



## Case Report

# Post-operative ascites of unknown origin after laparoscopic cholecystectomy: Case report

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## ARTICLE INFO

## Keywords:

Postoperative ascites

Laparoscopic cholecystectomy

Case report

## ABSTRACT

**Introduction and importance:** Post Laparoscopic cholecystectomy ascites is a rare complication that might be due to biliary leak, lymph duct injuries, infections, peritoneal reaction bowel injuries, malignancies and etc.

**Case presentation:** Here we have reported post-cholecystectomy ascites presented with hypovolemic shock in a women of unknown origin. Different possible etiologies have been ruled out for her but her intra-peritoneal secretions had been decreased about one week of hospitalization and was discharged without figuring out its etiology.

**Clinical discussion:** Post-cholecystectomy ascites is a rare condition that could be caused by biliary leak, lymphatic leak, ovarian hyper stimulation syndrome, infections, peritoneal reactions and malignancies that all of them should be considered for these patients to manage their problem.

**Conclusion:** The exact cause of ascites in the presented case was still unknown and the condition was controlled by administration of corticosteroids, octreotide, albumin, and insertion of the stents in biliary ducts. More investigation esp. on immunologic causes are needed.

## 1. Introduction

Cholecystectomy is the most common general surgery in the United States and its gold standard approach including laparoscopic cholecystectomy [1] is performed frequently worldwide with some common complications like bile duct injury which their rates are decreasing in the last years [2,3]. Post-operative ascites is a rare condition that could be due to lymphatic drainage damage, causing chylous ascites [4]; other possible causes are biliary leak, peritoneal reaction, infections, malignancy and etc. [5]. Lowering side-effects after surgical operations could be a cherished objective of each surgical professionals. Clarifying the pathophysiology of post-operative complications and their assessments help better management of patients. Here we have reported in line with the SCARE Criteria [6] a rare case of post-operative ascites of unknown origin after laparoscopic cholecystectomy.

### 1.1. Presentation of case

A 27-year-old woman was admitted to emergency department for

sudden abdominal pain in her right upper quadrant. She had history of polycystic ovarian disease, infertility for 8 years and successful laparoscopic surgery for infertility without complication two years before, she also had two children without history of abortion. She did not used any specific drugs and had no allergy history. Clinical examination, ultrasonic and laboratory evaluations revealed acute cholecystitis for her and she had been underwent laparoscopic cholecystectomy by leading of a surgeon with history of 5 years of laparoscopic surgeries without further complications during the surgery. One day after her discharge she was admitted with hypovolemic shock that after resuscitation her abdominal pain was evaluated with ultrasonography that showed aggregation of secretions in abdomen. Routine blood investigations and serum amylase/lipase were normal. Abdominopelvic ultrasound uncovered huge interlope free fluid (exact amount of it was not noted by radiologist) and about 25 mL in gallbladder space, fatty liver grade 2 and no hepatic fibrosis. An intraperitoneal pigtail catheter under ultrasonic guide was inserted and about 1000 mL ascites fluid (Liquid: glucose 97 mg/dl, LDH: 574, protein 2.5 g/dl, albumin 2 g/dl, WBC 100, PMN 40%, RBC 8000, amylase: 68, cholesterol: 28, triglyceride: 32, total bilirubin:

**Abbreviations:** MRCP, Magnetic resonance cholangiopancreatography; CBD, Common bile duct; ERCP, Endoscopic retrograde cholangiopancreatography; PCO, Polycystic ovary; SAAG, Serum ascites albumin gradient; CHD, Common hepatic duct; PCOD, Polycystic Ovarian Disease.

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<https://doi.org/10.1016/j.amsu.2022.103431>

Received 14 January 2022; Received in revised form 23 February 2022; Accepted 28 February 2022

Available online 4 March 2022

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0.3, direct bilirubin: 0.2, with no bacterial growth Serum: total protein 4.3 g/dl, Albumin 2.9, 1.1 < SAAG) was flowed out. An abdominopelvic intravenous contrast enhanced computed tomography done which did not discovered any intra-abdominal pathology that seem clarifying the cause of the ascites. MRCP did not showed any defect in biliary ducts and the size of CBD was in its upper limit (CBD: 5.5), ERCP was done with no contrast leak and as result two plastic stents had been inserted. During next 8 days her secretions from the catheter was decreased significantly and as result the stents had been removed with ERCP and 12 days after this procedure, control abdominopelvic ultra-sonography showed significant reduction in intraabdominal fluids (about 100 mL interlope free fluid and about 25 mL in gallbladder space) and octreotide (100 µg every 8 hours), hydrocortisone (50 mg every 12 hours) and albumin had been started for her and to rule out Pseudomyxoma Peritonei laboratory markers had been requested (CEC, CA19-9 and CA 125 that were in normal range). To rule out gynecologic causes transvaginal ultrasonography was done which showed only left ovary hypogenic round lesion in favor of PCO. She was discharged and did not experienced the same condition till six month of follow up.

## 2. Discussion

Several medical conditions could cause collection of liquid within the peritoneal space including heart failure, malignancy, pancreatic disease, cirrhosis, infectious causes and etc. Different causes could have their unique fluid characteristics and be different from others in color, SAAG, cell count and etc. [5]. Chylous ascites is a rare condition that is due to lymphatic leak into peritoneal space and is characterized with collection of milky secretions in peritoneal cavity that is due to high level of lipid secretions as result it is important to evaluate the ascites fluid for triglyceride. This condition could be managed by correcting the cause of lymphatic leak, dietary modifications, surgical interventions (peritoneal shunt, angiography, transjugular intrahepatic portosystemic shunt, and even laparotomy) and medical interventions like administration of diuretics and some other agents like octreotide, somatostatin, orlistat and etilefrine [7]. There are some reports about occurrence of chylous ascites after LC that were managed with surgical interventions [4,8,9] but dealing with our case we did not find evidence of this condition and aspirated fluid triglyceride was below 200 mg/dL (32 mg/dL).

One possible etiology for post LC ascites might be biliary leak that occurs in 0.4–0.6% of surgeries and its management requires cooperation of surgeons, radiologists and endoscopists to find out the leak site and manage it. Biliary leak is categorized in to high output drainage (more than 300 ml/24hours) and low output drainage; most of these leaks are due to Strasberg type A injuries that is mostly due to cystic duct damage; Strasberg type C and D are other types of injuries mainly to the right hepatic duct (RHD) or right posterior sectoral duct (RPSD) [10]. In our case we have more than 700 ml/24 hours secretion that encouraged us to do an ERCP for her, as result the video duodenoscope was introduced into papilla, cannulation of biliary duct using papillotome device over a guide wire was done successfully and deeply enough; the opacification of biliary duct was done successfully and completely. We did not detect any biliary leak and as result two plastic stents were placed in CHD as we could not rule out Strasberg type C and monitored the patient next days.

Ovarian hyper stimulation syndrome is another condition that could also cause ascites [11] but clinical evaluations and ultrasonic findings of ovaries beside laboratory markers including kidney function test were not consistent with this diagnosis. Our patient also had history of laparoscopic surgery for her infertility and there is a report of post-laparoscopic ascites for this reason [12] but interestingly our patient did not face the same condition after that surgery that might help researchers to build hypotheses for the cause of this phenomenon.

In approach to post-operative ascites, several other causes should be considered like pancreatitis due to pancreatic duct injury. Other life-

threatening conditions are bowel injury, lower unitary tract injury, and peritonitis which should be assisted by secessions analysis and physical exam. Spillage of endometriotic cyst contents is another condition that had been reported to cause massive post-operative ascites [12] that we have assessed by transvaginal sonography.

There are some reports about post-LC ascites due to immunologic reaction to methylene blue dye that is hypothesized that the use of certain agents during surgery may lead to this condition; some use of carbon dioxide, light, electricity and etc. might cause a diffuse peritoneal reaction and possible post laparoscopy ascites [13,14], although we did not use methylene blue dye we could not ignore this possible etiology. The occurrence of post-operative ascites after the second laparoscopy might be in favor of immunologic reactions.

## 3. Conclusion

Although we did not figure out the cause of post LC ascites the amount of secretions was decreased significantly after conservative therapy and administration of octreotide, hydrocortisone, and albumin besides insertion of stents. More evaluation and studies esp. on immunologic causes are needed on these idiopathic ascites to find out the real cause.

## Consent

Written informed consent was obtained from the patient for publication of this case report.

## Ethical approval

The ethical committee approval was not required given the article type (case report).

## Sources of funding

No funding

## Author contribution

Vahid Reisi-Vanani: Data collection; preparations of manuscript & follow up of the patient. Mehdi Alipour: Study conception, Data collection, and follow-up of the patient. Babak Alavi Farzaneh: Study conception, Supervision, and follow-up of the patient.

## Declaration of competing interest

They have no conflicts of interest for this report.

## Guarantor

Babak Alavi Farzaneh.

## Provenance and peer review

Not commissioned, externally peer-reviewed.

## Concluding remarks

A 27-year-old woman with a history of PCOD and laparoscopic surgery for infertility was cured two years before her admission that underwent LC and was discharged. Two days later she presented with severe ascites. Biliary damage was ruled out for her by MRCP and ERCP; and octreotide, hydrocortisone, and albumin had been administered for her. After about one week of hospitalization, her intra-peritoneal secretions had been decreased and she was discharged without figuring out the etiology.

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