A rare presentation of chyle leak following choledochotomy

**Emily Calasanz, Richard Murray, Mansoor Mehmood,
Rakhshanda Rahman, Muhammad Nazim**

ABSTRACT

Introduction: Chyle leak is a known complication of mediastinal and abdominal oncological procedures. Few cases of chyle leak involving biliary tree have been reported following laparoscopic cholecystectomy. We present a rare case of chyle leak following open choledochotomy and T-tube placement.

Case Report: A 29-year old Caucasian female with no significant past surgical or medical history was admitted with a several day history of right upper quadrant pain, nausea, and intolerance to food. Workup revealed a dilated common bile duct with filling defect consistent with choledocholithiasis. Patient underwent open cholecystectomy and choledochotomy for common bile duct exploration and removal of the stone. Post operative course became complicated by repeated episodes of nausea and abdominal pain and finding of a well-defined fluid collection in the pancreaticoduodenal region necessitating repeated image guided drainage of the collection. After the removal of the common bile duct stent and T-tube, patient again returned back within a week with recurrent symptoms. A computed tomography (CT) scan of the abdomen showed presence of two new small collections thought likely to be abscesses away from the previous collections. Drainage of the fluid was found to be milky with high triglyceride levels consistent with chyle leak. Patient was managed conservatively and doing well since then.

Conclusion: Chyle leak is a rare postoperative complication that requires early recognition and knowledge of its pathophysiology due to high morbidity from malnutrition and excellent response to conservative management in the era of parenteral nutrition.

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CASE REPORT

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Keywords: Chyle leak, Choledochotomy, Open cholecystectomy, Postoperative complication

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INTRODUCTION

Chyle leak is a known postoperative complication of thoracic and abdominal surgical procedures. It refers to accumulation of triglyceride rich “milky” fluid in the peritoneal cavity due to a breach in the lymphatic channels. The incidence is especially high where dissection involves

retroperitoneal structures thereby posing cistern chyli at risk of injury [1]. The incidence of chyle leak following biliary tree surgery is rare and confined to few case reports [2–5]. We present a case of chyle leak following choledochotomy and open cholecystectomy and its management. Although rare, it still has the potential to significantly increase postoperative morbidity.

CASE REPORT

A case of a 29-year-old Caucasian female with no significant past medical or surgical history who was admitted with several day history of right upper quadrant pain, nausea and intolerance to food. Workup revealed a dilated common bile duct (CBD) at 1.4 cm with filling defect concerning for choledocholithiasis (Figure 1). Given the radiological data, gastroenterologist (GI) was consulted for endoscopic retrograde cholangiopancreatography (ERCP) to further evaluate the common bile duct filling defect. During the ERCP, after sphincterotomy, stone extraction proved very difficult due to its large size so a stent was placed in the CBD to promote drainage. The patient subsequently underwent exploratory laparotomy, open cholecystectomy, and choledochotomy for common bile duct exploration and removal of the stone. A T-tube was placed along with a Jackson–Pratt drain followed by choledochotomy closure. The T-tube was found to flush easily and filling and emptying was confirmed with T-tube cholangiogram. The patient's symptoms improved and she tolerated clamping of the T-tube and removal of the JP drain and was subsequently discharged. A few weeks later, the patient returned with recurrent abdominal symptoms. A computed tomography (CT) scan of the abdomen and pelvis with contrast revealed a well-defined fluid collection in the pancreaticoduodenal region. A repeat T-tube cholangiogram revealed no filling defect or bile leak (Figure 2). To relieve symptoms, interventional radiology (IR) was consulted to drain the collection and the fluid was sent for gram stain and culture that came back negative. She remained on antibiotics throughout her hospital stay and was discharged home once symptoms improved. After her discharge the patient returned twice with similar presenting symptoms. Initially, a repeat IR guided drainage was performed along with removal of the stent placed by GI and unclamping of the T-tube; during this period, patient was instructed to keep a log of drain output. Less than a week later, the patient returned again complaining of abdominal pain and nausea. This time, CT scan revealed two new small collections thought likely to be abscesses measuring 2.2 cm each inferior and to the right of the drained collection from previous hospitalization (Figure 3). During IR guided drainage of these abscesses, the fluid was noted to be milky in appearance and so in addition to gram stain and cultures, amylase level and triglyceride level of the body fluid were measured and found to be 732 mg/dL indicative of chyle leak. In consultation with GI, it was decided to follow a

conservative approach, which included liquid strict non-fat diet. A dietary consultation was obtained and patient was given a brochure with a list of items that she could take. After symptomatic improvement, the patient was discharged home on the same dietary regimen. Since then, the patient has been doing well since.

Figure 1: Cholangiopancreatography showing a large stone in common bile duct.

Figure 2: A T-tube cholangiogram revealing no filling defect or bile leak.

Figure 3: Computed tomography scan of abdomen showing two small collections measuring 2.2 cm each.

DISCUSSION

Chyle leak following choledochotomy is an extremely rare complication. To our knowledge, only one case of a retroperitoneal chylous cyst following choledochotomy and cholecystectomy has been reported in Japanese literature while only a handful of cases reporting chyle leakage following cholecystectomy have been depicted in English literature [2–5].

Chyle is a fluid in the lymphatic system that consists of lymph from interstitial fluid and emulsified fat from intestinal lacteals. Chylous ascites is the extravasation of milky chyle into the peritoneal cavity. Sepsis is the most common complication considering the high concentration of lipids and proteins. The leak itself can cause tissue damage to surrounding structures by direct compression. With the depletion of lymphocytes, the patient is also prone to immunosuppression. Nutritional deficiencies due to loss of protein, calories, and vitamins as well as metabolic complications due to loss of electrolytes can also occur [6].

Chyle leak is most often associated with malignancies, penetrating trauma, node biopsies, neck dissection, esophagectomy, and resections of the lung, pancreas or cervical rib that causes injury to lymphatic vessels or enzymatic damage or mechanical compression of the lymphatics by an inflamed pancreas. The cause of chyle leak in our patient is unknown, as she did not have any of the above mentioned procedures. In most cases, chyle leak is found postoperatively, as was the case in our patient [7]. Presenting features are usually non-specific and include abdominal pain with distension, anorexia, nausea, vomiting, dyspnea, weight gain, and early satiety. Presence of fever signifies sepsis and requires prompt identification and drainage of the fluid for further analysis. Diagnosis of chyle ascites rests on chemical analysis of fluid demonstrating ≥ 110 mg/dL of triglycerides. Other

measurements include low cholesterol and leukocytosis with lymphocyte predominance [8].

Treatment of chyle leak varies, primarily based on the volume of chylous drainage and is generally supportive. Those who do not respond to low fat diet with medium chain triglyceride (MCT) supplementation are candidates for bowel rest and total parenteral nutrition [9]. It has also been suggested that the use of pancreatic lipase inhibitors and somatostatin analogs may decrease the triglyceride absorption and chyle flow [10]. Surgical intervention may be needed for higher volume chyle leaks or nutritional compromise especially if the site of the leak is known in selected group of patients [8].

CONCLUSION

Chyle leak is an uncommon complication of commonly performed surgical procedures which requires prompt identification and treatment due to high morbidity and associated health care cost. Diagnosis rests on presence of elevated triglycerides in the paracentesis fluid. Conservative management is highly successful in postoperative patients and includes the use of a low fat diet containing medium chain triglyceride (MCT), repeat paracentesis, total parenteral nutrition and somatostatin analogs.

Author Contributions

Emily Calasanz – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published

Richard Murray – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Final approval of the version to be published

Mansoor Mehmood – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Rakhshanda Rahman – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Muhammad Nazim – Substantial contributions to conception and design, Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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