

Iatrogenic biliary injuries: Multidisciplinary management in a major tertiary referral center

Ibrahim Abdelkader Salama

Menophya University, Egypt E-mail: ibrahim_salama@hotmail.com

Abstract

Background: Iatrogenic biliary injuries are considered as the most serious complications during cholecystectomy. Better outcome of such injuries have been shown in cases managed in a specialized center.

Objective: Evaluation of biliary injuries management in major referral hepatobiliary center.

Patients & Methods: 472 consecutive patients with post-cholecystectomy biliary injuries were managed with multidisciplinary team (hepatobiliary surgeon, gastroenterologist and radiologist) at major Hepatobiliary center in Egypt over 10 years period using endoscopy in 232 patients, percutaneous techniques in 42 patients and surgery in 198 patients.

Results: Endoscopy was very successful initial treatment of 232 patients (49%) with mild/moderate biliary leakage (68%) and biliary stricture (47%) with increased success by addition of percutaneous (Rendezvous technique) in 18 patients (3.8%). However, surgery was needed in 198 (42%) for major duct transection, ligation, major leakage and massive stricture. Surgery was done urgently in 62 patients and electively in 136 patients. Hepaticojejunostomy was done in most of cases with transanastomotic stents. One mortality after surgery due to biliary sepsis and postoperative Stricture was in three cases (1.5%) treated with percutaneous dilation and stenting.

Conclusion: Management of biliary injuries was much better with multidisciplinary care team with initial minimal invasive technique to major surgery in major complex injury encouraging for early referral to highly specialized hepatobiliary center.

This retrospective study included 472 patients with iatrogenic bile duct injuries following cholecystectomy (open and Laparoscopic) referred to the Department of Hepatobiliary Surgery at National Liver Institute, Menophya University, Egypt (a major tertiary referral center in delta region) from January 2002 to January 2012 and treated by multidisciplinary approach team including hepatobiliary surgeons, gastroenterologists, and interventional radiologists. The multidisciplinary team was established after ethical and scientific approval from Hepatobiliary Department and National Liver Institute committees. All cases of iatrogenic bile

duct injuries should undergo this multidisciplinary team approach to set up a road map management of such cases.

All patients complained of postcholecystectomy biliary tract injuries encountered with variable presentation and timing from the surgical insult until they were referred to our center for further evaluation and management. Cases were subjected to the following:

thorough detailed history taking;

meticulous clinical examination.

Operative details of the previous cholecystectomy should be revised with surgical team of referring hospital.

Investigation needed to diagnose the problems such as liver function tests and abdominal ultrasound were done for all cases as routine preliminary workup.

Computed tomography or magnetic resonance imaging was done in some cases.

Cholangiogram was done for all cases (the gold standard evaluation of biliary injuries) as a trans-tube cholangiogram (with a T-tube in place), an endoscopic cholangiography endoscopic retrograde cholangiopancreatography (ERCP) in most cases, or percutaneous transhepatic cholangiogram in some selected cases in which endoscopic approaches failed.

After receiving patients data by multidisciplinary team, patient condition was categorized through discussion of detailed results of treatment for each category to reach consensus on which type of modality to start with, either endoscopy or intervention radiology as minimal techniques for definitive treatment or bridging technique for definitive surgery (as complementary tool) prior to surgery or whether surgery still is needed for definitive treatment or surgery is mandatory from the start as definitive treatment.

Also the multidisciplinary team approach gave an outreach service for on-table repair of iatrogenic bile duct injuries to nearby hospitals around the tertiary center in 19 cases after receiving emergency call from the surgical team in those hospitals.

Patients were categorized according to the presentation into the biliary leakage group and the biliary stricture group as diagnosed by previous tools. Each group was managed according to the road map made by multidisciplinary team, starting with the minimally invasive tools (endoscopic treatment alone or in addition to percutaneous interventional radiological manipulation in difficult cases) to more invasive surgical treatment.

Biliary leakage group classified according to the

classification of Strasberg et al. [15] was managed by endoscopic sphincterotomy in mild cases and/or stenting in moderate to major leakage, with concomitant stone extraction if present with the common bile duct (CBD) by ERCP.

Biliary stricture group categorized according to the classification of Strasberg et al. [15] was treated initially by endoscopic dilatation and stenting in repeated endoscopic sessions, with upgrading of the stent, until cure was obtained (after full dilatation of the stricture segment as evident by loss of the waist in the cholangiogram).

Percutaneous manipulation was attempted in cases of proximal biliary injuries as in major CBD injuries, transection, or ligation through percutaneous transhepatic cholangiogram as diagnostic tool prior to surgery, percutaneous manipulations, and guide wire deployment through the CBD prior to combined procedures (Rendezvous) techniques or percutaneous dilatation and stenting for stricture or injuries.

Surgical approaches: surgical intervention was attempted for the cases not fixed by endoscopy or interventional radiology or cases which deserved surgical intervention from the start (transection, ligation, fibrotic stricture of CBD, and postoperative stenotic stricture in bilioenteric anastomosis (redo operation)), with the following surgical maneuvers:

- (i) emergency surgery for peritoneal lavage and drainage of biliary peritonitis;
- (ii) on-table repair of iatrogenic bile duct injuries in cases diagnosed intraoperatively in our center or as an outreach service in nearby hospitals;
- (iii) primary repair on T-tube splint in a minor laceration injury of the CBD;
- (iv) choldocholithotomy procedure in associated

CBD stones;

(v) undoing CBD ligation;

(vi) bilioenteric anastomosis operations were done as a Roux-En-Y loop depending upon the site of injury, in proximal injuries in porta hepatis (Hepp-Couinaud technique), was capitalized on the extrahepatic course of the left main hepatic duct. Hepaticojejunostomy was done (for the injuries above the biliary confluence) in which the repair was done in the common hepatic duct or at the bile duct confluence with widening the stoma by opening the right and left bile ducts together at site of confluence (stomoplasty), or cholodochojejunostomy was done (in the injuries below the cystic duct insertion and the proximal bile and hepatic duct was not cicatrized or infected). The bilioenteric anastomosis may be side to side or end to side maneuvers depending upon the site and extent of the biliary injuries, and the anastomosis was tension free, mucosa to mucosa, and good wide stoma, with T-tube or biliary splint (specially small ducts) in majority of the cases to decompress the biliary tree in the immediate post-operative period and to obtain postoperative, contrast studies.

This work is partly presented at 14th Euro-Global Gastroenterology Conference