

Gallbladder stones during pregnancy: are we doing the right thing in Mexico?

Litiasis vesicular durante el embarazo y el puerperio: ¿estamos haciendo lo correcto en México?

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Abstract

Objective: To present the treatment of choice and approach in pregnant and postpartum women with a diagnosis of gallstones in Mexico and to compare it with the recommendations of international guidelines. **Method:** Observational, descriptive, and retrospective study based on information from the 2019 Dynamic Cubes database of pregnant women diagnosed with cholecystitis and/or cholelithiasis who had undergone cholecystectomy. **Results:** During 2019, 937 patients with cholelithiasis and cholecystitis were registered, 516 (55%) pregnant and 421 (45%) in puerperium. 91.47% of cases were managed with medical treatment and 8.53% with cholecystectomy, with predominance in the open approach in 63.75% of cases. Mortality was nil in both groups. **Conclusions:** Despite current international guidelines recommending early laparoscopic cholecystectomy in pregnant or puerperal women, in Mexico medical treatment, delayed cholecystectomy and its open approach are still privileged.

Keywords: Cholelithiasis in pregnancy. Cholecystitis in pregnancy. Cholecystectomy in pregnancy. Laparoscopic cholecystectomy in pregnancy. Abdominal pain in pregnancy.

Resumen

Objetivo: Determinar el tratamiento de elección, el abordaje y la mortalidad en mujeres embarazadas y en puerperio con diagnóstico de litiasis vesicular en México, y compararlo con las recomendaciones de las guías internacionales. **Método:** Estudio observacional, descriptivo y retrospectivo basado en la información de la base de datos Cubos Dinámicos del año 2019 de mujeres embarazadas con diagnóstico de colecistitis o colelitiasis que se hubieran realizado colecistectomía. **Resultados:** En 2019 se registraron 937 pacientes con colelitiasis y colecistitis, 516 (55%) embarazadas y 421 (45%) en puerperio. El 91.47% de los casos se manejaron con tratamiento médico y el 8.53% con colecistectomía, con predominio del abordaje abierto en el 63.75% de los casos. La mortalidad fue nula en ambos grupos. **Conclusiones:** A pesar de que las guías internacionales actuales recomiendan la colecistectomía laparoscópica temprana en embarazadas y púerperas, en México todavía se privilegian el tratamiento médico, el retraso de la colecistectomía y su abordaje abierto.

Palabras clave: Litiasis vesicular en el embarazo. Colecistitis en embarazo. Colecistectomía en embarazo. Colecistectomía laparoscópica en embarazo. Dolor abdominal en embarazo.

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Introduction

Cholecystectomy is the second most common non-obstetric surgery performed during pregnancy^{1,2}. For many years, non-operative management has been the treatment of choice for cholecystitis and cholelithiasis³. However, current clinical practice guidelines published by the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) recommend avoiding delaying surgical treatment, as this leads to a worse prognosis for both the mother and the fetus. This is due to the risk of symptom recurrence, complication rates, longer lengths of stay, and higher likelihood of low birth weight, preterm birth, and the need for C-section^{4,5}.

Moreover, clinical practice guidelines consider laparoscopic cholecystectomy to be a safe procedure in any trimester of pregnancy⁴⁻⁶. A meta-analysis published in 2017 comparing laparoscopic vs open cholecystectomy found that maternal, fetal, and surgical complications were lower when minimally invasive approaches were used⁷. The trend in other countries has been toward increasing cholecystectomies in pregnant patients with this biliary disease, with fewer days at the hospital when laparoscopic approaches are chosen⁸.

In Mexico, clinical practice guidelines on the diagnosis and treatment of cholecystitis and cholelithiasis do not specify the preferred management⁹. Since 2008, when SAGES guidelines were published, only 4 studies have addressed the treatment of acute cholecystitis in pregnant patients in Mexico¹⁰. This situation justifies examining whether the management of this disease in obstetric patients has changed.

The objective of this work is to determine the treatment of choice (whether medical or surgical), approach (open or laparoscopic), and the mortality rate in pregnant and postpartum women with a diagnosis of gallbladder lithiasis in Mexico in 2019, and compare it with the recommendations of international guidelines. The study design, epidemiological in nature, aims to describe how clinical practice guidelines (as public health policies) are applied and to determine if the health needs of relevant groups (such as pregnant women) are met by the national health system in the case of individuals without social security or health services¹¹.

Method

We conducted an epidemiological, observational, descriptive, and retrospective study of national

records. The source of information was the public database "Cubos Dinámicos," from the General Directorate of Health Information of the Mexican Ministry of Health, available at www.salud.gob.mx/cubos. The information recorded corresponds to all hospital discharges from public hospitals in Mexico (patients without IMSS, ISSSTE, SEDENA, SEMAR, PEMEX, or private hospital affiliation) in 2019 according to the International Classification of Diseases 10th edition (ICD-10) codes. Records from that year were selected because they are definitive and clinical-surgical activities were not affected by the COVID-19 pandemic.

The method for obtaining information involved filtering with the variables allowed by the Cubos Dinámicos platform and the ICD-10 codes. First, in the 2019 discharges section, information was sought as a woman of childbearing age, selecting pregnancy and postpartum. Afterward, in the main condition section, diagnoses of cholelithiasis (code K80) and cholecystitis (code K81) were filtered. Finally, these data were compared with those from the Procedures section of the year 2019, where the main condition was filtered by diseases of the digestive system complicating pregnancy, childbirth, and postpartum (code O996), and in Procedures, cholecystectomy (code 5122), laparoscopic cholecystectomy (code 5123), partial laparoscopic cholecystectomy (code 5124), and other partial cholecystectomy (code 5121) were selected.

Information was obtained in aggregate form based on the mentioned variables and filters for each recorded hospitalization episode. This means that data cannot be disaggregated by trimester of pregnancy or by diagnostic method used. Although cholecystitis code includes diagnoses of acute, chronic, and chronic aggravated cholecystitis, the platform does not allow identification of which specific diagnosis was made. Cases registered as other gallbladder diseases, which were also included, correspond to variants like hydrops, pyocyst, and Mirizzi syndrome, but the specific diagnosis for each case cannot be identified.

The recorded diagnoses are generally based on an ultrasound that confirms them. In a much smaller proportion, specific clinical criteria (such as the 2018 Tokyo Guidelines for acute cholecystitis) are used, but the database does not allow identification of the proportion of clinical criteria or diagnostic studies used. Finally, the platform does not allow identification of the reasons why laparoscopic procedures were converted to open approaches. Although determining the trimester of pregnancy, diagnostic method, reason for conversion, and cause of death is very important, publicly

available data through this platform does not provide this information specifically. Although this information falls outside the scope and objective of this work, some considerations are presented at the end to help interpret the findings.

Results

In 2019, public health institutions in Mexico recorded a total of 937 cases of pregnant and postpartum patients with cholelithiasis and cholecystitis as hospital discharges (Table 1). The mean age was 25.3 years, and the most common diagnosis was acute cholecystitis. Of these, 516 (55%) were pregnant, and 421 (45%) were postpartum. There were 61,900 cholecystectomies in the general population, 80 of which (0.001%) were in pregnant and postpartum patients (Table 2).

Medical management, and thus deferral of cholecystectomy, was the predominant treatment at 91.47%. There were a total of 80 (8.53%) cases of cholecystectomy, with the open approach predominating, accounting for 51 (63.75%) cases, 28 (35%) by laparoscopic approach, and 1 (1.25%) as partial cholecystectomy without specifying whether it was open or laparoscopic (Table 2). It was not recorded whether open cholecystectomies were conversions from laparoscopic surgeries or the reasons for such conversions. The length of stay was 15.78 days for open cholecystectomy cases and 8.66 days for laparoscopic cholecystectomy cases. Mortality was nil in both groups. The recorded information did not allow identification of whether the procedures were elective or emergency procedures.

For the correct interpretation of the previous records, it is important to make some specifications. After a hospital medical care episode, the main condition, which may be “suspected” or “questionable,” if there is no further information or clarification, is coded as “confirmed.”

It is likely that patients coded as cholelithiasis had one of the following situations: biliary colic clinical picture, cholelithiasis as an incidental finding when the reason for consultation or admission was another (e.g., prenatal checkup), or other diagnoses categorized as cholelithiasis (polyp or biliary sludge). Finally, it should be considered that the same patient may have been recorded more than once if she required multiple hospital medical care for biliary, maternal-fetal, or other disease; however, cholecystectomy records indicate only 1 procedure of this type per case.

Table 1. Cholelithiasis and cholecystitis in pregnant and postpartum women during 2019 in Mexico

Registered disease	Discharges n (%)
Pregnant women	
Cholelithiasis	301 (32.12%)
Cholecystitis	210 (22.41%)
Other gallbladder diseases [†]	5 (0.53%)
Subtotal	516 (55.06%)
Postpartum women	
Cholelithiasis	239 (25.50%)
Cholecystitis	180 (19.21%)
Other gallbladder diseases [†]	2 (0.21%)
Subtotal	421 (44.93%)
Total	937 (100%)

^{*}Neoplasms of the gallbladder and diseases of the main bile ducts not included: acquired anatomical disorders of the gallbladder or bile ducts, choledocholithiasis, cholangitis, neoplasms, structural anomalies of prenatal development of the gallbladder or bile ducts.

[†]Includes obstruction, hydrops, perforation, fistula, gallbladder cholesterosis, and other specified and unspecified gallbladder diseases.

Table 2. Treatment of pregnant women with gallbladder diseases during 2019 in Mexico

	n	%
Pregnant women with cholelithiasis, cholecystitis, and other gallbladder diseases	937	100.00
Medical therapy	857	91.46
Cholecystectomy	80	8.54
Open cholecystectomy	51	63.75
Laparoscopic cholecystectomy	28	35.00
Other partial cholecystectomy	1	1.25

The tables show the distribution of diagnoses and treatments among pregnant and postpartum women with gallbladder diseases in Mexico during 2019. Most patients were treated medically, while a small proportion underwent cholecystectomy, with open surgery being more common than laparoscopic surgery.

Discussion

The results show that, in Mexico, the management of pregnant patients with cholelithiasis and cholecystitis is contrary to what current evidence^{1,7} and international clinical practice guidelines⁴ suggest. In national public centers, the treatment of choice is medical management, and surgical management is deferred until the patient has completed her pregnancy. This also contrasts with trends⁸ and preferred approaches in other countries¹², as in the few cases that undergo cholecystectomy, the open approach predominates over the laparoscopic one.

In Mexico, the delay in surgical management occurs in 91.47% of pregnant patients with cholecystitis and cholelithiasis. This figure contrasts with the 36% reported by Chen et al.⁸ in 2020 in the United States. Although SAGES recommendation on cholecystectomy during pregnancy is considered weak⁴, it is noteworthy that there were no deaths in either case in Mexico, unlike reports from other countries⁷. Maternal-fetal complications (both in medical and surgical management) are beyond the scope of this study, so an analysis and discussion of the associated morbidity to determine if there was any difference cannot be performed. Despite this, in light of current evidence, it is important to discuss some arguments still used to delay cholecystectomy.

The first group of arguments relates to fetal outcomes: spontaneous abortion, preterm birth, and teratogenesis. Chen et al.⁸ found that laparoscopic approaches were significantly associated with lower rates of preterm birth, preterm labor, or abortion (OR, 0.410; $p < 0.001$) vs non-operative management⁸. It should be considered that up to 30% of pregnancies within the first trimester end in spontaneous abortion, and while there is a risk of uterine contractions after surgery, these rarely result in preterm birth. In fact, these complications are more associated with other severe maternal diseases that are inadequately managed and can be exacerbated by delays in surgical management¹³.

Regarding the risk of teratogenesis due to cholecystectomy or the use of anesthetics, the American College of Obstetricians and Gynecologists (ACOG) has issued an opinion since 2011. While it mentions that consultation with obstetricians is necessary for any non-obstetric surgery in pregnant women, it also states that the anesthetic agents currently in use have not been shown to have teratogenic effects in humans when used at standard concentrations at any stage of pregnancy. In fact, they state that a pregnant woman should never be denied justifiably indicated surgery, in any trimester of pregnancy¹⁴.

Other arguments for delaying cholecystectomy have been maternal or surgical complications. However, it has been demonstrated that these occur in 4.3% of pregnant patients undergoing laparoscopic cholecystectomy¹⁵, which is similar to those reported in non-pregnant women (0.5% up to 6%)¹⁶⁻¹⁸. Silvestri et al.¹⁹ compared 32,479 non-pregnant women to 436 pregnant women, and found that the rates of major and minor complications within 30 days were similar in

both groups, suggesting that pregnancy does not increase postoperative maternal morbidity; however, pregnant women underwent emergency and open procedures more frequently, likely due to delays in diagnosis, reluctance of surgeons to perform laparoscopic approaches, or initial attempts at medical management. In the same vein, the few reported intraoperative maternal complications have been categorized as minor^{7,20}.

On the other hand, the medical management of this biliary disease has some consequences. Approximately 80% of pregnant women with symptoms of cholecystitis will experience recurrence, and in 20% up to 40% of cases, the recurrences occur before delivery; the number of recurrent episodes ranges from one to three. Preterm labor has also been reported in 4% of cases, and there is a need to induce labor to control biliary colic in 15% of cases²¹. Up to 9% may require an emergency C-section due to fetal distress, leading to preterm birth, low birth weight, and the need for critical neonatal care²².

The outcome of laparoscopic approach has also been proven better than that of the open approach in this population²³. Demonstrated advantages include early return of bowel function, early ambulation, a short length of stay, quick return to normal activity, low frequency of surgical site infection and hernia, and less postoperative pain²⁴. It is also associated with less fetal depression due to the reduced use of narcotics in the postoperative period and minimal manipulation of the uterus for adequate exposure. This leads to less uterine irritability, lower rates of spontaneous abortion, less preterm labor, and less preterm delivery²⁵.

In this study, the hospital stay was shorter (8.66 days) with the laparoscopic approach than with the open approach (15.78 days). It has been shown that the length of stay resulting from cholecystectomies in pregnant women is generally longer, although the surgeon's experience was the most important variable for this and for complications. In Mexico, experience with laparoscopic cholecystectomy has increased significantly in recent years²⁶, which may represent an advantage (among other variables) in shortening the length of stay. Finally, the laparoscopic approach in cases of acute abdomen is a strong recommendation, meaning the benefits clearly outweigh the risks⁵.

There are situations that may explain why the open approach has predominated over the laparoscopic

one; among them, that the open approach is considered safer by the treating surgeons²⁷, that the surgeries were emergencies, limiting the availability of the laparoscopic approach, and that there were risk factors or intraoperative complications that required conversion²⁸.

Although this study did not determine the trimester of the recorded cases, cholecystectomy is currently considered the treatment of choice at any stage of pregnancy⁵. Previously, weeks 26-28 were considered the period of least maternal and fetal risk for surgical management⁴, and most cases had been reported during this period⁸; however, although current evidence indicates that there is no difference by trimester^{29,30} it has been observed that as pregnancy progresses, the length of stay increases^{7,8} and technical difficulty increases³¹.

In Mexico, the feasibility and impact on the safety and efficacy profile of performing early cholecystectomies in patients with symptomatic gallbladder stones or acute cholecystitis is unknown to this date. It is also unknown whether surgeons would be willing to implement this practice and whether legal implications would play a determining role in such decisions. Therefore, it is necessary to develop studies comparing the approach by trimester, the conversion rate, surgical complications, and maternal-fetal morbidity and mortality.

What is certain is that delays in the diagnosis and treatment of a surgical abdomen during pregnancy, due to fear of unnecessary studies and procedures, contribute to increased complications³¹. Sufficient clinical knowledge, systematic evaluation, greater diagnostic suspicion, and the development of sufficient surgical experience are necessary to avoid maternal complications and unnecessary fetal losses.

Conclusions

Despite current international guidelines recommending early laparoscopic cholecystectomy in pregnant and postpartum women, in Mexico, medical treatment, delayed cholecystectomy, and the open approach are still preferred. No difference in mortality has been found between patients managed medically and those who underwent cholecystectomy.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained approval from the Ethics Committee for analysis and publication of routinely acquired clinical data and informed consent was not required for this retrospective observational study.

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