasis that undergo biliary tract exploration. [5–7] It enables direct visualization of the stone and its active extraction with the help of balloons and baskets. In addition, it is indispensible for corroborating the absence of stones, once the procedure is over, thus ensuring 0% of residual stones. [8–11]

The aim of this study was to determine the usefulness of intraoperative choledochoscopy in the laparoendoscopic treatment of difficult stones.

Methods

A cross-sectional study was conducted that reviewed the case records of patients that had undergone intraoperative choledochoscopy during biliary tract exploration plus laparoscopic choledochoduodenal anastomosis (LCDA) within the time frame of March 1, 2011 and May 31, 2012 at the *Hospital General Dr. Manuel Gea González*.

All the patients were admitted to the General and Endoscopic Surgery Division having had previous ERCP, with one or more of the following events: failed ERCP, choledocholithiasis recurrence, persistent cholestasis secondary to biliary tract dilation, and repeat cholangitis.

For these reasons, the surgical team decided to perform LCDA. Table 1 shows a summary of the indications for this surgical procedure in these patients.

Antimicrobial administration was indicated in all the patients; it was therapeutic in 5 patients presenting with cholangitis and prophylactic in the remaining patients, given that the gastrointestinal tract is exposed in this surgery.