

Original Article

Clinical Characteristics and Risk Factors of Ectopic Pregnancy: A Hospital-Based Cross-sectional Study in Sylhet

*Akther R¹, Afruz M², Ahmed S³, Zehan FA⁴, Nurunnabi M⁵

Abstract:

Background: Maternal morbidity and mortality are significantly increased by ectopic pregnancy, especially in women of reproductive age. For prompt diagnosis and treatment, it is crucial to comprehend its clinical presentation, risk factors, and management.

Objective: To evaluate the clinical characteristics and associated risk factors of ectopic pregnancy among women attending a tertiary hospital in Sylhet, Bangladesh.

Methods: A hospital-based descriptive cross-sectional study was conducted from January 2024 to December 2025, including 68 women diagnosed with ectopic pregnancy in the Department of Obstetrics and Gynecology, Sylhet Women's Medical College Hospital, Bangladesh. Data on socio-demographics, clinical presentation, risk factors, site of ectopic implantation, and management were collected using a pre-tested structured questionnaire and patient medical records.

Results: The mean age of participants was 27.5±6.1 years, with the majority aged 18–25 years (41.2%). Most women were multiparous (60.3%). Common presenting symptoms included short H/O amenorrhea (91.2%), abdominal pain (88.2%), fever (82.4%), per vaginal bleeding (72.1%), per vaginal discharge (66.2%), and syncopal attacks (55.9%). The ampullary region of the fallopian tube was the most frequent site of ectopic implantation (66.2%), followed by the isthmic (17.6%) and fimbrial regions (13.2%). Pelvic inflammatory disease (63.2%), previous induced abortion (42.6%), and previous cesarean section (32.4%) were the predominant risk factors. Surgical management was the most common treatment (76.5%), with right-sided salpingectomy performed in 57.7% of surgical cases and left-sided salpingectomy in 42.3%.

Conclusion: The study findings indicate that ectopic pregnancy commonly affects young, reproductive-age women, presents with amenorrhea and abdominal pain, and most often involves the ampullary region, with surgical intervention being the predominant treatment.

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Introduction:

Ectopic pregnancy (EP) is defined as the implantation of a fertilized ovum outside the uterine cavity, most commonly within the fallopian tube, and represents a major cause of maternal morbidity and mortality during early gestation.^{1,2}

1. Dr. Rina Akther, Professor (CC), Department of Obstetrics & Gynecology, Sylhet Women's Medical College Hospital, Sylhet, Bangladesh.
2. Dr. Murshida Afruz, Assistant Professor, Department of Obstetrics & Gynecology, Sylhet Women's Medical College Hospital, Sylhet Bangladesh.
3. Dr. Sonia Ahmed, Assistant Registrar, Department of Obstetrics & Gynecology, Sylhet Women's Medical College Hospital, Sylhet Bangladesh.
4. Dr. Furhan Asif Zehan, Ex- Assistant Registrar, Department of Cardiology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh.

5. Dr. Mohammad Nurunnabi, Assistant Professor, Department of Community Medicine and Public Health, Sylhet Women's Medical College, Sylhet, Bangladesh.

Corresponding author: Dr. Rina Akther,

Professor (CC), Department of Obstetrics & Gynecology, Sylhet Women's Medical College Hospital, Sylhet, Bangladesh.

Email- rinaakdr2@gmail.com

Globally, it affects approximately 1-2% of all reported pregnancies, and the clinical presentation is often nonspecific, including amenorrhea, abdominal pain, and abnormal vaginal bleeding.^{3,4} Early diagnosis is essential because delayed recognition can result in tubal rupture, intra-abdominal hemorrhage, hypovolemic shock, and potentially death.⁵

Despite advances in diagnostic and therapeutic approaches, EP remains a significant public health challenge worldwide.^{6,7} Analyses from the Global Burden of Disease study indicate that although age-standardized incidence rates have declined over the last three decades, the absolute number of EP cases and associated disability-adjusted life years (DALYs) has increased, particularly in low- and middle-income countries with limited access to early obstetric care.⁸⁻¹⁰ EP is also a leading cause of first-trimester maternal mortality, contributing substantially to overall pregnancy-related deaths.¹¹ According to the World Health Organization (WHO), approximately 260,000 women died from pregnancy-related causes in 2023, with a significant proportion attributable to obstetric emergencies, including EP.¹²

Several risk factors have been identified for EP, reflecting its multifactorial etiology. Pelvic inflammatory disease (PID), often resulting from sexually transmitted infections, is a major determinant, as it can cause tubal damage and impaired embryo transport.^{13,14} Other predisposing factors include previous induced abortion, prior pelvic or tubal surgery, subfertility treatments, and intrauterine contraceptive device (IUCD) usage when conception occurs with a device in situ.^{2,15,16} Advanced maternal age and smoking have also been associated with increased risk in some populations.¹³ Understanding these risk factors is essential for early identification, prevention strategies, and counseling regarding future fertility.

In Bangladesh, EP constitutes a notable component of obstetric morbidity. Hospital-based studies from tertiary care centers in Dhaka and other cities report that most affected women are of reproductive age, frequently presenting with abdominal pain and amenorrhea, and often have identifiable risk factors such as PID, previous abortions, or prior surgeries.^{3,17} The majority of ectopic pregnancies involve the ampullary region of the fallopian tube, which aligns with international observations.^{14,18,19} Such findings underscore the need for improved reproductive health education, timely diagnosis, and standardized management protocols to reduce morbidity and preserve future fertility.

Effective management of EP requires timely diagnosis and appropriate intervention,

including expectant, medical, or surgical approaches, depending on patient stability and gestational characteristics.^{5,15} In many developing countries, surgical management predominates due to delayed presentation and limited availability of early diagnostic tools such as serial β -hCG measurement and transvaginal ultrasonography.^{17,20,21} Early management mitigates the risk of severe hemorrhage and preserves reproductive potential.

EP remains a significant cause of reproductive morbidity and early pregnancy-related mortality globally and in Bangladesh, particularly among women with identifiable risk profiles. Continued research focusing on clinical characteristics, associated risk factors, and management outcomes is essential to inform evidence-based clinical practice, enhance early detection, and strengthen reproductive health services in line with global maternal health goals.

Methodology

Study design and settings

A hospital-based cross-sectional study was conducted from January 2024 to December 2025 in the Department of Obstetrics and Gynecology at Sylhet Women's Medical College Hospital, Sylhet, Bangladesh. The study aimed to evaluate the clinical characteristics and associated risk factors of ectopic pregnancy among women attending this tertiary care hospital.

Sample selection criteria

All clinically suspected cases of ectopic pregnancy admitted to the Department of Obstetrics and Gynaecology during the study period were included in the investigation. The target population comprised women aged 18–40 years, representing the reproductive age group. Only those who were clinically or diagnostically confirmed as cases of ectopic pregnancy based on clinical evaluation, ultrasonography, or surgical findings were enrolled. A total of 68 women were purposively selected for the study. Women were included if they were within the specified age range and willing to provide written informed consent. Patients with incomplete clinical records, concurrent life-threatening medical conditions, or other obstetric or gynaecological conditions unrelated to ectopic pregnancy were excluded from the study.

Data collection procedures

Data were collected using a pre-tested structured questionnaire and through review of patient medical records. Recorded clinical variables included patient demographics (age, parity), clinical presentation (abdominal pain, amenorrhea, abnormal vaginal bleeding, fever, syncopal attacks, and shock), and physical examination findings (adnexal tenderness and masses). Potential risk factors were documented, including a history of pelvic inflammatory disease, previous induced abortions, prior cesarean sections or other surgeries, use of intrauterine contraceptive devices (IUCDs), subfertility treatments, and previous ectopic pregnancies. Diagnostic findings from urine pregnancy tests, and ultrasonography were also recorded. Surgical variables included the type of intervention performed, such as salpingectomy, and the site of ectopic implantation (ampullary, isthmic, fimbrial, or interstitial/cornual). Multiple responses were allowed for presenting symptoms and risk factors, and data were collected through detailed patient interviews combined with hospital record review.

Data analysis

Data were entered, cleaned, and analyzed using the Statistical Package for Social Sciences (SPSS), version 25 (IBM Corp., New York, USA). Descriptive statistics were expressed as frequency and percentage for categorical variables; as mean and standard deviation (SD) for continuous variables. The results were presented using tables and charts.

Ethical statement

Written informed consent was obtained from all participants before enrollment, and confidentiality was strictly maintained throughout the study. The study was conducted in accordance with the principles of the Declaration of Helsinki (2013 revision). Ethical approval was obtained from the 'Institutional Review Board' of Sylhet Women's Medical College, Bangladesh.

Result

In the table 1, the study included 68 women diagnosed with ectopic pregnancy, with a mean age of 27.5 ± 6.1 years. The majority of participants were in the 18–25 years age group (41.2%), followed by 26–32 years (36.8%) and 33–40 years (22.1%). The most common

presenting symptoms were short H/O amenorrhea (91.2%) and abdominal pain (88.2%), followed by fever (82.4%), per vaginal bleeding (72.1%), per vaginal discharge (66.2%), syncopal attacks (55.9%), and shock (8.8%).

Regarding parity, most women were multiparous (60.3%), while 39.7% were nulliparous shown in the figure 1. Figure 2 displays the site of ectopic implantation showed that the ampullary region was most frequently involved (66.2%), followed by the isthmic (17.6%) and fimbrial regions (13.2%), with only a small proportion located in the interstitial (cornual) region (2.9%).

Table 2 presents the risk factors identified among the 68 women diagnosed with ectopic pregnancy. The most common risk factor was a history of PID, reported in 63.2% of cases. Previous induced abortion was noted in 42.6% of women, while 32.4% had a history of previous cesarean section. Other less frequent risk factors included sub-fertility treatment (17.6%), use of an IUCD (4.4%), and a previous ectopic pregnancy (1.5%).

Table 3 demonstrates the management approaches for ectopic pregnancy among the 68 study participants. The majority of women (76.5%) underwent surgical management, while 23.5% were managed conservatively. Among the 52 women who underwent surgery, right-sided salpingectomy was the most common procedure, performed in 57.7% of cases, and left-sided salpingectomy was performed in 42.3% of cases.

Table 1: Patient's characteristics (n=68)

Characteristics	Categories	Frequency (n)	Percent (%)
Age groups (in years)	18-25	28	41.2
	26-32	25	36.8
	33-40	15	22.1
	Mean±SD		27.5±6.1
Presenting symptoms	H/O Amenorrhoea	62	91.2
	Abdominal pain	60	88.2
	Fever	56	82.4
	Per vaginal bleeding	49	72.1
	Per vaginal discharge	45	66.2
	Syncopal attack	38	55.9
	Shock	6	8.8
	*Multiple responses		

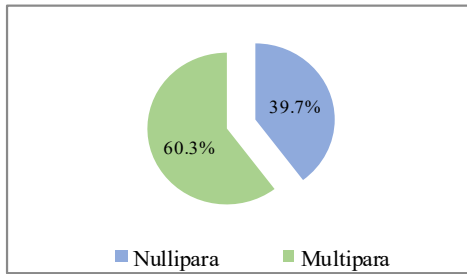


Figure 1: Cases according to parity (n=68)

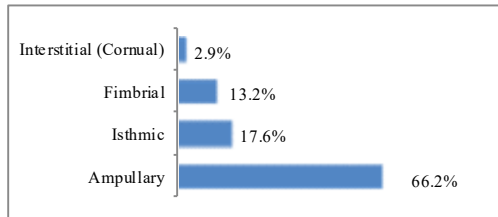


Figure 2: Site of ectopic pregnancies (n=68)

Table 2: Risk factors of the respondents (n=68)

Risk factors	Categories	Frequency (n)	Percent (%)
Risk factors	Pelvic inflammatory disease (PID)	43	63.2
	Previous induced abortion	29	42.6
	Previous caesarean section	22	32.4
	Sub-fertility treatment	12	17.6
	Intrauterine contraceptive device (IUCD)	3	4.4
	Previous ectopic pregnancy	1	1.5
*Multiple responses			

Table 3: Management of ectopic pregnancy (n=68)

Attributes	Categories	Frequency (n)	Percent (%)
Mode of management	Conservative	16	23.5
	Surgical	52	76.5
Type of surgery (n=52)	Right sided salpingectomy	30	57.7
	Left sided salpingectomy	22	42.3

Discussion:

This study included 68 women diagnosed with ectopic pregnancy, with a mean age of 27.5 ± 6.1 years, indicating that ectopic pregnancy primarily affects women in the early reproductive age group. The highest proportion of patients were in the 18–25 years

age group (41.2%), followed by 26–32 years (36.8%), which aligns with previous hospital-based studies in Bangladesh reporting that ectopic pregnancies are more common among younger women of reproductive age.^{3,17-19} These findings are consistent with global data, which show that women aged 20–30 years constitute the majority of ectopic pregnancy cases.^{1,8,12}

The predominant presenting symptoms were amenorrhea (91.2%) and abdominal pain (88.2%), followed by fever (82.4%), per vaginal bleeding (72.1%), per vaginal discharge (66.2%), and syncopal attacks (55.9%). Shock was observed in 8.8% of patients. This indicates that most women present with multiple clinical features, reflecting the potentially severe nature of the condition. These findings are in agreement with earlier studies from Bangladesh and other low- and middle-income countries, where abdominal pain and amenorrhea were consistently reported as the most frequent presenting features.^{3,4,6,8} The presence of syncopal attacks and shock, although less frequent, underscores the need for early recognition and prompt intervention to prevent morbidity and mortality.

Regarding parity, the majority of patients were multiparous (60.3%), while 39.7% were nulliparous. Similar trends have been observed in other hospital-based studies, suggesting that multiparity may not confer protection against ectopic pregnancy and may reflect cumulative exposure to risk factors such as pelvic infections and previous uterine procedures.^{3,18}

Analysis of the site of implantation revealed that the ampullary region was most commonly involved (66.2%), followed by the isthmic (17.6%) and fimbrial regions (13.2%), with only 2.9% in the interstitial (cornual) region. These findings are consistent with established literature, which identifies the ampulla as the most frequent site of tubal implantation due to its anatomical length and motility characteristics.^{4,22}

Risk factor analysis indicated that PID was the most common predisposing factor (63.2%), followed by previous induced abortion (42.6%) and prior cesarean section (32.4%). Less frequent risk factors included subfertility

treatment (17.6%), IUCD use (4.4%), and previous ectopic pregnancy (1.5%). These findings highlight the pivotal role of tubal damage and pelvic infection in the pathogenesis of ectopic pregnancy, corroborating previous reports from both Bangladesh and global studies.^{3,17,18,23} The high prevalence of PID as a risk factor underscores the importance of preventive measures, early diagnosis, and effective treatment of pelvic infections to reduce the incidence of ectopic pregnancies.^{24,25}

In terms of management, most women (76.5%) underwent surgical intervention, while 23.5% were managed conservatively. Among those operated, right-sided salpingectomy (57.7%) was more common than left-sided salpingectomy (42.3%). This preference for surgical management, particularly salpingectomy, is consistent with findings from other low-resource settings, where delayed presentation and hemodynamic instability often necessitate operative intervention rather than medical management.^{15,22,26} Conservative management was limited to hemodynamically stable women with unruptured ectopic pregnancies, reflecting global recommendations for individualized care based on patient condition and available resources.

The study revealed that ectopic pregnancy in this tertiary hospital setting in Sylhet predominantly affects young, reproductive-age women with multiple presenting symptoms and identifiable risk factors, particularly PID and prior uterine interventions. Early recognition, awareness of risk factors, and timely management surgical or conservative are essential to reduce morbidity and preserve reproductive potential. These findings reinforce the need for public health interventions targeting pelvic infection prevention, safe abortion practices, and reproductive health education to mitigate the burden of ectopic pregnancy in Bangladesh.

Conclusion:

The study shows that ectopic pregnancy primarily affects women of reproductive age, especially those between 18 and 32 years, with multiparous women being more commonly affected. The ampullary region of the fallopian tube was the most frequent site of

implantation. Amenorrhea and abdominal pain were the predominant symptoms, often accompanied by fever, vaginal bleeding, and syncopal attacks. The most common risk factors were pelvic inflammatory disease, previous induced abortion, and prior cesarean section. Most cases required surgical management, with unilateral salpingectomy being the most frequent procedure. Early recognition, prompt diagnosis, and timely intervention are essential to reduce complications and preserve fertility. Preventive strategies, reproductive health education, and standardized management protocols are recommended to improve outcomes.

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