

## Original Research

### To study the clinical characteristics and prognosis of ectopic pregnancy at a tertiary care hospital

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#### ABSTRACT

**Background:** An ectopic pregnancy happens when the fertilised egg implants and develops in a location other than the normal uterine cavity.

**Aim:** To study the clinical characteristics and prognosis of ectopic pregnancy at a tertiary care hospital.

**Material and methods:** This prospective observational study was conducted on pregnant women in their first trimester with ectopic pregnancy characteristics and diagnosis. The study covered all prenatal clinic and labour room patients who met the selection criteria. After acquiring written informed consent from patients or attendants, prenatal clinic and labour room patients with clinical characteristics and an ectopic pregnancy diagnosis were included.

**Results:** A total of 60 individuals were diagnosed with ectopic pregnancy. The most common site for tubal ectopic pregnancies was the ampulla, accounting for 49.09% of cases. In 16.36% of cases, the isthmus was the site, while the fimbria and isthmo-ampullar regions each accounted for 9.09% of cases. In 16.36% of cases, the exact site of the ectopic pregnancy was not known, indicating a range of locations for tubal ectopic pregnancies within the sample. The outcomes of the tubal ectopic pregnancies varied, with 5.45% resulting in tubal abortion. 21.82% of cases were diagnosed as unruptured ectopic pregnancies, while the majority (65.45%) were ruptured ectopic pregnancies. Chronic ectopic pregnancies were observed in 7.27% of cases, reflecting a spectrum of pregnancy outcomes among the patients.

**Conclusion:** An ectopic pregnancy is a frequently occurring obstetric emergency that results in complications and even death during the first trimester. Identifying these situations requires a strong level of clinical suspicion, and taking prompt action is often crucial for saving lives. Therefore, understanding the patterns of the illness and promptly implementing appropriate measures are crucial for achieving positive results in such situations.

**Keywords:** ectopic pregnancy, first trimester, tubal ectopic

#### Introduction

An ectopic pregnancy happens when the fertilised egg implants and develops in a location other than the normal uterine cavity.<sup>1</sup> The fallopian tube is the most frequent location for ectopic pregnancies.<sup>2</sup> Tubal ectopic pregnancies account for roughly 95% of all ectopic pregnancies, whereas the remaining 5% occur in the ovaries, cervix, peritoneal cavities, and prior caesarean section scars.<sup>3</sup> It is a potentially fatal condition and one of the most prevalent crises in regular obstetrics practice. It affects about 2% of all pregnancies and accounts for 3.5 to 7.1% of maternal fatalities in India.<sup>4,5</sup> Ectopic pregnancies have a significant risk of causing illness and death if not detected and treated promptly in the early stages. Therefore, it is crucial to have a strong suspicion of an ectopic pregnancy in pregnant women, since they may have symptoms such as discomfort, vaginal bleeding, or other ambiguous signs.<sup>6,7</sup> The reproductive potential of a woman is negatively impacted by a delay in diagnosis and treatment, which may cause damage to one or more of the vital reproductive organs, such as the fallopian tubes, ovaries, or uterus.<sup>8</sup>

In recent decades, there has been an apparent increase in the overall occurrence of ectopic pregnancies. However, the risk of death from this condition has decreased owing to early detection and appropriate treatment. Nevertheless, a ruptured ectopic pregnancy remains a substantial factor contributing to maternal mortality in the early stages of pregnancy.<sup>9,10</sup> The occurrence of ectopic pregnancy may be attributed to many risk factors, including pelvic inflammatory illness, infertility, intrauterine contraceptive devices, tubal operations, and assisted reproductive technologies, among others.<sup>10</sup>

**Aims and objectives:** The objective of this research was to assess the clinical characteristics and prognosis of ectopic pregnancy at a tertiary care hospital.

### **Material and methods**

The present prospective observational study was conducted on pregnant women in their first trimester with ectopic pregnancy characteristics and diagnosis. The present study included a total of 60 patients were diagnosed with ectopic pregnancy. The study was conducted at Department of Obstetrics and Gynaecology, Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar, India. The study duration was August 2023 to February 2024. The Institutional Ethics Committee gave the study its approval. All enrolled patients provided written informed consent.

The study covered all prenatal clinic and labour room patients who met the selection criteria. After acquiring written informed consent from patients or attendants, prenatal clinic and labour room patients with clinical characteristics and an ectopic pregnancy diagnosis were included. Data such as name, age, etc. was recorded.

Keeping power (1-beta error) at 80% and confidence interval (1-alpha error) at 95%, the minimum sample size required was 60 patients; therefore, we included 60 patients with ectopic pregnancy in the present study.

**Inclusion criteria:** The inclusion criteria included all pregnant women in the first trimester attending the antenatal clinic and labour room of the Department of Obstetrics and Gynaecology with a confirmed diagnosis of ectopic pregnancy who were willing to participate and available for follow up were included in the present study.

**Exclusion criteria:** The exclusion criteria included all the intrauterine pregnancies and cases with other causes of hemoperitoneum. Patients not give written informed consent and unavailable for follow up were excluded in the study as study subjects.

### **Statistical Analysis**

Data thus obtained were subjected to statistical analysis by using Microsoft and SPSS version. Data were presented as frequency and percentages. Comparison of categorical variables was carried out with the help of Chi-square test. P value<0.05was considered significant.

### **Results**

Mean age of patients was in  $31.07 \pm 3.23$  years with a p value 0.01(significant).

Therefore, the incidence of ectopic pregnancy was 0.88% in our research. A total of 55 individuals were identified with tubal ectopic pregnancy, whereas 5 patients were diagnosed with non-tubal ectopic pregnancy. In the study sample of 60 patients, the age distribution shows that the majority of patients (45%) were between 25 - 30 years old, with a mean age of 31.07 years and a standard deviation of 3.23 years. Only 3.33% were below 20 years, 13.33% were between 20 and 25 years, 21.67% were aged 30-35 years, and 16.67% were over 35 years. Parity data indicated that 25% were nullipara, 36.67% were primipara, and 38.33% were multipara. Regarding referral status, 48.33% of the patients were non-referred, while 51.67% were referred from other healthcare providers. The

gestational age at the time of admission varied, with 26.67% admitted at 6 weeks or less, 55% between 6 weeks and 8 weeks, 10% between 8 weeks and 10 weeks, and none between 10 weeks and 12 weeks. For 8.33% of the patients, the gestational age was not known (Table 1).

**Table 1: Baseline Parameter of the patients**

Characteristics	Number =60	Percentage
<b>Age in years</b>		
Below 20	2	3.33%
20-25	8	13.33%
25-30	27	45.0%
30-35	13	21.67%
Above 35	10	16.67%
<b>Mean Age (years)</b>	31.07 ± 3.23	
<b>Parity</b>		
Nullipara	15	25.0%
Primipara	22	36.67%
Multipara	23	38.33%
<b>Referral Status</b>		
Non-Referred	29	48.33%
Referred	31	51.67%
<b>Gestational Age at Time of Admission</b>		
≤6 weeks	16	26.67%
6 weeks, 1 day to 8 weeks	33	55.0%
8 weeks, 1 day to 10 weeks	6	10.0%
10 weeks, 1 day to 12 weeks	0	0.0%
Not Known	5	8.33%

**Table 2: symptoms and signs**

Parameters	Number =60	Percentage
<b>Symptoms</b>		
Amenorrhea	55	91.67
Abdominal Pain	59	98.33
Vaginal Bleeding/Spotting	35	58.33
Shock	3	5.0
Fainting Attack	9	15.0
Triad	35	58.33
<b>Signs</b>		
Shock	3	5.0
Pallor	40	66.67
Hypertension	11	18.33
Abdomen Tenderness	37	61.67
Abdomen Guarding/Rigidity	31	51.67
Cervical Motion Tenderness	39	65.0
Palpable Adnexal Mass	49	81.67
Cervical Ballooning	1	1.67

Table 2 shows that among the 60 patients, a significant majority (91.67%) reported experiencing amenorrhoea, and almost all patients (98.33%) reported abdominal pain. Vaginal bleeding or spotting was observed in 58.33% of the cases, while shock and fainting attacks were less common, reported in 5% and 15% of the patients, respectively. The classic triad of symptoms (amenorrhoea, abdominal pain, and vaginal bleeding) was present in 58.33% of patients. Clinical signs revealed that 5% were in shock, 66.67% had pallor, and 18.33% had hypertension. Abdominal tenderness was noted in 61.67% of patients, and 51.67% showed abdominal guarding or rigidity. Cervical motion tenderness was observed in 65% of patients, 81.67% had a palpable adnexal mass, and cervical ballooning was a rare sign, found in only 1.67% of cases.

**Table 3: Beta-HCG levels in the patients**

Beta-HCG levels (mIU/ml)	Number =60	Percentage
<1500	21	35.0
1500-3000	4	6.67
3000-5000	4	6.67
>5000	31	51.67

The distribution of beta-HCG levels among the patients showed that 35% had levels below 1500 mIU/ml, while 6.67% had levels between 1500 and 3000 mIU/ml, and another 6.67% had levels between 300 and 5000 mIU/ml. The largest proportion of patients, 51.67%, had Beta-HCG levels exceeding 5000 mIU/ml, indicating higher levels of this hormone in a significant portion of the sample (Table 3).

**Table 4: Hemoglobin levels (gm/dl)**

Hemoglobin levels (gm/dl)	Number =60	Percentage
<5	5	8.33
5-7	13	21.67
7-10	23	38.33
>10	19	31.67

Haemoglobin levels varied among the patients, with 8.33% having severe anaemia (haemoglobin levels below 5 l). 21.67% had haemoglobin levels between 5-7 gm/dl, 38.33% had levels between 7-10 gm/dl, and 31.67% had haemoglobin levels above 10 gm/dl, indicating a range from moderate anaemia to normal haemoglobin levels within the sample (Table 4).

**Table 5: Findings on transabdominal/transvaginal sonography**

Findings on transabdominal/transvaginal sonography	Number =60	Percentage
Adnexal mass (TVS)	58	96.67%
Adnexal mass with free fluid in pelvic cavity (TVS)	47	78.33%
Mass with free fluid in peritoneal cavity (TAS)	12	20.0%

Sonographic findings revealed that 96.67% of patients had an adnexal mass detected via trans-vaginal sonography (TVS), and 78.33% had an adnexal mass with free fluid in the pelvic cavity. Additionally, 20% had a mass with free fluid in the peritoneal cavity detected through trans-abdominal sonography (TAS), indicating the presence of ectopic pregnancy in the majority of cases (Table 5).

**Table 6: Site of tubal ectopic pregnancy**

Site of tubal ectopic pregnancy	Number =55	Percentage
Ampulla	27	49.09
Isthmus	9	16.36
Fimbria	5	9.09
Isthmo-Ampullar	5	9.09

Not Known (Unruptured)	9	16.36
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Table 6 shows that the most common site for tubal ectopic pregnancies was the ampulla, accounting for 49.09% of cases. In 16.36% of cases, the isthmus was the site, while the fimbria and isthmo-ampullar regions each accounted for 9.09% of cases. In 16.36% of cases, the exact site of the ectopic pregnancy was not known, indicating a range of locations for tubal ectopic pregnancies within the sample.

**Table 7: Outcome of tubal ectopic pregnancy**

Outcome of Pregnancy	Number =55	Percentage
Tubal Abortion	3	5.45
Unruptured ectopic	12	21.82
Ruptured ectopic	36	65.45
Chronic ectopic	4	7.27

Table 7 shows that the outcomes of the tubal ectopic pregnancies varied, with 5.45% resulting in tubal abortion. 21.82% of cases were diagnosed as unruptured ectopic pregnancies, while the majority (65.45%) were ruptured ectopic pregnancies. Chronic ectopic pregnancies were observed in 7.27% of cases, reflecting a spectrum of pregnancy outcomes among the patients.

### Discussion

Ectopic pregnancy is a prevalent obstetric emergency that occurs worldwide during early pregnancy. It is a significant contributor to maternal illness and death worldwide. An ectopic pregnancy is a critical and potentially fatal condition that often occurs during the first trimester of pregnancy. Globally, it constitutes 10% of maternal death and morbidity. Ectopic pregnancies account for around 1 to 2% of all pregnancies in both industrialised and developing nations. The prevalence of ectopic pregnancy in the Southeast Asia area has shown an upward trend, ranging from 0.25% to 1.9%. The rise in occurrence has been linked to an increase in STDs, caesarean sections, ART, and advancements in diagnostic methods and healthcare infrastructure.

The occurrence rate of ectopic pregnancy in our research was 0.88%. Das et al.<sup>11</sup> found that the occurrence of ectopic pregnancy accounted for 0.95% of all births. In a recent study by Verma et al., the incidence of ectopic pregnancies was found to be 2.3%.<sup>12</sup> The primary factor influencing the diverse occurrence is believed to be the quantity of referrals. The majority of patients, 95%, were married, while the remaining 5% were single. The age distribution indicates that the largest proportion of patients (45%) fell within the age range of 25 to 30 years. The average age of the patients was 31.07 years, with a standard deviation of 3.23 years. The percentage of those below 20 years old was 3.33%, while those between 20 and 25 years old accounted for 13.33%. Additionally, individuals between 30-35 years old represented 21.67% of the total, while those over 35 years old accounted for 16.67%. In the research conducted by Dheepthikaa et al.<sup>13</sup>, the age group with the highest frequency was 26–30 years, accounting for 35.71% of the patients. Similarly, Singh et al.<sup>14</sup> observed that 53.13% of the patients were within the age range of 27–32 years. We found Parity data indicated that 25% were nullipara, 36.67% were primipara, and 38.33% were multipara. In a study by Gyamtsho et al.<sup>15</sup>, 20.19% of cases were unmarried, while 79.81% were married. The majority of the patients were multipara in studies conducted by Behera et al.<sup>16</sup> (48.4%). In our study, the gestational age at the time of admission varied, with 26.67% admitted at 6 weeks or less, 55% between 6 weeks and 8 weeks, 10% between 8 weeks and 10 weeks, and none between 10 weeks and 12 weeks. For 8.33% of the patients, the gestational age was not known. In a study by Nathet al.<sup>17</sup>, the mean gestation at the diagnosis of ectopic pregnancy was 7 weeks and 1 day.

Among the 60 patients, a significant majority (91.67%) reported experiencing amenorrhoea, and almost all patients (98.33%) reported abdominal pain. Vaginal bleeding or spotting was observed in 58.33% of the cases, while shock and fainting attacks were less common, reported in 5% and 15% of the patients, respectively. The classic triad of symptoms (amenorrhoea, abdominal pain, and vaginal bleeding) was present in 58.33% of patients. Clinical signs revealed that 5% were in shock, 66.67% had pallor, and 18.33% had hypertension. Abdominal tenderness was noted in 61.67% of patients, and 51.67% showed abdominal guarding or rigidity. Cervical motion tenderness was observed in 65% of patients, 81.67% had a palpable adnexal mass, and cervical ballooning was a rare sign, found in only 1.67% of cases. In research conducted by Ranji et al.<sup>18</sup>, the most prevalent symptoms of ectopic pregnancy were amenorrhoea (95.8%), followed by vaginal haemorrhage (41.2%), abdominal pain (62.2%), fainting attacks (11.8%), and the triad (27.7%). In research conducted by Tahminaetal.<sup>19</sup>, the predominant symptoms seen were abdominal discomfort (75%), followed by cervical motion soreness (58.3%), and hemodynamic shock (26.4%).

The ampulla was the most frequent location for tubal ectopic pregnancies, representing 49.09% of cases. The isthmus was the location in 16.36% of instances, whereas the fimbria and isthmo-ampullar areas each represented 9.09% of cases. Approximately 16.36% of cases had an unknown, precise location for the ectopic pregnancy, suggesting a variety of possible sites for tubal ectopic pregnancies within the sample. According to research conducted by Behera et al.<sup>16</sup>, tubal pregnancies on the right side are more prevalent than those on the left side. The ampulla of the fallopian tube was the most frequent location for ectopic pregnancy, accounting for 51.6% of cases. 16.1% of the patients exhibited isthmic tubal pregnancy, whereas 6.5% of the cases were diagnosed with cornual pregnancy. The occurrence of ovarian pregnancies was just 3.2%. In research conducted by Sujataet al.<sup>20</sup>, it was found that the majority of the cases (66.5%) were ampullary pregnancies. The isthmus accounted for 11% of the cases. Tubal abortion occurred in 5% of cases. There was a single instance of ovarian pregnancy and another instance of heterotrophic pregnancy. 49% of the cases included left-sided ectopic pregnancy, whereas 47.5% involved right-sided ectopic pregnancy.

The incidence of ruptured tubal ectopic pregnancy was 63.6% (42 cases), while unruptured tubal ectopic pregnancy accounted for 21.2% (14 instances). Chronic ectopic pregnancy represented 7.5% (5 cases) of the cases, and tubal abortion accounted for 6.06% (4 cases). In research conducted by Sujata et al.<sup>20</sup>, it was shown that 75% of the patients had discomfort upon cervical movement. Ultrasound detected a ruptured ectopic pregnancy in 67.5% of cases, an unruptured ectopic pregnancy in 5% of cases, and an adnexal mass in 25% of cases.

**Limitation of study:** The small sample size and short duration of the study.

### **Conclusion**

An ectopic pregnancy is a frequently occurring obstetric emergency that results in complications and even death during the first trimester. Identifying these situations requires a strong level of clinical suspicion, and taking prompt action is often crucial for saving lives. Therefore, understanding the patterns of the illness and promptly implementing appropriate measures are crucial for achieving positive results in such situations.

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