Original Article

Surgical Outcome in Laparoscopic Cholecystectomy in Pregnant Patients

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Abstract

Objective: To determining the diagnostic and surgical outcomes in the patients with gallstones treated with laparoscopic cholecystectomy techniques during pregnancy.

Methodology: This descriptive case series study was conducted at the Department of Surgery of Liaquat University of Medical & Health Sciences, Jamshoro from July 2019 to June 2020. Inducing the usual anesthesia, veress needle method was used for establishing a pneumoperitoneum. The needle was injected in the right upper abdominal quadrant ahead of the uterine fundus along with a 5mm trocar and a 5 mm laparoscope was passed through this channel. Two trocars of 10 mm size were introduced for direct vision in the Trendelenburg reverse position. The gallbladder dissection was performed using scissors which were associated with electrocautery for instantaneous hemostasis.

Results: A total of 30 pregnant patients underwent laparoscopic cholecystectomy, their mean age was 34.23+23.5 years, and mean gestational age was 28.12+5.22 weeks. 20 patients became highly symptomatic after eating food which impelled surgical intercession, six patients reported biliary pancreatitis and four had acute cholecystitis. The average time duration of the surgical procedure was 60 minutes. All patients except two females who remained pregnant at 16 and 32 gestational weeks have delivered healthy babies with zero developmental abnormalities evidence up to the present time. Nineteen patients were discharged on postoperative 1st day, three on 2nd day, three on 3rd day, and one on the 4th day.

Conclusion: All patients have well tolerated the surgical operations with zero labor precipitation or death of fetus only in two patient's minor superficial infection has been observed. The only utter contraindications would be the unqualified lack of spaces for manipulating the instruments, unclear anatomy during the procedure and lack of satisfactory training and experienced surgeons.

Key Words: Laparoscopic cholecystectomy, Laparoscopic Surgery

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Introduction

Over the past few years, several non-resective techniques have been described for the treatment of cholelithiasis. In spite of effectively destroying or removing gallstones with few of such techniques,

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everyone is imperfect by the constant existence of a diseasing gallbladder.[1] In 1987, the first gallbladder was removed following laparoscopic guidelines by a French surgical expert Phillipe Mouret. Since at that time, there has been a detonation of interests in this surgical procedure reported with thousands of medical practitioners being qualified at several hands-on trainings and a lot of reports confirming to the operational safety being published in the large series. [2] Laparoscopic cholecystectomy has developed as an excellent operational method for the patients with characteristic cholelithiasis and regarding complication. Meanwhile, applications of this method in pregnant patients with symptomatic acute biliary tract infections have gained extensive clinical acceptances.[3] Moreover, the overall facts and figures confirmed that the laparoscopic operations have been functional during pregnancy for the treatment of other intra-abdominal complications. These attitudes also kept another fear of injury of fetal and miscarriage precipitations.[4] The risks of major complications and even mortalities consequential from such operation are less in number which made cholecystectomy the gold standard technique for the patients with cholelithiasis.[5] In the United States of America, approximately 20 million people have gallstones which is about 15% of the overall population. Ultrasonic studies in Europe exhibited the prevalence of 9% to 21% and the incidences of 0.63 per 100 persons per year.[6] In Pakistan, the incidence of cholecystectomy surgery was reported about 4.2% and 14.2% in males and females per year respectively.[7] Regardless of increasing the surgical expertise, the presently existing literature recommends a wide series of conversions from laparoscopic cholecystectomy to open cholecystectomy. Laparoscopic cholecystectomy is significant as the perfect resort for safe surgical practices in critical cases.[8] Upsurge number of perioperative and pre-operative risk factors prerequisite to be recognized. The current study was conducted for determining the diagnostic and surgical outcomes in the patients with gallstones treated with laparoscopic cholecystectomy techniques.

Methodology

This descriptive case series study was conducted at the Department of Surgery of Liaquat University of Medical & Health Sciences, Jamshoro. Study duration was one year from July 2019 to June 2020. The total 30 pregnant patients were suspected acutely symptomatic cholelithiasis or its complications were treated using a laparoscopic approach at the Department of Surgery of Liaquat University of Medical & Health Sciences, Jamshoro, Sindh, Pakistan. Non-probability consecutive sampling technique was used. Every patient was informed about standard protocols of such an advanced approach and limited involvement. After taking completely informed inscribed consent, every patient had placed in an endotracheal tube to inducing the usual anesthesia.[9] The veress needle method was used for all patients for establishing a pneumoperitoneum. The needle was injected in the right upper abdominal quadrant ahead of the uterine fundus. In the same site, 5 mm trocar was introduced where the needle was inserted and a 5 mm laparoscope was passed through this channel. Two trocars of 10 mm size were introduced under direct vision, one in the supra and the other one in the epigastrium infraumbilically depends upon the body habits and the pregnancy age of the patients. Another trocar was injected only in the patients who needed inspections of the common bile ducts. The patients were kept in the Trendelenburg reverse position with an incline to the left side and intra-abdominal pressure was sustained at 10-14 mmHg. Each patient underwent consecutive pneumatic compressions of the lower extremities as well as the appointment of a doppler transvaginal fetal cardiac monitor when suitable for the pregnancy age. The gallbladder dissection was performed using scissors which were associated with electrocautery for instantaneous hemostasis. The cystic artery and the cystic duct stump were managed using the double laparoscopic clip system.[10] The exploration of the common bile duct was performed through the cystic duct while intraoperative cholangiography was not carried out. All the data was recorded via study proforma. Data was analyzed by using SPSS version 20.

Results

During one-year time duration, 30 pregnant patients underwent laparoscopic cholecystectomy during pregnancy. Among these, only 5 patients underwent instantaneous exploration of transcystic common bile duct and choledocholithotomy utilizing 3 mm choledochoscopy and a segura or dormia basket. Mean age of the patients was 34.23$\pm$23.5 years, average gestational age was 28.12$\pm$5.22 weeks and average operative duration was 60.23$\pm$15.23 minutes. The longest surgical time duration was 120 minutes in the patients who underwent the exploration of bile duct. Most of the patients 14(46.7%) were multiparous,

followed by 09(30.0%) were grand multiparous and 07(23.3%) were primiparous. 20 out of 30 patients exhibited insistent vomiting, nausea, and abdominal pain in upper right quadrant. 20 patients became highly symptomatic after eating food which impelled surgical intercession, 6 patients reported biliary pancreatitis and another four had acute cholecystitis. (Table I)

The six patients had biliary pancreatitis underwent effective choledochoscopy, extraction of stone and transcystic exploration of the common bile duct. All patients have well tolerated the surgical operations with zero labor precipitation or death of fetus. 10 out of 30 patients become asymptomatic after laparoscopic cholecystectomy. All patients except two females who remained pregnant at 16 and 32 gestational weeks have delivered healthy babies with zero developmental abnormalities evidence up to the present time. Nineteen patients were discharged on postoperative 1st day, three on 2nd day, three on 3rd day, and one on 4th day. The patients with biliary pancreatitis or acute cholecystitis were extended their stays in the hospital. (Table II)

Table I: Demographic characteristics of the patients (n=30)

Variables		
Age	Mean±SD	34.23±23.5 years
Gestational age	Mean±SD	28.12±5.22 weeks
Duration of surgery	Mean±SD	60.23±15.23 minutes
Parity	Primiparous	07(23.3%)
	Multiparous	14(46.7%)
	Grand multiparous	09(30.0%)
Presentation & diagnosis	Vomiting, nausea and abdominal pain in upper right quadrant	20(66.7%)
	Highly symptomatic during eating	20(66.7%)
	Biliary pancreatitis	06(20.0%)
	Acute cholecystitis	04(13.3%)

Table II: Surgical outcome of the patients (n=30)

Variables		**N(%)**
Post-operative infection	Yes	02(6.7%)
	No	28(23.3%)
Any other complications till birth	Yes	00
	No	30(100%)
Mortality	Yes	00
	No	30(100%)
Hospital stay	2nd post-operative days	19(63.3%)
	3rd post-operative day	06(20.0%)
	4th post-operative day	03(10.0%)
	5th post-operative day	02(06.7%)

Discussion

In the English literatures, the first reports of effective laparoscopic cholecystectomy in pregnant women seemed as inaccessible case reports in 1991.[11] Based on the previous literatures and reports which demonstrate the laparoscopic safety, it is decided to utilize the laparoscopic method for all patients during pregnancy who prerequisite an emergency or urgent cholecystectomy.[12] In the current study, the majority of the patients who were described with symptomatic cholelithiasis were nonoperatively administrated with modifying their nourishments and managed of minimum pain medication doses. Only such patients who had constant abdominal pain and incapable to ingest and insistent vomiting or nausea as well as those who had biliary pancreatitis or acute cholecystitis were considered to be applicants for surgical management. According to a previous study which concluded that laparoscopic cholecystectomy as contraindicated for the pregnant patients due to fetal mortalities postoperatively in seven patients who underwent same operation.[13] However, one causative factor might have been the average time of operation which is about twice given that our operations. When our 30 patients are compared with the formerly published sequences, the deaths of fetuses are less in rates connected with the open procedures. The uterus of pregnant patients spreads the umbilicus at about 20th gestational week and from that point of displacements of the abdominal viscera commandingly in the abdomen restrictions the spaces offered for both laparoscopic manipulations and trocar placements.[14] If a trocar of 5 mm size is introduced first into the upper abdominal quadrants, the two more trocars can be inserted safely and properly positioned under straight vision. The procedure should be restricted to only three trocars due to the reduced intra-abdominal spaces accessible to perform a cholecystectomy.[15] In the current study, a fourth trocar was poisoned in the patients with the requirement of exploration of common bile duct. Based on random literature and their outcomes, it is believed that laparoscopic cholecystectomy must also be the technique of interest under comparable conditions in pregnant patients.[16] We have made this practice within

all three trimesters with zero regarding fetal demises and zero congenital aberrations except those patients who have not given birth up till now. Only six patients who had pancreatitis secondary to choledocholithiasis experienced effective laparoscopic exploration of the common bile duct and removal of stones.

Conclusion

All patients have well tolerated the surgical operations with zero labor precipitation or death of fetus only in two patient's minor superficial infection has been observed. The only utter contraindications would be the unqualified lack of spaces for manipulating the instruments, unclear anatomy during the procedure, and lack of satisfactory training and experienced surgeons.

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