

Laparoscopic Cholecystectomy During Pregnancy: Three Case Reports

Themis Chamogeorgakis, MD, Emanuele Lo Menzo, MD, Robert D. Smink Jr, MD, Brandt Feuerstein, MD, Michelle Fantazzio, MD, Jarrod Kaufman, MD, Edward J. Brennan, MD, Randal Russell, MD

ABSTRACT

Objective: The purpose of this presentation is to investigate the effects and feasibility of laparoscopic cholecystectomy during pregnancy.

Methods and Procedures: We present three pregnant patients who underwent a laparoscopic cholecystectomy for biliary colic during the early second and early third trimester of pregnancy. We also reviewed the literature regarding this topic.

Results: All three pregnant patients had uneventful hospital courses after their procedures and delivered full-term babies without complications. Laparoscopic cholecystectomy during the first trimester of pregnancy is contraindicated due to the ongoing fetal organogenesis and during the third trimester is not technically feasible due to the large uterine size.

Conclusions: We conclude that laparoscopic cholecystectomy during the second and very early third trimester of pregnancy is safe and feasible.

INTRODUCTION

There is a strong association between pregnancy and gallstones. When biliary colic or acute cholecystitis occurs during pregnancy, medical treatment is indicated.¹⁻³ Spontaneous abortion and congenital abnormalities are associated with cholecystectomy during the first trimester of pregnancy. Premature labor, on the other hand, can occur during the third trimester of pregnancy.⁴⁻⁶

We present three cases of laparoscopic cholecystectomy during pregnancy: two during the second trimester and one at the beginning of the third trimester. Laparoscopic cholecystectomy has the advantage of faster recovery due to less pain than open cholecystectomy.⁷

CASE REPORT 1

A 30-year-old white female, 22 weeks pregnant, was admitted with two episodes of right upper quadrant abdominal pain associated with nausea and vomiting. Ultrasonography of the gallbladder revealed gallstones with a normal size common bile duct. Because conservative treatment with diet failed, the patient was admitted for laparoscopic cholecystectomy. She received indocin to prevent premature contractions. A Hasson trocar was placed, and the abdominal cavity was insufflated with carbon dioxide, with the maximum insufflation pressure at 15 mm Hg.

The patient was placed on the left lateral decubitus position. Laparoscopic cholecystectomy was performed without incident. In the recovery room she had fetal heart monitoring, which did not reveal any bradycardic episodes. She was then admitted to the ante-partum unit and discharged the following day, tolerating oral diet. The final pathology revealed chronic calculous cholecystitis. She subsequently delivered a full-term baby boy weighing 7 lb 13 oz.

CASE REPORT 2

A 25-year-old female, 26 weeks pregnant, was admitted to the hospital with two episodes of biliary colic, which resolved with conservative management. A third episode occurred, and she was again admitted, placed on antibiotics and taken to the operating room for laparoscopic

The Lankenau Hospital, Wynnewood, Pennsylvania

Address reprint request to: Themis Chamogeorgakis, MD, The Lankenau Hospital, 100 Lancaster Ave, Suite 422 Wynnewood, PA 19096, USA. Fax: (610) 645-3354

cholecystectomy on the following day. A Hasson trocar was placed, and the abdominal cavity was insufflated with carbon dioxide with maximum insufflation pressure of 12 mm Hg. Intraoperative and postoperative fetal heart monitoring did not reveal any fetal heart compromise, although the patient had a few contractions. The patient was discharged on the second postoperative day, tolerating oral diet. The final pathology report was chronic calculous cholecystitis. She delivered a healthy, full-term 8 lb boy.

CASE REPORT 3

A 24-week pregnant female had two previous admissions for cholecystitis, which were treated with analgesics and antibiotics. The ultrasound revealed gallstones with a thickened gallbladder wall and a normal size common bile duct. Because the pain recurred, the patient was admitted for laparoscopic cholecystectomy. The patient had a Hasson trocar placed, and the abdominal wall was insufflated with a maximum pressure of 15 mm Hg. No perioperative fetal monitoring was applied. She was discharged on the first postoperative day, tolerating oral diet and delivered a full-term baby with vacuum-assisted vaginal delivery. The final pathology again revealed chronic calculous cholecystitis.

DISCUSSION

Biliary colic during pregnancy can most often be managed successfully with diet and analgesics. If acute cholecystitis is suspected, antibiotics can be added, and cholecystectomy can be postponed until after delivery. If these measures are not successful, cholecystectomy is indicated.⁸ The second trimester is the safest time to perform the procedure.⁹⁻¹² During the first trimester, fetal malformation because of ongoing organogenesis is the major concern associated with anesthesia and abdominal surgery. During the third trimester, premature labor is the most important complication of cholecystectomy,⁴⁻⁶ although cases of successful laparoscopic cholecystectomy during that trimester have been reported.¹³

Recently, Graham et al. published six case reports of laparoscopic cholecystectomy during pregnancy and performed a literature research of 105 published similar cases. They concluded that, although the above procedure is technically feasible in all three pregnancy trimesters, the incidence of spontaneous abortion and premature delivery is lower during the second trimester.⁹

There are 14 cases of laparoscopic cholecystectomy reported during the third pregnancy trimester.⁹ Only one patient had pre-term delivery due to hypertension. The higher incidence of pre-term labor after open cholecystectomy (40%)¹⁴ during the third trimester of pregnancy justifies the laparoscopic approach when cholecystectomy is necessary. Our only third trimester pregnant patient who underwent laparoscopic cholecystectomy had a full-term, uneventful delivery.

The most common abdominal procedures performed during pregnancy are appendectomy, ovarian cystectomy, laparoscopy for ectopic pregnancy and laparoscopic cholecystectomy.¹⁵ Prophylactic tocolysis with intravenous magnesium have an uncertain effect on the incidence of pre-term labor.^{5,16} Our patients who underwent laparoscopic cholecystectomy received indocin with good results.

The effect of carbon dioxide pneumoperitoneum is unknown.⁴ Although the carbon dioxide can cause physiologic alterations in the fetus, the elimination of carbon dioxide from the placental circulation is rapid and should not cause serious problems. A case of gasless laparoscopic cholecystectomy has been reported by Iafrati et al.¹⁵ Intraperitoneal pressure of carbon dioxide should be kept at a minimum. In our cases, carbon dioxide pneumoperitoneum with a maximum insufflation pressure of 15 mm Hg did not cause any fetal compromise, as shown by the good perioperative course of the three patients, as well as the healthy babies that resulted.

Concerns have been expressed about the effect of venous flow from the lower extremities with carbon dioxide pneumoperitoneum during pregnancy. Specifically, the application of intermittent pneumatic compressors cannot eliminate the phenomenon of venostasis during pregnancy.¹⁷ None of our patients developed deep vein thrombosis during laparoscopic cholecystectomy.

We found the use of a Hasson trocar to be extremely useful, because the open technique of port placement avoids injury to the uterus. Most other case reports of laparoscopic cholecystectomy during pregnancy report using the same technique.^{18,19}

We felt that intraoperative cholangiogram is risky for the fetus due to the radiation exposure and prolonged anesthesia. However, this topic is controversial.¹³ We did not use intraoperative cholangiography during our cases

because there was no evidence of choledocolithiasis on the ultrasonography or the laboratory evaluation. If cholangiography is necessary, a lead shield should be placed over the entire infraumbilical area to protect the fetus.²⁰

CONCLUSION

We conclude that laparoscopic cholecystectomy during the second and early third trimester of pregnancy with perioperative fetal monitoring is safe for the mother and the fetus.

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