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Is Laparoscopic Cholecystectomy Safe in Late Pregnancy?

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ABSTRACT

Gallbladder disease is second to acute appendicitis in pregnancy, which would require surgical intervention. Twelve percent of all pregnancies are complicated by gallstones; 33%-40% fail to resolve by conservative management. Laparoscopic cholecystectomy which was considered to be technically difficult in advanced pregnancy is now the accepted treatment for failed conservative management.

We present three cases, successfully managed by laparoscopic surgery in late pregnancy.

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INTRODUCTION

Conservative management is the main stay of biliary colic and acute cholecystitis in pregnancy. Laparoscopy in first trimester may lead to spontaneous abortion and congenital abnormalities; whereas in the last trimester, any surgical procedure may induce premature labor.

Gallstone disease is not uncommon in pregnancy. The incidence ranges from 5%-36%. It may be due to sludge or gallstones; one-third of patients with gallstones experience biliary pain; after delivery, sludge (in two-thirds of patients) and even gallstones (in one-third of patients) tend to disappear over a few months[1-3].

Multiparous women have a higher incidence of gallstones[3-5]. Obesity is also known to predispose to higher incidence. The complications of gallstones such as acute cholecystitis, choledocholithiasis, gangrenous gallbladder and acute pancreatitis are uncommon. Acute cholecystitis occurs in less than 0.05% - 0.08% of pregnant patients[4,6].

The Middle East has a higher incidence of obesity due to sedentary lifestyle and food consumption high in fat, such as meat and rice[7]. The incidence may be higher due to consanguinity leading to genetic predisposition[8].

In pregnancy, the increase of reproductive hormones lead to increased saturation of bile with cholesterol and impaired response of cholecystokinin to gallbladder emptying. The increased percentage of cholic acid, cholesterol, decreased chenodeoxycholic acid and decreased enterohepatic circulation coupled with increased bile stasis contribute to increased gallstone formation. These changes return to normal 3 months after delivery[9].

The repeated pregnancies in the gulf population predispose these women to gallstone formation[10,11]. Presentation of gallstone disease in pregnancy is similar to non-pregnant patients.

The aim of this study is to present three cases, successfully managed by laparoscopic surgery in late pregnancy.

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THE CASE

We operated on three cases in late pregnancy during 2001 to 2012. All these patients were placed in 30 degree left lateral and reverse Trendelenburg (head side up) position. The height of the uterus was marked manually or with the help of ultrasound scan.

Pneumoperitoneum was created with closed Veress needle which was placed on palmer point in the left hypochondrium. Entry into peritoneal cavity was gained through the left upper quadrant or via a supraumbilical port 6 cm above the umbilicus. Additional ports were two 5 mm ports in right upper quadrant and 11 mm port in the epigastrium, see figures 1, 2 and 3.

The abdominal pressure was kept to maximum of 12mmHg. Laparoscopic cholecystectomy was completed in 45-80 (mean of 65) minutes.

Case 1

The first case was 22 years old (Gravida 2 Para 1), 26 weeks pregnant by dates and ultrasound estimation. She was admitted with history of recurrent upper abdominal pain, nausea, vomiting and loss of appetite. She was admitted twice previously with similar complaints but had settled on conservative management. Ultrasound scan confirmed calculous cholecystitis with multiple small stones. She was offered laparoscopic cholecystectomy when she was admitted with similar complaint at 20 weeks of gestation; she refused surgical intervention at that time. In the third trimester, she was readmitted and her pain was not relieved with conservative management. She agreed for laparoscopic cholecystectomy. Informed consent was obtained and she was operated upon successfully by laparoscopic approach.

Pre-operative, immediate and one week post-operative fetal monitoring was performed. No tocolytics for premature contraction were administered to this patient. She delivered a healthy male baby weighing 3.700 kg at 40 weeks gestation.

Case 2

The second case was 28 weeks pregnant lady (Gravida 4 Para 3). She was admitted with biliary colic. Conservative treatment failed to relieve her pain. Ultrasound scan confirmed multiple gallstones and normal common bile duct, but serum amylase was mildly raised. She had very mild acute pancreatitis according to Ranson criteria. Informed consent was obtained; she underwent successful laparoscopic cholecystectomy. No tocolytic agent was given but she was monitored for premature labor contractions and fetal well-being till her discharge after 48 hours. She delivered a full term normal baby weighing 4.100 kg by Caesarean section at a gestational age of 38 weeks.

Case 3

The third case was a 33-year-old lady, 22 weeks pregnant (Gravid 3, Para 2). She presented with epigastric pain radiating to the back, nausea and vomiting. She had two Caesarean sections previously. Ultrasound examination of abdomen showed multiple gallstones impacted in the neck of gallbladder which showed minimal thickening. Informed consent was obtained and successfully underwent laparoscopic cholecystectomy and was discharged on the second postoperative day. She had an elective Caesarean section at 37 weeks and delivered a normal 3.030 kg baby.

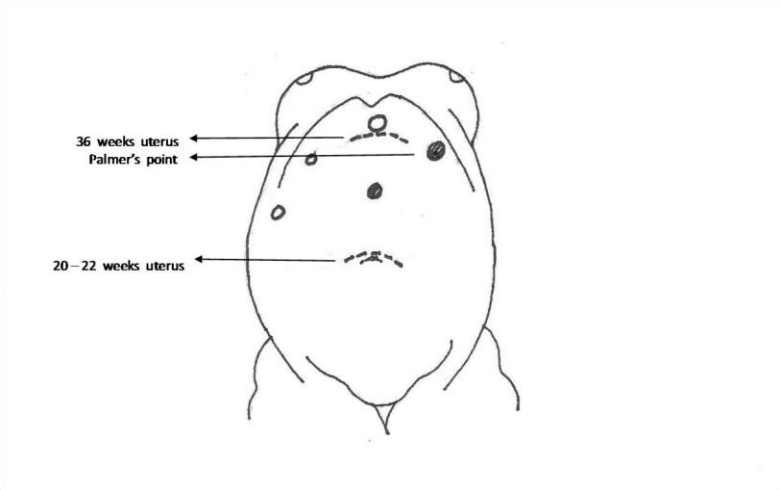

Figure 1: Trocar Positions and Expected Height of the Uterine Fundus

Figure 2: Positions of Trocars

Figure 3: Positions of Trocars

DISCUSSION

The main stay of diagnosis of gallstone and sludge disease in pregnancy is ultrasonography. It is reliable and safe with nearly 100% sensitivity and specificity, but it is an operator dependent modality[12]. Magnetic resonance cholangiopancreatography (MRCP) may be useful in some complicated cases. During the first trimester, MRCP should be avoided to safeguard the fetus during the period of organogenesis. The administration of Gadolinium during pregnancy is controversial but it may be required sometimes when the benefits of investigation outweigh the harm[13,14].

Pregnancy was considered an absolute contraindication for laparoscopy in the early era of therapeutic laparoscopy[15-17]. Supportive management is usually successful for disease associated with gallstones in pregnancy. However, conservative management leads to increased readmission rates of up to 50% and gallbladder disease may be a contributory factor for spontaneous

abortions or preterm deliveries in 1 out of 6 cases[17-20]. Laparoscopy is an excellent tool when the diagnosis in a pregnant patient is uncertain.

Many case reports, meta-analysis and large series have validated the use of laparoscopic surgery in gallbladder associated disease in pregnancy[21-24]. There is no evidence to state that laparoscopy will lead to increased risk of preterm delivery[25-28]. Fear of increased morbidity of cholecystectomy in pregnant women as compared to non-pregnant is not validated[29].

Surgery is more difficult in the pregnant patient, especially in late pregnancy. It requires an experienced surgeon, anesthesiologist and involvement of the patient's obstetrician. In our series of three cases, the outcome was favorable.

In late pregnancy due to enlargement of the uterus, there is limited intra-abdominal space leading to some modifications such as patient being placed head up and right side up with tilt towards left to avoid gravid uterus pressing on inferior vena cava. Use of the open (Hasson) technique is recommended to gain access to the abdomen by Veress needle for introduction of pneumoperitoneum and optical trocars can be safely employed[30,31].

In the postoperative period, fetal heart rate and uterine activity should be monitored in the recovery room, as appropriate for gestational age. Opioids and antiemetics can be used, as needed, to control postoperative pain and nausea. Non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided, especially after 32 weeks of gestation because they might cause premature closure of the fetal ductus arteriosus.

Respiratory acidosis during laparoscopic surgery in pregnancy can be avoided by keeping the end tidal CO2 pressure (PET CO2) less than 34 mmHg[32]. Prophylactic tocolytic agents are not used routinely unless there are premature contractions[33,34].

Antibiotics such as cephalosporin and newer penicillins can be safely given in acute cholecystitis. Pregnancy is a hypercoagulable state and these patients might require antithrombotic-pneumatic stockings and anticoagulation therapy prophylaxis to prevent deep vein thrombosis.

Morbidity ranges from 1% to 9% and common bile duct injuries ranges from 0.2% to 0.7%. They both largely depend on the surgeon's experience. Conversion rates are from 1.8% to 7.8%[35].

Laparoscopic cholecystectomy is ideally performed in the second or early third trimester[36-39]. Although Ursodeoxycholic acid has been administered in the management of intrahepatic cholestasis during pregnancy, its safety and efficacy for the treatment of gallstones during pregnancy has not been evaluated. In the postpartum period, cholecystectomy is indicated if the patient has symptoms and signs with radiological confirmation of gallstones.

CONCLUSION

Laparoscopic cholecystectomy is safe in any trimester although second trimester remains the preferred choice for operative intervention. Laparoscopic cholecystectomy reduces morbidity of the mother and the fetus. Surgery in advanced pregnancy requires a team of experienced surgeon, anesthetist and monitoring by the obstetrician.

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