Iatrogenic bile duct injury during open nephrectomy

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ABSTRACT

Introduction: Iatrogenic bile duct injury can occur during several intra-abdominal surgeries, such as hepatobiliary, pancreatic duodenal and gastric surgeries. Here we report a first case of bile duct injury, occurred during attempt of open nephrectomy.

Case report: A 35 year old male presented with antecedent history iatrogenic duodenal injury at the level of papilla during nephrectomy for non functioning kidney. Which was managed by resection of the 2-3 cm of bowel and hand sewn end to end anastomosis. Nephrectomy could not perform due to dense perinephric adhesions. In postoperative period, patient developed sepsis, Raised TLC (12,800 /ml) counts and high bilious drain output. Upper gastrointestinal contrast study was showing extravagation of dye from duodenum in subhepatic space with air. Patient was managed conservatively by Broad spectrum antibiotics, placing CT guided multiple percutaneous drains, drain manipulation and nutritionally supported by NJ feeding. By this mean fistula was controlled. Latter patient developed stricture of the common channel of bilipancreatic ducts which revealed on MRCP and PTBD gram and patient managed by Side-to-Side, 2.5 cm, longitudinal, Roux- en-Y Choledochojejunostomy.

Results: In immediate postoperative period he remained hemodynamically stable, on 4th postoperative day he developed large collection in the lesser sac which managed with intravenous antibiotics and percutaneous drains. We found no abnormality in last 1 year follow-up

Conclusion: Iatrogenic bile duct injury, which occurs during intraabdominal surgeries, usually recognized in later stage, initially these patient required multidisciplinary approach and latter managed by hepatobiliary reconstruction.

Key words: Bile Duct Injury, Hepatobiliary Reconstruction, Multidisciplinary Approach

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INTRODUCTION

Laparoscopic cholecystectomy is one of the most commonly performed surgical procedures, since 1980 it has been the standard procedure for management of symptomatic gall stones, acute or chronic cholecystitis. Today, also it is the most common cause of iatrogenic bile duct is laparoscopic cholecystectomy procedure (0.4-0.6). 1 bile duct injury might have severe consequences for some patients. Such injuries represent a vast economic burden to the society 2 and a high rate of medico- legal claims. 3 Bile duct injuries are also reported in other upper abdominal procedures such as hepatobiliary, duodenal, stomach and pancreatic. Gallbladder and duodenal injuries are well reported during percutaneous urological procedure, however, bile duct injuries are very rarely reported in urological procedure, and here we report bile duct injury during attempt of open nephrectomy, which was managed successfully by multidisciplinary approach.

CASE REPORT

A 35 year old male, presented with antecedent history of open nephrectomy for non-functional kidney (PUJ obstruction) in May 2014, during surgery iatrogenic duodenum injury occurred, which was managed by resection of the 2-3 cm of duodenum and primary hand sewn end to end anastomosis. However, due to dense perinephric adhesion, nephrectomy could not perform, and one intra-abdominal drain was placed through right flank. In first seven post-operative days, drain output (500-600 ml/day) was serous and letter on its turned in to bilious output, drain output increased up to 1000 ml/day on next few day. He had spikes of fever (100-101 degree F), Tachycardia (105-110/min), Raised TLC (12,800 /ml). In view of duodenal leak, patient was treated with empirical intravenous antibiotics for 10 days. Upper GI contrast study was done, which was showing contrast extravasation from duodenum in subhepatic space with air. After this patient referred to us for further management, we get a CT scan done which revealed a large collection in right parieties with minimal retro-pancreatic and inter bowel fluid, abdominal drain was in situ (Figure No. 1). Recurrent low grade fever was continued despite all measures and drain output was still high (600-700 ml/day) and it's reached up to 1.5-2 Ltr/day. In view of suspicious duodenum leak, nasojejunal (NJ) tube was placed distal to duodenal leak site for feeding purpose. NJ feed was started, this leads to further increased in drain output up to 1.5 to 2 Ltr/day. Gradually frequency and spike of fever subsided after one week of culture base intravenous antibiotics treatment. Drain output was bilious and continuously high, refeeding and oral feed was started after excluding duodenal leak with oral methylene blue, which was well tolerated by patient. On 24th day of injury drain fluid amylase was 29440 U/L. So it was confirmed that patient had lower end CBD and Pancreatic duct injury with healed duodenal injury.

In view of CBD injury, liver segment 6 PTBD was done to divert the bile. Drain fluid amylase on 31th day was 102650 U/L. In view of pancreatic duct association patient kept

NPO, TPN and injectable octreotide was started to heal biliary and pancreatic fistula. Drain output significantly decreased and reached to less than 50 ml/day after 5 days of treatment and became nil after 20th days of starting treatment. However, PTBD output increased up to 1400 ml /day. Amylase levels of PTBD fluid was 16,000. Patient was discharge and regularly evaluated on 3 months follow up with PTBD gram and MRCP, which revealed a stricture at the common channel of bilipancreatic duct (Figure No. 2a, 2b). Stricture was managed surgically by creating 2.5 cm diameter Roux-en-Y Choledochojejunostomy (Figure No. 3). Immediate postoperative period was uneventful. He started tolerating oral liquids on 3rd postoperative. On 4th postoperative day patient developed abdominal pain, which referred to left shoulder tip and fever spikes. CT scan revealed a large lesser sac collection, which was managed by CT guided aspiration and intravenous antibiotics. On postoperative day 7th, 12th, 14th his PCD, PTBD, and NJ tube removed respectively, and patient discharge. His follow up done on basis of clinical history, USG (Assess pancreatic duct diameter), LFT and stool fat examination. We find no abnormality in one year follow up.

Fig 1: CECT Abdomen: Large collection in right parieties with minimal retropancreatic and inter-bowel fluid,drain in situ

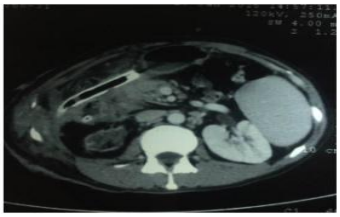
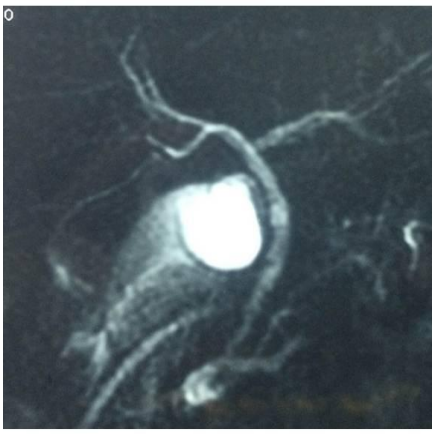


Fig No. 2a: PTBD gram showing stricture of the common channel of bilipancreatic duct

Fig No. 2b: MRCP showing stricture of the common channel of bilipancreatic ducts)



DISCUSSION

Iatrogenic bile duct injuries usually occur during procedure adjacent to hepatobiliary tract such as hepatobiliary, duodenal, stomach, pancreatic. At present laparoscopic cholecystectomy (0.4%-0.6%) is the most common cause of bile duct injury. Incidence of iatrogenic bile duct injury during urological procedure is reported very few in numbers.

However, gallbladder and duodenal injuries are well documented usually occurred during percutaneous urological procedure (percutaneous nephrolithotomy). Only less than one third (11% -23%) of bile duct injuries recognized during surgery, 75% of all bile duct injuries present in postoperative period, 4 these patient may present with abdominal pain, bile leakage, jaundice and cholangitis in postoperative period. Mode of treatment in form of surgical, endoscopic, radiological are available, which is depends on anatomy and severity of injury. Strasberg classification is the most widely accepted classification of bile duct injury, where the bile injury classified from A to E grade; E is taken from bismuth classification which is further classified E1-E5 grade of bile duct stricture. Classification such as Nehaus, Crendes ve stewart, Bergman were also recommended by other. 5 Definition of hepatobiliary anatomy and location are prerequisite for management, the on table cholangiogram may be the useful tool to know the extent suspected injury during surgery. However, in a case where the injury detected in postoperative period, initial imaging investigation of choice should be ultrasonography, it can help to detect the extent of injury, any intraabdominal fluid collection, it can also help to aspirate the bile for conformation and percutaneous drain placement. HIDA can help to detect the leak, however, we could not use for localization of injury. 6 CECT is superior investigation for detection of intraabdominal collection and potential vascular injury. MRCP is very useful investigation to detect the grade of bile duct stricture (E1-E5) in a young stable patient with dearrange renal function test, there are other modality that can be use according to their need and indications such as ERCP, PTC.

Before the concept of acid suppression in peptic ulcer disease was revolutionized by the discovery of H2-receptor antagonists, surgical interventions in the form of gastric resections, vagotomy was preferred treatment of acid peptic disease which was associated with frequent reports of bile duct injuries during these procedures. 7 The most common situation resulting in biliary injury during the course of gastrectomy involves mobilization of the duodenum either for creation of Billroth I Gastroduodenostomy or for closure of the duodenal stump 8, 9 due to acute and chronic inflammation of peptic ulcer. 10,11,12,13

Better outcomes of bile duct injuries have been reported in cases managed in a specialized center by multidisciplinary care team.14 An analysis of the treatment of 88 patients with laparoscopic bile duct injuries, showing 17% of success rate of primary repair attempts by primary surgeon in compare to 94% success rate in patients whose first repair was performed by tertiary care biliary surgeons. Morbidity (58% vs 4%), Mortality (1.6% vs 0%) was significantly different in patient repaired by primary surgeon in compare to repaired by tertiary care biliary surgeons respectably 15

After reviewing the literature we come to know that, there are 7 case reports of gallbladder injuries during isolated nephrostomy and percutanous nephrolithotomy, 2 of them were managed with laparoscopic cholecystectomy, 3 were needed open cholecystectomy and two other were managed by percutaneous cholecystostomy and endoscopic intervention respectively.16, 17,18

Cleveland clinic foundation Cleveland ,ohio reported two cases bile duct injuries during laparoscopic urologic procedure, 19 where 2866 transperitoneal laparoscopic urological procedure were performed between 1997 to 2007 only two bile duct injuries were occurred

one during laparoscopic anterior pelvic exenteration and Indiana pouch diversion and another during laparoscopic partial nephrectomy, in both cases bile duct injury occurred at the time of applying clips to control the peroperative excessive bleeding and after clip removal injuries were identified peroperatively and managed same time with T-tube placement and primary repair of CBD, no conversion was required at that time

CONCLUSION

Iatrogenic bile duct injury during urological procedure are very rare, these injury usually occurs due to adhesion and fibrosis around hepatoduodenal ligament or uncontrolled clip application during uncontrolled bleeding ,which could be avoided by anticipation of technical difficulty, in these situation gastrointestinal surgeon should consulted to assist these difficult steps in surgery and unfortunately if injury already occurred, patient should refer to tertiary care center for multidisciplinary approach management by experience hepatobiliary surgeon, gastroenterologist, intervention radiologist and better outcomes.

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