

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20232952>

## Original Research Article

# Analysis of ectopic pregnancy in a tertiary care hospital

Sunanda N.\*, Impana M.

Department of Obstetrics and Gynecology, Mysore Medical College and Research Center, Mysore, Karnataka, India

**Received:** 11 August 2023

**Accepted:** 02 September 2023

**\*Correspondence:**

Dr. Sunanda N.,

E-mail: [sunanda\\_n@rediffmail.com](mailto:sunanda_n@rediffmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

**Background:** Ectopic pregnancy is a life threatening obstetrics emergency in early trimester associated with increased risk of morbidity and mortality if not timely intervened. High index of clinical suspicion is required for early diagnosis specially in reproductive age group women presenting with history of amenorrhoea. Aim was to analyse the incidence of ectopic pregnancy, its risk factors, clinical presentation and management of ectopic pregnancy.

**Methods:** A retrospective observational study was conducted on ectopic pregnancy cases admitted in a tertiary care institute over a period of 5 years from January 2018 to December 2022. A total of 221 cases of ectopic pregnancy were analysed for parameters like age, parity, gestational age, clinical presentation, risk factors, intervention and outcome.

**Results:** There were 221 ectopic pregnancy cases during the study period with incidence of 4.3/1000 deliveries. The mean age was 24 years with the mean gestational age of  $6.83 \pm 1.25$  weeks. The commonest risk factor identified was any previous pelvic surgeries (49.32%), PID (11.76%), history of abortion and use of IUCD (8.14%). The triad of ectopic pregnancy (pain abdomen, history of amenorrhoea, bleeding PV) was found in 35.29%. Ectopic pregnancy was ruptured in 148 cases (66.96%) and unruptured in 73 cases (33.03%). Majority of the ectopic pregnancy was tubal ectopic and most common site was Ampulla (47.06%) followed by isthmus (23.98%). 96% of the cases were managed by surgical intervention and two maternal deaths were found during the study period.

**Conclusions:** Proper evaluation of risk factors and early diagnosis will help in preserving fertility and also reducing morbidity and mortality. Majority of the cases were in ruptured condition, rendering conservative management was impossible. Therefore awareness of its determinants can aid in early detection of more number of such cases in unruptured condition especially in peripheral center, leading to early referral.

**Keywords:** Ectopic pregnancy, Early diagnosis, Ruptured, Salpingectomy

### INTRODUCTION

Ectopic pregnancy is defined as implantation and development of fertilised ovum outside, other than lining of the uterine cavity.<sup>1</sup> It is a life-threatening condition that every OBGYN encounters in her/his practice. Diagnosis of ectopic pregnancy is a challenge for obstetrician and gynaecologist due to its bizarre clinical presentation, from asymptomatic cases to acute abdomen and hemodynamic shock.<sup>2</sup> This often leading to delay in diagnosis with disastrous consequences. It is a significant cause of

morbidity and mortality in women of reproductive age group, if not recognised and treated early.

An ectopic pregnancy gaining more importance because of its increasing incidence and significantly impacting on women's fertility.<sup>3</sup> Incidence of ectopic pregnancy among all pregnancies is about 0.25-2% worldwide, which can occur in any sexually active women of reproductive age.<sup>4</sup> Globally the incidence of ectopic pregnancy has been on the rise over the past few decades because of early detection, increased incidence of pelvic inflammatory disease (PID), increase in ovulation induction and other

artificial reproductive technology (ART), previous pelvic and tubal surgeries. Though the incidence of ectopic pregnancy are on rise worldwide, but case fatality rate has declined because of early detection in unruptured condition and effective management.<sup>5</sup> Hence, worldwide, the focus has shifted from maternal mortality due to ectopic pregnancy to preserving fertility by diagnosing the condition at an early salvageable stage. This still remains a challenge in developing countries where preventing mortality remains the main concern.

Ectopic pregnancy is one of the most common causes of first trimester maternal death in developing countries, accounting upto 3.5-7.1% of all maternal deaths.<sup>6,7</sup> High index of clinical suspicion is required for early diagnosis specially in reproductive age group women because triad of pain abdomen, bleeding per vagina and amenorrhoea is present in only 30-40% of cases. Hence once should be ectopic minded in any reproductive age group women because they may present with non-specific symptoms, even unaware of an ongoing pregnancy or might present with haemodynamic shock. Aim was to analyse the incidence of ectopic pregnancy, its risk factors, clinical presentation and management of ectopic pregnancy.

## METHODS

This retrospective study was conducted at Cheluvaba hospital attached to Mysore medical college and research institute, Mysore a tertiary care teaching hospital in Karnataka which gets multiple referrals from surrounding peripheral areas and other hospitals. The study was approved by the Institute Ethics Committee. In the study we have analysed 221 cases of ectopic pregnancy admitted in our institute during a period of five year between 1<sup>st</sup> January 2018 to 31<sup>st</sup> December 2022 keeping in mind the objective to identify the trends of the condition, including risk factors involved, the varied presentations, age group affected and management provided.

The case sheets of patients with ectopic pregnancy were traced through labour ward registers and operation theatre registers. Information regarding total number of deliveries during study period, details of demographic characteristics, presenting clinical symptoms, detail obstetric history, risk factors for ectopic pregnancy, use of contraception, history of genital infection, site of ectopic pregnancy, line of management as well as morbidity and mortality were obtained from case sheets from medical records department.

### *Inclusion criteria*

All women with confirmed ectopic pregnancies were included the study.

### *Exclusion criteria*

There were no exclusion criteria.

## RESULTS

In our study, 221 cases of ectopic pregnancy were encountered, out of 50,970 deliveries over 5 year, giving incidence of 4.33 per 1,000 deliveries. In all cases urine pregnancy test and  $\beta$ HCG was done as provisional diagnosis and USG helped in diagnosing ectopic pregnancy. Gestational age ranges between 4-10weeks, and the mean gestational age was found to be 6.83 weeks.

Table 1 shows age wise distribution of the study population showed majority were of the reproductive age group 25–30 years and 18-24 years. Table 2 shows obstetric score (Gravida) distribution of ectopic pregnancy cases. Among which 48.8% were with G 2 (multiparous).

**Table 1: Age wise distribution of the study population.**

Age	Frequency	Percentage (%)
18-24	92	41.63
25-30	94	42.53
>30	35	15.84

**Table 2: Obstetric score (Gravida) distribution of ectopic pregnancy cases.**

Obstetric score (gravida)	Frequency	Percentage (%)
G1	69	31.22
G2	108	48.87
G3	31	14.03
Above G3	13	5.88

**Table 3: Distribution of risk factors in the study population.**

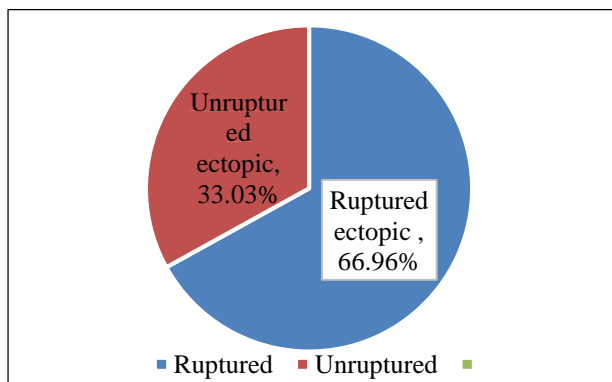
Risk factors	Frequency	Percentage (%)
Previous abortion/MTP	18	8.14
ART	08	6.78
PID	26	11.76
IUCD	18	8.14
Pelvic surgery	52	23.53
Previous C-section	57	25.79
Previous ectopic	4	1.8
No risk	31	14

Distribution of risk factors in the study population revealed previous history of pelvic surgery (49.32%) among which previous C-section (25.79%) was found to be the most common risk factor. Previous history of pelvic inflammatory disease (PID) was found in 11.76% of women, whereas in 14% cases, no risk factors could be identified. Other important risk factors noted were previous abortion, IUCD and history of infertility treatment (Table 3).

Table 4 showed the various clinical presentation of these women. Classic triad of amenorrhea, abdominal pain and vaginal bleeding was found in only 35.29% of women. Abdominal pain was the most common symptom (28.96%) followed by amenorrhea and vaginal bleeding. 7.24% of the cases presented with no symptoms and was diagnosed with USG. 4 patients presented with acute abdomen posing a diagnostic challenge.

**Table 4: Showed the various clinical presentation of these women.**

Clinical presentation	Frequency	Percentage (%)
Triad	78	35.29
Shock	27	12.22
Pain abdomen	64	28.96
Bleeding PV	21	9.5
Amenorrhea	11	4.98
Asymptomatic	16	7.24
Acute abdomen	4	1.81



**Figure 1: Type of ectopic pregnancy.**

Figure 1 shows type of ectopic pregnancy. A total of 148 (66.96%) ruptured ectopic pregnancy and 73 (33.03%) unruptured ectopic cases. Majority of the cases were managed surgically.

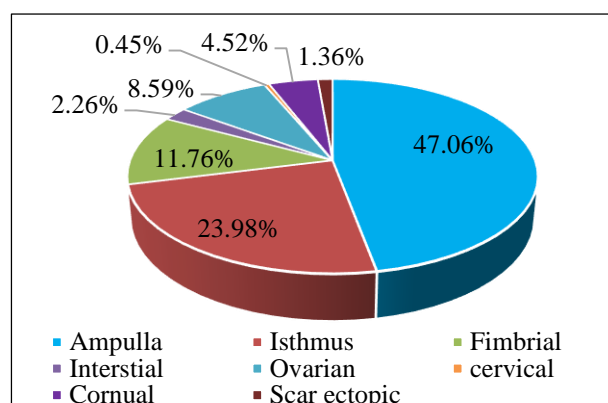
**Table 5: Summary of different treatment modalities done in our study group.**

Intervention	Frequency	Percentage (%)
Partial salpingectomy	95	42.98
Total salpingectomy	100	45.24
Salpingoophorectomy	8	3.61
Medical management	7	3.16
Hysterectomy	2	0.9
Corneal resection	7	3.16
Scar ectopic	2	0.90

Table 5 summarizes the different treatment modalities done in our study group seven women were found suitable for medical and expectant management. In

total, 214 out of 221 women were managed by surgical approach which also includes failed medical management. Salpingectomy was the most commonly performed operation (88.23%).

Among tubal ectopic pregnancy, most common site was ampulla (47.06%) followed by isthmus (23.9%). Extra tubal ectopic like ovarian ectopic seen in 8.5%. In the study there was 1 case if cervical ectopic which is very rare (Figure 2).



**Figure 2: Site of ectopic pregnancy.**

Blood transfusion needed in 47 (21.27%) cases. 27 (12.22%) patients required intensive care unit admission in the post-operative period and had prolonged hospital stay. There was 2 mortality cases during study period (Table 6).

**Table 6: Morbidity and mortality associated with ectopic pregnancy.**

Morbidity and mortality	Frequency	Percentage (%)
HDU admission	118	53.39
Blood transfusion	47	21.27
ICU admission	27	12.22
Prolong stay in hospital	27	12.22
Acure renal failure	2	0.90
Mortality	2	0.90

**DISCUSSION**

The first known description of anectopic pregnancy is by Al-Zahrawi in the 11<sup>th</sup> century as cause of maternal death. Not surprisingly, it is still one of the leading causes of maternal death in early pregnancy.<sup>7,8</sup> Incidence of ectopic pregnancy has definitely increased over the last decade, probably attributed to better diagnostic modalities. In the present study, we found an incidence of 4.33/1000 deliveries. Comparing incidences found in other studies, Mufti et al in 2012 found incidence of 3.99/1000 deliveries and by Shetty et al showed 5.6/1000 deliveries and by Mehata et al reported incidence of 30.2/1000 deliveries.<sup>9-11</sup> Royal College of Obstetrics and Gynaecologist (RCOG)

in their guidelines stated incidence of ectopic pregnancy in UK was 11/1000 deliveries.<sup>12</sup> Demographic characteristics in this study, such as age group, women between 18–30 years being most commonly affected. Similar study conducted by Soren et al also reported age group between 21-30 years.<sup>13</sup> On the contrary, Rubin et al in USA reported incidence of ectopic pregnancy increasing with age.<sup>14</sup> This is because in India, most women marry at an early age and finish child bearing in an early age and fewer pregnancies are seen above 30 years of life. Most mean gestational age was around 6.83 weeks which is comparable to study carried by Wakankar et al.<sup>15</sup>

Different studies show different associations between parity and ectopic pregnancy. In some studies primigravida are highest affected whereas some have shown third or fourth gravida to be most affected.<sup>13,16</sup> In our study we found parous women presenting more with ectopic pregnancy, of which women with previous one child comprised the majority.

Upon evaluating various risk factors for ectopic pregnancy, it was found that the most common cause was previous pelvic surgery. Among previous pelvic surgery, previous caesarean section was more common. Therefore tabulated this as a separate risk factor. This finding was not so uncommon as also found by Wakankar et al and Ranji et al where LSCS was the most common risk factor associated with ectopic pregnancy.<sup>15,17</sup>

PID is a known risk factor of ectopic pregnancy, PID following gonococci, chlamydial and other bacterial infection cause 3.3-6 fold increased risk of ectopic pregnancy. In our study, past history of PID was present in 11.76% of women whereas in Rose et al the incidence of PID as a risk factor was 34.4%.<sup>18</sup> A strong association between Chlamydia infection and tubal pregnancy was found by Brunham et al.<sup>19</sup> So a recent change in sex life can cause pelvic inflammation and tubal damage in younger age groups causing more incidence of ectopic pregnancy in young. In the present study IUCD was used by 18 patients (8.14%). An incidence of 7.69% ectopic pregnancy were quoted in relation to the use of intrauterine devices by Devi et al corroborating to recent concept that if pregnancy occurs with IUCD *in situ*, it is most likely ectopic.<sup>20</sup> Various studies showed previous abortion to be the most common risk factor, accounting for 17–31% of all ectopic pregnancies.<sup>9–11,16</sup> We found 8.14% of our study population had a history of abortion. Advancements in the field of reproductive medicine and usage of ovulation induction drugs have increased the overall incidence of ectopic pregnancies. 6.78% of women in our study were treated for infertility with ART. Infertility and its treatment have surfaced as a newer and significant risk factor for ectopic pregnancy over the years, from 8% in 2012 to as high as 31% in 2018.<sup>9,17</sup> History of previous ectopic pregnancy was elicited in 1.8% of our cases, comparable to other similar studies in India. Risk factors were unidentified in 14% of cases in this study.

The classic triad of ectopic pregnancy presentation was present in less than half of the cases 35.29%. Studies by Srivastava et al and Ranji et al show that classic triad was present in only 27.7% and 31.9% of study population respectively.<sup>16,17</sup> Abdominal pain was the most prominent symptom found in 28.96% of the cases, which unfortunately is a vague symptom. Vaginal bleeding was seen in 9.5% women, a symptom which on its own is not of much help in diagnosing ectopic pregnancy. Women of reproductive age group presenting with amenorrhea makes possibility of pregnancy come into the picture early and helps in further diagnosis. As most of the ectopic pregnancy cases we received were ruptured ectopic, pallor, adnexal and abdominal tenderness with cervical motion tenderness were the most common clinical signs. Acute shock was present in 12.22% of the cases. 66.96% of our study population had ruptured ectopic pregnancies, whereas study by Yadav et al found the incidence of ruptured ectopic as 82.50%.<sup>4</sup> Our institute being a referral center, many cases were referred here in ruptured state. This showed the lack of early diagnosis of ectopic pregnancies at periphery. We had a 33.03% cases of unruptured ectopic pregnancies. The site of ectopic pregnancy in our cases were no different from the expected, with ampulla being the most common site in 47.06% cases, similar to other studies. Cornual and interstitial were less common tubal ectopic pregnancy. Extra tubal ectopic pregnancy with very less incidence.

Management of ectopic pregnancy is either lifesaving or targets fertility preservation. Majority of the women in this study received surgical management (96%), laparotomy being the most common surgery performed. In 88.23% salpingectomy was done, while salpingo-oophorectomy had to be done in 3.61% cases. Different studies over time have shown that open salpingectomies were done in 70–90% of all ectopic pregnancies.<sup>13,17</sup> We had managed 7 patients successfully by nonsurgical management which included both medical and expectant management according to their eligibility criteria. Similar results of previous studies for example 1.75% by Majhi et al and 2.5% by Mehta et al.<sup>21,11</sup>

21.27% required blood transfusion which was much lesser comparable to the finding of Wakankar et al where 84.61% women required transfusion.<sup>15</sup> A high number of ruptured ectopic cases can justify need of blood transfusion in our study.

## CONCLUSION

Proper evaluation of risk factors and early diagnosis will help in preserving fertility and also reducing morbidity and mortality. Majority of the cases were in ruptured condition, rendering conservative management was impossible. Therefore awareness of its determinants can aid in early detection of more number of such cases in unruptured condition especially in peripheral centre, leading to early referral.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Mummert T, Gnugnoli DM. Ectopic pregnancy. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2022.
2. Berek JS, Berek DL. Berek and Novak's Gynecology. 16th ed. USA: Lippincott, Williams & Wilkins, A Wolters Kluwer Business; 2020:817-821.
3. Centers for Disease Control and Prevention (CDC). Ectopic pregnancy-United States, 1990-1992. MMWR Morb Mortal Wkly Rep. 1995;44(3):46-8.
4. Yadav A, Prakash A, Sharma C, Pegu B, Saha MK. Trends of ectopic pregnancies in Andaman and Nicobar Islands. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(1):15-20.
5. Elson CJ, Salim R, Potdar N, Chetty M, Ross JA, Kirk EJ on behalf of the Royal College of Obstetricians and Gynaecologists. Diagnosis and management of ectopic pregnancy. *BJOG.* 2016;123(13):e15-e55.
6. Tahmina S, Daniel M, Solomon P. Clinical analysis of ectopic pregnancies in a tertiary care centre in southern India: a six-year retrospective study. *J Clin Diagn Res.* 2016;10(10):QC13-6.
7. Department of Health. In: Drife J, Lewis G, editors. Why Mothers Die: A Confidential Enquiry into the Maternal Deaths in the United Kingdom. Norwich, UK: HMSO; 2001:282
8. Shah P, Shah S, Kutty RV, Modi D. Changing epidemiology of maternal mortality in rural India: time to reset strategies for MDG-5. *Trop Med Int Health.* 2014;19(5):568-75.
9. Mufti S, Rathe S, Mufti S, Rangrez RA, Khalida W. Ectopic pregnancy: an analysis of 114 cases. *JK Practitioner.* 2012;17(4):20-3.
10. Shraddha Shetty K. A clinical study of ectopic pregnancies in a tertiary care hospital of Mangalore, India. *Innovat J Med Health Sci.* 2014;4(1):305-9.
11. Mehta A, Jamal S, Goel N, Ahuja M. A retrospective study of ectopic pregnancy at a tertiary care centre. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(12):5241-6.
12. Diagnosis and Management of Ectopic Pregnancy: Green-top Guideline No. 21. *BJOG : an international J Obstet Gynaecol.* 2016;123(13):e15-e55.
13. Soren M, Patnaik R, Sarangi BK. A clinical study on ectopic pregnancy. *Int J Res Med Sci.* 2017;5:4776-82.
14. Rubin GL, Peterson HB, Dorfman SF, Layde PM, Maze JM, Ory HW, et al. Ectopic pregnancy in USA 1970 through 1978. *JAMA.* 1983;249(13):1725.
15. Wakankar R, Kedar K. Ectopic Pregnancy-rising Trend at Indira Gandhi Government Medical College, Nagpur. *Int J Sci Stud.* 2015;3(5):18-22.
16. Shrivastava M, Parashar H, Modi JN. A clinical study of ectopic pregnancy in a tertiary care centre in Central India. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(6):2485-90.
17. Ranji GG, Usha Rani G, Varshini S. Ectopic pregnancy: risk factors, clinical presentation and management. *J Obstet Gynaecol India.* 2018;68(6):487-92.
18. Jophy R, Thomas A, Mhaskar A. Ectopic pregnancy 5 years' experience. *J Obstet Gynecol India.* 2002;52(4):55-8.
19. Brunham RC, Peeling R, Maclean I, Kosseim ML, Paraskevas M. Chlamydia Trachomatis-associated ectopic pregnancy: serologic and histologic correlates. *J Infect Dis.* 1992;165(6):1076-81.
20. Savitha DY. Laparoscopic treatment of ectopic pregnancy. *J Obst Gyn India.* 2000;50:69.
21. Majhi AK, Roy N, Karmakar KS, Banerjee PK. Ectopic pregnancy - an analysis of 180 cases. *J Indian Med Assoc.* 2007;105(6):308-12.

**Cite this article as:** Sunanda N, Impana M. Analysis of ectopic pregnancy in a tertiary care hospital. *Int J Reprod Contracept Obstet Gynecol* 2023;12:3086-90.