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Received: 8 Aug 2022

Accepted: 1 Dec 2022

**Citation:** Anusha NSS,  
Hota BM, Naimisha  
Movva N. Clinical analysis  
of ectopic pregnancy in a  
tertiary care centre in rural  
Telangana. *Nep J Obstet  
Gynecol.* 2022;17(35):37-  
42. DOI:  
<https://doi.org/10.3126/njo.g.v17i2.52373>

## Clinical analysis of ectopic pregnancy in a tertiary center in rural Telangana

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### ABSTRACT

**Aims:** To find the incidence, risk factors, morbidity and mortality in ectopic pregnancy in a tertiary center in rural Telangana.

**Methods:** This retrospective observational study was conducted in the Department of Obstetrics and Gynecology, Mamata Medical College, Khammam, Telangana State, India, over 5 years from 2017 to 2021. Detailed informative data of all admitted and treated cases of ectopic pregnancy were collected, analyzed and discussed.

**Result:** The incidence of ectopic pregnancy was 1.3 per 100 pregnancies and 2.5% case fatality. The majority of cases were in the 20-30 years of age group (82.5%); multipara (50%) and gestational age of  $\leq 8$  weeks (62.5%). History of abortion was the most common risk factor (67.5%). The classical triad of amenorrhoea, pain abdomen and bleeding per vagina was present in 45% of cases; and amenorrhea (97.5%), pain abdomen (87.5%) and vaginal bleeding (42.5%), abdominal tenderness (85%) and unstable hemodynamic (22.5%) were reported. The fallopian tube was the commonest site and operative management was required in 97.2% of cases.

**Conclusion:** Prevention of known risk factors, early reporting and referral in need, diagnosis and effective management is the way to a better outcome in ectopic pregnancy.

**Keywords:** ectopic pregnancy, hysterotomy, implantation, laparotomy

### INTRODUCTION

Pregnancy, located outside the normal endometrial cavity whether intra or extra-uterine, is called ectopic pregnancy (EP). This is a derivative of the Greek word 'extopos' which means 'out of place'. The incidence is 1-2% of all pregnancies.<sup>1</sup> It is a life-threatening emergency and found to constitute 3.75%-7.1% of maternal death by different studies.<sup>2,3</sup> Risk factors are age, parity, pelvic inflammatory disease, previous abortion, infertility, past ectopic pregnancy, assisted reproductive technology, intrauterine contraceptive device, uterine anomalies, and post caesarean pregnancy.<sup>4</sup> High index of suspicion is the key to diagnosis as the patients rarely present with the classical triad of amenorrhea, pain abdomen and bleeding per vagina (PV). Clinical presentations and urine pregnancy test are the primary tools for diagnosis. Ultrasonography (USG) is the most sensitive investigation and may need diagnostic laparoscopy in some cases. Abortion, appendicitis, torsion of ovarian cyst, and bleeding corpus luteum cysts are the common differential diagnosis for ectopic pregnancy. Treatment is based on the condition of the patient, type of EP, size of EP mass, and initial serum  $\beta$ -human Chorionic Gonadotropin ( $\beta$ -hCG). The outcome of the pathology depends on early diagnosis and efficient management.

## METHODS

This retrospective observational study was carried out in the Department of Obstetrics and Gynecology of a Medical College Hospital. Being located in a small town, this tertiary care centre caters mainly to rural people of surrounding villages in Telangana State. The number of EP cases among all pregnant patients admitted to the department from January 2017 to December 2021 was taken into the study for finding the rate of EP per 100 pregnancies. Demographic profile, medical, surgical, obstetric and gynecological history, clinical presentation, investigation reports, details of treatment and outcome for each EP case was noted from the hospital case record. All data was compiled and statistically analyzed by simple descriptive statistics and frequency tables. The outcome was discussed and compared with other similar studies.

## RESULTS

There were 40 EP cases for a total of 3076 pregnancies finding the rate of EP to be 1.3 per 100 pregnancies. In addition to clinical parameters, urine pregnancy test and USG was done in all cases for confirmation of diagnosis. The majority of women were of low socioeconomic class, with either middle school education or illiterate and housewife or daily wagger. None of them revealed multi-sexual behavior of self or spouse; which makes her prone to pelvic infection. Intrauterine contraceptive device was not used by any of them at any time to date. There was no case with history of diagnosed pelvic inflammatory disease.

Out of the total diagnosed 40 cases of EP, 33 (82.5%) were in the age group of 20-30 years, whereas multiparity constituted 20 (50%) cases (Table 1).

**Table-1: Patient characteristics**

Age in years		Parity	
<20	0	P <sub>0</sub>	8 (20.0%)
20-30	33 (82.5%)	P <sub>1</sub>	12 (30.0%)
31-40	6 (15%)	P <sub>≥2</sub>	20 (50.0%)
>40	1 (2.5%)		

Past history of abortion was there in 27 cases (67.5 %), whereas, history of past ectopic pregnancy was in 03 cases (7.5%), out of which 01 patient was treated by medical method with parenteral Methotrexate. History of lower segment caesarean section (LSCS) was present in 11 patients (27.5%). Infertility treatment was there in 06 patients (15%) out of which 05 conceived after ovulation induction, whereas 01 patient was treated with intrauterine insemination (IUI). Four patients (10%) with EP had undergone tubectomy earlier as a sterilization procedure and 02 (05%) patients had history of tubal recanalization procedure. History of ovarian cystectomy was there in 02 (05%) patients. No known risk factor was there in 13 (32.5%) patients. (Table-2)

**Table-2: Risk factors (N=40)**

Risk factors	N (%)
H/O Abortion	27 (67.5%)
H/O Ectopic pregnancy	3 (7.5%)
Infertility treatment	6 (15%)
Tubectomy	4 (10%)
Tubal recanalization	2 (05%)
LSCS	11 (27.5%)
Ovarian cystectomy	2 (0.5%)
Past Pelvic Surgery	22 (55%)
No Identifiable Risk Factor	13 (32.5%)

Amenorrhoea of  $\leq 8$  weeks was present in 25 (62.5%) cases. Pain abdomen in 35 (87.5%), bleeding PV in 17 (42.5%) and amenorrhea in 39 (97.5%) was present on reporting. Only 01 patient reported 02 days short of the due date for the next menses. Triad of amenorrhea, pain abdomen and bleeding per vagina was there in 45.0 % of cases. On admission, abdominal tenderness was present in 34 (85.0%) cases and cervical movement tenderness was observed in 30 (75.0%) cases and 09 (22.5%) patients were found hemodynamically unstable. Severe anemia with hemoglobin of  $< 7$  gm% was in 10(25.0%) patients. Transfusion with blood and blood products was required in 20 (50.0%) patients. Urine pregnancy test was positive in all cases. The diagnosis was confirmed in all cases by USG. (Table-3)

Table-3: Clinical presentations (N=40)

Clinical presentations	Number (%)
Gestation ≤6wks	14 (35.0%)
≤8wks	25 (62.5%)
>8wks	15 (37.5%)
Amenorrhea	39 (97.5%)
Pain Abdomen	35 (87.5%)
Bleeding PV	17 (42.5%)
All of the above three	18 (45%)
Hb <7gm%	10 (25.0%)
Hemodynamically unstable	09 (22.5%)
Abdominal Tenderness	34 (85.0%)
Cx movement Tenderness	30 (75.0%)

The tubal EP was the commonest finding as seen in 33 (82.5%) cases. Interestingly, 5 (12.5%) cases presented as caesarean scar ectopic pregnancy (CSEP). (Fig-1)

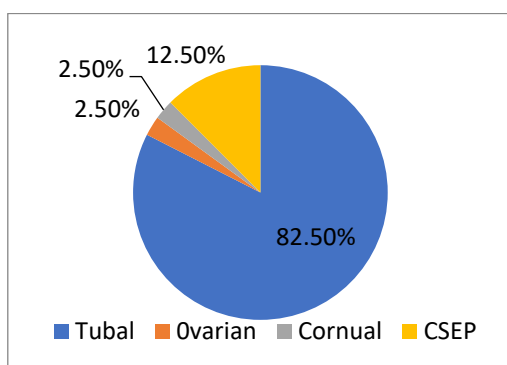


Fig-1: Anatomical site-wise distribution of EP

Majority of the cases (90%, 36) underwent laparotomy and only one was managed with parenteral methotrexate with total resolution in due time. (Table-4).

Table-4: Management modality (N=40)

Method of management	N (%)
Laparotomy	36 (90.0%)
Laparoscopy	3 (7.25%)
Medical method	1 (2.5%)

Out of the 40 cases, 14 (35%) cases reported unruptured, 24 (60%) were ruptured EP and 2 (5%) cases were tubal abortion. Out of the 5 cases of CSEP, one case was found ruptured with hemoperitoneum, whereas other four cases either had scar dehiscence or thinning of scar.

Salpingectomy was done for all tubal EP cases, whereas, Salpingo-oophorectomy for ovarian EP and wedge resection and repair for cornual EP

was carried out. Most common procedure was Salpingectomy. Among CSEP patients hysterotomy, removal of product of conception and scar excision was done in 03 cases; one patient needed subtotal hysterectomy and other one needed total abdominal hysterectomy.

Outcome was good in all cases except in 01 patient, who reported with ruptured caesarean scar ectopic pregnancy in shock and needed total abdominal hysterectomy. She had fever with positive for Dengue IgM and was managed with respiratory and circulatory support in ICU (Intensive Care Unit) as she developed dilated cardio myopathy. In spite of all the multidisciplinary management, she succumbed to death on 8<sup>th</sup> postoperative day.

## DISCUSSION

Ectopic pregnancy is a major cause of maternal morbidity and mortality in first trimester of pregnancy. Depending on the prevalence of risk factors, lifestyle, socioeconomic condition and status of available health care system; incidence and outcome may vary in different geographical regions. In our study in a tertiary care center which caters mostly to patients of rural Telangana State; the incidence is 1.3 per 100 pregnancies. Goldner TE et al. found it 1-2 %.<sup>1</sup> Meenakshi T Chate et al. found 93 cases of EP over a period of 1.5 years in a Government Medical College Hospital.<sup>4</sup> Tahmina S et al. in 2016 from a tertiary care medical teaching hospital reported it as 0.91 per 100 pregnancies.<sup>5</sup> Prasanna B et al. have reported an incidence of 1.8 per 100 pregnancies.<sup>6</sup>

Majority of women (82.5%) were of age group 20 -30 years in this study. Prem Singh Tak et al. have found maximum number of patients (70.5%) in this age group.<sup>7</sup> Age group of 25–30 years was 74,2% as noted by Sraddha Setty K.<sup>8</sup> Meenakshi T Chate et al. had also found majority of cases in this age group.<sup>4</sup> May be high sexual activity, pelvic surgery and clinical or subclinical pelvic infection, treatment for infertility in this age group is the predisposing factor for the pathology. 50% were multipara, whereas 30% and 20% cases were seen among primipara and nulliparous patients respectively in the present

study. Meenakshi T Chate et al. had shown 51.60% as multipara and 24.73% primipara and 23.6% as nulliparous in their study.<sup>4</sup> As reported by Prem Singh Tak et al. 71.8% of cases were multipara and 28.2% were primipara.<sup>7</sup> It may be because multipara is more prone to have increased sexual exposure, pelvic infection and pelvic surgery. Uterine anomaly, treatment for infertility and previous ectopic pregnancy were the risk factors in nulliparous patients in our study. There might be subclinical pelvic infection also. Majority of cases in our study reported at gestational age of  $\leq 8$  weeks which was at 6-8 weeks pregnancy as noted by Aziz S et al.<sup>9</sup> Lack of awareness for early antenatal checkup and reporting to hospital only on being symptomatic might be the cause behind this.

67.5% of cases had past history of abortion as the commonest risk factor for ectopic pregnancy. But many of them had other associated risk factors also like tubal surgery, LSCS and ovarian cystectomy. Tahmina S et al. had mentioned it as the most common risk factor (36.10%) in their study.<sup>5</sup> The commonest risk factor (29.0%) noted by Shraddha Shetty K was also history of abortion.<sup>8</sup> History of pelvic surgery was present in our study in 55% cases, though some of the cases had multiple variety of surgeries like LSCS, tubal ligation, tubal recanalization and ovarian cystectomy. History of pelvic surgery was found in 37.5% of cases by Tahmina S et al.<sup>5</sup> Previous EP was found in 03 (7.5%) cases in our study as compared to 06% by Prasanna B et al.<sup>6</sup> and 9.0% in the study conducted by Aziz S et al.<sup>9</sup> History of infertility and undergoing treatment in our study was 15%, which was observed in 10% of cases by Prasanna B et al.,<sup>6</sup> 16.1% of cases by Ranjita Ghadei et al.<sup>10</sup> and 15.0% by Aziz S et al.<sup>9</sup> No identifiable risk factor was found in 32.5% of our cases compared to 38.71% by Meenakshi T Chatel et al.<sup>4</sup> and 55.12% by Prem Singh Tak et al.<sup>7</sup> The classical triad of amenorrhoea, pain abdomen and bleeding PV was observed in 18 (45.0%) cases in the present study compared to 40.3% by Tehmina S et al.<sup>5</sup> Amenorrhoea, pain abdomen and bleeding PV was there in 97.5%, 87.5% and 42.5% women respectively in our report; compared to 68.8%,

96.8%, 31.26% respectively by Ranjita Ghadei et al.<sup>10</sup> and 93.58%, 100%, 69.23% of cases respectively by Prem Singh Tak et al.<sup>7</sup> On examination, abdominal tenderness was present in 34 (85.0%) patients in our study compared to 75.0% by Tahmina S et al.<sup>5</sup> and 64.5% by Shraddha Shetty K.<sup>8</sup> Cervical movement tenderness was present in 75.0% of our patients; compared to 58.3% noted by Tahmina S et al.<sup>5</sup> and 51.6% by Shraddha Shetty K.<sup>8</sup> Ten (25%) of our patients had  $< 7$  gm% of hemoglobin (Hb) and Prasanna B et al.<sup>6</sup> found 28% of patients with  $< 7$  gm% Hb on reporting to hospital. Hemodynamically unstable patients were 09 (22.5%) in our study compared to 21.5% in shock as reported by Ranjita Ghadei et al.<sup>10</sup>, 18.0% by Prasanna B et al.<sup>6</sup> and 18.33% Panchal D et al.<sup>11</sup>

Site of EP was tubal in 33 (82.5%), ovarian in 01 (2.5%), cornual 01 (2.5%) and CSEP in 5 (12.5%). Prem Singh Tak et al.<sup>7</sup> have reported the location of EP as tubal, ovarian, cornual and CSEP as 93.58%, 3.84%, 1.28% and 1.28% respectively. Meenakshi B Chatel et al. reported 81.72% as tubal 9.67% ovarian and 8.61% as cornual EP in their study.<sup>4</sup> In our study ruptured EP was 60%, unruptured 35% and tubal abortion 5% compare to 61.3%, 22.5% and 12.9% respectively as reported by Shraddha Shetty K,<sup>8</sup> 79.48%, 11.53% and 8.97% by Prem Singh Tak et al.<sup>7</sup> Latchaw G et al. have reported 59% cases of ruptured and 41% unruptured EP.<sup>12</sup> In our study 20 (50%) patients required blood and/or blood products transfusion which was 64.5% of cases as reported by Ranjita Ghadei et al.<sup>10</sup>, 54.8% of cases by Shraddha Shetty K<sup>8</sup> and 65.5% cases by Panchal D et al.<sup>11</sup>

Surgical management was done in 97.5% of cases in our study; of which 7.5% by laparoscopy and 90% by laparotomy compared to report by Meenakshi T Chate et al. as 100% cases had surgical management; 97.84% by laparotomy and 2.15% by laparoscopy.<sup>4</sup> 91.3% had surgical management; of which 79.7% had laparotomy and 11.6% had laparoscopy as reported by Sreelatha B et al.<sup>13</sup> Tubal surgery was the commonest procedure in our study as reported by

many others like Ranjita Ghadei et al.<sup>10</sup>, Sreelatha B et al.<sup>13</sup> Mortality was 2.5 % among our patients as one patient died of cardiac arrest on 8<sup>th</sup> postoperative day because of delayed reporting in a case of ruptured CSEP in shock, infection with Dengue and development of dilated cardiomyopathy. All other patients had good prognosis without any significant morbidity. EP is responsible for 3.5%-7.1% of maternal mortality.<sup>2,3</sup> Ranjita Ghadei et al. observed a mortality rate of 03.27%<sup>10</sup>, whereas Lawani OL et al observed 1.4% mortality rate in their study.<sup>14</sup> Mortality depends on condition of patient on reporting, status of hospital and co-morbid conditions.

## CONCLUSION

Ectopic pregnancy is a life-threatening condition in young women in reproductive life. The morbidity, as well as affection of future fertility of the woman and the economic burden of the family, is also quite disturbing. Though not totally preventable, it can be reduced to some extent by taking precautions like avoiding unwanted pregnancy, practicing safe sex to prevent pelvic infection and treating early and adequately if infection occurs, reducing LSCS rate, improving expertise in pelvic surgery, early antenatal check up to localize the site of implantation in high-risk cases and if possible in all pregnant women. Creating social awareness about risk factors and the advantages of early gynecological consultation may prevent many adverse outcomes. Both morbidity and mortality are less in unruptured than ruptured EP. Early diagnosis and effective management and referral to a higher health care centre in need; is the key to a successful outcome.

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