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Endoscopic management of bile leaks after laparoscopic cholecystectomy: Sohag center experience

BY

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Introduction

Laparoscopic cholecystectomy has become the first choice of management for symptomatic cholecystolithiasis. ⁽¹⁾ However, it is associated with decreased postoperative morbidity and mortality, prospective audits reported a fourfold to eightfold increase in bile duct injuries compared with those seen in the 'open' era. ^(2, 3) These bile duct injuries include leaks, strictures, transection and removal of (part of) the duct, with or without vascular damage. ⁽¹⁾ Bile duct injury might be due to misidentification of the biliary tract anatomy due to acute cholecystitis, large impacted stones, short cystic duct, anatomical variations, but also due to technical errors leading to bleeding with subsequent clipping and coagulation trauma. ⁽⁴⁾ The mechanism and nature of biliary complications following laparoscopic surgery are different from those at open surgery. ⁽⁵⁾

Early recognition and adequate multidisciplinary approach is the cornerstone for the optimal final outcome. Suboptimal management of injuries often leads to more extensive damage to the biliary tree and its vasculature as biliary peritonitis, sepsis, abscesses, multiple organ failure, a more difficult (proximal) reconstruction and in the long run, secondary biliary cirrhosis, and liver failure. ⁽¹⁾ Despite increasing experience in performing laparoscopic cholecystectomy, the frequency of bile duct injuries has not decreased. Therapy encompasses endoscopic stenting, percutaneous transhepatic dilatation (PTCD) and surgical reconstruction. ⁽⁶⁾

Aim of the study

This study will aim to evaluate the effectiveness of therapeutic endoscopic retrograde cholangiopancreatography (ERCP), by various options as sphincterotomy, nasobiliary drainage, dilatation of stricture and stenting procedures in the management of postoperative bile leaks.

Patients and methods

Study design

This prospective observational study will consist of all consecutive patients who will be referred for endoscopic management of bile leaks after laparoscopic cholecystectomy in the department of surgery of Sohag University hospital. The research

proposal will be conducted after approved of the research and ethics committee of our faculty.

Patients

Patient demographics, indication for the cholecystectomy, details of intra-operative difficulties, postoperative presentation of the bile leak including the duration until the presentation , investigations used and initial management by the referring surgeon will be reviewed. Patients who developed a bile leak after conversion from a laparoscopic procedure to an open cholecystectomy and patients with complete transaction of CBD will be excluded from the study.

All patients will be clinically evaluated and subjected to routine investigations such as CBC, liver function tests, coagulation parameters, ultrasonography (US) or computed tomography (CT) examination. Bile leaks and fistula will be diagnosed by the presence of clinical features like abdominal pain, fever, abdominal distension, nausea, jaundice and radiological findings (US and/or CT scan of the abdomen). The presence of bile leaks and fistula will be confirmed by ERCP and appearance of bile in percutaneous drainage of abdominal collections. Bile duct injuries demonstrated at ERCP will be classified according to the Strasberg grading system. ⁽⁷⁾ When a sizeable localised collection will be apparent, percutaneous drainage under US or CT guidance will be performed and a catheter will be left in place to drain the bile. However, when the collection will be large and diffuse, laparoscopy for lavage and drain placement will be performed, either before or immediately after ERCP.

Prophylactic antibiotics will be prescribed 24 hours before the procedure and will be continued for next 24-48 hours. Each patient or his/her relatives will give a written informed consent after receiving verbal and written explanations about ERCP and possible post-procedure complications.

ERCP procedure

All ERCP procedures will be performed by high volume endoscopist (who perform more than two sphincterotomies per week) ⁽⁸⁾. Cholangiography will be used to demonstrate the biliary anatomy and the presence of a leak, stricture or retained stones was noted. Papillotomy will be done using the Erbe ICC 200 electrosurgical unit using endocut

blended current mode or Olympus PC 20 electrosurgical unit using 40 watt cutting and 25 watt coagulation current.

An endoscopic sphincterotomy (ES), sphincterotomy and stenting, stenting alone or nasobiliary drainage will be performed according to the endoscopic biliary findings. For biliary stenting, 10 French (10 Fr) plastic stents will be routinely used. External drains will be removed 2 days after cessation of bile drainage. If bile drainage had not reduced by day 3, further imaging with computed tomography intravenous cholangiography or magnetic resonance cholangiopancreatography (MRCP) will be performed to ensure that no major biliary injury or transected accessory ducts had been overlooked. Repeat ERCP for assessment and stent removal will be performed 6 weeks after resolution of the biliary leak. Cholangiography will be used to confirm healing of the biliary fistula and absence of a biliary stricture or residual stones. If a balloon cholangiogram performed after stent removal was normal, the plastic stent will be not replaced. If bile duct stones were present, they will be removed

Follow up

Patients will be discharged from the hospital if there will be no clinical or radiological evidence of further leaking along with clinical recovery and they will be followed up in the out-patient clinic biweekly for 3 months. Clinical examination, white blood cell count, liver function tests and abdominal ultrasonography will be performed on each follow up visit.

Statistical analysis

Descriptive data will be expressed as mean & standard error of the mean, or as median and ranges for continuous variables and proportions for categorical variables. Statistical analysis will be performed using the Fisher's and chi-square tests. A p-value <0.05 was considered statistically significant.

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