Choledocholithiasis and pregnancy.
Hybrid laparo-endoscopic treatment in one step

ABSTRACT

Background: Complications associated with choledocholithiasis are uncommon during pregnancy. However, when it occurs, related morbidity and mortality for the product and the mother increases; therefore, timely and appropriate treatment is imperative in these patients.

Clinical case: We present the case of a 25-year-old patient in her second trimester of pregnancy. Her current condition began 4 days prior to hospital admission with abdominal pain in the right upper quadrant with nausea and vomiting. Twenty-four hours later, jaundice and dark urine were observed. Physical examination showed scleral jaundice and right upper quadrant abdominal pain without peritoneal irritation and uterus at umbilicus level without uterine activity. Laboratory tests showed elevated bilirubin and transaminases without leukocytosis. Ultrasound reported unique live intrauterine product with a heart rate 128 beats/min. Gallbladder demonstrated multiple images that cast acoustic shadowing and a 10-mm common bile duct with dilatation of intrahepatic bile ducts. Laparoscopic cholecystectomy was performed with intraoperative cholangiography and placement of a transcystic jaguar guide for selective cannulation of the common bile duct. Intraoperative endoscopic retrograde cholangiopancreatography was performed with endoscopic stone extraction. The outcome was satisfactory with hospital discharge at 48 h.

Conclusion: Current evidence has shown that the combined use of laparoscopy and therapeutic endoscopic cholangiography in one step is effective for the treatment of choledocholithiasis, decreasing the risk of complications associated with cannulation of the bile duct.

Key words: Choledocholithiasis, pregnancy, endoscopic retrograde cholangiopancreatography, laparoendoscopic surgery.
**BACKGROUND**

Acute appendicitis and symptomatic cholelithiasis represent common nonobstetric medical emergencies during pregnancy and are the cause of abdominal surgery in 1/500-635 pregnant females. The incidence of gallstones during pregnancy is ~4%, and choledocholithiasis is associated with cholangitis and pancreatitis. Although pancreatitis during pregnancy is not common (1/1,000-12,000 pregnancies), 66.3% of the cases are of biliary origin and are associated with premature labor, fetal death and admission to intensive care in 18.6, 4.7 and 2.3%, respectively, for which timely treatment is important.

Treatment of choledocholithiasis with preoperative retrograde cholangiography followed by laparoscopic cholecystectomy is safe and effective during pregnancy; however, the risks and complications associated with endoscopic cholangiography remain latent and there are no clinical trials in pregnant patients.

In past years the combination of laparoscopy and endoscopy at one time has proven to be efficient for treating patients with choledocholithiasis. This technique (laparoendoscopy) is a hybrid procedure that combines gallbladder resection with laparoscopy and stone extraction by means of endoscopy with selective cannulation of the biliary duct during the same surgical procedure, without need for additional equipment other than what is normally used for these procedures, decreasing the risk and complications associated with traditional cannulation of the bile duct with endoscopic retrograde cholangiography.

We report the case of a pregnant patient with diagnosis of choledocholithiasis subjected to laparoendoscopic hybrid surgery.

**Clinical Case**

We present the case of a 25-year-old female patient with a normal pregnancy at 18.5 weeks gestation. The patient reported adequate prenatal control prior to her admission. The actual ailment began 4 days prior to her admission with a clinical picture characterized by abdominal pain in the right lower quadrant radiating to the back, accompanied by nausea and vomiting, which was partially relieved with fasting and ingestion of “over the counter” nonsteroidal anti-inflammatory medications. Twenty four hours after intensity of the pain, icterus and choluria appeared. For this reason, she presented for medical evaluation and was referred to this department.

On physical examination the patient was in good general condition with adequate hydration. She had icteric sclerae without cardiopulmonary complaints. Abdomen was soft and depressible with pain on deep palpation of the right lower quadrant and positive Murphy’s sign, without peritoneal irritation. The uterus was palpated at the level of the umbilical scar, without uterine activity but with positive peristalsis. Genitalia were without discharge. Lower extremities did not show edema and there were normal deep tendon reflexes. Laboratory tests showed leukocytes 5590 cells/mm³, hemoglobin 10.4 g/dL, hematocrit 31.1%, platelets 235,000 cells/mm³, glucose 119 g/dL, urea nitrogen 7 g/dL, creatinine 0.6 g/dL, total bilirubin 4.2 IU/L, direct bilirubin 3.7 IU/L, AST 103 IU/L, ALT 102 IU/L, alkaline phosphatase 281 IU/L, amylase 145 IU/L, PT 11.4 sec, and PTT 26.4 sec. Obstetric ultrasound reported the existence of a live intrauterine fetus with fetal heart rate of 128 beats/min. Ultrasound of the liver and bile ducts showed the gallbladder with multiple ovoid images that projected a posterior acoustic shadow and mobilized with changes in position. Gallbladder wall was 7 mm, choledocho 10 mm, and there was dilatation of the intrahepatic bile duct.

The patient was transferred to the operating room and general anesthesia was given. Laparoscopy was done and showed the pregnant uterus at the level of the umbilical scar (Figure 1).
Dissection of the gallbladder was begun from the visceroperitoneum up to the structures at the level of the triangle of Calot. Direct view of the elements, stapling and cutting the cystic artery was accomplished. With partial dissection of the cystic duct, intraoperative cholangiography and fluoroscopy was done after ensuring protection of the pregnant uterus. Dilation of the intra- and extrahepatic bile duct was done and a stone at the level of the choledochal duct was observed (Figure 2). A transcystic Jaguar endoscopic guide was placed towards the duodenum to selectively cannulate the bile duct (Figure 3) and to perform an endoscopic retrograde cholangiography whereby the stones were satisfactorily extracted with a Dormia basket (Figures 4 and 5). The gallbladder was excised in the usual manner. The postoperative course was adequate and without fever. Oral tolerance was achieved at 12 h, and pancreatic enzymes were normal at 4 and 8 h. The patient was discharged from the hospital at 48 h following evaluation of the fetal well-being.

**DISCUSSION**

Treatment of abdominal pain in a pregnant patient is a dilemma for which the surgeon should take the risks and benefits of the diagnostic and therapeutic modalities into account, both for the mother and the fetus. A fundamental principle for the differential diagnosis of abdominal pain establishes that “early diagnosis means a better prognosis.” In pregnant females with abdominal pain, fetal well-being depends on the mother’s well-being.¹⁵
During its inception, some authors argued that there was contraindication for laparoscopic surgery during pregnancy due to the risk of uterine injury and decrease in fetal perfusion. Currently, with the acquired experience, laparoscopy has become the first-line treatment for many surgical diseases in pregnant patients. In the past, surgical treatment was not recommended for symptomatic cholelithiasis during pregnancy.16 Today, early surgical treatment is the choice based on the data that demonstrated recurrent symptoms in 92, 64 and 44% of the patients treated nonsurgically during the first, second and third trimester, respectively.17 This delay in surgical treatment translates into greater rates of hospitalizations, spontaneous abortions and premature labor compared with patients who undergo cholecystectomy.18,19

In general, nonsurgical treatment of symptomatic biliary stones in pregnant patients translates into recurrent symptoms in > 50%, and 23% of these patients will have acute cholecystitis or biliary pancreatitis, the latter associated with fetal loss in 10-60% of cases.20

In the gravid female, morbidity and mortality associated with gallbladder disease favors surgical treatment. Laparoscopic cholecystectomy is the treatment of choice because of its advantages in relation to the low complications and secondary effects.21 There have been no reports of fetal death due to laparoscopic cholecystectomy performed during the first and second trimesters of pregnancy. In addition, a decrease in spontaneous abortions and premature labor have been reported in laparoscopic cholecystectomy compared with open surgery.22

Although it has been shown that treatment of choledocholithiasis in pregnancy with endoscopic retrograde cholangiography followed by laparoscopic cholecystectomy is safe and effective,6-8 there are no other studies comparing it with other approaches. Currently, the combination of laparoscopy and intraoperative endoscopy in one surgical procedure has emerged as a viable option for the treatment of choledocholithiasis and it has been demonstrated to be safe and effective.23-25 The laparoendoscopic hybrid technique (Figure 6) combines resection of the gallbladder laparoscopically and stone extraction with intra-
operative endoscopy selectively cannulating the bile duct, whereby the risks of pancreatitis are expected to be decreased\textsuperscript{12,14} as well as having a shorter hospital stay.\textsuperscript{26,27}

In conclusion, the treatment of choice for choledocholithiasis associated with pregnancy is difficult to define due to the lack of controlled clinical trials in this group of patients. The current recommendation points to a preoperative endoscopic retrograde cholangiography and laparoscopic cholecystectomy as the first line treatment. However, the hybrid laparoendoscopic approaches could offer a therapeutic advantage by selectively cannulating the bile duct and with it decrease the risk of complications that could be catastrophic for the mother and the fetus. Also, treatment-related costs would be reduced. Studies in this group of patients are required that would validate these potential advantages.

REFERENCES


