



**A Retrospective Study on Ectopic Pregnancy in a Tertiary Care Center**

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**Abstract**

**Introduction:** Ectopic pregnancy is one of the leading causes of maternal death during first trimester. Any woman in the reproductive age group, presenting with amenorrhea, lower abdominal pain or vaginal bleeding must raise the suspicion of an ectopic pregnancy to prevent mortality and morbidity.

**Aim:** This study was done to know the incidence, diverse clinical presentations, period of gestation at the time of presentation, high risk factors predisposing for ectopic pregnancy; and to investigate the intra-operative findings and management employed in all cases of ectopic pregnancy.

**Materials and Methods:** This was a retrospective cohort study, conducted at Mahatma Gandhi Hospital, Jaipur. Medical records of all cases of ectopic pregnancy; from January 2018 to December 2018 were retrieved. Demographic data, obstetric history, risk factors, clinical features, mode of management and need for blood transfusion was noted. Main outcome measures studied were the incidence of ectopic pregnancy, risk factors, duration of amenorrhea at the time of presentation, mortality and morbidity in these women.

**Statistical Analysis:** Data was entered in Microsoft Excel spreadsheet and analyzed using SPSS software version 19.0. For categorical variables, data was compiled as frequency and percent.

**Results:** 50 cases ectopic pregnancy presented during the one-year study period, with an incidence of 1.5% over total deliveries. 84% cases aged between 21-35years, 36% being primigravida. The most common risk factors identified was previous abdominopelvic surgery 40%. Second common factor came out to be history of abortion associated with or without dilatation and evacuation, in 22% of cases. History of infertility treatment found in 20%. There was no identifiable risk factor in 18 % of cases. 48% patients presented at a gestational age of 6-8 weeks. The classic triad of lower abdominal pain, amenorrhea and vaginal bleeding was seen in 60% cases. Ultrasonographic findings were positive in all cases. 98% were tubal ectopic pregnancies. One case of cesarean scar ectopic was noted. Haemoperitoneum was seen in all cases. Most common surgical procedure employed was salpingectomy in 92% and salpingo-oophorectomy in 6%. One hysterectomy was done due to excessive intra-operative bleeding in case of cesarean scar ectopic. 80%

patients required blood transfusion in intra-operative and post-operative period. No deaths were noted.

**Conclusion:** Most cases present late making tubal conservation inapplicable. Common risk factors for ectopic pregnancy must be identified. High index of suspicion and prompt management is required to prevent complications and preserve the future reproductive function of patient.

### Introduction

Ectopic pregnancy is defined as a pregnancy in which the fertilized ovum is implanted outside the endometrial cavity. Ectopic pregnancy is one of the leading causes of maternal death during the first trimester of pregnancy. Ectopic pregnancy is given greater importance because apart from fetal wastage, maternal mortality and morbidity, ectopic pregnancy is also associated with repeat ectopic gestation and impairment of subsequent fertility. Mostly (93-98%) ectopic pregnancies are located in fallopian tubes. Major risk factors of tubal pregnancy include pelvic infections, adnexal adhesions owing to previous surgeries, history of previous ectopic. Now a day's incidence is also increased because of the recent technical progress and prevalence of artificial reproductive technology. However, in recent years, the development of high-resolution Ultrasonography and the availability of techniques for rapid measurement of serum  $\beta$ -hCG (human chorionic gonadotropin) concentrations have improved early detection of ectopic pregnancy, so ectopic pregnancy-related deaths have decreased. In spite of good diagnostic methods available most women present late as majority of the cases are asymptomatic till they rupture. Management of the cases depends on the clinical presentation, site of ectopic and need of future reproductive function.

### Aims And Objectives

This study was undertaken to study the incidence, diverse clinical profile; identify the factors associated with ectopic pregnancy; and to calculate the type of management employed in all cases of ectopic pregnancy that presented to our hospital over a period of one year.

### Materials and Method

This is a retrospective study conducted at Mahatma Gandhi Medical College and Hospital, Sitapura, Jaipur from January 2018 to December 2018.

All women who presented to our hospital with ectopic pregnancy were analyzed from the available hospital documents (Operation Theater Registers, MRD files).

The data was collected in respect to the following:

1. Age
2. Gravida
3. Clinical presentation
4. Risk factors for ectopic pregnancy
5. Duration of amenorrhea
6. Ultrasonographic features
7. Intra operative findings
8. Treatment

The data was analyzed with simple descriptive statistics and presented as percentages in tables.

### Results

In the review period of one year, there were a total of 3321 deliveries and 50 cases of ectopic pregnancies giving an incidence of 1.5% of total deliveries.

Age (years)	N=50
<20	4
21-25	9
26-30	19
31-35	14
>36	4

**Table-1 : Distribution according to age group.**

Age bracket ranged from 18 to 40 years. It was found that majority of (84%) ectopic pregnancies occurred in the females in age group of 21-35 years.

**Table 2: Distribution according to birth order**

Gravida	N=50	%
G1	18	36
G2	9	18
G3	13	26
G4	6	12
≥ G5	4	8

In the study (18/50) 36% patients were primigravida. G3 and below accounted for 80% of the cases.

**Table 3: Distribution of cases according to risk factors**

Risk factors	N=50	%
Infertility treatment	10	20
No risk factors	9	18
Dilatation and Evacuation(D&E)	7	14
Abdominal surgery	6	12
Failed Tubal ligation	6	12
MT Pill intake	4	8
Previous caesarean	4	8
Previous ectopic pregnancy	2	4
Recanalization	2	4

In the study 82% cases had one or the other risk factor. Among the various risk factors studied history of previous abdominopelvic surgery was the most common; found in 20/50 (40%) of cases. Among these women 6 patients had history of abdominal surgery, 6 had history of tubal ligation, 2 had undergone Recanalization surgery, and 4 had previous caesarean. Repeat ectopic was seen in 2 (4%) cases. Second common factor came out to be history

of abortion with or without D and E was found in 22% of cases. History of infertility treatment was there in (20%); being a tertiary care centre with IVF facility at our setup may be the cause. There was no identifiable risk factor in 18 % of cases.

Duration of Amenorrhea	N=50	%
<6weeks	18	36
6-8weeks	24	48
8-10weeks	6	12
>10weeks	2	4

**Table 4: Period of gestation at the time of presentation**

Most of the cases (48%) patients presented at a gestational age of 6-8 weeks

**Table 5: Clinical features at presentation**

Clinical presentation	N=50	%
Urine pregnancy test	50	100
Amenorrhea	50	100
Abdominal pain	38	76
Vaginal bleeding	30	60
Nausea & vomiting	5	10
Giddiness & vertigo	5	10
Shock	2	4

Amenorrhea was present in all 50 (100%) cases. UPT was positive in 100% of cases. The most common presenting symptom was abdominal pain 38/50 (76%) followed by vaginal bleeding 30/50 (60%). Giddiness vertigo and nausea vomiting were present in 10% cases each. Classical triad of amenorrhea, abdominal pain and vaginal bleeding was present in 30/50 (60%) patients. Shock was present in 2/50 (4%) cases.

**Table 6: Ultrasound features of ectopic pregnancy**

Ultrasound features	N=50
Significant free fluid with TO Mass	24
Hypoechoic/Hyperechoic lesion in adnexal region	16
Complex adnexal mass	10

Ultrasonographic findings were conclusive in all 50 cases, consolidating the presence of ectopic pregnancy. Adnexal lesion was the most common finding; found in all 50 cases. Hemoperitoneum was the second most common finding detected in 24 out of 50 cases.

**Table 7: Intra-operative Findings**

Intra-operative Findings	N=50	(%)
Laprotomy	41	82
Laparoscopy	9	18
Ruptured	32	64
Unruptured	5	10
Tubal abortion	5	10
TO Mass	5	10
Chronic ectopic	3	6
Site of ectopic	N=50	(%)
Ampullary	26	52
Fimbrial	14	28
Cornual	5	10
Isthmic	4	8
Caesarean scar ectopic	1	2
Side of ectopic	N=50	(%)
Left	26	52
Right	24	48
Quantity of Hemoperitoneum (ml)	N=50	(%)
<500	18	36
500-1000	15	30
1000-1500	6	12
1500-2000	6	12

>2000	5	10
Surgical procedures	N=50	(%)
Salpingectomy	46	92
Salpingo-oophorectomy	3	6
Hysterectomy	1	2
Salpingostomy	0	0

41/50 (82%) patients underwent laprotomy and 9/50 (18%) patients taken for laparoscopy. We found 49/50 cases of tubal ectopic and only one case of caesarean scar ectopic. 32/50 (64%) patients were found to have ruptured ectopic at the time of presentation, 5/50 (10%) were in unruptured state, 5/50 (10%) had tubal abortion, 3/50 (6%) had chronic ectopic. 26/50 (52%) patients had gestation in the ampullary region of fallopian tube followed by fimbrial region 14/50 (28%). Right sided ectopic pregnancies were more common as compared to left side though the difference was statistically insignificant. Out of 50 patients, 18 (36%) patients had hemoperitoneum less than 500 ml, 15 (30%) patients had between 500-1000 ml, 6 (12%) patients had hemoperitoneum between 1000-1500 ml and 11 (22%) patients had hemoperitoneum more than 1.5 liters. Most common surgical procedure employed was salpingectomy 46/50 (92%) patients and 3/50 (6%) patient underwent salpingo-oophorectomy. One hysterectomy was done due to excessive intra-operative bleeding in one case of caesarean scar ectopic. 40/50 (80 %) patients required blood transfusion in intra-operative and post-operative period. Histopathological report confirmed ectopic gestation in all patients. There was no maternal mortality from ectopic pregnancy in our case series.

**Discussion**

Ectopic pregnancy is a life threatening emergency in obstetrics especially when ruptured. The prevalence of ectopic pregnancy among women who present with first

trimester bleeding, pain or both, varies from 6 to 16%.<sup>(1)</sup> In India the incidence of ectopic pregnancy reported by the Indian council of medical research (ICMR 1990) task force in their multi-centric case control study was 3.12 per 1000 pregnancies or 3.86 per 1000 live births in the hospital reported pregnancies.

In present study the incidence is 1.5 %, which is comparable to studies by Olarewaju et al (1.7%) in Jos and Gharoro and Igbafe in Benin, Nigeria.<sup>(2,3)</sup> It is however higher than 1 in 161 (0.6%) found by Arup Kumar et al in India and 1 in 250 (0.4%) of the ICMR multi-center study, also in India.<sup>(4,5)</sup>

In our case series the dominant age bracket was from 21-35 years (84%). This age bracket was similar to study by Arup Kumar et.al, in which the most common age group affected was 26-30 years (68.57%).<sup>(4)</sup> Osaheni et al found a dominant slice from 20 to 24 years old.<sup>(6)</sup> The study by Rakhi et al and Poonam et al, in which the peak age incidence was in 20-25 years.<sup>(7)</sup> This corresponds to the age of reproduction and peak sexual activity. Younger age group is more active sexually, predisposed to STI, PID and their sequelae.

In the present study, maximum occurrence of ectopic gestation was seen predominantly in lower birth order. 18/50 (36%) patients were primigravida. In the ICMR multi-centric case control study of ectopic pregnancy, majority of women were young and had low parity<sup>(1)</sup> In the study by LakshmiNair et al majority of patients i.e. 33.3% patients were primigravida.<sup>(8)</sup> Morice *et al* in their study found that in nulliparous women were 2.6 times more likely to have an ectopic pregnancy after one year of unprotected intercourse.<sup>(9)</sup>

In the present study most frequent gestational age at the time of presentation was around 6-8 weeks (48%), which is similar to the observation made by Khaleeque et al<sup>(10)</sup>;

in contrast the study by Vandana bhuria et al maximum number of patients of ectopic gestation were ruptured between 7 and 12 weeks (72.79%)<sup>(11)</sup>. Ectopic pregnancies are generally diagnosed earlier due to their association with symptoms like bleeding and pain. This can be explained by the fact that as the egg gets bigger and at this gestational age, the development of chorionic villi will cause tubal erosion and rupture.

Classical triad of abdominal pain, amenorrhea and vaginal bleeding was present in 60 % of the cases. In study by Archana et al classical triad was reported in 71.25% case.<sup>(12)</sup> Wakankar et al and Jophy et al have also reported classic triad in 53.84% and 66% cases respectively.<sup>(13,14)</sup> This suggests that this classical triad is reliable most of the time for raising a suspicion of ectopic gestation.

Shock as a presenting emergency was observed in 2/50 (4%) of cases, which was very less in comparison to studies by Maji et al and Begum S et al (32%).<sup>(15, 16)</sup> and Archana et al (42.5%)<sup>(12)</sup>

Amenorrhea was present in 100% of the cases, which was also seen in studies of Jophy et al (78.5%), Archana et al (86.23%) and Pal A et al (73%).<sup>(14,12,17)</sup> In the absence of amenorrhea woman may be unaware of an ongoing pregnancy and hence may not anticipate a pregnancy associated complication. This subjects her to increased risk due to delayed diagnosis.

A detailed history taking is imperative in all the cases of ectopic gestation, so that underlying causative etiology is established. In current study history revealed presence of at least one high risk factor in 82% of cases. Amongst the risk factors, history of previous abdominopelvic surgery was the most common (40%) factor identified. This was followed by history of abortion (22%). In the present study 6/50 (12%) patients had history of tubal ligation, and 2/50 (4%) patients has undergone tuboplasty in past.

In the study by Vandana et al the most common risk factor was found to be the history of tubal surgery (44.1%) followed by history of previous abortion (37.2%).<sup>(11)</sup> Singh et al have reported prior tubal surgery as a common risk factor (40%).<sup>(18)</sup>

In the study by Archana et al history of tubal surgery, including tubal sterilization and tuboplasty, was seen in 16 % cases.<sup>(12)</sup> Thus, patients ought to be counselled and educated about its failure and the risk for ectopic pregnancy in future. They should be counselled for early reporting in case of amenorrhea, lower pain abdomen and irregular bleeding per vaginum.

History of abortion with or without D and E was found in 11/50 (22%) of cases. In the study by Archana et al history of abortion (induced and spontaneous) was there in (31.25%).<sup>(12)</sup> Similar observations were made by Maji et al (26.1%) and Mufti et al (21.05%).<sup>(15,19)</sup> This observation asserts the sequelae of unsafe abortion causing tubal damage and thus highlights the need of education to promote safe abortion practices and post abortal care.

Significant number of cases (8%) had a history of MTP pill intake over the counter in the present study and it is comparable to study of Shetty et al (9.7%) and Archana et al (13.75%).<sup>(1, 12)</sup> This highlights the urgent need to address this important issue. The patients with undiagnosed ectopic pregnancies, who take medical abortion regimen, usually report late to health care facilities, under the false impression of undergoing a normal abortion process. A ruptured ectopic eliminates the opportunity to treat the patient medically due to an unstable hemodynamics and also compromising the future fertility. So, there is need to institute a prior ultrasound mandatory before medical abortion, and equally important, to push for bringing legislation, seeking a protocol on the sale of MTP pills over the counter.

In present study 2/50 (4%) of the cases had the history of previous ectopic pregnancy. Archana et al reported 3.75 %.<sup>(12)</sup> Recurrence of ectopic has been reported in various studies, ranging between 3.2% to 20%. So, such patients need to be educated about the risk of recurrences.

History of infertility treatment was there in 10/50 (20%) cases in our case series. Significant incidence of prolonged infertility and its causal relationship to ectopic pregnancy has been observed by various authors. Positive history of infertility was reported as high as 48% by Savitha Devi et al.<sup>(20)</sup> Archana et al reported infertility in 6.25% cases of ectopic.<sup>(12)</sup> Lakshmi Nair reported infertility in 11% of their case.<sup>(8)</sup> Infertility treatment and hormonal alteration may predispose to tubal implantation.

In the present study 18% of cases had no recognizable risk factor, similar to study of Begum S et al (36%), Archana et al (33.75%) and Rose et al (32.2%).<sup>(16,12,14)</sup> Therefore, ectopic pregnancy should be suspected in every woman of reproductive age who presents with unexplained abdominal pain, irrespective of amenorrhea and vaginal bleeding and whether risk factors are present or not.

In present study Ultrasonographic findings were present in all 50 cases, adnexal mass being the most common finding detected. In the study by Lakshmi Nair et al 83% patients were diagnosed by ultrasonography.<sup>(8)</sup> Condous et al stated that an experienced sonologist can diagnose 75-80% of ectopic gestation by TVS in the first visit.<sup>(21)</sup>

Ruptured ectopic pregnancy was present in 32/64 (64 %), tubal abortion in 10% cases, similar to results of Shetty et al 61.3% and 12.9% respectively.<sup>(1)</sup> Study by Archana et al found 55% cases of ruptured ectopic and tubal abortion in 16.25% cases.<sup>(12)</sup> Our center being a tertiary referral center, more than half (64%) of the cases came with ruptured ectopic pregnancies. It emphasizes that in India

majority of the cases present late, either due to late diagnosis or because of delay in referral.

In present study 10% of cases had unruptured ectopic which is correlating with the study done by Gaddagi RA et al (8.1%).<sup>(22)</sup> Archana et al reported 10% unruptured cases.<sup>(12)</sup>

Chronic ectopic pregnancy was seen in 6 % of cases. Intra-operative diagnosis for the same was made by presence of organized mass in POD. Archana et al found 18.75% cases of chronic ectopic in their study.

The fallopian tube was the most common site of ectopic pregnancy 49/50 (98%) in our study, similar to Archana et al,( 98.75%).<sup>(12)</sup> Ampulla was the commonest site 26/50 (52 %), similar to the observation of Shetty et al (45.2%) and Archana et al (42.5%).<sup>(1,12)</sup> It was followed by Fimbrial, cornual, and Isthmic in 14%, 5%, and 4% cases respectively. One case of caesarean scar ectopic pregnancy was detected. It was taken for laparotomy and it finally ended in hysterectomy due to excessive intra-operative bleeding.

In current study both right and left side of tubes were involved with almost equal frequency similar to study of Porwal et al.<sup>(23)</sup>

It was observed that majority of the cases had to undergo laparotomy 41/50 (82%) and rests 9/50 (18%) were managed by laparoscopy. The high rate of surgery is because of the hospital being a tertiary care center and the patients themselves present late to the hospital or are referred from other centers.

Salpingectomy 46/50 (94%) was the most common modality of treatment. In 20 % cases had Salpingectomy with contralateral tubectomy by modified Pomeroy's method as they were not desirous of further child bearing. Laprotomy with Salpingectomy was the most common modality of treatment in other studies too (Shetty et al

90.3%, Maji et al 81.9%).<sup>(1, 15)</sup> In some studies lack of expertise in laparoscopy and presentation of the patient late in night when seniors are not around also led to increase in the rate of laprotomy.

Salpingo-oophorectomy was done in 3/50(6%) cases in v/o tubo-ovarian mass. One hysterectomy was done in case of caesarean scar ectopic pregnancy.

There was no mortality in the current study. Maternal mortality due to ectopic pregnancy is reported between 0% and 1.3% in various studies.<sup>(1,19)</sup> It is possible to prevent maternal mortality in low-resource countries by maintaining basic clinical and surgical skills.

### Conclusion

Incidence of ectopic pregnancy has increased over past few years. Around 84% of cases were in the age group of 21-35 years and mostly being primigravida. Most common symptom in our study was lower abdominal pain, 76% cases. Amenorrhea was present in 100% cases, whereas vaginal bleeding in 48 cases 60%. Ampullary part of the fallopian tube is the most common site of ectopic pregnancy 52% observed during our study. Adnexal mass was the most common finding on ultrasound. In the present study due to prompt diagnosis and management maternal mortality was avoided even in referred case.

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