

## TRENDS IN ECTOPIC PREGNANCY: A RETROSPECTIVE OBSERVATIONAL STUDY

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## ABSTRACT

**Objectives:** An ectopic pregnancy occurs when fetal tissue implants outside the uterus or attaches to an abnormal/scarred portion of the uterus. If not diagnosed and managed promptly, it is associated with significant morbidity and mortality. The objective of the study is to determine the incidence of ectopic pregnancy and analyze its associated risk factors, clinical presentations, and management provided.

**Methods:** A retrospective observational study of patients who were diagnosed with ectopic pregnancy and managed at ABVGMC, Vidisha, over a period of 1 year was done.

**Results:** A total of 33 patients with ectopic pregnancy were included, with an incidence of 14.47/1000 deliveries. Out of them, 66.67% were multigravida, and 75.70% belonged to the 21–30 years age group. Of all risk factors, pelvic inflammatory disease (60.60%) was the most common, followed by the previous cesarean section (24.24%). The predominant symptom was amenorrhea (96.96%), followed by abdominal pain (75.75%) and bleeding per vaginum (69.69%). More than half of the patients presented with classical triads. On examination, adnexal fullness with tenderness and cervical motion tenderness were elicited in most. The most common type of ectopic pregnancy was ampullary tubal ectopic (96.96%). 57.57% of cases presented in a ruptured state. The mainstay of treatment was salpingectomy, and there was no mortality.

**Conclusion:** The incidence of ectopic pregnancy is alarming in developing countries due to the high prevalence of pelvic inflammatory disease and cesarean section. Lack of early diagnosis and management led to ruptured ectopic, due to which conservative management was rendered impossible.

**Keywords:** Ectopic, Maternal mortality, Trends in ectopic pregnancy, Fertility conservation, Salpingectomy.

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## INTRODUCTION

Following fertilization and fallopian tube transit, the blastocysts normally implant in the endometrial lining of the uterine cavity. Implantation elsewhere is considered ectopic [1]. If not diagnosed and managed promptly, it is associated with significant morbidity and mortality. Worldwide, approximately 1–2% of all naturally conceived pregnancies result in ectopic implantation [2]. In India, the total incidence of ectopic pregnancy is 0.91–2.3% [3]. In India, it is one of the leading causes of maternal mortality in early pregnancy, contributing 3.5–7.1% of maternal mortality [4].

An ectopic pregnancy may present with non-specific symptoms such as lower abdominal pain and vaginal bleeding, most of the times clinically similar to appendicitis, urinary calculi, early pregnancy loss, trauma, ovarian torsion, adnexal abscess, rupture of ovarian cyst. The classic clinical triad of ectopic pregnancy is pain, amenorrhea, and vaginal bleeding. The current standard for diagnostics is ultrasound (USG) imaging-transvaginal and transabdominal and beta-human chorionic gonadotropin (hCG) level monitoring. Of ectopic pregnancies, the ampulla of the fallopian tube is the most common site. The common risk factors for ectopic pregnancy are pelvic inflammatory disease, pelvic surgeries, Koch's abdomen, surgeries for sterilization, fertility restoration, and prior tubal pregnancy.

For all ectopic pregnancy sites, management is influenced by pregnancy viability, gestational age, maternal health, desire for future fertility, physician skills, and available resources. Knowledge of trends of ectopic pregnancy will help in the early diagnosis and management of ectopic pregnancy, can prevent the disastrous consequences, and preserve

fertility.

## METHODS

After getting ethical approval from the IEC, ABVGMC Vidisha, this retrospective observational study was held in the tertiary care center of central India in the Department of Obstetrics and Gynaecology of Atal Bihari Vajpayee Medical College Vidisha (MP). All the patients who were admitted to the hospital from April 2023 to March 2024 with a diagnosis of ectopic pregnancy were included in this study. All the data of this study was collected from the case records of the patients and retrieved from the medical records department of the hospital. A total of 33 patients were included in this study who were fulfilling the inclusion criteria. Moreover, data on the total number of deliveries that occurred during the study time period was collected from labor room record registers.

Any woman in her early pregnancy, who presented with a complaint of abdominal pain and/or vaginal bleeding, was suspected to be ectopic pregnancy as a differential diagnosis. These women were subjected to a confirmatory test for ectopic pregnancy, which is urine beta hCG level and transvaginal sonography or transabdominal sonography. The women with a positive urine pregnancy test (UPT) with USG suggestive of extrauterine pregnancy were included in this study. All the women with positive UPT and USG suggesting intrauterine pregnancy or pregnancy of unknown location were excluded from this study.

Data collection of the included subjects was done based on the age of the patient, parity of patient, clinical symptoms at the time of presentation, previous history of any surgery, previous history of any

ectopic pregnancy, history of any pelvic infection, type of ectopic (site and ruptured/unruptured), management and outcome.

Treatment modalities of the patient were opted based on hemodynamic stability, site and size of ectopic pregnancy, presence of cardiac activity of fetus and available resources, and desire to preserve fertility.

The patients of ruptured ectopic pregnancy who were hemodynamically unstable were immediately resuscitated and taken for the emergency laparotomy along with blood transfusion.

In a tertiary care center of central India such as ours, most of the patients present in complicated or the later phase of ectopic pregnancy, so medical or expectant management is less likely to have opted. Another reason for the same is the very high loss of follow-up. All the patients were managed accordingly.

The analysis of the study was done using mean, standard deviation, and T-test of quantitative data. Moreover, qualitative data were assessed by percentage and Chi-square test.

## OBSERVATION AND RESULTS

In this study, a total of 33 patients with ectopic pregnancy were included. During the study period of 1 year from April 2023 to March 2024, a total of 2280 deliveries occurred in the department. Hence, the incidence of ectopic pregnancy was 14.47/1000 deliveries. Out of them, 66.67% were multigravida and belonged to the 21–30 years age group (75.70%). 73% of the patients presented to the hospital within 8 weeks of the period of gestation, and the rest 27% presented within 8–12 weeks of the period of gestation (Table 1).

In the above table, out of all risk factors, pelvic inflammatory disease (60.60%) was the most common, followed by the previous cesarean section (24.24%). Three patients (9.09%) out of 33 were the known cases of Koch's abdomen. Three patients (9.09%) had cases of laparoscopic tubal ligation failure, one had a history of recanalization, and one patient had a previous history of ectopic pregnancy.

As shown in Table 2 the most common type of ectopic pregnancy was ampullary tubal ectopic (96.96%), out of which 58% was of the right side tubal, 36% was of the left side tubal ectopic. One patient (3.03%) had scar ectopic. One patient (3.03%) had cornual ectopic pregnancy. At the time of surgery, 50% of cases were found in a ruptured state, and 37% were found in an unruptured state. The remaining 13% had tubal abortion.

The predominant symptom was amenorrhea (96.96%), followed by abdominal pain (75.75%) and bleeding per vaginum (69.69%). About 17 patients (51.51%) presented with a classical triad that is amenorrhea, pain in the abdomen, and bleeding per vaginum. Acute shock was seen in 5 patients (15.15%).

On examination, adnexal fullness with tenderness and cervical motion tenderness were elicited in most.

Resuscitation and laparotomy with hand-in-hand salpingectomy were done for all tubal ectopic pregnancies. For scar ectopic pregnancy, resuscitation and excision of scar, removal of product of conception followed by repair of the uterus was done. A total of 28 (84.84%) patients needed a blood transfusion. None of the patients needed intensive care unit (ICU) care (Graph 1).

There was no mortality. A total of 3 patients (9.09%) had episodes of fever in the post-operative period. One patient had a wound gaping. There was no evidence of sepsis or any other hospital-acquired infection.

## DISCUSSION

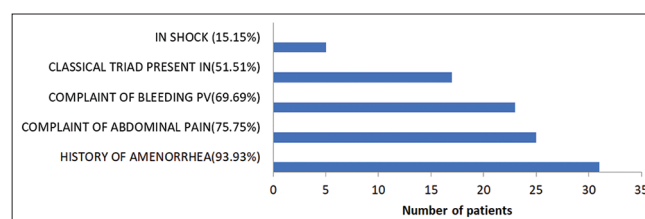
During the study period of 1 year, the incidence of ectopic pregnancy in our study was 1.45%, which is in the range of 1–2% as seen in other similar studies [3,5]. The incidence of ectopic pregnancy is rising due

**Table 1: Parity, age and gestation age in cases of ectopic pregnancy**

Parity/ Age/ Gestation Age	No. of cases	Percentage
Multigravida	20	66.67 %
Primigravida	13	33.33%
Age group 21-30 years	25	75.70%
Age more than 30 years	08	24.30%
Period of gestation <8 week	24	73%
Period of gestation 8 to 12 weeks	09	27%

**Table 2: Risk factors of ectopic pregnancy**

Risk factors	Number	Percentage
Pelvic inflammatory disease	20	60.60
Previous LSCS	8	24.24
Koch's abdomen	3	9.09
Laparoscopic tubal ligation failure	3	9.09
History of recanalization	1	3
Previous history of ectopic pregnancy	1	3



**Graph 1: Clinical presentation**

to an increase in incidences of pelvic inflammatory diseases, sexually transmitted diseases, cesarean section, other pelvic surgeries, assisted reproductive technology, and induced abortion.

About 75% of women in our study group belonged to the age group of 21–30 years, which is similar to Prasanna *et al.* 74% [5], but on the other hand, the study of Weström *et al.* [6] in the USA says that the incidence of ectopic pregnancy increases with an increase in age. In India, the majority of females get married around this age; usually, females are reproductively more proficient at around 20–30 years of age, so most of them are conceiving during this phase of life.

In our study, 66.67% of patients were multiparous, which is also seen in another study [7]. This might be because of more chances of exposure to sexually transmitted infections, multiple abortions, and tubal damage.

The majority of the patients 73% presented to the hospital within 8 weeks of the period of gestation, which is closer to the study of Mullany *et al.* 75% [8], as by this period of gestation, patients are getting clinical symptoms of ectopic pregnancy, due to advancement of diagnostic modalities it is very easily diagnosed in the early phase.

Of all the risk factors, pelvic inflammatory disease is the most common risk factor, serving 60.6% of the contribution. In Nalini *et al.* [7] study, PID is the most common cause of ectopic pregnancy, but it only contributes 19.5%. Whereas a study done by Akande *et al.* PID was associated with 30–50% of ectopic pregnancies, where chlamydia trachomatis was the most common causative agent [9]. In developing countries, the prevalence of pelvic inflammatory disease is high, and the availability of better antibiotics permits the patency of tubes with ciliary damage of the fallopian tube following infection, which results in a higher incidence of ectopic pregnancy. The second most common risk factor was the previous cesarean section which was 24.24% which is similar to the finding of the Bowman *et al.* study that is 26% [10]. The previous cesarean section also increases the risk of cesarean section

scar pregnancy, which occurs following implantation of the product of conception over the previous cesarean scar or hysterotomy scar, according to Panelli *et al.*, [11] the number of previous scars does not matter, but it mostly occurs after elective LSCS, which is explained by the impaired healing of an unprepared lower uterine segment.

In our study, 3 patients (9.09%) out of 33 were the known cases of Koch's abdomen. Intraabdominal infection hampers the ciliary activity of the fallopian tube, causing mostly tubal pregnancy. Three patients (9.09%) were the case of laparoscopic tubal ligation failure, which is also seen in the study of Prasanna *et al.* 6% [5]. One patient had a history of recanalization. Formation of fistulas, partial tube blockage, and friable tube increases the risk of tubal pregnancy.

In our study, one patient had a previous history of ectopic pregnancy. It increases the risk of ectopic pregnancy in successive pregnancies due to the pathology of the fallopian tube.

The other risk factor of ectopic pregnancy found in other different studies is the history of previous abortion 12.9%, according to Khaleeqe *et al.* [12], which is due to post-abortion infection causing tubal damage. Pregnancies with intrauterine contraceptive devices are also a risk factor at 6% [5].

In this study, the predominant symptom was amenorrhea (96.96%), followed by abdominal pain (75.75%) and bleeding per vaginum (69.69%). This is similar to the study of Gupta *et al.* [13]. About 17 patients (51.51%) presented with a classical triad that is amenorrhea, pain in the abdomen, and bleeding per vaginum. Acute shock was seen in 5 patients (15.15%).

The most common type of ectopic pregnancy was ampullary tubal ectopic (96.96%). Some other studies also stated that the ampullary tubal ectopic is the most common site as it is the thickest portion of the fallopian tube, providing better space for implantation, but the incidence is lower at 37.33% [7] as compared to our study. In this study, out of ampullary tubal ectopic, 58% was of the right side tubal, and 36% was of the left side tubal ectopic.

One patient (3.03%) had a scar ectopic. One patient (3.03%) had cornual ectopic pregnancy.

At the time of surgery, 50% of cases were found in a ruptured state, and 37% were found in an unruptured state. The remaining 13% had tubal abortion. This is due to the lack of early diagnosis, so by the time the patient comes to the tertiary care center, it already becomes in a ruptured state.

As in our institute, laparoscopy was not available, so resuscitation and laparotomy with hand-in-hand salpingectomy were done for all tubal ectopic pregnancies. As most of the patients presented in the ruptured stage, laparotomy was the mainstay of treatment. For scar ectopic pregnancy, resuscitation and excision of scar, removal of product of conception followed by repair of the uterus was done.

A total of 28 (84.84%) patients needed a blood transfusion. This is close to the study of Wakankar and Kedar [14], as most of the patients presented in the ruptured stage, which leads to internal hemorrhage and blood loss. Luckily, none of the patients needed ICU care.

There was no mortality. A total of 3 patients (9.09%) had episodes of fever in the post-operative period. One patient had a wound gaping, which can be minimized by maintaining proper asepsis condition, antibiotic coverage, personal hygiene, proper hydration, and diet. There was no evidence of sepsis or any other hospital-acquired infection.

## CONCLUSION

The incidence of ectopic pregnancy is alarming in developing countries due to the high prevalence of pelvic inflammatory disease and cesarean section. Lack of early diagnosis and management led to ruptured ectopic, due to which conservative management was rendered

impossible. In our study, the most common risk factor associated was pelvic inflammatory disease in developing countries; the prevalence of pelvic inflammatory disease is high, and the availability of better antibiotics permits the patency of tube with ciliary damage of the fallopian tube following infection, so we should be aware people about the hygiene and barrier method of contraception. As the prevalence of cesarean section increases, which is also a major risk factor for ectopic pregnancy, one should judiciously opt for this method of delivery.

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## AUTHORS' CONTRIBUTIONS

Dr. Aarti Sharma: Study design, review of literature, data analysis, and revision of draft; Dr. Divyanshu Choudhary: Concept, study design, and revision of draft; Dr. Rahil Kumar Sharma: Concept, daily guidance, data analysis, and revision of draft; Dr. Dileep Dandotiya: Formal analysis, validation, and supervision.

## CONFLICTS OF INTEREST

None declared.

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Nil.

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