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Research Article

**EFFICACY OF LAPAROSCOPIC CHOLECYSTECTOMY  
WITHOUT ON TABLE CHOLANGIOGRAPHY AND  
INCIDENCE OF INJURY TO BILE DUCT**Dr Masood Ul Hassan<sup>1</sup>, Dr Aqsa Anum Saeed<sup>2</sup>, Dr Arif Hussain<sup>3</sup><sup>1</sup>Medical Officer/Lecturer at New City Teaching Hospital, Mirpur, <sup>2</sup>Research Assistant Shalamar hospital Lahore, <sup>3</sup>Mohtarma Benazir Bhutto Shaheed Medical College, Mirpur, AJK.

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**Abstract:****Aim:** To determine the safety of laparoscopic cholecystectomy without on table cholangiography.**Study design:** A quasi-experimental study**Place and duration:** Conducted in Surgical department of New City Teaching Hospital, Mirpur for one-year duration from June 2019 to June 2020.**Methodology:** Patients with acute or chronic cholecystitis due to gallstones were included in the study, while patients with obstructive jaundice and gallbladder mass were excluded. All patients were operated on by laparoscopic cholecystectomy without table cholangiography. In the course of the procedure, damage to the bile ducts was noted and evidence of damage to the bile ducts was collected after surgery during hospitalization and follow-up visits. Data on complications related to damage to the bile ducts were recorded and analyzed.**Results:** In this series, a total of 7 (0.92%) injuries of the biliary tract were reported. There were two (0.26%) cases of partial damage to the common hepatic duct, 1 of which was a case of Mirizzi syndrome. In the second case, the common hepatic duct was partially damaged during an attempt to cauterize the severed branch of the cystic artery. Two (0.26%) patients developed partial damage to the common bile duct as a result of dislocation of the common bile duct. Complete transection of the common bile duct occurred in two (0.26%) cases. One patient (0.13%) had a postoperative leak due to rupture of the bile-hepatic duct.**Conclusion:** This study shows that the absence of an OTC facility does not lead to a disturbingly increased rate of biliary tract injuries during laparoscopic cholecystectomy.**Keywords:** laparoscopic cholecystectomy (LC), common bile duct (CBD), table-top cholangiogram (OTC), ultrasound (USG)**Corresponding author:****Dr. Masood Ul Hassan,**

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## INTRODUCTION:

The introduction of laparoscopic cholecystectomy increased the number of bile duct lesions three to four times. Injury to the bile duct can lead to bile leakage, peritonitis, stricture, cholangitis, jaundice, chronic liver disease, and sepsis [1-2]. These injuries are often prone to delayed diagnosis and difficult reoperations due to inflammation, infection and malnutrition. In this context, a number of techniques have been developed, among which table cholangiography (OTC) is widely practiced. The first cystic tubular cholangiography was performed by Mirizzi 5 in 1937 [3-4]. Based on the high incidence of common bile duct stones, which reduced the rate of unnecessary exploration of CBD from 66% to <5%. In cholecystectomy, the routine use of OTC is controversial as it is useful to map the anatomy of the bile ducts, but on the other hand, it increases surgery time, cost, and unnecessary exploration of CBD due to poor image quality and false-negative and false-positive results [5-6]. The debate is further complicated by the advent of laparoscopic cholecystectomy, which requires additional technical skills in the treatment of OTC. Multiple studies have shown that laparoscopic cholecystectomy was performed safely with minimal OTC use [7-8]. While some insist on routine OTC use during laparoscopic cholecystectomy, and others recommend selective OTC to minimize CBD damage. In our system, table cholangiography is not routinely performed during laparoscopic cholecystectomy. This is mainly due to technical difficulties and the lack of availability of equipment in most hospitals [9-10]. In this study, we present the results of a series of patients who underwent LC without table cholangiography.

## PATIENTS AND METHODS:

This study was conducted at the Surgical department of New City Teaching Hospital, Mirpur for one-year

duration from June 2019 to June 2020, a total of 760 patients were enrolled in the study. Laparoscopic cholecystectomy was performed in patients with diagnosed cholelithiasis without clinically and radiologically proven complications (obstructive jaundice). Patients were admitted on an outpatient basis or in the emergency department. After an appropriate history and examination, cholelithiasis was diagnosed by means of ultrasound and, if necessary, computed tomography. Patients with complications such as obstructive jaundice or gallbladder mass were excluded from the study. All patients underwent elective surgery with the use of laparoscopy. In most cases, laparoscopic cholecystectomy was performed in three ports, in difficult cases, the four-port technique was used. Scrupulous concentration was adopted in the case of anomalies of the liver and biliary tract. Table cholangiography was not performed in any of the cases. At the end of the procedure, the bile ducts were carefully examined for any obvious or potential damage. They were watched for a day or two and then released home. They were recommended to visit follow-up clinics at four-to-six-week intervals. During the postoperative course and follow-up visits, they were looked for signs of damage to the bile ducts (peritonitis, biliary leakage through drainage or biliary fistula). The cases of biliary tract damage detected in this way were admitted for further research. The data was entered into a proforma format and analyzed, and the results were drawn up after the end of the study.

## RESULTS:

Out of all 760 biliary trauma cases, laparoscopic cholecystectomy was found in 7 (0.92%) seven cases (Table 1).

Table 1: Management of complications

Type of injury	No. (%)	Action Taken	Result
Partial Injury to CBD	2 (0.26%)	Laparotomy & T-Tube	No further complication
Partial Injury to CHD	2 (0.26%)	Laparotomy and T-Tube insertion	No further complication
Cholecystohepatic duct leak	1 (0.13%)	Drain placed under ultrasound control	Leak continued after two weeks. Laparotomy and stitch applied to the duct
Complete transaction of CBD	2 (0.26%)	Hepatojejunostomy/ choledochojejunostomy	Complete recovery after four weeks

There were 2 (0.26%) cases of partial damage to the common bile duct. One case involved "Mirizzi's

syndrome." The opening between the Hartman pouch and the CHD (common hepatic duct) became visible

during dissection. Therefore, an immediate laparotomy was performed and a T-tube inserted. In the second case, a slight tear occurred from the vessel flowing through the CHD during preparation of the dense adhesions in the Calot's triangle, therefore diathermy was used to coagulate the bleeding. Nothing happened during the operation. The patient recovered and was discharged home. However, after a week the patient returned with biliary peritonitis, ERCP confirmed the leak in CHD. Laparotomy showed an opening at the site of diathermy application, T-tube inserted. Partial damage to CBD: In 2 (0.26%) patients, partial damage to CBD occurred due to the tent, and both injuries were detected during surgery. The problem was solved by converting to open surgery and inserting a T-tube. Total CBD transection occurred in 2 (0.26%) patients. One had a very small gallbladder (only 2 cm) that was buried in the liver near porta hepatis. In addition, the entire gallbladder was occupied by a large stone. So, CBD has been mistaken for a cystic duct, trimmed and split. A gallbladder that was densely adhered to the underside of the liver and was separated with a blunt and sharp dissection using scissors and a diathermy hook, and then removed. A drain was placed, but the next day showed 400 cc of bile which increased over the next 48 hours. ERCP confirmed the blockage in CBD. A laparotomy and hepato-jejunostomy were performed, and the patient eventually recovered. The second patient had a crash due to a congenital anomaly (no cystic duct). Biliary leakage occurred in a patient who came back on day 4 after surgery with gas and abdominal pain. Ultrasound examination showed a large uptake under the liver and an ultrasound-guided drain was placed. As continuous discharge (approximately 1000 ml of bile daily) was performed, a laparotomy was performed which revealed a ligated hepatic duct. The patient recovered without complications.

#### DISCUSSION:

The spectrum of iatrogenic biliary trauma ranges from striking clips to complete dissection of the common bile duct. In our study, we saw almost all of these injuries. It has previously been suggested that the high rate of bile duct damage associated with laparoscopic cholecystectomy is the result of a learning curve<sup>11</sup>. However, other authors reported that this problem lasts much longer than the learning period. In our study, all cases were performed by experienced laparoscopic surgeons who had already performed more than 100 LC, however, biliary tract injuries occurred in 0.92% of cases, indicating that no surgeon is immune to biliary damage during LC<sup>12</sup>. Carroll BJ et al. Also experienced that most of the injuries were to surgeons who were outside the

learning curve. In the present study, technical errors were the main cause of biliary damage. In 4 (57.14%) cases, these injuries were the result of misidentification of the anatomy due to insufficient dissection and over-tension, resulting in CBD rupture. Whereas in one case (14.28%) there was an injury due to cauterization. Carroll BJ et al. observed misidentification of anatomy in 48% of cases and cauterization in 11% of cases<sup>13</sup>. According to Hunter JG, these injuries can be avoided by using a forward angled telescope at a 30-degree angle, strong head tension on the bottom and lateral traction of the funnel to place the cystic duct perpendicular to the common duct, dissection of the cyst the channel where it connects to the gallbladder, and routine fluoroscopic cholangiography. Table cholangiography (OTC) reduces the risk of biliary trauma, so some authors recommend routine and others select selective cholangiography during LC<sup>14</sup>. However, due to the lack of facilities and knowledge, we do LC without OTC. Experience with laparoscopic cholecystectomy in the United States where OTC is either routinely or selectively performed has shown a biliary injury rate of 0.6%. MacFadyen BV et al. observed the incidence of biliary tract injuries at the level of 0.5%, while Calvete J et al. the injury rate was 1.3%<sup>15</sup>. Our study found that the percentage of biliary damage is 0.92%, which is comparable to the frequency in centers where OTC is performed routinely or selectively. Archer SB et al. in their study they also showed better detection of biliary tract injuries, even without OTC.

#### CONCLUSION:

Although surgical cholangiography plays a well-established role in minimizing the risk of biliary damage during laparoscopic cholecystectomy, especially in the anatomy of abnormal extrahepatic bile ducts. But this small study shows that careful dissection of the callot's triangle and defining the anatomy without on table cholangiography is also safe.

#### REFERENCES:

1. Borie, Frédéric, Muriel Mathonnet, Alain Deleuze, Jean-François Gravié, and Jean Gugenheim. "The Cost and the Effectiveness of Cholangiography for the Diagnosis and Treatment of a Bile Duct Injury After Difficult Identification of the Cystic Duct." *economics* 5 (2020): 7.
2. Bleszynski, Michael S., Kristin M. DeGirolamo, Adam T. Meneghetti, C. Jack Chiu, and Ormond Neely Panton. "Fluorescent Cholangiography in Laparoscopic Cholecystectomy: An Updated

- Canadian Experience." *Surgical Innovation* 27, no. 1 (2020): 38-43.
3. Wang, Chusi, Wenguang Peng, Jiarui Yang, Yuxuan Li, Jiawei Yang, Xueqiao Hu, Long Xia et al. "Application of near-infrared fluorescent cholangiography using indocyanine green in laparoscopic cholecystectomy." *Journal of International Medical Research* 48, no. 12 (2020): 0300060520979224.
  4. Matsumura, Tatsuki, Shunichiro Komatsu, Kenichi Komaya, Yasuyuki Fukami, Takashi Arikawa, Takuya Saito, Takaaki Osawa et al. "Dual common bile duct examination with transcystic choledochoscopy and cholangiography in laparoscopic cholecystectomy for suspected choledocholithiasis: a prospective study." *Surgical Endoscopy* (2020): 1-8.
  5. Di Maggio, Francesco, Naveed Hossain, Andrea De Zanna, Danya Husain, and Luca Bonomo. "Near-Infrared Fluorescence Cholangiography can be a Useful Adjunct during Emergency Cholecystectomies." *Surgical Innovation* (2020): 1553350620958562.
  6. Matsumura, Masaru, Yoshikuni Kawaguchi, Yuta Kobayashi, Kosuke Kobayashi, Takeaki Ishizawa, Nobuhisa Akamatsu, Junichi Kaneko, Junichi Arita, Norihiro Kokudo, and Kiyoshi Hasegawa. "Indocyanine green administration a day before surgery may increase bile duct detectability on fluorescence cholangiography during laparoscopic cholecystectomy." *Journal of Hepato-Biliary-Pancreatic Sciences* (2020).
  7. Broderick, Ryan C., Arielle M. Lee, Joslin N. Cheverie, Beiqun Zhao, Rachel R. Blitzer, Rohini J. Patel, Sofia Soltero et al. "Fluorescent cholangiography significantly improves patient outcomes for laparoscopic cholecystectomy." *Surgical Endoscopy* (2020): 1-11.
  8. Elkerkary, Mohamed A., Ahmed H. Soliman, and Hamdy Shaban. "Assessment of Laparoscopic Intraoperative Cholangiogram in Controlling Postoperative Outcomes and Its Implication on the Quality of Life." *Suez Canal University Medical Journal* 23, no. 1 (2020): 97-105.
  9. Tomaoğlu, Kamer. "Intraoperative Cholangiography in Laparoscopic Cholecystectomy: Technique and Changing Indications." *Istanbul Medical Journal= Istanbul Tıp Dergisi* 21, no. 5 (2020): 350.
  10. Berci, George, and Brian R. Davis. "Intraoperative Cholangiography (IOC): Important Aid in Biliary and Common Bile Duct Surgery." In *The SAGES Manual of Biliary Surgery*, pp. 91-105. Springer, Cham, 2020.
  11. Donnellan, Eoin, Jonathan Coulter, Cherian Mathew, Michelle Choynowski, Louise Flanagan, Magda Bucholc, Alison Johnston, and Michael Sugrue. "A Meta-Analysis of the use of Intraoperative Cholangiography; Time to revisit our approach to Cholecystectomy?." *Surgery Open Science* (2020).
  12. Kapoor, Vinay K. "Prevention of Bile Duct Injury During Cholecystectomy." In *Post-cholecystectomy Bile Duct Injury*, pp. 47-60. Springer, Singapore, 2020.
  13. Gomez, Daniel, Luis F. Cabrera, Ricardo Villarreal, Mauricio Pedraza, Jean Pulido, Sánchez Sebastián, Andrés Urrutia, Andrés Mendoza, and Natan Zundel. "Laparoscopic common bile duct exploration with primary closure after failed endoscopic retrograde cholangiopancreatography without intraoperative cholangiography: a case series from a referral center in bogota, Colombia." *Journal of Laparoendoscopic & Advanced Surgical Techniques* 30, no. 3 (2020): 267-272.
  14. Maeda, Koki, Masami Tabata, Tatsuya Sakamoto, Yu Fujimura, Taijiro Takeuchi, Ryosuke Desaki, Motoyuki Kobayashi et al. "Cholecystohepatic duct detected during laparoscopic cholecystectomy: a case report." *Surgical Case Reports* 6, no. 1 (2020): 19.
  15. Škrabec, Clara Gené, Fernando Pardo Aranda, Francisco Espín, Manel Cremades, Jordi Navinés, Alba Zárata, and Esteban Cugat. "Fluorescent cholangiography with direct injection of indocyanine green (ICG) into the gallbladder: a safety method to outline biliary anatomy." *Langenbeck's Archives of Surgery* 405, no. 6 (2020): 827-832.