LESS

Case Report

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Laparoscopic gallbladder-preserving surgery: Case report

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ABSTRACT

Laparoscopic gallbladder-preserving surgery (LGPS) was developed in recent years to avoid the potential complications of laparoscopic cholecystectomy when there is a functional gallbladder. This is the first case report of LGPS in 2 adult patients in Turkey: Two patients, 40 and 53 years old, each with a single gallstone. Gallbladder function was evaluated preoperatively using ultrasonography. The gallstones were 12 mm and 20 mm in diameter. LGPS was performed using 3 trocars in one case and 2 in the other. No severe postoperative complications, such as bile leakage or hemorrhage, were observed. No recurrence was observed at 14 months after the operation. In conclusion, LGPS is feasible technique for selected cholelithiasis patients with a functional gallbladder. Randomized controlled trials are required for broad adoption of this technique..

Keywords: Cholecystolithotomy; gallbladder-preserving surgery; gallstone surgery.

Introduction

Gallstone is a significant worldwide health problem. Laparoscopic cholecystectomy (LC) is the standard of care for treating patients with symptomatic gallstones.[1] However, studies in recent years have reported %9.22 complication rate after LC,[2] those including dyspepsia and diarrhea, upper abdominal discomfort, bile reflux gastritis, bile duct injury, post-cholecystectomy syndrome. To avoid these complications, laparoscopic gallbladder preserving surgery (LGPS) in a functional gallbladder, was developed in recent years. We performed LGPS to two cases with gallstone in a functional gallbladder. Best of our knowledge, this is the first LGPS case report from Turkey.

Case Report

Case 1 (LGPS with 3 Ports)

40 years old female patient, with the complaints of dyspeptic symptoms after greasy meal, examined in our clinic. BMI was 24.7 kg/m^2. There was a 22 mm in diameter gallstone in her gallbladder since two years. No family history of gallstones. A/C section and biliary colic attack was present in her past medical history. She was under treatment with L-throxin 100 mcg tablet regularly due to Hashimoto's thyroiditis. In her physical examination, epigastric discomfort was noted. There were no icterus findings on her conjunctiva and skin. Laboratory findings revealed insulin resistance (elevated HbA1c and Insulin levels). Thyroid hormones, complete blood count, hepatic

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transaminases and bilirubin levels were normal. Grade 1 hepatosteatosis and a 22x15 mm in diameter gallstone was detected in her gallbladder by ultrasonography (USG). Gallbladder wall thickness was 3 mm. Antral gastritis (no Helicobacter pylori) was detected by gastroscopy.

Gallbladder volume measured by USG, on fasting and 90 min. after meal to evaluate gallbladder function. Gallbladder volume decreased over 80% one hour after the meal. Proton pump inhibitor and sucralfate were given for gastritis preoperatively. Gluten free and dairy free diets were started for insulin resistance. Ursodeoxycolic acid (Ursofalk 250 mg cap) was given twice daily for three months.

After three months, there was no evidence of insulin resistance on the laboratory tests. The patient lost weight about 4 kilograms. She was feeling good, but sometimes, she suffered from nausea after greasy meal. The function of the gallbladder and wall thickness were normal in USG. A 20 mm in diameter gallstone was noted in gallbladder. Detailed information was given to the patient and detailed consent form was signed.

In the operating room, a 5-mm trocar was first placed in the intraumbilical position and the laparoscope was inserted. Visualization of the peritoneal cavity was normal. Two more 5-mm ports were introduced, One in the epigastric region and one in the right subcostally (just above the gallbladder) were introduced under direct visualization. The gallbladder and triangle of Callot were then observed. Incision of the right subcostal port place was expanded to 2 cm. A small size wound protector was inserted into this incision. Fundus of the gallbladder was pulled outside from the incision. A 1 cm incision was made on top of the fundus. The gallbladder bile was aspirated and then the gallbladder was filled with 0.9% NaCl isotonic solution. A nephroscope (Karl-Storz Nephroscope 5 mm) was inserted into the gallbladder. A cholesterol gallstone that 20 mm in diameter was removed by stone extractor (10F/38 cm Perc N Circle Nitinol Tipless Stone Extractor by Cook Medical).

Complete view of the gallbladder mucosa and the entry of the cystic duct were visualized by nephroscope. No pathological findings observed in the gallbladder. Bile reflux from the cystic duct was seen during aspiration for the confirmation of the opening of the cystic duct. Fundus incision was sutured double layer by 5/0 absorbable sutures. Operation time was 70 minutes.

The patient recovered uneventfully and was discharged in good condition on the first day postoperatively. No severe postoperative complications such as bile leakage and hemorrhage were observed. Ursodeoxycolic acid (Ursofalk 250 mg cap) was prescribed twice daily for three months.

At the follow up visit, 14 months after the operation, patient was free of any symptoms. The gallbladder function was good and no pathology was observed by USG.

Case 2 (LGPS with 2 Ports)

53-year old female patient, who had known a 8 mm in size gallstone in the gallbladder since one year. The patient suffered from dyspepsia after meals. She had no family history of gallstone. She was under treatment with L-throxin 100 mcg tablet regularly due to Hashimoto's thyroiditis.

BMI was 31.2 kg/m^2. There were no icterus findings on her conjunctiva and skin. Laboratory findings revealed insulin resistance (elevated HbA1c and Insulin levels). Complete blood count, hepatic transaminases and bilirubin levels were normal. A 13.3 mm in diameter gallstone was detected in her gallbladder by USG. Gallbladder wall thickness was 3 mm. Gallbladder volume measured by USG on fasting and 90 min after meal to evaluate gallbladder function. Gallbladder volume decreased over 80% at one hour after meal. Antral gastritis (no Helicobacter pylori) was detected by gastroscopy. Proton pump inhibitor and sucralfate were given for gastritis preoperatively. Gluten free and dairy free diets were started for insulin resistance. Ursodeoxycolic acid (Ursofalk 250 mg cap) was prescribed twice daily for four months.

After 4 months, the patient was symptom free and she lost weight about 7 kilograms. The patient was feeling good. Gallbladder function and wall thickness measurements were normal in USG. A 12 mm in diameter of gallstone was seen in the gallbladder. HbA1c, insulin and thyroid hormone levels were normal. But biliary colic attack was observed on the first week after the visit. One month after the biliary colic attack, the gallbladder function and wall thickness were observed as in normal limits by USG. Detailed information was given to the patient and detailed consent form was signed.

In the operating room, a 5-mm trocar was first placed in the intraumbilical position and the laparoscope was inserted. Visualization of the peritoneal cavity was normal. One more 5-mm ports were introduced in the right subcostally (just above the gallbladder) under direct visual-

ization. The gallbladder and triangle of Callot were then visualized. Incision of the right subcostal port place was expanded to 15 mm. LGPS was performed as in the first case. A 12 mm in diameter cholesterol gallstone was removed. Operation time was 55 minutes.

The patient recovered uneventfully and was discharged in good condition on the first day postoperatively. No severe postoperative complications such as bile leakage and hemorrhage were observed. Ursodeoxycolic acid (Ursofalk 250 mg cap) was prescribed twice daily for three months.

At the follow up visit, 14 months after the operation, patient was free of any symptoms. The gallbladder function was good and no pathological findings observed by USG.

Discussion

In 1988, Kellett and coworkers[3] first described a technique of percutaneous cholecystolithotomy for the treatment of gallstones. They concluded that symptomatic patients with gallstones and a patent cystic duct who wished to retain "functioning" gallbladders, percutaneous cholecystolithotomy offers an alternative to open or laparoscopic cholecystectomy. High gallstone recurrence rates were significant problem in this technique. Patient selection criteria were not clearly defined and foley catheter was left in the gallbladder for 10 days. The gallbladder function may be affected by this catheter for fixation of the gallbladder wall to the abdominal wall.

With the development of more effective minimally invasive techniques and meticulous patient selection, recurrence and complication rates of cholecystolithotomy has changed.[4] The contraindications of LGPS were as follows: (1) acute cholecystitis (2) malformed cystic duct (3) gallbladder atrophy (4) malignant biliary tumor (5) obstruction of cystic duct or common bile duct (6) biliary pancreatitis. Indications of LGPS are more important prior to surgery for careful selection of patients. Preoperative evaluation of the gallbladder function (the contractile function of the gallbladder >1/3 of normal after a fatty meal), wall thickness (<4 mm), gallstone size (<30 mm) and number of stones (<3) are mandatory. Real-time ultrasound is the method used for direct gallbladder and bile ducts visualization under physiological and pathological conditions, since it allows repeated measurements at short intervals and provides information for the study of gallbladder wall thickness, content, and contraction.[5,6] LGPS showed less complication rates in intra and postoperatively compared with LC.[6]

Stone recurrence was the important problem that disturbed the progress of cholecystolithotomy, which had been reported 44% during a 48 months follow-up after the percutaneous cholecystolithotomy.[7] Recently in a meta-analysis,[8] stone residual and recurrence is prominently decreased by minimally invasive technology like the laparoscope and choledochoscope widely used in clinics. Lin Ye reported that the average rate of gallstone recurrence was only 3% during an average follow up time of 4 years. And long term recurrence rate of gallstones, more than 15 years, was reported only 10.11% in China. The reason of the decline in reccurence rate is not stated clearly in the literature but the careful patient selection and meticulous surgical technique should be the reason for the decline of recurrence rates.[4]

Our patients who wished save their gallbladder, had no family history of gallstones, no acute cholecystitis and choledocolithiasis. We used preoperative USG for the evaluation of the gallbladder features (Gallbladder wall thickness, gallstone size, gallbladder volume) performed by a radiologist. In our cases, fasting gallbladder volume decreased about 80% at 1 hour after a fatty meal, wall thickness sizes were 3 mm in diameter. We performed LGPS and exploration of all the gallbladder mucosa by rigid nephroscope. We didn't put a catheter into the gallbladder or any abdominal drains. The patients recovered uneventfully and were discharged on the first postoperative day. Effective gallbladder function and no recurrence of gallstones at 14 months follow-up.

In conclusion, LGPS is feasible technique for selective cholelithiasis patients with a functional gallbladder. Randomized controlled trials are required for the adoption of this technique.

Disclosures

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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