



COMPARISON OF MEDICAL AND SURGICAL CHOLESTASIS IN PREGNANCY: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: Cholestasis during pregnancy is a significant hepatobiliary disorder associated with maternal discomfort and adverse fetal outcomes. It may be classified into medical cholestasis, primarily due to functional hepatic dysfunction, and surgical cholestasis, resulting from mechanical biliary obstruction. Differentiation between the two is essential for appropriate management.

Objectives: To compare the clinical profile, laboratory parameters, imaging findings, management strategies, and maternal–fetal outcomes between medical and surgical cholestasis in pregnancy.

Materials and Methods: This prospective observational study included 50 pregnant women diagnosed with cholestasis at a tertiary care hospital. Patients were categorized into medical cholestasis (n=35) and surgical cholestasis (n=15). Clinical features, biochemical parameters, ultrasonography findings, treatment modalities, and maternal and fetal outcomes were analyzed.

Results: Medical cholestasis was more common (70%) than surgical cholestasis (30%). Pruritus was the predominant symptom in medical cholestasis, while abdominal pain and jaundice were more frequent in surgical cases. Serum bile acids and transaminases were significantly higher in medical cholestasis, whereas bilirubin and alkaline phosphatase were markedly elevated in surgical cholestasis. Adverse fetal outcomes were more frequent in medical cholestasis.

Conclusion: Medical cholestasis is more prevalent during pregnancy and is associated with higher fetal risk, while surgical cholestasis poses greater maternal morbidity. Early diagnosis and appropriate differentiation are crucial for optimizing outcomes.

Keywords: Cholestasis of pregnancy, Medical cholestasis, Surgical cholestasis, Pregnancy, Fetal outcome

INTRODUCTION

Cholestasis during pregnancy represents a significant hepatobiliary disorder characterized by impaired bile formation or bile flow, resulting in accumulation of bile acids in maternal circulation, with important maternal and fetal implications.^{1–3} .Pregnancy induces profound physiological changes in hepatic metabolism due to elevated estrogen and progesterone levels, which impair bile acid transport and predispose susceptible women to cholestasis.^{4,5} Clinical presentation varies from pruritus and jaundice to abdominal pain or asymptomatic biochemical abnormalities, making early diagnosis challenging.⁶

Cholestasis in pregnancy is broadly classified into medical and surgical cholestasis based on pathophysiological mechanisms, which is critical for appropriate management.⁷ Medical cholestasis is primarily functional and hormone-mediated, with intrahepatic cholestasis of pregnancy (ICP) being the most common entity, typically presenting in the third trimester.^{8,9} Biochemically, medical cholestasis is characterized by elevated serum bile acids and transaminases, with normal or mildly raised bilirubin levels.¹⁰

Despite benign maternal outcomes, ICP is associated with adverse fetal outcomes such as preterm labor, fetal distress, meconium-stained liquor, and unexplained intrauterine fetal death.^{11–13} Other causes of medical cholestasis include drug-induced liver injury, hypertensive disorders of pregnancy, HELLP syndrome, and acute fatty liver of pregnancy.¹⁴

Surgical cholestasis results from mechanical obstruction of bile flow, most commonly due to gallstone disease, for which pregnancy itself is a recognized risk factor.^{15,16} Surgical cholestasis may occur at any gestational age and commonly presents with right upper quadrant pain, jaundice, and fever, particularly in complicated cases.¹⁷

Maternal complications such as cholangitis, pancreatitis, and sepsis are more common in surgical cholestasis and may indirectly affect fetal outcomes.¹⁸ Differentiation between medical and surgical cholestasis is essential, as management strategies differ markedly.¹⁹

Ultrasonography and targeted biochemical investigations play a key role in establishing diagnosis and guiding management.²⁰ Limited data are available from developing countries comparing medical and surgical cholestasis in pregnancy with respect to maternal and fetal outcomes.²¹ This study was undertaken to compare medical and surgical cholestasis in pregnancy in cases, focusing on clinical profile, biochemical parameters, management, and outcomes.²²

MATERIAL AND METHODS

A prospective observational study was conducted over a period of 18 months in the Department of Obstetrics and Gynecology at a tertiary care teaching hospital.

Study Population

Fifty pregnant women diagnosed with cholestasis were enrolled.

Inclusion Criteria

1. Pregnant women with clinical and biochemical evidence of cholestasis
2. Gestational age ≥ 20 weeks
3. Singleton pregnancy

Exclusion Criteria

1. Pre-existing chronic liver disease
2. Viral hepatitis
3. Hemolytic jaundice
4. Alcohol-related liver disease

Grouping

- **Medical cholestasis:** 35 cases (70%)
- **Surgical cholestasis:** 15 cases (30%)

Investigations

- Liver function tests
- Serum bile acid levels
- Ultrasonography of abdomen
- MRCP where indicated

Management

Medical cholestasis was treated with ursodeoxycholic acid and symptomatic therapy. Surgical cholestasis was managed conservatively initially, with ERCP or surgical intervention when required.

Statistical Analysis

Data were analyzed using descriptive statistics and results expressed as percentages and mean values.

RESULTS

Out of 50 cases, medical cholestasis constituted 35 cases (70%), while surgical cholestasis accounted for 15 cases (30%). The majority of medical cholestasis cases presented in the third trimester, whereas surgical cholestasis was observed across all trimesters. Pruritus was present in 91% of medical cholestasis cases compared to 20% of surgical cases. Abdominal pain was significantly more common in surgical cholestasis (80%) than in medical cholestasis (14%). Jaundice was observed in 73% of surgical cases and 28% of medical cases.

Table 1. Distribution of Cholestasis in Pregnancy (n = 50)

Type of Cholestasis	Number of Cases	Percentage (%)
Medical cholestasis	35	70
Surgical cholestasis	15	30
Total	50	100

Table 2. Clinical Features in Medical and Surgical Cholestasis

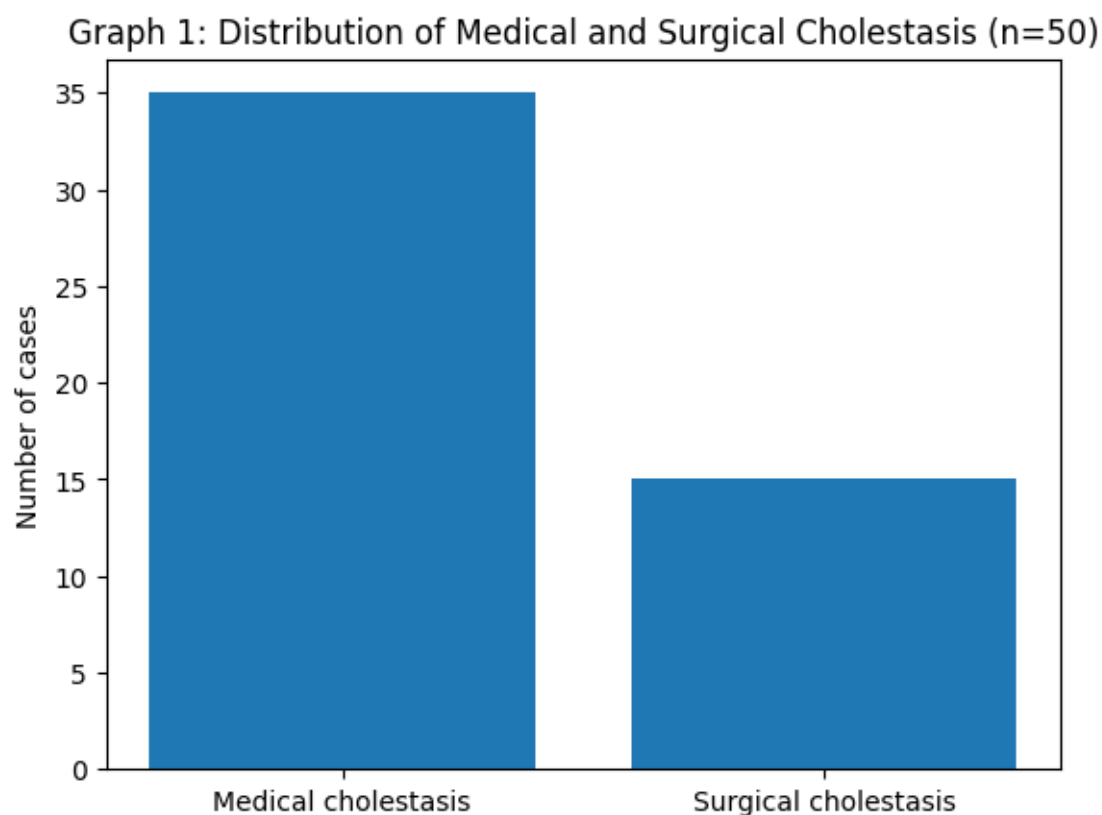
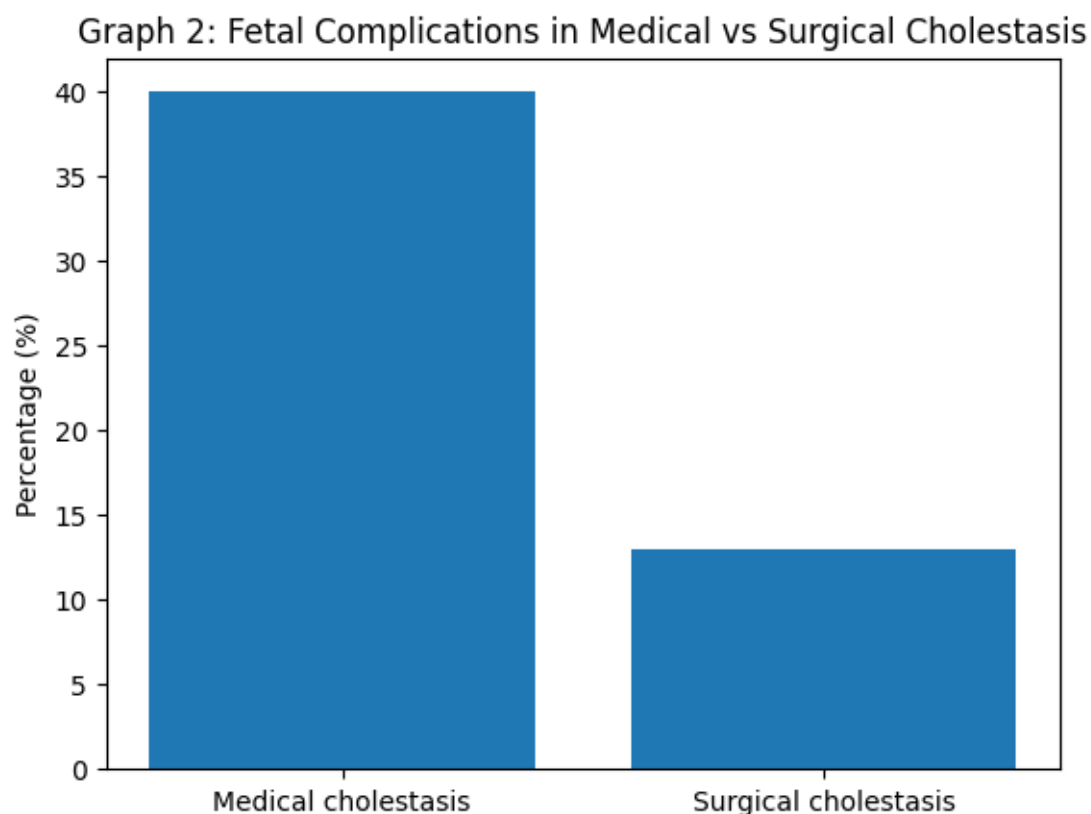
Clinical Feature	Medical (n=35)	Surgical (n=15)
Pruritus	32 (91%)	3 (20%)
Abdominal pain	5 (14%)	12 (80%)
Jaundice	10 (28%)	11 (73%)
Fever	0	4 (27%)

Table 3. Maternal and Fetal Outcomes

Outcome	Medical (n=35)	Surgical (n=15)
Preterm delivery	9 (26%)	2 (13%)
Fetal distress	5 (14%)	1 (7%)
NICU admission	7 (20%)	2 (13%)
Maternal complications	3 (9%)	5 (33%)

Graph 1. Distribution of Medical and Surgical Cholestasis

Figure 1: Shows that medical cholestasis constituted the majority (70%) of cholestasis cases in pregnancy, while surgical cholestasis accounted for 30%.



Graph 2 : *Demonstrates a higher proportion of fetal complications in medical cholestasis compared to surgical cholestasis.*

Biochemically, serum bile acids and transaminases were markedly elevated in medical cholestasis, while serum bilirubin and alkaline phosphatase were significantly higher in surgical cholestasis. Ultrasonography showed normal biliary architecture in medical cholestasis, whereas biliary dilatation or gallstones were identified in most surgical cases. Adverse fetal outcomes such as preterm delivery and fetal distress were more common in medical cholestasis. Maternal complications including cholangitis and pancreatitis were seen predominantly in surgical cholestasis.

DISCUSSION

The present study highlights that medical cholestasis is more common during pregnancy than surgical cholestasis, consistent with previous literature. Intrahepatic cholestasis of pregnancy accounted for the majority of medical cases, emphasizing the hormonal influence on bile acid transport mechanisms during pregnancy.

Pruritus emerged as the most sensitive clinical marker for medical cholestasis, while abdominal pain and jaundice were strong indicators of surgical cholestasis. The biochemical profile further aided differentiation, with bile acid elevation being characteristic of medical cholestasis and hyperbilirubinemia indicating obstruction.

The present study provides a comparative evaluation of medical and surgical cholestasis in pregnancy, highlighting distinct clinical and biochemical differences.²³

Medical cholestasis accounted for the majority of cases (70%), consistent with previous reports emphasizing the predominance of ICP during pregnancy.^{8,9}

Hormonal influence during late pregnancy likely explains the higher incidence of medical cholestasis observed in the third trimester.^{4,5}

Pruritus was the most frequent presenting symptom in medical cholestasis, reinforcing its diagnostic importance.^{10,11}

Abdominal pain and jaundice predominated in surgical cholestasis, reflecting biliary obstruction and inflammatory pathology.¹⁷

Biochemical analysis revealed significantly elevated bile acids and transaminases in medical cholestasis, consistent with hepatocellular dysfunction.¹⁰

Surgical cholestasis showed marked elevation of bilirubin and alkaline phosphatase, characteristic of extrahepatic biliary obstruction.^{15,18} Ultrasonography proved invaluable in distinguishing medical from surgical cholestasis, demonstrating normal biliary anatomy in the former and obstruction in the latter.²⁰ Maternal morbidity was higher in surgical cholestasis due to complications such as cholangitis and pancreatitis.¹⁸

Fetal complications were more frequent in medical cholestasis, including preterm delivery, fetal distress, and NICU admission.^{11–13} Elevated maternal bile acids are believed to exert toxic effects on the fetal myocardium and placental circulation, explaining increased fetal risk.^{12,13} These findings are consistent with earlier studies identifying ICP as a condition with significant fetal risk despite mild maternal disease.^{11,23}

Surgical cholestasis, although less common, requires prompt diagnosis and intervention to prevent serious maternal complications.¹⁹ Early differentiation using clinical features, biochemical markers, and imaging is essential for optimal outcomes.^{20,21}

Multidisciplinary management involving obstetricians, hepatologists, and surgeons improves both maternal and fetal prognosis.²⁴ The present study adds valuable data from a tertiary care setting and emphasizes the importance of early recognition and tailored management of cholestasis in pregnancy.^{22,25}

CONCLUSION

Medical cholestasis is more prevalent than surgical cholestasis in pregnancy and is associated with higher fetal morbidity, whereas surgical cholestasis carries increased maternal risk. Accurate differentiation based on clinical features, laboratory findings, and imaging is vital for timely and appropriate management.

Limitations of the Study

1. Small sample size
2. Single-center study
3. Lack of long-term neonatal follow-up
4. Absence of molecular diagnostic evaluation

DECLARATIONS

Conflicts of interest: There is no any conflict of interest associated with this study

Consent to participate: There is consent to participate.

Consent for publication: There is consent for the publication of this paper.

Authors' contributions: Author equally contributed the work.

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