

## Original research article

## Incidence, Risk, and Management of Ectopic Pregnancy in a Tertiary Care Facility: A cross sectional analysis

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### Abstract

**Aim:** To study the incidence, risk factors, clinical features and management of ectopic pregnancies.

**Methods:** This observational study was carried out in the Department of Obstetrics and Gynecology, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India. Total 120 cases were diagnosed with ectopic pregnancy.

**Results:** The majority of the patients, 61 (50.83 percent), were between the ages of 20 and 25. 83.33 percent of the patients were under the age of 30. The majority of the patients (60 percent) were from a lower socioeconomic class. The majority of the patients were multiparous, with 89 (74.17 percent) being multiparous. The fallopian tube 109 was the most prevalent location of ectopic pregnancy (90.84 percent). Pelvic inflammatory disease was the most prevalent risk factor (52.33 percent), followed by H/o previous abortion (22.5 percent) and H/o previous abdominopelvic surgery (tubal ligation, LSCS, and appendectomy) (16 percent) (13.33 percent).

**Conclusion:** The maternal morbidity and mortality associated with ectopic pregnancy can be reduced by early diagnosis, prompt referral, increased access to health care, proactive management, and enhanced blood bank facilities.

**Keywords:** Ectopic pregnancy, Pelvic inflammatory disease, Risk factors, Salpingectomy, Tubal pregnancy

### Introduction

Ectopic pregnancy is a global problem and has showed a rising incidence during last three decades.<sup>1</sup> It is also the most important cause of maternal morbidity & mortality in the first trimester.<sup>2</sup> Ectopic pregnancy is a life-threatening condition that every practicing obstetrician and gynaecologist encounters in his or her practice. It greatly endangers the life of the woman and also her future fertility by causing damage to the fallopian tubes and/or ovary. The physician who is ectopic minded rarely fails to make the diagnosis. Ectopic pregnancy occurs when the fertilized ovum implants outside the uterus.<sup>3</sup> Approximately 1-2% of all pregnancies in developed countries are ectopic.<sup>4</sup> In the developing world, the incidence is much higher and 1 in 10 women admitted with a diagnosis of tubal ectopic pregnancy ultimately die from the condition.<sup>5</sup> In the developing countries, ectopic pregnancy is possibly the second most common cause of maternal death next to postabortal complications in the first three months of pregnancy.<sup>6</sup> Although, overall incidence of ectopic pregnancy has increased over the past few years, death due to ectopic pregnancy has declined.<sup>7,8</sup> The increase in incidence is because of increase in STD rates, cesarean rates and increasing ART pregnancies. On the other hand, availability of ultrasound and other diagnostic modalities and improvement in health facilities has helped to reduce the maternal morbidity and mortality.<sup>8-10</sup> Absence of identifiable risk

factors, varied clinical presentation, and non-availability of ultrasound may cause delay in diagnosis. Delayed diagnosis or late referral resulting in ruptured ectopic pregnancy may increase the maternal morbidity and mortality. Early diagnosis can make medical management and conservative surgery feasible. This can have a huge impact on the future fertility of the affected women. This study aims at evaluating the incidence, predisposing risk factors, clinical features, diagnosis and management of ectopic pregnancy in a tertiary care teaching hospital.

### Material and Methods

The Department of Obstetrics and Gynecology, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India for 15 months, conducted this prospective observational research on 120 instances of ectopic pregnancy.

### Methodology

The details of history including age, parity, presenting symptoms, past obstetric history, past history of surgeries or medical disorders, use of contraception and history of infertility. Sexual history was taken in detail to note any high risk for STD/PID.

A detailed general physical examination, abdominal and bimanual examination was done. All the patients were subjected to urine pregnancy tests and ultrasound. Culdocentesis was done in few patients. Routine blood and urine investigations were done. All the patients underwent laparotomy or laparoscopy. All 120 patients underwent surgical treatment. Intra operative findings, surgical procedure, blood requirement, post-operative morbidity and outcome were recorded.

Prophylactic antibiotics were given to all patients at the time of induction of anaesthesia. Patients were followed up in the post-operative period with special attention to the development of fever, abdominal pain, and distension of the abdomen and wound sepsis. Patients were discharged with an advice to come for follow up after a week.

### Statistical Analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages.

### Results

**Table1: Distribution of cases according to age**

Age (years)	N =120	Percentage
20-25	61	50.83
26-30	39	32.5
31-35	17	14.67
Above 35	3	2.5

**Table 2: Distribution of the cases by socio-economic status**

Socio-economic status	N=120	Percentage
Low	72	60
Medium	30	25
High	18	15
Total	72	100

**Table 3: Distribution of cases according to parity**

Parity	N=120	Percentage
Nullipara	20	16.67
Primipara	11	9.16
Multipara	89	74.17

**Table 4: Distribution of cases according to site of ectopic pregnancy**

Site of Ectopic Pregnancy	N =120	Percentage
1. Fallopian Tube	109	90.84
Ampullary	95	79.16
Isthmic	8	6.67
Fimbrial	4	3.33
Cornual	2	1.66
2. Ovarian	6	5
3. Abdominal	1	0.83
4. Heterotopic Pregnancy	4	3.33
<b>Total</b>	<b>120</b>	<b>100</b>

**Table 5: Distribution of cases according to risk factors**

Risk Factors	N=120	Percentage
No obvious risk factor	20	20
H/o pelvic inflammatory disease	52	43.33
Previous Ectopic Pregnancy	2	2
H/o abdominopelvic surgeries	16	13.33
Tubectomy/Tubal surgery	7	5.83
LSCS	9	7.5
Others (e.g. Appendicectomy)	0	0
H/O IUCD usage	17	14.17
H/O Oral contraceptive pill usage	8	8
H/O Previous abortion	27	22.5
H/O infertility	15	12.5
H/O Endometriosis	2	2
abdominal pain	106	88.33
bleeding or spotting per vaginum	80	66.67

## Discussion

Indian research done between 1996 and 2015 found that the incidence of ectopic pregnancy ranged from 0.25 percent to 1.9 percent. Ages.<sup>8-17</sup> Similar to our findings, Jophy et al. (7.4 per 1000 live births to 15.2 per 1000 live births) and Porwal et al. (7.4 per 1000 live births to 15.2 per 1000 live births) found an increasing trend in the incidence of ectopic pregnancies.<sup>8,9</sup> From 2000 to 2010, Shobeiri et al studied 872 women in Iran who had an ectopic pregnancy. Ectopic pregnancy was shown to have increased from 1.5 per 1000 pregnancies in 2000 to 4.8 per 1000 pregnancies in 2010. In this survey, 83.33 percent of women were between the ages of 20 and 30. In the present study, 83.33% of women were in the age group of 20-30 years. Similar to our study, most studies reported that majority of women diagnosed with ectopic pregnancy belonged to this age group.<sup>9,11-20</sup> This is probably because sexual activity and fertility of women is highest during this period. In the present study, 89 (74.17%) of the women were multiparous which was comparable with studies by Bhuria et al.<sup>10</sup>, Rakhi et al.<sup>17</sup>, Yadav et al.<sup>20</sup> and Prasanna et al.<sup>21</sup> In the present study, the commonest site for ectopic pregnancy was tubal 109 (90.84%). Among the tubal pregnancies, ampulla was the commonest site 95 (79.16%). Ampullary

pregnancy was seen in 53.84% to 80% of the ectopic pregnancies in other studies.<sup>10,11,13,20</sup> In our study, heterotopic pregnancy was seen in 3.33% of the cases. In our study, 5% of the ectopic pregnancy was ovarian. In other studies, the non-tubal sites for ectopic pregnancy were ovaries, cervix, broad ligament, rudimentary horn of uterus and abdominal cavity.<sup>10,11,15,20</sup> In the present study, majority of the women with ectopic pregnancy 52(43.33%) had H/O pelvic inflammatory disease. Yadav ST et al, Yadav A et al, Jophy et al and Shivakumar et al also found H/O PID as the major risk factor for ectopic pregnancy.<sup>8,10,12,16</sup> Moini et al reported a strong association between prior PID and ectopic pregnancy.<sup>22</sup> Past history of previous abortion with or without D&C was found to be an important risk factor in most studies including the present study.<sup>8,10-14,21</sup> This is probably because of tubal damage following post abortal infections. Although any form of contraception decreases the overall risk of pregnancy including ectopic Pregnancy, when contraceptive failure occurs in women using an IUCD or following tubal sterilization, risk of ectopic Pregnancy is elevated. In our study, we found that IUCD or oral contraceptive pill usage predisposed to ectopic pregnancy. A higher incidence of ectopic pregnancy among IUCD users was noted in most studies.<sup>8,10,13</sup> Parashi et al found that usage of IUCD increases the risk of ectopic pregnancy significantly whereas oral contraceptive pills prevent ectopic pregnancy.<sup>23</sup> Moini et al found that usage of IUCD increased the risk of subsequent ectopic pregnancy four to fivefold.<sup>22</sup> Probably, IUCDs predispose to PID or induce inflammatory changes in the endosalpinx leading to subsequent ectopic pregnancy. Therefore, women with poor menstrual hygiene, those at risk of STDs/PID should be suggested alternative (barrier) methods of contraception. In our study, tubal ligation was associated with ectopic pregnancy in 7 (5.83%) of patients. Other studies have reported that the risk of tubal pregnancy following tubal ligation or tubal surgery is 5.4% to 16.21%.<sup>8,10-12,16,21</sup> Moini et al reported that women with previous tubal surgery were likely to have ectopic pregnancy two to three times more than controls.<sup>22</sup> In the present study, 2.5% of the study subjects had past history of ectopic pregnancy. Other studies noted that 5.4% to 10.95% of women with ectopic pregnancy had H/o prior ectopic pregnancy.<sup>8,10,16,20,21</sup> Moini et al have reported that among all the risk factors of ectopic pregnancy the association between subsequent ectopic pregnancy and previous ectopic pregnancy was the strongest.<sup>22</sup> Parashi et al. found an increased risk of 7-9 fold in women with previous ectopic pregnancy.<sup>23</sup> H/o infertility was found in 15(12.5%) of women in the present study. Other studies have observed that 10%-23.7% of women with ectopic pregnancy had history of infertility.<sup>8,11-14,20,21</sup> Tubal pathology, endometriosis, ovulation induction and ART are the probable reasons for association of infertility with occurrence of ectopic pregnancy. Moini et al found a strong association between infertility and ectopic pregnancy.<sup>22</sup> However; Parashi et al. did not find significant association of infertility with occurrence of ectopic pregnancy.<sup>23</sup> In the present study, H/o previous LSCS, H/o previous abdominal or pelvic surgeries (excluding tubal ligation) was found in 16(13.33%). women. Simsek Y et al analysed the risk factors in 35 ectopic pregnancies. They found that 46% women had history of Caesarean section.<sup>24</sup> Parashi et al found that there was a significant relationship between abdominal/pelvic surgery and incidence of ectopic pregnancy.<sup>23</sup> In their studies, Wakankar et al and Yadav A et al reported that 32% and 26.02% of women with ectopic pregnancy respectively had history of LSCS.<sup>10,13</sup> A possible explanation for this association is formation of peritubal adhesions. Ragab et al conducted a univariate and multivariate analyses of various risk factors for ectopic pregnancy and demographic characteristics. Univariate analyses showed that H/o previous abortion, H/o abdominal surgery, PID, H/o previous D&C and IVF were associated significantly with increased risk of ectopic pregnancy. Multivariate analyses showed that past abdominal surgery, IVF, H/o PID were the only significant risk factors in nulliparous women.<sup>25</sup> The present study and other comparative studies show that PID, previous abortions, abdominopelvic surgeries contribute to the risk of subsequent ectopic pregnancy. These risk factors are modifiable. Early diagnosis and adequate treatment of PID, performing

D& C under strict aseptic conditions, ensuring adequate haemostasis during surgeries, employing methods to reduce post op adhesions during surgery and adequate antibiotic cover may help in reducing the incidence of ectopic pregnancy. In the present study, 20% of women had no identifiable risk factor. Other studies have also reported that ectopic pregnancy can occur in women (20%-58.3%) with no identifiable risk factor.<sup>8,11,12,16,21</sup> This fact emphasizes that ectopic pregnancy should be suspected when clinical features are suggestive of ectopic pregnancy even in low risk women. One has to remember that absence of symptoms does not rule out ectopic pregnancy. Almost 97.5% patients in our study came with H/o variable period of amenorrhoea. Similar observation was noted by Prasanna et al. (96%).<sup>21</sup> In other studies, amenorrhoea was noted in 54.9%- 84.3% patients.<sup>8,11-13,15,20</sup> Abdominal pain was seen in 106 (88.33%) cases in the present study. Other studies reported that abdominal pain was a frequent and constant symptom in 80%- 95% patients.<sup>8,11-13,16,20,21</sup> In the present study, 80 (66.67) of the patients had bleeding or spotting per vaginum. This was similar to the observations by Yadav ST et al (72.2%), Shivakumar et al. (70%), Jophy et al. (66.6%) and Wakankar et al. (65.4%).<sup>8,12,13,16</sup> However, the classical triad of amenorrhoea, abdominal pain and vaginal bleeding was seen in 56% of the cases in the present study which was comparable to the observation by Wakankar et al (53.84%) and Shetty et al. (50%).<sup>5,11</sup> Only 22% of the cases had presented with the classical triad of symptoms in the study by Shukla et al. This shows that unless the obstetrician has high index of suspicion, diagnosis of ectopic pregnancy may be missed or delayed.<sup>15</sup> Clinical presentation, urinary pregnancy test, culdocentesis and ultrasound were the diagnostic tools used for diagnosis of ectopic pregnancy. In the present study, urine pregnancy test was positive in 115(95.83%) of patients. This was in concordance with the studies by Gaddagi et al. (97.3%), Prasanna et al. (94%), Yadav ST et al. (100%) and Shukla et al. (98.04%).<sup>11,15,16,21</sup> In the present study, culdocentesis was positive in 50(41.67%) of patients. This was comparable to the study by Gaddagi et al (37.8%).<sup>11</sup> In the present study, ultrasound was able to diagnose 99(82.5 %) of cases. In the present study, the incidence of ruptured ectopic pregnancy was 87.5% as against an incidence of 60.52% - 89.1% as observed in other studies.<sup>11,13-15,17</sup> This shows that majority of cases with ectopic pregnancy present as ruptured ectopic pregnancies. This emphasizes the need for early diagnosis. Women with high risk of ectopic pregnancy must be emphasized to consult the obstetrician as early as possible when they miss the periods. In the present study, all the patients with ectopic pregnancy were managed surgically. 95 % patients underwent laparotomy and 5 % patients had laparoscopic treatment. In most studies, surgery was the main stay of treatment.<sup>9-13</sup> In the present study and in the studies by Bhuria et al. and Shetty et al., 96%, 95.2% and 98% of the patients underwent unilateral or bilateral salpingectomy or salpingoophorectomy respectively.<sup>7,17</sup> Treatment modality for ectopic pregnancy depends on site of pregnancy, ruptured or unruptured pregnancy, availability of laparoscopy, surgical expertise, need to retain fertility and choice of patient. There was no maternal mortality in our study as reported by many other studies.<sup>7-16</sup> This shows that early diagnosis, timely and prompt management of ectopic pregnancy, availability of adequate blood and blood components improves the outcome of ectopic pregnancies. Delay in seeking healthcare, accessibility to expert health facilities, initial misdiagnosis and delayed referral are important deterrents to prompt management of ectopic pregnancy.<sup>27</sup>

## Conclusion

Ectopic pregnancies are becoming more common. Due to late diagnosis and referral, the rate of ruptured ectopic pregnancy is significant in underdeveloped nations. PID and postabortal sepsis remain the most prominent risk factors for ectopic pregnancy in underdeveloped nations. Because many patients may lack observable risk markers, a high index of suspicion is essential for early detection.

**Reference**

1. Arup K.M., Niloptal R., Kakali S.K., et al. B. Ectopic Pregnancy an analysis of 180 cases. *Journal of Indian Med Assoc.* 2007; 105:308-14.
2. Mahboob U, Mazahar SB. Management of ectopic pregnancy: a two year study. *J Ayub Med Coll Abbottabad.* 2006; 18(4):34-7
3. Farquhar CM: Ectopic pregnancy. *Lancet.* 2005;366(9485):583-91.
4. Varma R, Gupta J. Tubal ectopic pregnancy. *BMJ Clin Evid.* 2009;1406.
5. Leke RJ, Goyaux N, Matsuda T, Thonneau PF. Ectopic pregnancy in Africa: a population-based study. *Obstet Gynecol.* 2004;103:692-97.
6. Thonneau P, Hijazi Y, Goyaux N, Calvez T, Keita N. Ectopic pregnancy in Conakry, Guinea. *Bull World Health Organ.* 2002;80:365-70.
7. Shetty VH, Gowda S, Lakshmidevi M. Role of ultra sonography in Diagnosis of ectopic pregnancy with clinical analysis and management in tertiary care hospital. *J Obstet Gynecol Ind.* 2014;64(5):354-57.
8. Jophy R, Thomas A, Mhaskar A. Ectopic pregnancy -5 year experience. *J Obstet Gynecol Ind.* 2002;52:55-8.
9. Gupta R, Porwal S, Swarnkar M, Sharma N, Maheshwari P. Incidence, trends and risk factors for ectopic pregnancies in a tertiary care hospital of Rajasthan. *JPBMS.* 2012;16(07):1-3.
10. 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;6:15-9
11. Gaddagi RA, Chandrashekhar AP. A Clinical Study of Ectopic Pregnancy. *J Clin Diagn Res.* 2012;6(5):867-9.
12. Shivakumar HC, Umashankar KM, Ramaraju HE. Analysis of forty cases of ectopic pregnancies in tertiary care hospital in south India. *Indian Journal of Basic and Applied Medical Research;* 2013: 3(1):235-241.
13. Wakankar R, Kedar K. Ectopic Pregnancy- A rising Trend. *Int J Sci Stud.* 2015;3(5):18-22.
14. Mufti S, Rather S, Mufti S, Rangrez RA, Wasiqa, Khalida. Ectopic pregnancy: an analysis of 114 cases. *JK Practitioner.* 2012;17(4):20-3.
15. Shukla DB, Jagtap SV, Kale PP, Thakkar HN. Study of ectopic pregnancy in a tertiary care centre. *Int J Reprod Contracept Obstet Gynecol.* 2017;6:975-9.
16. Yadav ST, Kaur S, Yadav SS. Ectopic pregnancy an obstetric emergency: retrospective study from medical college Ambala, Haryana, India. *Int J Reprod Contracept Obstet Gynecol.* 2016;5:2210-4.
17. Bhuria V, Nanda S, Chauhan M, Malhotra V. A retrospective analysis of ectopic pregnancy at a tertiary care centre: one year study. *Int J Reprod Contracept Obstet Gynecol.* 2016;5:2224-7.
18. Nair L, Peter N, Rose A. *International Journal of Biomedical Research* 2015;6(05):331-3.
19. Shobeiri F, Tehranian N, Nazari M. Trend of ectopic pregnancy and its main determinants in Hamadan province, Iran (2000-2010). *BMC research notes.* 2014;7(1):733.
20. Rakhi, Mital PL, Hooja N, Agarwal A, Makkar P, Andleeb F. Ectopic pregnancy: a devastating catastrophe. *Sch J App Med Sci.* 2014;2(3A):903-7.
21. Prasanna B, Jhansi CB, Swathi K, Shaik MV. A study on risk factors and clinical presentation of ectopic pregnancy in women attending a tertiary care centre. *IAIM.* 2016;3(1):90-6.
22. Moini A, Hosseini R, Jahangiri N, Shiva M, Akhoond MR. Risk factors for ectopic pregnancy: A case-control study. *J Res Med Sci.* 2014;19:844-9.

23. Parashi S, Moukhah S, Ashrafi M. Main risk factors for ectopic pregnancy: a case–control study in a sample of Iranian women. *Int J Fertil Steril*. 2014;8:147-54.
24. Simsek Y, Oguzhan A M. Analysis of ectopic pregnancies admitted to emergency department. *Turk J Emerg Med*. 2015;15(4):151–154.
25. Ragab A, Mesbah Y, El-Bahlol I, Fawzy M, Alsammani MA. Predictors of ectopic pregnancy in nulliparous women: A case-control study. *Middle East Fertility Society Journal*.2016;21(1):27-30.
26. Naseem I, Bari V, Nadeem N. Multiple parameters in the diagnosis of ectopic pregnancy. *J Pak Med Assoc*. 2005;55(2):74-6.
27. Awoleke JO, Adanikin AI, Awoleke AO. Ruptured tubal pregnancy: predictors of delays in seeking and obtaining care in a Nigerian population. *Int J Women Health*. 2015;7:141-7

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