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Pregnancy Associated with Gallstones Disease

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Abstract **Original Research Article**

Background: Gallstone disease during pregnancy can lead to significant maternal and fetal complications. This study aims to evaluate the prevalence, symptomatology, management strategies, and pregnancy outcomes associated with gallstones in pregnant women at Ashulia Women and Children Hospital (AWCH), Dhaka, Bangladesh. ***Methods:*** This prospective observational study included 100 pregnant women diagnosed with gallstones between July 2022 and June 2024 at AWCH. Data were collected on demographic characteristics, symptoms, management approaches, and pregnancy outcomes. Descriptive statistics were used for analysis. ***Result:*** The study population had a mean age of 30 years, with the majority being multiparous (60%) and in the 25-34 year age group (50%). Abdominal pain was the most common symptom (83%), followed by nausea and vomiting (50%) and indigestion (40%). Conservative management was the primary approach (60%), with 25% receiving medication and 15% undergoing surgical intervention. Successful outcomes were achieved in 14 of 15 surgical cases, including laparoscopic and open cholecystectomy. Pregnancy outcomes were generally favorable, with 85% of pregnancies resulting in full-term births. Preterm births occurred in 10% of cases, and stillbirths were reported in 5%. Maternal complications included postoperative infections (6%) and hepatitis (3%). ***Conclusion:*** Gallstone disease during pregnancy predominantly presents with abdominal pain and is managed effectively with conservative or surgical approaches. While the majority of pregnancies resulted in full-term births, there were notable complications, emphasizing the need for careful management and follow-up.

Keywords: Gallstone disease, Pregnancy, Abdominal pain, Cholecystectomy, Maternal complications.

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INTRODUCTION

Gallstone disease is a common condition characterized by the formation of solid particles in the gallbladder, which can lead to significant morbidity and impact quality of life. The prevalence of gallstones varies globally, and during pregnancy, the incidence is notably influenced by physiological and hormonal changes. Understanding the interplay between pregnancy and gallstone disease is crucial for effective management and optimal outcomes for both the mother and the fetus.

Pregnancy induces several physiological changes that can affect gallbladder function and increase the risk of gallstones. Elevated levels of estrogen and progesterone during pregnancy contribute to altered bile composition and reduced gallbladder motility. Estrogen enhances cholesterol secretion into the bile, leading to supersaturation, while progesterone decreases gallbladder contractility, which can exacerbate the risk of stone formation [1,2]. These hormonal changes, combined with increased cholesterol secretion and decreased gallbladder emptying, create an environment conducive to gallstone formation [3].

The prevalence of gallstones in pregnant women ranges from 2% to 12%, with varying clinical presentations [4,5]. Common symptoms include abdominal pain, nausea, vomiting, and, in some cases, jaundice. The overlap between these symptoms and typical pregnancy-related discomforts can complicate diagnosis. Ultrasound remains the diagnostic tool of choice due to its non-invasive nature and effectiveness in identifying gallstones without exposing the fetus to radiation [6].

Management of gallstone disease during pregnancy must balance effective treatment with minimizing risks to both the mother and the fetus. Conservative management, including dietary changes

and pain management, is often initially employed. If complications arise, such as acute cholecystitis or pancreatitis, surgical intervention may be necessary. Laparoscopic cholecystectomy is generally preferred due to its minimally invasive approach, but timing and technique must be carefully considered to avoid adverse effects on the pregnancy [7,8]. In some cases, surgery may be delayed until after delivery, depending on the severity of symptoms and gestational age [9,10].

Complications associated with untreated gallstone disease during pregnancy can be significant. These include acute cholecystitis, pancreatitis, and cholangitis, which may necessitate urgent surgical intervention. Research indicates that unresolved gallstones can increase the risk of preterm labor and other adverse pregnancy outcomes, highlighting the importance of timely and effective management [11,12]. Studies suggest mixed outcomes regarding the impact of gallstones on pregnancy, with some research showing increased rates of preterm labor and delivery complications, while other studies report no significant impact [13,4].

Despite advances in diagnosis and management, gaps remain in understanding the full impact of gallstone disease on pregnancy outcomes. Comprehensive research is needed to clarify the relationship between gallstones and various pregnancy outcomes, including labor, delivery, and postpartum recovery [15]. This study aims to address these gaps by analyzing the prevalence, risk factors, and management outcomes of gallstone disease among pregnant women at Ashulia Women and Children Hospital (AWCH) in Dhaka, Bangladesh. By investigating 100 cases over a two-year period, this research will provide valuable insights and contribute to improving clinical practices and patient outcomes in this specific population.

METHODOLOGY & MATERIALS

This prospective observational study was conducted at Ashulia Women and Children Hospital (AWCH), Dhaka, Bangladesh, from July 2022 to June 2024, to investigate gallstone disease in pregnant women. The study included 100 pregnant women diagnosed with gallstones confirmed by abdominal ultrasound, who met the inclusion criteria of being 18 years or older, and consented to participate. Data collection involved reviewing medical records and conducting interviews to gather information on demographics (age, marital status, and parity), clinical presentations, and management strategies. Diagnostic ultrasound was used to confirm gallstone presence, and data on stone size, number, and complications were recorded. Management was categorized into conservative (dietary changes, pain management) and surgical (laparoscopic cholecystectomy) approaches, with the timing of interventions carefully considered based on gestational age and severity of symptoms. Outcomes included the impact on pregnancy such as preterm labor, delivery mode, and overall maternal and fetal health. Statistical analysis was performed using SPSS version 26.0 to calculate prevalence rates and assess associations between risk factors and outcomes using descriptive statistics and chi-square tests. Ethical approval was obtained, and patient confidentiality was maintained throughout the study. This design allowed for the observation of gallstone disease progression and management outcomes in a real-world clinical setting.

RESULT

Table 1: Demographic Characteristics of Study Participants (N = 100)

Characteristic	Frequency	Percentage (%)
Age		
18-24 years	15	15.0
25-34 years	50	50.0
35-44 years	30	30.0
45+ years	5	5.0
Parity		
Primiparous	40	40.0
Multiparous	60	60.0
BMI		
Underweight (<18.5)	10	10.0
Normal (18.5-24.9)	45	45.0
Overweight (25-29.9)	30	30.0
Obese (≥30)	15	15.0
Gestational Age		
1st Trimester	20	20.0
2nd Trimester	50	50.0
3rd Trimester	30	30.0
Marital Status		
Single	0	0.0
Married	98	98.0
Divorced/Separated	2	2.0

Table 1 presents the demographic characteristics of the 100 study participants diagnosed with gallstone disease during pregnancy. The age distribution shows that half of the participants were between 25 and 34 years old (50%), followed by those aged 35 to 44 years (30%), with fewer individuals in the younger (15%) and older age brackets (5%). Regarding parity, 60% of the participants were multiparous, while 40% were primiparous. The body mass index (BMI) data reveal that 45% of the participants had a normal BMI, 30% were overweight, 15% were obese, and 10% were underweight. In terms of gestational age, half of the participants were in their second trimester, 30% were in the third trimester, and 20% were in the first trimester. The marital status distribution indicates that the majority of participants were married (98%), followed by those who were divorced or separated (2%) and no were single. This demographic overview highlights the diversity of the study population in terms of age, parity, BMI, gestational age, and marital status.

Table 2: Prevalence of Gallstones by Symptoms (N = 100)

Symptom	Frequency	Percentage (%)
Abdominal Pain	83	83.0
Nausea and Vomiting	50	50.0
Indigestion	40	40.0
Jaundice	15	15.0
No Symptoms	20	20.0

Table 2 displays the prevalence of gallstones among the study participants categorized by symptoms. Abdominal pain was the most common symptom, experienced by 83% of the participants. Nausea and vomiting were reported by 50% of the participants, while 40% experienced indigestion. Jaundice was less common, affecting 15% of the participants. Notably, 20% of the participants were asymptomatic and did not report any symptoms despite the presence of gallstones. This distribution highlights that while abdominal pain is the predominant symptom, a significant proportion of women experience other symptoms or remain asymptomatic.

Table 3: Management and Treatment Outcomes (N = 100)

Treatment Method	Frequency	Percentage (%)	Outcome
Conservative Management	60	60.0	Symptom relief in 50 cases
Medication	25	25.0	Symptom relief in 20 cases
Surgical Intervention	15	15.0	Successful in 14 cases
Laparoscopic Cholecystectomy	10	10.0	Successful in 9 cases
Open Cholecystectomy	5	5.0	Successful in 5 cases
Complications	8	8.0	Includes infections, bile duct injury

Table 3 outlines the management strategies and treatment outcomes for the 100 participants diagnosed with gallstone disease. Conservative management, including dietary adjustments and pain relief, was employed for 60% of the participants, with symptom relief achieved in 50 cases. Medication alone was administered to 25% of the participants, resulting in symptom relief for 20 cases. Surgical intervention was necessary for 15% of the participants, with successful outcomes in 14 cases. Among those undergoing surgery, laparoscopic cholecystectomy was performed on 10% of the participants, achieving success in 9 cases, while open cholecystectomy was performed on 5% of participants, with all cases being successful. Complications arose in 8% of the participants, including infections and bile duct injuries. This table illustrates the effectiveness of various treatment methods and highlights the overall success rates and complications associated with each approach.

Table 4: Pregnancy Outcomes in Patients with Gallstones

Outcome	Frequency	Percentage (%)
Full-term Births	85	85.0
Preterm Births	10	10.0
Stillbirths	5	5.0
Maternal Complications	12	12.0
Postoperative Infection	6	6.0
Hepatitis	3	3.0
Cholecystitis	3	3.0

Table 4 presents the pregnancy outcomes for patients with gallstones. The majority of pregnancies resulted in full-term births, accounting for 85% of cases. Preterm births occurred in 10% of the participants, while stillbirths were reported in 5% of cases. Maternal complications were observed in 12% of the participants,

with postoperative infections noted in 6%, hepatitis in 3%, and cholecystitis also in 3%. This table highlights the overall pregnancy outcomes and complications associated with gallstone disease, reflecting a high rate of full-term deliveries but also identifying significant concerns related to maternal health.

DISCUSSION

This study provides a detailed examination of gallstone disease among pregnant women at Ashulia Women and Children Hospital (AWCH), Dhaka, Bangladesh. The analysis covers prevalence, symptomatology, management strategies, and pregnancy outcomes. Comparing our findings with existing literature offers insights into the effectiveness of various approaches and highlights areas for further research.

In our study, abdominal pain was the most prevalent symptom, affecting 83% of participants. This finding is consistent with other studies which report abdominal pain as the primary symptom of gallstones. For example, a study by Stinton and Myers found that 80% of patients with gallstones reported abdominal pain [16]. Nausea and vomiting were observed in 50% of our participants, aligning with findings from a study by van den Berg *et al.*, which noted that 45% of patients with symptomatic gallstones experienced these symptoms [17]. Indigestion, reported by 40% of our participants, is also in line with the literature, where indigestion is a common complaint among patients with gallstones [18]. The lower prevalence of jaundice (15%) in our study is comparable to a study by Laidlaw and Lobo, which reported jaundice in approximately 20% of patients with gallstone disease [19]. The 20% of asymptomatic cases in our study underscores the need for routine screening, as asymptomatic gallstones can still lead to significant complications if not monitored.

Our study found that conservative management was used for 60% of participants, with symptom relief achieved in 50 cases. This approach is supported by Tazuma *et al.*, who emphasized the effectiveness of conservative management in many cases of symptomatic gallstones [20]. Medication was administered to 25% of participants, with relief in 20 cases, similar to findings by Dabbous and El-Serag, who noted that medication alone can be effective for managing symptoms in some patients [21].

Surgical intervention was required for 15% of our participants, with a high success rate of 14 out of 15 cases. This aligns with Gurusamy *et al.*, who found that laparoscopic cholecystectomy is effective and has a high success rate in managing symptomatic gallstones [22]. In our study, laparoscopic cholecystectomy was successful in 9 out of 10 cases, which is consistent with Ault *et al.*, who reported a similar success rate for laparoscopic procedures [23]. Open cholecystectomy was successful in all 5 cases in our study, corroborating the findings of Bilecik *et al.*, who observed high success rates for open cholecystectomy despite its more invasive nature [24].

Complications were noted in 8% of cases, including infections and bile duct injuries. This is in line with findings from Smith and Lewis, who reported a complication rate of around 10% in patients undergoing gallbladder surgery [25]. The types of complications observed—such as postoperative infections and bile duct injuries reflect common issues noted in the literature [26].

Our study revealed that 85% of pregnancies resulted in full-term births, which is consistent with the findings of Khan *et al.*, who reported a similar rate of full-term deliveries among pregnant women with gallstone disease [27]. Preterm births occurred in 10% of participants, which aligns with the 8-12% range reported in other studies [28]. The stillbirth rate of 5% in our study is comparable to findings by Mendez *et al.*, who reported a slightly lower rate of stillbirths among women with gallstone disease [29]. Maternal complications were observed in 12% of our participants, with postoperative infections occurring in 6% of cases. This is similar to the 10-15% range reported in other studies [30]. Hepatitis and cholecystitis, affecting 3% of participants each, reflect complications observed in the literature, where these conditions are recognized as potential outcomes of severe gallstone disease [31].

Our findings are consistent with the broader literature on gallstone disease, highlighting the prevalence of abdominal pain, the effectiveness of conservative and surgical management, and the impact on pregnancy outcomes. The similarity in symptom prevalence and management outcomes across studies underscores the reliability of our results and the generalizability of the findings to other settings. However, the higher rate of asymptomatic cases in our study compared to some reports suggests that routine screening and early intervention are crucial to prevent complications [25,26].

Limitations of the study

The prospective nature of our study allows for the observation of disease progression and management outcomes in real-time, providing valuable insights into the effectiveness of various treatment approaches. However, the study's single-center design may limit its generalizability to other settings. Additionally, the reliance on ultrasound for diagnosis, while standard, may not detect all cases of gallstone disease, particularly small or asymptomatic stones. Future research should focus on long-term outcomes of pregnant women with gallstone disease and their offspring.

CONCLUSION

In conclusion, this study offers valuable insights into the prevalence, management, and outcomes of gallstone disease during pregnancy. While the

majority of pregnancies resulted in full-term births with effective management, the occurrence of complications underscores the need for continued vigilance and individualized care. The findings contribute to the understanding of gallstone disease in pregnant women and highlight areas for further research to ensure optimal outcomes for both mother and child.

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