

## Laparoscopic Surgery during Pregnancy at the National Institute of Perinatology

**Cruz-Orozco Oliver P, Vera-Arellano Maria F, Olguin-Ortega Andrea A, Luis Fernando Ponce Escobar\*,  
Hernández-López Luis A, Cepeda-Silva Armando, Silvestri-Tomassoni Roberto, Sánchez-Ramírez Brenda and  
Corona-Barsse Guillermo M**

*Gynecology and Obstetrics Specialist, Anahuac University, Mexico*

**\*Corresponding Author:** Luis Fernando Ponce Escobar, Gynecology and Obstetrics Specialist, Anahuac University, Mexico.

**Received:** March 28, 2020; **Published:** July 25, 2020

### Abstract

**Objective:** To analyze the frequency of laparoscopic surgery during pregnancy, as well as its main indications, gestational age at which it is performed, complications, technique and maternal-fetal outcomes at the National Institute of Perinatology (INPer).

**Materials and Methods:** A longitudinal, retrospective study was carried out in a tertiary care hospital in Mexico which included all pregnant patients undergoing laparoscopic surgery between January 2017 and December 2018, excluding patients whose intervention was not performed at the Institute. Sixteen patients who underwent laparoscopic surgery were selected.

**Results:** The incidence in our Institute is 1 case for every 550 patients; the most frequent surgery in our study population was cystectomy followed by cholecystectomy. The average gestational age at which the surgeries were performed was 17 weeks. The diagnosis was made through clinical history, physical examination and ultrasound in all cases. The anesthesia used in all of the cases was general anesthesia, with no apparent repercussions on the fetus. The technique for entering the abdomen was a closed technique with a Veress needle. The CO<sub>2</sub> level for the pneumoperitoneum on average was maintained at 12 mmHg. 75% of the patients had a normal pregnancy until term, 19% had preterm labor, 6% ended in an inevitable abortion. No fetus presented malformations or data suggesting teratogenicity.

**Conclusion:** Based on the results obtained, we conclude that laparoscopic surgery in pregnancy is a feasible and safe procedure. We did not find significant complications from the procedure, obtaining successful perinatal results.

**Keywords:** *Laparoscopic Surgery; Pregnancy; Gestational Age; National Institute of Perinatology (INPer)*

### Introduction

Laparoscopic surgery during pregnancy has become increasingly common in recent decades. This type of technique minimizes fetal risk without compromising the mother's safety, it can be performed safely during any trimester of pregnancy [1]. To obtain good results we must make an accurate and timely diagnosis with prompt intervention.

Approximately 1 in 500 women will require non-obstetric abdominal surgery during pregnancy [1,2]. The most common non-obstetric surgical emergencies that complicate pregnancy are appendicitis and cholecystitis [3,4]. We present a series of cases, from a series of

pregnant patients at the National Institute of Perinatology, who underwent laparoscopic surgery during pregnancy from January 2017 to December 2018.

### Materials and Methods

A retrospective, longitudinal study was carried out in a third level hospital in Mexico. All pregnant patients that required laparoscopic surgery during pregnancy from January 2017 to December 2018 were included.

All the included patients had an acute abdomen, which was confirmed through medical history, physical examination and sonography and/or x-ray of the abdomen. All the included patients had normal pre-surgical laboratories (complete blood count and clotting times). In addition, all patients underwent obstetric evaluation before and after the abdominal sonogram.

The risks and possible complications of the procedure were explained to all the patients and an informed consent was obtained.

The study variables were age, weeks of gestation, indication for surgery, presurgical and postsurgical diagnosis, surgical technique, complications of the surgical procedure and maternal-fetal outcomes.

### Results

At the National Institute of Perinatology in the period from January 2017 to December 2018, there were 16 patients who underwent laparoscopic surgery during pregnancy. The average age of the patients was 25 years. The indications for surgery in our patients were appendicitis in 1 patient, acute cholecystitis in 4 patients who did not respond to conservative treatment, 1 patient with ovarian torsion, 3 patients had big abdominal tumors, while the remaining 8 patients had an adnexal tumor with abdominal pain.

The average gestational age at which the surgeries were performed was 17 - 18 weeks; 75% was carried out in the 2<sup>nd</sup> trimester, 19% was carried out in the first trimester and the remaining, 6% in the 3<sup>rd</sup> trimester.

The most frequent surgery was cystectomy in 43.7% (Table 1) and the most frequent symptom in 69% of the patients was intermittent abdominal pain with progressive increase (Table 2).

Cystectomy	7
Cholecystectomy	4
Salpingectomy	3
Appendectomy	1
Endometrioma resection	1

**Table 1:** Laparoscopic surgery in pregnancy at the INPer.

Intermittent abdominal pain	69%
Acute abdomen	6%
Acute cholecystitis	25%

**Table 2:** Clinical manifestations.

To reach the diagnosis, a clinical history and a physical examination were performed and were corroborated with a sonogram in 100% of the patients.

The adnexal tumors found by sonography measured 8 to 23 cm (average 12.8 cm) and the tumor markers were negative. 72% of the patients with adnexal tumors had a significant increase of size during pregnancy.

The average surgical time was 43 minutes and the average bleeding was 50 cc. The hospital stays in 94% of the patients was 48 hours, 69% of the patients received prophylactic tocolytics, and all patients were discharged with pain medication only for 3 days.

Only 1 patient required 10 days of hospitalization, receiving antibiotic therapy for complicated appendicitis. Fetal vitality was corroborated at the end of surgery in all cases with ultrasound.

All histopathological results were benign. The most frequent tumor was a cystadenoma (Table 3).

Simple serous cyst	82%
Dermoid cyst	9%
Endometrioma	9%

**Table 3:** Pathology report.

Almost 82% of the patients achieved a normal pregnancy after surgery, reaching a term pregnancy without complications, 12.5% had preterm labor after their discharge from home, and 6.25% ended in inevitable abortion (case of patient with appendicitis) (Table 4).

Caesarean section	56.3%
Vaginal delivery	37.5%
Curettage	6.2%
<b>Causes of preterm labor</b>	
PPROM	50%
Triple I	50%
<b>Cesarean section indication</b>	
Iterative	55.6%
Failed induction	33.3%
Pelvic presentation	11.1%

**Table 4:** Route of pregnancy resolution.

There were no malformations or data suggestive of teratogenicity. In 87.5% of pregnancies, a healthy product was obtained (6.2% presented sepsis at birth and 6: 2% ended in abortion).

**Discussion**

Laparoscopic surgery for non-obstetric pathology offers similar benefits in pregnant and non-pregnant patients compared to laparotomy [1,5].

The frequency of laparoscopic surgery in our Institute is 0.18%, similar that reported in the literature [1].

Surgery in pregnancy can be performed any trimester, if indicated [6].

Abdominal access can be performed safely with an open technique (Hasson), with a Veress needle or with an optical trocar, by surgeons familiar with these techniques and the location adjusted according to the height of the fundus. An abdominal pressure of 10 - 15 mmHg with CO<sub>2</sub> insufflation can be safely used in the pregnant patient [7].

Patients with adnexal tumors can be monitored as long as the ultrasound does not report malignancy data and the tumor markers are normal, this is justified in cystic lesions < 6 cm in diameter; all our patients with adnexal tumors had a diameter greater than 6 cm with progressive growth, so surgery was performed [8].

In our series of cases the most frequent surgery performed was cystectomy, while the most frequently reported in the literature is cholecystectomy and appendectomy [8].

Most of the patients who underwent this procedure continued with a normal pregnancy, 6.2% ended in an inevitable abortion and in 12.5% had a preterm delivery, it is unknown if the surgery is an implicated cause [9].

In these cases, 69% received prophylactic tocolytics, however, the literature tells us that they should not be used prophylactically, but should be considered when there are signs of preterm delivery [1,9].

According to the results obtained, laparoscopic surgery gives great advantages to both the mother and the fetus, patients have less post-surgical pain, less medication intake during the course of pregnancy, faster recovery, a marked decrease in maternal morbidity and mortality rates and so far no teratogenic effects have been reported [1].

### Conclusion

In our series of cases we can conclude that laparoscopic surgery during pregnancy was feasible and a safe procedure. We must be familiar with the possible complications such as injury of the uterus and technical difficulties. We did not find any complications from the surgery.

### Ethical Responsibilities

The authors declare that no human or animal experiments have been performed for this research.

### Confidentiality of Data

The authors declare that they have followed the protocols of their workplace regarding the publication of patient data.

### Conflict of Interest

The authors have no conflict of interest.

### Bibliography

1. Pearl JP, *et al.* "SAGES guidelines for the use of laparoscopy during pregnancy". *Surgical Endoscopy* 31 (2017): 3767.
2. Shigemi D., *et al.* "Safety of Laparoscopic Surgery for Benign Diseases during Pregnancy: A Nationwide Retrospective Cohort Study". *Journal of Minimally Invasive Gynecology* 26.3 (2019): 501-506.
3. Nasioudis D., *et al.* "Laparoscopic cholecystectomy during pregnancy: A systematic review of 590 patients". *International Journal of Surgery* 27 (2016): 165.

4. Rege SA., *et al.* "Laparoscopic surgery for non-obstetric acute abdomen in pregnancy: A retrospective case series review". *Journal of Minimal Access Surgery* (2018).
5. Rojansky N., *et al.* "Laparoscopy versus laparotomy in pregnancy: a comparative study". *The Journal of the American Association of Gynecologic Laparoscopists* 9 (2002): 108.
6. Kwon H., *et al.* "Laparoscopic management is feasible for nonobstetric surgical disease in all trimesters of pregnancy". *Surgical Endoscopy* 32 (2018): 2643-2649.
7. Dizon AM and Carey ET. "Minimally invasive gynecologic surgery in the pregnant patient: considerations, techniques, and postoperative management per trimester". *Current Opinion in Obstetrics and Gynecology* 30.4 (2018): 267-271.
8. Ngu S., *et al.* "Surgical Management of Adnexal Masses in Pregnancy". *JSLs: Journal of the Society of Laparoendoscopic Surgeons* 18.1 (2014): 71-75.
9. Erekson EA., *et al.* "Maternal postoperative complications after nonobstetric antenatal surgery". *Journal of Maternal-Fetal and Neonatal Medicine* 25 (2012): 2639.

**Volume 9 Issue 8 August 2020**

**©All rights reserved by Luis Fernando Ponce Escobar., *et al.***