RESEARCH ARTICLE

Laparoscopic Cholecystectomy at Cesarean Section

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Abstract

Objective: To study the outcome of laparoscopic cholecystectomy at the time of cesarean section.

Materials and methods: Eight patients were subjected to laparoscopic cholecystectomy at the time of cesarean section. All of them were diagnosed with cholelithiasis at the first antenatal scan. Laparoscopic cholecystectomy was performed by a standard technique, after assessing the anatomy via the cesarean wound.

Results: Laparoscopic cholecystectomy was combined with lower segment cesarean section (LSCS) under general anesthesia in all patients. Surgeries were completed in a mean operating time of 82 minutes. There were no intraoperative or major postoperative complications. No extra antibiotics or analgesics doses were needed. Patients were discharged on the third and the fourth postoperative day.

Conclusion: A combination approach of laparoscopic cholecystectomy at the time of LSCS confers the benefits of minimal access for gallstone disease apart from being safe, effective, and well accepted. With an additional small port site incision, single anesthesia, and single hospital stay, the combined procedure confers valuable advantages in terms of time, hospital stay, cost, and convenience. It also prevents the possibility of developing acute cholecystitis while the patient is waiting for cholecystectomy apart from avoiding the separation of mother from newborn entailed by reoperation.

Keywords: Combined approach, Gallbladder disease, Laparoscopic cholecystectomy, Lower segment cesarean section, Pregnancy.

World Journal of Laparoscopic Surgery (2019): 10.5005/jp-journals-10033-1348

Introduction

Lower segment cesarean section (LSCS) is one of the most common operative procedures in women of reproductive age. Gallstones are three times more common in women than men and cholecystectomy is the most common major operation worldwide. While 2–4% of pregnant women are found to have gallstones by obstetric ultrasound, symptomatic cholelithiasis and cholecystitis during pregnancy occur in only 5–10 of every 10,000 births. Most patients are effectively managed with conservative, nonoperative therapy. In some patients, however, surgery is required for refractory symptoms or complications.[1] The incidental finding of gallstones has increased considerably as so many patients undergo ultrasound imaging of abdomen for a variety of conditions.[2] It has been shown that cholecystectomy for gallstones during laparotomy for the unrelated condition may sometimes be appropriate because such patients are at a greater risk of developing symptoms.[3] Many women undergoing gynecological surgery ask for cholecystectomy to avoid future hospitalization and another operation. One appropriate approach could be to perform combined cesarean section and cholecystectomy in one sitting. Different varieties of procedures have been done at the time of cesarean section, including gynecological procedures, hernia repair, appendectomy, and cholecystectomy.[4–7] The combination of cholecystectomy with cesarean section is virtually undocumented outside of a case report.[8–10] The authors of the present article have reported the feasibility and safety of combined LSCS and open cholecystectomy in a single sitting,[11] and the present study is a further a step ahead by approaching the patient with the laparoscopic technique for gallbladder removal immediately after cesarean section.

Materials and Methods

The study was conducted from July 2014 to August 2018 at Sopore Nursing Home and New City Hospital in Kashmir, Jammu and Kashmir, India. A total of 20 pregnant women with concurrent gallstone disease were identified at their first antenatal sonography, out of which, 12 were scheduled for laparoscopic cholecystectomy at the time of cesarean section. All the patients had gallstones. The selection criteria for the combined procedure were the same as that of the previous study by the authors. Patients who refused a combined procedure or had associated cardiovascular or pulmonary illnesses, acute cholecystitis in the third trimester, gallbladder mass, and symptoms or investigations suggestive of common bile duct stones were not included in the study. In our study group, one patient underwent open cholecystectomy for her intractable recurrent biliary colics in the second trimester of her pregnancy and was excluded from the study. Three more patients lost the antenatal follow-up. The remaining eight patients were either managed conservatively for their symptomatic gallbladder disease or were asymptomatic during their pregnancy. Indications for cesarean section included cephalopelvic disproportion (CPD),

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How to cite this article: Mushtaque M, Khanday SA, Sheikh J, *et al.* Laparoscopic Cholecystectomy at Cesarean Section. World J Lap Surg 2019;12(1):25–28.

Source of support: Nil

Conflict of interest: None

previous cesarean section, transverse lie, twin pregnancy, and placenta previa. Written informed consent was obtained for combined procedures at the time of admission. All patients received prophylactic intravenous antibiotics. Under general anesthesia, LSCS was done first by making a Pfannenstiel or lower midline abdominal incision. Upper abdominal anatomy was assessed via the cesarean wound after the uterus was closed. A telescope was also used through the cesarean incision to have a closure look at the target site. The lax abdominal wall was easily retracted allowing the assessment of the upper abdomen. After closing the uterus, the first 10 mm trocar was placed at the umbilicus under direct vision and was controlled by surgeons' left hand, before closing the cesarean wound. The abdominal cavity was insufflated with carbon dioxide after closing the laparotomy incision and the insufflation pressure was preset at 12–13 mm Hg. Continuous $ETCO_2$ monitoring was done. Three additional trocars were placed at conventional sites (epigastric 10 mm, right subcostal 5 mm, and right lumbar 5 mm) under laparoscopic vision (Fig. 1). Laparoscopic cholecystectomy was completed in all the patients by the duct first method after defining the critical view of safety. The gallbladder was extracted via the epigastric port. A small 14 Fr tube drain was placed in the subhepatic region in all the patients. Ports were removed under the vision and port sites closed. All the patients were encouraged to be ambulatory 18 hours after the operation. Data recorded included age, parity, associated illnesses, biliary symptoms, laboratory and radiological investigations, conversion rate, operative findings, intraoperative complications, the time taken for laparoscopic cholecystectomy after completion of cesarean section, postoperative complications, length of hospital stay from the day of operation, mortality, and pathological findings of gallbladder.

Results

The age of the patients ranged between 24 and 37 years (mean 29.7 years). All except one patient were multigravida. Ultrasonographic findings included multiple gallbladder (GB) calculi in 7 (87.5%) patients, and a solitary large stone of 30 mm diameter in one (12.5%) patient. Clinical presentation included a history of biliary symptoms like episodic upper abdominal pain and/or dyspepsia in four (50%) and acute cholecystitis in the first trimester in one (12.5%), while three (37.5%) women had silent gallstones. One patient who was excluded from the study developed recurrent acute biliary colic requiring frequent admissions and was operated at a referral center for her gallstone disease in her second trimester of pregnancy. Other three patients lost their follow-up in their last trimester of pregnancy. All symptomatic patients were managed conservatively during their pregnancy, including one who developed acute calculous cholecystitis in her first trimester. The indications of LSCS in our study group were CPD in two, previous LSCS in five, and placenta previa in one of the patients. All the patients were operated at term. Under general anesthesia, LSCS was first done using either Pfannenstiel incision (five patients) or lower midline incision (three patients). Anatomy in the upper abdomen was assessed via the cesarean wound after closing the uterus. Direct visual assessment was somewhat easier via the lower midline incision as compared to Pfannenstiel incision. All the patients had favorable anatomy and laparoscopic cholecystectomy was completed in them. A small tube drain was placed via the right flank port site as routine which was removed in all patients on the first or the second postoperative day.

Intraoperative findings included flimsy omental adhesions in four (50%) patients, and dense adhesions in calots, distended gallbladder, short cystic duct, and mucocele in each (12.5% each) of the patients. None of the patients had pericholecystic edema/abscess, empyema, or dilated cystic duct. Opened specimen revealed gallstones with or without sludge in seven patients, and gallstones with clear mucus in one patient.

Surgeries were completed in a mean operating time of 82 minutes and the mean extra time taken after LSCS, placement of primary optical supraumbilical trocar, and closure of the cesarean wound was 24 minutes (15–40 minutes). There were no conversions to open cholecystectomy. There were no intraoperative or postoperative complications except for one woman who developed postoperative cesarean wound infection (mild) which was treated with additional daily dressings. All newborn were healthy with a mean birth weight of 2.9 kg. There were no deaths in our series. No extra antibiotics or analgesic doses were needed. Patients were discharged on the third and the fourth postoperative day. Histopathology of the gallbladder specimen revealed features consistent with chronic cholecystitis in five, acute inflammation in one, cholesterolosis in one, and a normal gallbladder in one of the specimens.

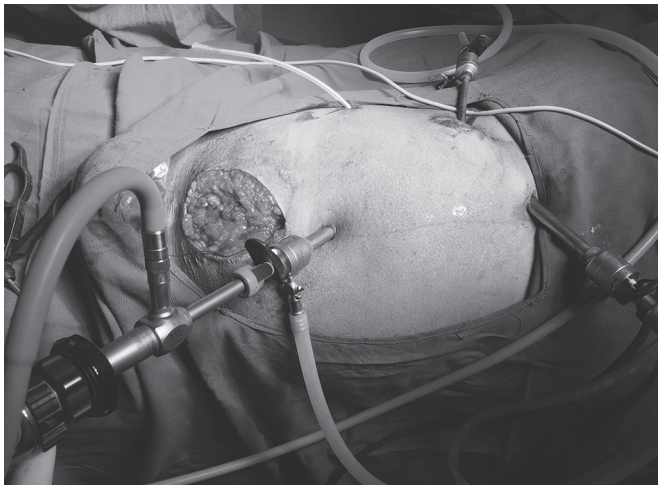

Fig. 1: Lower segment cesarean section wound with sheath closed and standard port sites for laparoscopic cholecystectomy

Discussion

Gallstones are more common during pregnancy due to decreased gallbladder motility and increased cholesterol saturation of bile. Gallstone disease during pregnancy has been associated with increased risk of preterm birth, maternal morbidity, and readmission, as well as neonatal morbidity.[12] The prevalence of biliary sludge, gallstones, and biliary pancreatitis in pregnancy ranges from 5 to 36%, 2 to 11%, and 1/1,000 to 3/10,000, respectively.[13–16] However, the need for cholecystectomy occurs in 1 in 1.6–1 in 10,000 pregnancies and most of the patients with symptomatic gallbladder disease in pregnancy are effectively managed conservatively, and cholecystectomy is performed selectively during the postpartum period.[14] Many patients require cholecystectomy during pregnancy, and the laparoscopic approach seems to be a safe alternative to open surgery during pregnancy.[17] For pancreaticobiliary diseases in pregnancy, endoscopic retrograde cholangiopancreatography (ERCP) has been suggested as an effective alternative to surgery.[18] Although gallstone disease in pregnancy is uncommon, the potential maternal and fetal morbidities from both the disease and its surgical therapy are significant. Pregnant women who

develop symptomatic gallstone disease have a high rate of recurrent symptoms.[19]

After open or laparoscopic cholecystectomy in pregnant women, the rate of preterm labor is 5–7% overall and up to 40% in the third trimester.[17–20] The rate of spontaneous abortion is 0–18%, and the rate of preterm delivery is 0–22%, depending on the severity of the underlying disease and gestational age.[21] In a large retrospective population-based study, fetal outcome following laparoscopy did not differ from that following laparotomy.[22] Decision between operative and nonoperative management regarding the gallstone disease in pregnancy must balance the operative risks against those of the disease itself. The main operative risks include fetal teratogenicity and spontaneous abortion for patients treated early in pregnancy and preterm labor or delivery in those treated in the third trimester. With nonoperative management, the main concern relates to the severity of nausea and/or pain and the potential development of complications of gallstones, including acute cholecystitis, obstructive jaundice, and pancreatitis.[19] Five of our patients (62.5%) were treated nonoperatively for their symptoms before delivery.

If a pregnant womanrequires abdominal surgery, the major issues are the optimal perioperative management and the best surgical approach. In the past, laparotomy was the only option. In recent years, more and more laparoscopic procedures are being done during pregnancy.[23] Any abdominal operation during pregnancy may adversely affect the fetus and/or mother by several mechanisms. These include direct uterine trauma, altered uteroplacental blood flow, teratogenic effects of anesthetic drugs and altered homeostasis in fetus and mother, increased risk of thromboembolic disease, effects of postoperative medications, and increased risk of incisional hernias.[24] Laparoscopic surgery has potential advantages compared to open abdominal surgery. These include reduced exposure of the uterus to trauma and air, more rapid maternal recovery and mobilization, decreased pain, better cosmesis, improved operative exposure in some conditions, and decreased risk of incisional hernias.[19]

In an era when the cost of surgery has become increasingly important, a new approach is combined procedures in laparoscopic surgery as well as open general and gynecological surgery.[25,26] The authors of this article have already demonstrated the safety and efficacy of combined LSCS and open cholecystectomy earlier,[11] and the present study is a further a step ahead by approaching the patient with the laparoscopic technique for gallbladder removal. In our present series, a combined procedure was completed in all the patients and it was observed that laparoscopic cholecystectomy can be safely performed at the time of cesarean section in properly selected low-risk patients with a negligible rate of complications. A healthy young patient with no comorbid conditions and uncomplicated cesarean section is a good candidate. However, the safety needs to be further established with further studies, especially in obese patients with comorbid medical conditions, acute cholecystitis in the early third trimester, associated or suspected CBD stones, and those encountering complications of LSCS. Till date, these patients would be better served by delayed laparoscopic cholecystectomy.

The disadvantages of combined surgeries include longer duration of anesthesia and operative time, possible complications of multiple incisions, and increased blood loss. However, in the present study, laparoscopic cholecystectomy was completed in a mean operating time of 24 minutes (15–40 minutes) after LSCS. Additional port site wounds did not significantly increase the analgesia requirements or morbidity and all patients were ambulatory after 18 hours after surgery. The duration of hospital stay was 3–4 days. No additional antibiotics were required.

Laparoscopic cholecystectomy at the time of cesarean section in selected patients is a cost-effective method of treatment for gallstone disease, especially in developing countries like India. A combined procedure avoids rehospitalization for separate cholecystectomy. With an additional benefit of minimal access surgery, single anesthesia, and single hospital stay, the combined procedure confers valuable advantages for both patient and hospital in time, cost, and convenience, including avoiding the separation of mother from newborn entailed by reoperation. It also prevents the possibility of developing acute cholecystitis while the patient is waiting for cholecystectomy. Our results indicate that the combination approach of laparoscopic cholecystectomy at the time of LSCS confers the benefits of minimal access for gallstone disease apart from being safe, effective, and well accepted.

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