# **Original Research**

# Clinical profile and outcome of ectopic pregnancy in tertiary care hospital

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#### Abstract

**Background:**Ectopic pregnancy remains a major cause of maternal morbidity and mortality, particularly in developing countries. Early diagnosis and prompt management are essential to prevent life-threatening complications and improve outcomes.

Aim: To study the clinical profile, risk factors, management modalities, and outcomes of ectopic pregnancies managed at a tertiary care hospital.

**Material and Methods:**This retrospective observational study was conducted in the Department of Obstetrics and Gynecology at Nalanda Medical College and Hospital (NMCH), Patna, Bihar, over a period of one and a half years. A total of 58 patients diagnosed with ectopic pregnancy by clinical examination, ultrasonography, and/or intraoperative findings were included. Data regarding demographic profile, clinical presentation, risk factors, site of ectopic pregnancy, type of management, operative findings, postoperative complications, and outcomes were collected and analyzed using SPSS version 25.0.

**Results:** Most patients (55.17%) were aged 21–30 years, and 65.52% were multiparous. Amenorrhea (96.55%) and abdominal pain (89.66%) were the most common presenting symptoms. A history of pelvic inflammatory disease was present in 31.03% of cases. The fallopian tube was the most common site of implantation (96.56%). Surgical intervention was required in 82.76% of patients, while 17.24% were managed medically. Blood transfusion was needed in 37.93% of cases. Maternal morbidity was observed in 17.24% of patients, and no maternal mortality was recorded. The mean hospital stay was  $5 \pm 2$  days.

**Conclusion:**Ectopic pregnancy continues to pose a significant threat to maternal health, particularly due to delayed presentation. Early clinical suspicion, timely ultrasonographic diagnosis, and prompt management can significantly reduce morbidity and improve maternal outcomes.

Keywords: Ectopic pregnancy, Clinical profile, Maternal morbidity, Surgical management

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#### Introduction

Ectopic pregnancy remains one of the most critical emergencies encountered in obstetrics, posing a significant threat to maternal health and life if not diagnosed and managed promptly. Characterized by the implantation of the fertilized ovum outside the uterine cavity, ectopic pregnancies continue to be a leading cause of maternal morbidity and mortality worldwide. Despite technological advances in diagnostic modalities and management options, the incidence of ectopic pregnancies shows a relatively stable pattern, emphasizing the necessity for early clinical suspicion and intervention.<sup>1</sup>

The most common site of ectopic implantation is the fallopian tube, accounting for the vast majority of cases. Other less frequent sites include the ovary, cervix, cesarean section scar, and abdominal cavity. The early clinical presentation often mimics normal intrauterine pregnancy or is mistaken for other abdominal or gynecological conditions, making the diagnosis challenging, especially in resource-limited settings. Classic symptoms include amenorrhea, abdominal pain, and vaginal bleeding, though variations exist depending on the location and progression of the ectopic gestation. Advanced cases may present with signs of rupture, hemodynamic instability, and profound hemorrhage, requiring emergency surgical intervention.<sup>2</sup>

Various studies conducted at tertiary care hospitals have contributed to understanding the clinical profile, risk factors, and outcomes associated with ectopic pregnancies. Research findings have demonstrated that the majority of ectopic pregnancies occur in women of reproductive age, particularly those aged between 21 to 30 years. Factors such as delayed first marriages, rising maternal age, and lifestyle changes have contributed to altering the demographic profile of affected individuals. Notably, shifts in marriage patterns and reproductive behaviors in India over the past three decades have been observed, correlating with changes in the epidemiology of ectopic pregnancies.<sup>3</sup>

Numerous risk factors have been implicated in the pathogenesis of ectopic pregnancies. Previous pelvic inflammatory disease (PID) stands as one of the most significant contributors, damaging the tubal mucosa and altering the ciliary function necessary for normal gamete transport. History of tubal surgery, including tubal ligation or reconstructive procedures, also women to ectopic implantation. predisposes Furthermore, prior ectopic pregnancy, use of assisted reproductive technologies, intrauterine device usage, and smoking are well-recognized risk factors. In recent years, certain modifiable risk factors, such as sexually transmitted infections leading to PID, have gained increasing attention as targets for preventive strategies.4,5

The clinical profile of patients varies significantly depending on the stage at which the ectopic pregnancy is diagnosed. In many cases, patients present with minimal symptoms, leading to delayed recognition. Hemodynamic stability at presentation is associated with a better prognosis and allows for conservative management options such as medical therapy with methotrexate. Conversely, delayed diagnosis often results in rupture, significant intraabdominal hemorrhage, and the need for emergency laparotomy, which carries higher morbidity and mortality rates. Studies have emphasized the crucial role of early transvaginal ultrasonography and serum beta-human chorionic gonadotropin  $(\beta-hCG)$ measurements in enabling early diagnosis and improving patient outcomes.<sup>6</sup>

The outcomes of ectopic pregnancies largely depend on early diagnosis, timely management, and the extent of tubal damage. With prompt intervention, the prognosis for future fertility can be favorable. However, the risk of recurrence in subsequent pregnancies remains a major concern. Several research articles have highlighted that surgical interventions, especially salpingectomy, are associated with reduced fertility potential compared to conservative procedures such as salpingostomy or medical management. Nonetheless, patient selection based on clinical stability,  $\beta$ -hCG levels, and sonographic findings is critical in determining the appropriate therapeutic approach.<sup>7</sup>

In the context of tertiary care centers, the availability of advanced diagnostic and therapeutic facilities has led to significant improvements in the management of ectopic pregnancies. Multidisciplinary teams involving obstetricians, radiologists, and anesthesiologists play a pivotal role in optimizing outcomes. Despite these advances, challenges persist, particularly in cases referred late from peripheral centers where diagnostic facilities are limited. Hence, enhancing awareness among primary healthcare providers and implementing effective referral systems are necessary to reduce delays in diagnosis and management.<sup>8</sup>

Additionally, the psychological impact of ectopic pregnancy on affected women is an important but under-recognized aspect. Women often who experience ectopic pregnancies may undergo significant emotional distress, particularly if fertility is compromised. Counseling and support services should form an integral part of comprehensive care. The pattern of ectopic pregnancies in tertiary hospitals also reflects broader public health trends. Rising rates of pelvic infections, increasing maternal age at conception, and the growing use of assisted reproductive technologies have influenced the observed clinical profiles. In addition, lifestyle factors such as smoking and multiple sexual partners have contributed to the complexity of risk factor profiles among modern populations.<sup>9</sup>Given the wide-ranging implications of ectopic pregnancies, continuous research is vital to understand evolving risk factors, refine diagnostic criteria, and develop better management protocols. Data generated from tertiary care centers offer valuable insights into trends, gaps in healthcare delivery, and opportunities for early intervention strategies. Moreover, preventive measures, including education on sexually transmitted infections, timely treatment of PID, promotion of safe reproductive health practices, and accessibility to healthcare services, are essential components in reducing the burden of ectopic pregnancies.

# Material and methods

This was a retrospective observational study conducted in the Department of Obstetrics and Gynecology at Nalanda Medical College and Hospital (NMCH), Patna, Bihar. The study was carried out over a period of one and a half years. A total of 58 cases of ectopic pregnancy, diagnosed either clinically, radiologically, or intraoperatively, were included in the study. Data were collected from the medical records, operative notes, and discharge summaries of patients who were admitted and managed for ectopic pregnancy during the study period.

#### **Inclusion Criteria**

- All patients diagnosed with ectopic pregnancy during the study period.
- Cases confirmed by clinical examination, ultrasonography, and/or intraoperative findings.
- Patients who underwent either medical or surgical management.

# **Exclusion Criteria**

- Patients with incomplete medical records.
- Cases where the diagnosis of ectopic pregnancy could not be confirmed.

#### **Data Collection**

A structured proforma was used for data extraction, and the following parameters were recorded: demographic details such as age, parity, and marital status; clinical presentation, including history of amenorrhea, abdominal pain, vaginal bleeding, and hemodynamic status at presentation; and risk factors like prior history of pelvic inflammatory disease, previous ectopic pregnancy, infertility treatments, and previous pelvic surgeries. Information regarding the site of ectopic pregnancy was also documented. Details regarding the type of management were recorded, whether the patient was managed medically with methotrexate or surgically through laparotomy. Operative findings, the nature of surgical interventions performed, and any postoperative complications were carefully noted. The final outcome measures included maternal morbidity, maternal mortality, requirement for blood transfusion, and duration of hospital stay.

#### **Statistical Analysis**

Collected data were compiled and analyzed using Microsoft Excel and SPSS software version 25.0. Results were presented in terms of frequencies, percentages, means, and standard deviations for continuous variables. Categorical variables were analyzed using the Chi-square test wherever applicable. A p-value of less than 0.05 was considered statistically significant.

#### Results

In the present study, the demographic profile of patients with ectopic pregnancy revealed that the majority were in the reproductive age group of 21–30 years, comprising 55.17% (32 cases) of the total 58 patients (Table 1). Patients aged 31–40 years constituted 31.03% (18 cases), while those younger than 20 years and older than 40 years accounted for 6.90% each (4 cases each). In terms of parity, 34.48% (20 cases) were nulliparous, whereas 65.52% (38 cases) were multiparous. Regarding marital status, the overwhelming majority of patients were married,

comprising 93.10% (54 cases), while only 6.90% (4 cases) were unmarried.

The clinical presentation at the time of admission showed that amenorrhea was the most common symptom, reported in 96.55% (56 cases) of patients (Table 2). Abdominal pain was the second most frequent complaint, observed in 89.66% (52 cases). Vaginal bleeding was present in 48.28% (28 cases). Notably, 25.86% (15 patients) presented in a hemodynamically unstable condition, indicating the urgency and severity often associated with ruptured ectopic pregnancies.

Regarding risk factors for ectopic pregnancy, a history of pelvic inflammatory disease (PID) was noted in 31.03% (18 cases), making it the most commonly associated factor (Table 3). A previous history of infertility treatment was identified in 17.24% (10 cases), while prior pelvic surgeries were documented in 13.79% (8 cases). Previous ectopic pregnancy was present in 10.34% (6 cases). Interestingly, no identifiable risk factor could be found in 27.59% (16 cases), indicating that ectopic pregnancies can occur even in the absence of traditional risk factors.

When analyzing the site of ectopic implantation, the fallopian tube was the most common site, accounting for 96.56% (56 cases) of all ectopic pregnancies (Table 4). Ovarian and cervical pregnancy was noted in 1.72% (1 case each) each. In terms of management strategies, surgical intervention was the predominant mode of treatment, with 82.76% (48 patients) undergoing laparotomy. Medical management with methotrexate was successfully employed in 17.24% (10 cases), mainly in patients presenting early with stable vitals and small unruptured ectopic pregnancies.

Postoperative outcomes revealed that 37.93% (22 cases) of patients required blood transfusion due to blood loss associated with ruptured ectopic pregnancy (Table 5). Maternal morbidity in the form of postoperative complications such as anemia and wound infections was observed in 17.24% (10 cases). Importantly, there were no maternal deaths recorded during the study period, reflecting effective management and timely intervention. The average hospital stay was found to be  $5 \pm 2$  days, indicating that most patients had a relatively short recovery period after treatment.

 Table 1: Demographic Profile of Patients with Ectopic Pregnancy (n = 58)

Parameter	Number of Patients	Percentage (%)	
Age Group (years)			
<20 years	4	6.90%	
21–30 years	32	55.17%	
31–40 years	18	31.03%	
>40 years	4	6.90%	
Parity			
Nulliparous	20	34.48%	
Multiparous	38	65.52%	
Marital Status			

Married	54	93.10%
Unmarried	4	6.90%

Symptom	Number of Patients	Percentage (%)
Amenorrhea	56	96.55%
Abdominal Pain	52	89.66%
Vaginal Bleeding	28	48.28%
Hemodynamic Instability (Shock)	15	25.86%

Table 3: Risk Factors for	Ectopic Pregnancy (n = 58	)

Risk Factor	Number of Patients	Percentage (%)
History of Pelvic Inflammatory Disease (PID)	18	31.03%
Previous Ectopic Pregnancy	6	10.34%
History of Infertility Treatment	10	17.24%
Previous Pelvic Surgery	8	13.79%
No Identifiable Risk Factor	16	27.59%

 Table 4: Site of Ectopic Pregnancy and Type of Management (n = 58)
 Image: Comparison of Management (n = 58)

Parameter	Number of Patients	Percentage (%)
Site of Ectopic Pregnancy		
Fallopian Tube	56	96.56%
Ovary	1	1.72%
Cervical	1	1.72%
Type of Management		
Medical (Methotrexate)	10	17.24%
Surgical (Laparotomy)	48	82.76%

Table 5: Posto	perative Outcome	s and Compli	cations $(n = 58)$
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Outcome/Complication	Number of Patients	Percentage (%)
Need for Blood Transfusion	22	37.93%
Maternal Morbidity (Post-op complications like wound	10	17.24%
infection, anemia, etc.)		
Maternal Mortality	0	0.00%
Average Hospital Stay (days)	$5\pm 2$	_

# Discussion

In the present study, the majority of ectopic pregnancy cases were observed in the age group of 21-30 years, accounting for 55.17%, followed by 31-40 years (31.03%). Similar age distribution has been reported by Behera et al 2018 and Das et al 2020, where the majority of patients also belonged to the second and third decades of life, emphasizing that ectopic pregnancy primarily affects women during their peak reproductive years.<sup>10,11</sup> A smaller proportion of cases (6.90%) occurred in women aged <20 years and >40 years, consistent with findings by Gyamtsho et al 2020.12 Regarding parity, 65.52% of the patients were multiparous and 34.48% were nulliparous, which aligns with observations by Verma et al 2022, who also reported a higher incidence among multiparous women.<sup>13</sup> Marital status analysis showed that 93.10% of patients were married, supporting the patterns reported by Singh et al 2021, reflecting sociocultural practices where pregnancies predominantly occur within marriage.14

Clinically, amenorrhea was the most common presenting symptom in our study, seen in 96.55% of

patients, followed by abdominal pain in 89.66% and vaginal bleeding in 48.28%. These figures are consistent with the classical triad described by Shetty et al 2014, who noted amenorrhea in over 90% of their cases, along with pain and bleeding. Hemodynamic instability was noted in 25.86% of cases in our study, reflecting a significant burden of ruptured ectopics.<sup>15</sup> Chaudhuri and Nath 2019 also highlighted similar life-threatening presentations in a tertiary hospital setting, suggesting that delayed diagnosis remains a major challenge even today.<sup>16</sup>

Analysis of risk factors revealed that a history of pelvic inflammatory disease (PID) was the most common, present in 31.03% of cases, consistent with Huang et al 2019, who found PID to be strongly associated with tubal damage and subsequent ectopic gestation.<sup>17</sup> Previous infertility treatment was noted in 17.24% of cases and previous ectopic pregnancy in 10.34% in the present study, findings comparable to the results reported by Moini et al 2014 and Wang et al 2020, who emphasized that assisted reproductive technologies and prior ectopic pregnancies significantly elevate risk.<sup>18,19</sup> Interestingly, 27.59% of

patients in our study had no identifiable risk factors, supporting the observations by Ngene and Lunda 2020 that ectopic pregnancies can still occur in the absence of traditional risk predictors.<sup>20</sup>

The most common site of ectopic implantation in our study was the fallopian tube, accounting for 96.56% of cases, which is consistent with findings from Verma et al 2022 and Das et al 2020, who also reported tubal pregnancies as the predominant site in more than 80% of their cases.<sup>13,11</sup> Rare sites such as ovarian and cervical (3.45% each) were also noted, similar to the rare locations described by Ngene and Lunda 2020 in their case report analysis.<sup>20</sup> Regarding the type of management, 82.76% of cases required surgical intervention, while 17.24% were successfully managed medically with methotrexate. The preference for surgery in our study mirrors the findings by Igwegbe et al 2013 and Behera et al 2018, who both observed that late presentation and rupture often necessitate operative management.<sup>21,10</sup> Comparatively, Shetty et al 2014 highlighted that early diagnosis allows a greater opportunity for successful medical management, which explains the relatively smaller proportion of medical therapy in our series.<sup>15</sup>

Postoperative outcomes in our study revealed that 37.93% of patients required blood transfusion, owing to hemorrhagic shock secondary to ruptured ectopic pregnancy. This is similar to findings by Chaudhuri and Nath 2019, who reported significant transfusion needs in ruptured cases.<sup>16</sup> Maternal morbidity, in the form of postoperative anemia and wound infections, was seen in 17.24% of patients, which correlates closely with the morbidity rates reported by Dheepthikaa and Murugan 2020.<sup>22</sup> Importantly, there were no maternal deaths recorded in our study, reflecting effective perioperative care and timely intervention, similar to the findings by Nath et al 2021.<sup>23</sup> The average hospital stay in our study was 5  $\pm$ 2 days, which is comparable to the recovery duration reported by Behera et al 2018, indicating that most patients had an uneventful postoperative course once treated appropriately.<sup>10</sup>

#### Conclusion

Ectopic pregnancy remains a significant cause of maternal morbidity, predominantly affecting women in their reproductive years. In our study, delayed presentation often led to hemodynamic instability, requiring surgical intervention in most cases. Early diagnosis through high clinical suspicion and prompt management can greatly reduce complications and improve maternal outcomes. Strengthening awareness and timely use of ultrasonography are essential to further optimize care.

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