

Department of Surgery and Cancer

Intraoperative Cholangiogram vs Preoperative MRCP in Treatment of Gallstones

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Abstract:- Laparoscopic cholecystectomy (LC) is the standard treatment for gallbladder disease. Intraoperative cholangiography (COI) can reduce biliary complications from CL; however, with the advent of magnetic resonance cholangiopancreatography (MRCP), the IOC today faces an unprecedented challenge. Studies have shown that the purpose of COI goes beyond the mere detection of bile duct stones, as it is viewed as a safe and effective method for detecting bile duct abnormalities and when anatomy is uncertain. Therefore, the IOC could help prevent damage to the bile duct (CBD), especially in acute cholecystitis and in difficult cases. The aim of this article review is to evaluate whether the IOC can replace preoperative MRCP in CL for retained common bile duct stones (CBD) and bile duct damage.

I. INTRODUCTION

Biliary tract stones are the most common cause of abdominal pain and the most common complication of gallstones. Biliary colic or bile duct disease occurs in about 7% to 15% of adult patients with abdominal pain [1]. The incidence of gallstones increases, with a prevalence of 30% over 70 years [2]. About 80% of gallstones have silent presentation and most patients remain symptom-free for decades. 8 to 10% of people with asymptomatic gallstones develop symptoms within 5 years and only 5% require surgery [3]. Laparoscopic cholecystectomy (LC) is now the procedure of choice for the treatment of symptomatic incomplete gallstones [4–5] compared to postoperative morbidity and mortality and in small hospital conventional open cholecystectomy [6]

Despite advances in both endoscopy and laparoscopy, asymptomatic common bile duct (CBD) stones pose a serious problem for the surgeon. In the last decade, the prevalence of asymptomatic CBD stones ranged from 5.2% to 12% [7]. Although all procedures are feasible, some methods are preferred over others. If the patient undergoes cholecystectomy, there is a general consensus that choledocholithiasis should be treated endoscopically using endoscopic retrograde cholangiopancreatography (ERCP) in the event of failure (5-10%) [8]. If the gallbladder is still present, treatment can be done in three ways; Laparoscopic cholecystectomy (LC) after ERCP, cholecystectomy with surgical removal of CBD stones, or removal of ERCP after ERCP. Many surgeons accept these options based on their personal

experience, available resources, and various protocols to follow.

II. METHODS

➤ MRCP +/- ERCP followed by LC

CBD stones are usually suspected preoperatively based on medical history, clinical examination (presence of jaundice), laboratory tests showing high levels of bilirubin, alkaline phosphatase (ALP), amylase, and / or ultrasound, indicating CBD calculations. or indicates a dilation greater than 7 mm. The vast majority of surgeons prefer to have these patients undergo magnetic resonance cholangiopancreatography (MRCP) before LC.

Magnetic resonance cholangiopancreatography (MRCP) is a noninvasive technique that is routinely used to evaluate suspected biliary obstruction, including BCC stones [9]. Compared to the IOC, CPRM requires a shorter examination time, fewer personnel, and does not require ionizing radiation. If bile stasis was suspected, MRCP was able to detect CBD stones in 89.3% of patients [10]. ERCP is able to confirm and treat CBD stones in 83.7% of those with a preoperative diagnosis of CBD stones by MRCP [10]. However, with ERCP there is still a risk of failure in 5–10% of cases [8].

➤ Laparoscopic cholecystectomy + Intra-operative cholangiogram (LC + IOC)

This approach involves traditional laparoscopic cholecystectomy using a four-port technique. After identifying the cystic duct and artery and establishing a critical approach to safety, the IOC is performed with scissors to create a small opening in the anterior surface of the cystic duct. A catheter is then inserted into the canal through the sub-central opening. A contrast medium diluted 1: 1 in a normal saline solution is injected. The anatomy of the biliary tract is dynamically visualized with a mobile C-arm device equipped with an image intensifier. In patients with CBD stones, 10.6% are found to be due to perioperative collagenography [10] during LC. The rate of failed IOC is 1.2% of all patients [10].

Once stones are identified in the biliary duct during LC, the treatment option is to remove the stones laparoscopically, turn them into open surgery, leave the stones that are waiting for them on their own. Automatically exit the CBD before performing the ERCP or to make laparo-endoscopic procures simultaneously. These different approaches are

based not only on the expertise of surgeons and endoscopists, but also on the resources available. Each of these treatments has a different percentage of success, anxiety and mortality [11].

The IOC is valuable not only in the detection of bile duct stones, but also in describing the anatomy of the biliary tract, in avoiding dissemination injury, and in identifying other abnormalities of the biliary tract system [16]. About 10% of patients with significant surgical bile duct abnormalities can be identified by IOC [12]. The use of IOC was associated with a lower risk of biliary tract injury in patients during surgery or a history of severe cholecystitis during surgery. [13]

III. DISCUSSION

Despite the fact that MRCP and subsequent ERCP have a high rate of detection and treatment of CBD stones before and after surgery, intraoperative cholangiography remains an effective method for detecting common bile duct stones during surgery [14].

The prevalence of asymptomatic CBD stones ranges from 5.2% to 12% [7], with more than half of patients with preserved asymptomatic duct stones developing symptoms over time, with 25% It has been reported to develop serious complications [15]. Therefore, due to the high incidence of asymptomatic biliary tract stones, the majority of these patients do not undergo preoperative MRCP, and the IOC may be an ideal method for detecting these cases during surgery.

IV. CONCLUSION

Surgical agreement has not yet arrived at any consensus for adequate treatment of choledocholithiasis and till today the sequential treatment in the form of pre-operative ERCP followed by LC is considered as optimal therapy. Uncertainty has always existed for the treatment of underestimated CBD stones.

Studies suggest that IOC performed through the cystic duct before dividing any structures can prevent common duct injury. Also, it is an ideal method to detect silent CBD stones. CBD stones are preferably treated at the same time of cholecystectomy for costs, effectiveness and safety [17].

We recommend that cholangiography to be attempted on all patients undergoing LC.

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