

Evaluating the Frequency, Risk Factors, Clinical Characteristics, Diagnosis, Treatment, and Outcome of Ectopic Pregnancies: Observational Research

Sangeeta Kumari¹, Seema Kumari², Raj Rani Chaudhary³, Renu Rohatgi⁴

¹Senior Resident, Department of Obstetrics and Gynecology, Nalanda Medical College and Hospital, Patna, Bihar, India

²Senior Resident, Department of Obstetrics and Gynecology, Nalanda Medical College and Hospital, Patna, Bihar, India

³Associate Professor, Department of Obstetrics and Gynecology, Nalanda Medical College and Hospital, Patna, Bihar India

⁴HOD, Department of Obstetrics and Gynecology, Nalanda Medical College and Hospital, Patna, Bihar, India

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Corresponding author: Dr. Seema Kumari

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Abstract

Aim: The present study aims at determining the incidence, risk factors, clinical features, diagnosis, management and outcome of ectopic pregnancies. **Methods:** This prospective observational study was carried out in the Department of Obstetrics and Gynecology, Nalanda Medical College and Hospital, Patna, Bihar India for 15 months. Total 50 cases were diagnosed with ectopic pregnancy. **Results:** The mean age of the patients was 27.97 ± 5.25 years. Majority of the patients 26 (52%) belonged to 20-25 years. Most of the patients 32 (64%) belonged to lower class socioeconomic status. Majority of the patients 37 (74%) were multiparous and 7 (14%) of the patients were nulliparous. The most common site of ectopic pregnancy was fallopian tube 46 (92%). The most common risk factor was pelvic inflammatory disease 24 (48%) followed by H/o previous abortion 11 (22%) and H/o previous abdomino pelvic surgery including tubal ligation 8 (16%) and LSCS 4 (8%). Almost 95% patients in our study came with H/O variable period of amenorrhoea. 44 (88%) cases complained of abdominal pain. 66% of the patients had bleeding or spotting per vaginum. The other symptoms noted in our study were syncope 15 (30%), nausea / vomiting 19 (38%) and urinary symptoms 11 (22%). In our study, 48 (96%) of patients had severe pallor. The most important signs which guided in the diagnosis of ectopic pregnancy were cervical excitation pain 36 (72%), abdominal tenderness 33 (66%), adnexal mass or fullness 30 (60%) and tenderness in the fornix 34 (68%). Urine pregnancy test was positive in 95% of patients. Culdocentesis was positive in 42% of patients. 97% patients underwent laparotomy (unilateral or bilateral salpingectomy or salpingoophorectomy). **Conclusion:** Early diagnosis, timely referral, improved access to health

care, aggressive management and improvement of blood bank facilities can reduce the maternal morbidity and mortality associated with ectopic pregnancy.

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

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Introduction

Ectopic Pregnancy (EP) is a pregnancy implanted outside the cavity of the uterus. It is well recognised as a life-threatening emergency in early pregnancy. The incidence of EP is around 1-2% in most hospital based studies[1,2]. Diagnosis requires a high index of suspicion as the classic triad of amenorrhoea, abdominal pain and vaginal bleeding is not seen in majority of cases. Women may present with non-specific symptoms, unaware of an ongoing pregnancy or even present with haemodynamic shock. The contribution of EP to the maternal mortality rates in developing countries including India is not precisely known, with data from few studies indicating 3.5-7.1% maternal deaths due to EP[3]. The most common EP location is in the fallopian tube, predominantly the ampullary region of the fallopian tube. Implantation outside the fallopian tube-in the cervix, ovary, myometrium, abdominal cavity, interstitial (i.e., intramuscular/proximal) portion of the fallopian tube or coincidentally with an intrauterine pregnancy-occurs in less than 10 % of EPs. Heterotopic pregnancy (HP) refers to the coexistence of an intrauterine pregnancy with an EP in any of these locations. ‘Cornual’ pregnancies are those implanted in a horn of an anomalous uterus (i.e., unicornuate, bicornuate, didelphys or septate uteri); these do not uniformly require intervention and will not be included in this review[4]. 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[5]. 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[6]. Although, overall incidence of ectopic pregnancy has increased over the past few years, death due to ectopic pregnancy has declined[7,8]. 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[8-10]. 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:

This prospective observational study was carried out in the Department of Obstetrics and Gynecology, Nalanda Medical College and Hospital, Patna, Bihar India for 15

months, after taking the approval of the protocol review committee and institutional ethics committee. Total 50 cases were diagnosed with ectopic pregnancy.

Methodology:

The details of history included 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. Routine blood and urine investigations were done. All 50 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.

Results:

Table1: Distribution of cases according to age

Age (years)	N =50	Percentage
20-25	26	52
26-30	15	30
30-35	7	14
Above 35	2	4

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

Socio-economic status	N=50	Percentage
Low	32	64
Medium	11	22
High	7	14

Table 3: Distribution of cases according to parity

Parity	N=50	Percentage
Nullipara	7	14
Primipara	6	12
Multipara	37	74

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

Site of Ectopic Pregnancy	N =50	Percentage
1. Fallopian Tube	46	92
Ampullary	36	72
Isthmic	5	10
Fimbrial	4	8
Cornual	1	2
2. Ovarian	3	6
3. Abdominal	1	2

Table 5: Distribution of cases according to risk factors and symptoms

Variables	N=50	(%)
Risk Factors		
No obvious risk factor	11	22
H/o pelvic inflammatory disease	24	48
Previous Ectopic Pregnancy	2	4
H/o abdominopelvic surgeries	8	16
Tubectomy/Tubal surgery	3	6
LSCS	4	8
Others (e.g. Appendicectomy)	0	0
H/O IUCD usage	8	16
H/O Oral contraceptive pill usage	5	10
H/O Previous abortion	11	22
H/O infertility	6	12
H/O Endometriosis	2	4
Symptoms		
Abdominal pain	44	88
Bleeding or spotting per vaginum	33	66
Syncope	15	30
Nausea/vomiting	19	38
Urinary symptoms	11	22

Table 1 gives the distribution of cases of ectopic pregnancy according to age. The mean age of the patients was 27.97 ± 5.25 years. Majority of the patients 26 (52%) belonged to 20-25 years.

Table 2 show that most of the patients 32 (64%) belonged to lower class socioeconomic status.

Table 3 shows the distribution of the cases based on parity. Majority of the patients 37 (74%) were multiparous and 7 (14%) of the patients were nulliparous.

Table 4 shows the distribution of cases according to the site of ectopic pregnancy. The most common site of ectopic pregnancy was fallopian tube 46 (92%). Ampulla was the commonest site 36 (72%) for ectopic implantation in the fallopian tube.

Table 5 shows the distribution of risk factors identified in the patients with ectopic pregnancy. The most common risk

factor was pelvic inflammatory disease 24 (48%) followed by H/o previous abortion 11 (22%) and H/o previous abdominopelvic surgery including tubal ligation 8 (16%) and LSCS 4 (8%). 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, 8 (16%) patients were using copper IUCD. H/o infertility due to tubal block or other causes, treatment associated with infertility, endometriosis and H/o previous ectopic pregnancy were other identified risk factors.

Almost 95% patients in our study came with H/O variable period of amenorrhoea. 44 (88%) cases complained of abdominal pain. 66% of the patients had bleeding or spotting per vaginum. The other symptoms noted in our study were syncope 15 (30%), nausea / vomiting 19 (38%) and urinary

symptoms 11 (22%). In our study, 48 (96%) of patients had severe pallor. The high incidence of pallor was probably because 41 (82 %) of cases were associated with ruptured ectopic pregnancy or tubal abortion. The most important signs which guided in the diagnosis of ectopic pregnancy were cervical excitation pain 36 (72%), abdominal tenderness 33 (66%), adnexal mass or fullness 30 (60%) and tenderness in the fornix 34 (68%).

In the present study, urine pregnancy test was positive in 95% of patients. Culdocentesis was positive in 42% of patients. Ultrasound was able to diagnose 42 (84 %) of cases. USG findings suggestive of ectopic pregnancy were extra-uterine gestational sac 7 (14%), haemoperitoneum 31 (62%) and adnexal mass 39 (78%).

In the present study, the incidence of ruptured ectopic pregnancy was 89%. 96% of the patients received one or more units of blood transfusion intra operatively and/or post operatively. All the patients with ectopic pregnancy were managed surgically. 97% patients underwent laparotomy (unilateral or bilateral salpingectomy or salpingoophrectomy). Milking of tube was performed in 3% of patients. There was no maternal mortality in the present study.

Discussion:

The incidence of ectopic pregnancy in other Indian studies conducted during 1996 to 2015 ranged from 0.25% to 1.9% [8-17]. Similar to our study, there was an increasing trend in the incidence of ectopic pregnancies in the studies conducted by Jophy et al (7.4 per 1000 live births to 15.2 per 1000 live births) and Porwal et al [8,9]. Shobeiri et al conducted a study of 872 women with ectopic pregnancy in Iran during 2000 to 2010. They found that the incidence of ectopic pregnancy increased

from 1.5 per 1000 pregnancy in 2000 to 4.8 per 1000 pregnancy in 2010. Majority of the patients 51 (51%) belonged to 20-25 years. 81% of the patients were ≤ 30 years. Similar to our study, most studies reported that majority of women diagnosed with ectopic pregnancy belonged to this age group [9,11-20]. This is probably because sexual activity and fertility of women is highest during this period. In the present study majority of the patients 37 (74%) were multiparous and 7 (14%) of the patients were nulliparous which was comparable with studies by Bhuria et al, Rakhi et al, Yadav et al and Prasanna et al. [10,17,20,21]. In the present study, the most common site of ectopic pregnancy was fallopian tube 46 (92%). Ampulla was the commonest site 36 (72%) for ectopic implantation in the fallopian tube. Ampullary pregnancy was seen in 53.84% to 80% of the ectopic pregnancies in other studies [10,11,13,20]. In our study, 6% of the ectopic pregnancy was ovarian and 2% abdominal. In other studies, the non-tubal sites for ectopic pregnancy were ovaries, cervix, broad ligament, rudimentary horn of uterus and abdominal cavity [10,11,15,20]. In the present study, The most common risk factor was pelvic inflammatory disease 24 (48%). 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 [8,10,12,16]. Moieni et al reported a strong association between prior PID and ectopic pregnancy [22]. 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 [8,10-14,21]. 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[8,10,13]. Parashi et al found that usage of IUCD increases the risk of ectopic pregnancy significantly whereas oral contraceptive pills prevent ectopic pregnancy[23]. Moini et al found that usage of IUCD increased the risk of subsequent ectopic pregnancy four to fivefold[22]. 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 3 (6%) of patients. Other studies have reported that the risk of tubal pregnancy following tubal ligation or tubal surgery is 5.4% to 16.21%[8,10-12,16,21]. Moini et al reported that women with previous tubal surgery were likely to have ectopic pregnancy two to three times more than controls[22]. In the present study, 4% 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[8,10,16,20,21]. 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[22]. Parashi et al found an increased risk of 7-9 fold in women with previous ectopic pregnancy[23]. H/o infertility was found in 6 (12%) of women in the present study. Other studies have observed that 10%-23.7% of women with ectopic pregnancy had history of infertility[8,11-14,20,21]. 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[22]. However; Parashi et al did not find significant association of infertility with occurrence of ectopic pregnancy[23]. In the present study, H/o previous abdominopelvic surgery including tubal ligation and LSCS 12 (24%). Simsek Y et al analysed the risk factors in 35 ectopic pregnancies. They found that 46% women had history of Caesarean section[24]. Parashi et al found that there was a significant relationship between abdominal/pelvic surgery and incidence of ectopic pregnancy[23]. 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[10,13]. 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[25]. 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, 23% 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[8,11,12,16,21]. 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 95% patients in our study came with H/o variable period of amenorrhoea. Similar observation was noted by Prasanna et al (96%)[21]. In other studies, amenorrhoea was noted in 54.9%-84.3% patients[8,11-13,15,20]. Abdominal pain was seen in 44 (88%) cases in the present study. Other studies reported that abdominal pain was a frequent and constant symptom in 80%-95% patients[8,11-13,16,20,21]. In the present study, 66% 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%)[8,12,13,16]. 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%)[5,11]. 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[15]. 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 95% 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%)[11,15,16,21]. In the present study, culdocentesis was positive in 42% of patients. This was comparable to

the study by Gaddagi et al (37.8%)[11]. In the present study, Ultrasound was able to diagnose 42 (84 %) of cases. USG findings suggestive of ectopic pregnancy were extra-uterine gestational sac 7 (14%), 31 (62%) and adnexal mass 39 (78%), as against an incidence of 60.52% - 89.1% as observed in other studies[11,13-15,17]. 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. All patients underwent laparotomy. In most studies, surgery was the main stay of treatment[9-13]. In the present study and in the studies by Bhuria et al and Shetty et al, 97%, 95.2% and 98% of the patients underwent unilateral or bilateral salpingectomy or salpingoophrectomy respectively[7,17]. 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[7-16]. 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[27].

Conclusion:

Ectopic pregnancy is one of the commonest gynaecological emergencies with significant maternal morbidity and mortality. The incidence of ectopic pregnancy is on the rise. The incidence of

ruptured ectopic pregnancy is high in developing countries due to late diagnosis and delayed referral.

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