

Incidence of Ectopic Pregnancies in Tertiary Centre of Jharkhand-A Population Based Cross Sectional Study

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ABSTRACT

Background- In spite of the tremendous advances in obstetric care and technology, ectopic pregnancy remains an enigma for a women full of dreams of blissful motherhood, as it may turn into a nightmare and a catastrophe. An ectopic pregnancy or ecyesis is a complication of pregnancy in which the embryo attaches outside the uterus¹. An ectopic pregnancy is an obstetric emergency if not treated properly, it not only leads to fetal wastage, but also increases the incidence of maternal morbidity and mortality and may even lead to problems of future infertility.

Objective-1.To determine the incidence of ectopic pregnancy in respect to other gynaecological admissions, according to age, race, parity, as well as different socio-economic strata.

Place And Duration-The present study was conducted in RIMS, Ranchi from April 2016 – September 2017.Total 102 cases of ectopic pregnancy were admitted in this duration. This was a Prospective Observational type of study.

Material and methods-All cases coming to RIMS, Obstetrics & Gynaecology suspected clinically as ectopic pregnancy were admitted .The diagnosis was made on detailed history, clinical examination, routine & special investigations[UPT,USG(TAS+TVS)].The diagnosis was confirmed on operative findings. The surgical and medical treatment given was noted and the post-operative period was observed.Data was analyzed to determine the incidence, risk factors, varied clinical presentations, mode of treatment and the morbidity and mortality associated with ectopic pregnancy.

Patient's performa-A detailed clinical record sheet was prepared for all patients at the time of admission with particular reference to following points:Name,Age,Religion-Hindu/Muslim/Christian /Others,Tribe/Non-tribal,Address

History-I. Medical history

1.Complaints and their duration – They were noted in chronological order of their appearance.

2.Menstrual History-Age of menarcheFirst day of last menstrual period Duration of menstruation Duration of cycle in daysAmount of blood loss-average/heavy/ scanty Inter-menstrual bleeding or discharge

3.Obstetrical History-Each pregnancy was recorded in the following plan:Gravida,Parity,Duration of pregnancy,Labour-normal/abnormal,Delivery-Home/Hospital,Pueperal period,Infant-Boy/Girl, alive/dead and well being,Birth weight,Breast fed or not.

Contraceptive History- Use of oral contraceptives, intrauterine contraceptive devices, history of ligation if present were recorded.

Any history of infertility and the treatment given was noted.

Past History- Previous history of illness such as tuberculosis, PID, appendicitis or any other gynaecological treatment including operative procedures.

Family History- Family history of tuberculosis, hypertension, diabetes was enquired.

Personal History-Vegetarian/non-vegetarian .Any addiction was noted.

II. Social history:

Marital Status- Married with date of marriage, single, widow,Educational status

Occupation,Socioeconomic status-Monthly family income

Based on Kuppuswamy's socioeconomic status scale 2007 the study group divided into

Poor,Lower middle class,Upper middle class,High class.

PHYSICAL EXAMINATION: General Examination,Level of consciousness,Height in cm,Weight in kgs,Height-weight relation- thin/average/overweight,Anaemia,Cyanosis,Jaundice,Oedema,Temperature,Blood pressure,CVS,Chest

LOCAL EXAMINATION: Per Abdomen-Inspection

Palpation - to note tenderness, guarding, if any lump felt then its margins, consistency, surface, tenderness and mobility.

Percussion- to note any shifting dullness and fluid thrill Auscultation.Pelvic Examination-Inspection of vulva, vagina and cervix,Bimanual examination.

Results-*There were 13,204 total obstetric admission in which 102 cases were ectopic pregnancies. It shows that the incidence of ectopic pregnancy in RIMS is 7.7 cases per 1000 pregnancies. . Youngest patient admitted with ectopic pregnancy was of 19 years and oldest was of 38 years.Maximum incidence seen among the age group of 26-30 years is 36.42.Majority of the patients (71.57%) belonged to the non- tribal group and maximum in hindu females(68.63%). The lower socioeconomic strata i.e. poor 33.33% and lower middle 50% constituted the major bulk of the cases i.e. together they constituted 83.33% cases. The maximum number of patients were nullipara. The next group that was affected was the para 1 and para 2 patients.*

Conclusion-*Incidence was high in the present series, mainly due to increased prevalence of PID and tuberculosis.*

- *Ectopic pregnancy was more prevalent in nulliparous women. Average age incidence was lower in the population studied. It shows that the predisposing factors sets in the affected women in early reproductive life and as no parity status or age was spared, it proved that the factors are found in all age groups throughout a women's reproductive life.*

Key words- *Ectopic pregnancy,obstetric emergency,fetal wastage,maternal morbidity and mortality,future infertility,nulliparity.*

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I. Introduction

In spite of the tremendous advances in obstetric care and technology, ectopic pregnancy remains an enigma for a women full of dreams of blissful motherhood, as it may turn into a nightmare and a catastrophe. An ectopic pregnancy or eccyesis is a complication of pregnancy in which the embryo attaches outside the uterus. ^[1] An ectopic pregnancy is an obstetric emergency if not treated properly, it not only leads to fetal wastage, but also increases the incidence of maternal morbidity and mortality and may even lead to problems of future infertility.The prevalence of ectopic pregnancy among women who go to an emergency department with first trimester bleeding, pain or both ranges from 6-16%.The overall incidence of ectopic pregnancy increased during the mid-twentieth century, plateauing at approximately 20/1000 pregnancies in 1990's, the last time national data were reported by the Centre of Disease Control (CDC 1990-1992).The incidence of ectopic pregnancy is approx. 1-2% of all first trimester pregnancies (in US).This small proportion accounts for 6% of all pregnancy related deaths. ^[2] It is the most common cause of death in first trimester above 10% of the total. ^[3] The risk of death in developed world is 0 1-0.3% while in developing world it is between 1 and 3 %.^[4] The incidence of ectopic pregnancy is increasing and this has been attributed to the rising incidence of risk factors such as Pelvic inflammatory disease, uses of intrauterine contraceptive device, tubal surgeries, infertility, D&C, previous ectopic pregnancy, etc.Ectopic pregnancy can be classified into tubal, non-tubal, heterotopic pregnancy and persistent ectopic pregnancy.

1. Tubal pregnancy: - Nearly 95% of ectopic pregnancy occur in various segments of fallopian tube .Pregnancies can grow in the ampullary section, isthmus, fimbrial end and interstitial part of the tube. Ampulla is the most common site i.e. >80% of ectopic gestations occur in the ampullary part of the fallopian tube followed by the isthmus.Abnormal fallopian tube anatomy underlies many cases of tubal ectopic pregnancy. There is history of previous tubal surgeries like sterilization, fertility restoration, previous ectopic ^[5] and also prior history of pelvic inflammatory disease.
2. Non-tubal pregnancy: - Less than 5% ectopic pregnancies occur in ovary, cervix or intra abdominal. Ovarian pregnancy are most common type of non-tubal pregnancy^[6]. Abdominal pregnancies are of two types primary and secondary of which secondary pregnancies are common. Cervical pregnancies are less than 1% and very rare⁷.
3. Heterotopic pregnancy:-In rare cases of ectopic pregnancy there may be two fertilized eggs, one inside the uterus i.e. intrauterine and one outside which is ectopic pregnancy. .This is called heterotopic pregnancy. Patients who underwent assisted reproduction have a much higher incidence of heterotopic pregnancy⁸.
4. Persistent ectopic pregnancy:-It refers to the continuation of trophoblastic growth after a surgical intervention to remove an ectopic pregnancy (e.g. salpingostomy, fimbrial expression). The incidence of persistent ectopic pregnancy increased with the increased use of surgery that conserves the tubes.

The faulty implantation in ectopic pregnancy occurs because of defect in anatomy or normal function of uterus, in the fallopian tube (as can result from surgical or infectious scarring or hormonal imbalances), ovary (as can occur in women undergoing fertility treatment) or uterus (in cases of bicornuate uterus or caesarean delivery).The fertilized ovum burrows through the mucous membrane of the tube followed by minimal decidual change at the site of implantation. Muscles undergo limited hyperplasia and hypertrophy but more stretching.

The tube at the implantation site is distended and wall thinned out. The decidua develops all the characteristics of intrauterine pregnancy except that it contains no evidence of chorionic villi. In majority cases, tubal rupture occurs leading to massive intraperitoneal haemorrhage. In some cases, tubal abortion may occur with extrusion of gestational sac into the peritoneal cavity.

The **classic clinical triad** of ectopic pregnancy is amenorrhea, pain and vaginal bleeding. Unfortunately only about 50% of patients present with all 3 symptoms and is typical in patients with a ruptured ectopic pregnancy.^[9] Pain is the most persistent symptom. An ectopic pregnancy should be considered as one of the cause of abdominal pain or vaginal bleeding in every women who has positive pregnancy test.^[10] Ectopic pregnancy may have varied atypical presentation. No other gynaecological or obstetrical condition produces as atypical and variable picture as ectopic pregnancy. Upto 10% of women with ectopic pregnancy have no symptoms and one third have no medical signs gynaecological or obstetrical condition produces as atypical and variable picture as ectopic pregnancy. Upto 10% of women with ectopic pregnancy have no symptoms and one third have no medical signs.

The early diagnosis of ectopic pregnancy is one of the greatest challenge and the importance of early diagnosis lies in the fact that the lady can be offered conservative management which can have beneficial effect on her reproductive life. The diagnosis of ectopic pregnancy is mostly a clinical diagnosis but relies on Ultrasound scanning (TAS +TVS), serial B-HCG levels, Laparoscopy or Laparotomy, Culdocentesis. Quantitative B-HCG is the diagnostic cornerstone of ectopic pregnancy. It is an accurate screening test for detection of ectopic pregnancy and assay is positive in virtually all the cases. The B-HCG doubling time can help to differentiate an ectopic pregnancy from an intrauterine pregnancy. Transvaginal USG is superior to transabdominal USG in evaluating intrapelvic structures. Intrauterine pregnancy can be diagnosed 1 week earlier in TVS than TAS. The closeness of vaginal probe to the pelvic organs allows the use of higher frequencies (5-7 mHz), which improves the resolution. Laparoscopy is the gold standard for the diagnosis of ectopic pregnancy. Culdocentesis was widely used as a diagnostic technique for ectopic pregnancy. With the use of HCG testing and TVS, culdocentesis is rarely indicated.

Ectopic pregnancy can be managed expectantly, medically and surgically. The treatment approach depends on the clinical circumstances, the site of ectopic pregnancy and the available resources. In expectant management only observation is done hoping for spontaneous resolution. Most women are followed up with serum hCG measurements and repeat TVS examinations. Number of chemotherapeutic agents have been used either systemic or direct local as medical management of ectopic pregnancy. The drug most frequently used for medical management of ectopic pregnancy is methotrexate and other drugs used are potassium chloride, prostaglandins (PGF₂), hyperosmolar glucose, actinomycin and RU-486. Methotrexate is given in single dose and multidose regimen in haemodynamically stable patients. Laparoscopy has become the recommended surgical approach in most cases. Laparotomy is usually reserved for patients who are haemodynamically unstable. It is estimated that rate of pregnancy of unknown location that eventually undergo surgery is between 0.5 and 11 percent.^[10]

Ectopic pregnancy is the most common life threatening emergency in early pregnancy. It is still a major health problem in women of child bearing age in our country and continues to be an important cause of morbidity and mortality. As ectopic pregnancy has variable presentations from asymptomatic to life threatening condition, this study was conducted with the aim to determine the clinical profile of patients presenting with ectopic pregnancy and determine the various risk factors, so as to make recommendations on interventions to reduce the incidence of this condition

II. Methodology

The present study was conducted in RIMS, Ranchi from April 2016 - September 2017. Total 102 cases of ectopic pregnancy were admitted in this duration. This was a Prospective Observational type of study. All cases coming to RIMS, Obstetrics & Gynaecology suspected clinically as ectopic pregnancy were admitted. The diagnosis was made on detailed history, clinical examination, routine & special investigations [UPT, USG (TAS+TVS)]. The diagnosis was confirmed on operative findings. The surgical and medical treatment given was noted and the post-operative period was observed. Data of all the patients were collected from a specially designed performa pertaining to patients particulars' clinical examinations, investigations, diagnosis and surgical procedures, it is then subjected to statistical analysis. All the surgical procedures and medical management and investigations were conducted under direct guidance and supervision of our guide. Before start of our study, informed consent was obtained from each patients.

III. Results

TABLE I Incidence of ectopic pregnancy in relation to total no. of Obstetric admission.

No. of ectopic pregnancy	Total Admissions	Obstetrics	Percentage
102	13,204		0.772

There were 13,204 total obstetric admission in which 102 cases were ectopic pregnancies. It shows that the incidence of ectopic pregnancy in RIMS is 7.7 cases per 1000 pregnancies

TABLE-II
Age Distribution (n=102)

Age group(in years)	No. of cases	Percentage
15-20	9	8.82
21-25	33	32.65
26-30	37	36.42
31-35	20	19.61
36-40	3	2.5

In this study youngest patient admitted with ectopic pregnancy was of 19 years and oldest was of 38 years.

TABLE-III
Table no. III

Distribution of cases according to race (n=102)

Race	No. of cases	Percentage
Tribal	29	28.43
Non-Tribal	73	71.57

The majority of patients belonged to non-tribal population(71.57)

TABLE-IV
Distribution of cases according to religion (n=102)

Religion	No. of cases	Percentage
Hindu	70	68.63
Muslim	22	21.57
Christian	8	7.84
Others	2	1.96

I e. majority of the patients (71.57%) belonged to the non- tribal group.

TABLE-V
Incidence among different socioeconomic strata (n=102)

Socioeconomic status	No. of cases	Percentage
Poor	34	33.33
Lower middle	51	50
Upper middle	14	13.73
High	3	2.94

The lower socioeconomic strata i.e. poor 33.33% and lower middle 50% constituted the major bulk of the cases i.e. together they constituted 83.33% cases. While the upper class constituted 16.67% of the cases.

TABLE-VI
Parity Distribution (n=102)

Parity	No. of cases	Percentage
Nullipara	32	31.37
Para 1	27	26.47
Para 2	21	20.59
Para 3	12	11.77
Grand multipara	10	9.80

This study shows that no state of parity is immune to ectopic pregnancy. The maximum number of patients were nullipara. The next group that was affected was the para 1 and para 2 patients. In the present work 102 cases with ectopic pregnancy presented in the Department of Obstetrics & Gynaecology, Rajendra Institute of Medical Sciences, Ranchi during the study period from April 2016 to September 2017.

IV. Discussion

As shown in table I the total number of ectopic pregnancy were 102 out of total number of obstetrics admission of 13,204 which comes to be 0.77% of the total admission i.e. 1 ectopic pregnancy in every 130 pregnancies.

There is a wide variation in the incidence of ectopic pregnancy reported by western as well as Indian authors. Upadhyay et al reported an incidence of one in 3000 and Mitha (1965) one in 333 full term deliveries¹¹. Das (1970) reported one in 250 deliveries and Pendse one in 266¹². These incidences are quite less as compared to that of the present series of 1 in 130 pregnancies. Vyas et al (1998) in a study at Mumbai found an incidence of 7.6% ectopic pregnancies per 1000 deliveries in SION Hospital, Mumbai¹³. Maji AK (2007) reported an incidence of 1 in 161 deliveries¹⁴.

Beacham et al (1956) found an incidence of 1 in 26 full term deliveries¹⁵ and Jeffcoat (1962) 1 in 300-1000 deliveries after 28 weeks¹⁶. Douglas (1963) reported an incidence of 1 in 28 live births in Jamaica, presumably because of high incidence of salpingitis. Bobrow and Bell (1962) reported an incidence of 1 in 64 and Greenhill (1965) 1 in 70 deliveries¹⁷.

The incidence in present series is comparable to that reported by Williams (2001) of more than 1 in 100 pregnancies. But it is far more than that reported by Indian Council of Medical Research report (1989), which found the incidence to be 1 in 150 to 1 in 300 pregnancies. This wide variation is so because incidence varied from place to place, depending upon the general population being studied. And also because the incidence is calculated in relation to such variables as total deliveries, intrauterine pregnancies, live births, viable confinements etc.

Ectopic pregnancy can occur at any age from menarche to menopause. Coming to Table II, it was seen that patients were of variable age group. Youngest patient was 19 years old and oldest was 38 years. The maximum patients were seen in the age group of 26-30 years in this study i.e. 37 cases. In age group 15-20 there were 8.82% cases, 32.65% in 21-25 years, 36.42% in 26-30 years, 19.61% in 31-35 years age group and 2.5% in

36-40 years age group. In this study, average age incidence was found to be 28 years which is comparable to that reported by Mitha (1965) who reported average incidence to be 25.5 to 28.2 years and Pendse (1981) who found average age to be 26.5 years¹². Vyas (1998) reported that 75% belong to the age group of 21-30 years¹³. Maji AK et al (2007) reported that the peak age of incidence was 26-30 years¹⁴.

This average incidence of 28 years does not correspond to that reported by William (2001) and Novak (2002) of 35-44 years. This may be due to earlier age of marriage in the population studied, although two cases studied were unmarried at the time of presentation. It shows that no age is exempt and once the female attains the reproductive status she is at risk of getting ectopic pregnancy.

Fontanilla and Anderson (1955) gave an incidence of 1 in 200 pregnant white and 1 in 120 negro women while in present series as shown by table III, out of 102 patients, 29 were tribal (28.43%) and 73 were non-tribal (71.57%)¹⁸. It shows the ratio to be 1:3 which is in conjugation with the general population attending R.I.M.S. Obstetrics and Gynaecology department. The ratio being 1:7:18. It shows that racial difference did not influence the occurrence of ectopic pregnancy and that no race is immune to it.

Table IV shows the distribution of cases of ectopic pregnancy in different religion. In this study 68.63% cases were Hindu, 21.57% were Muslim, 7.84% were Christian and 1.96% other groups. This study is comparable to the study done by Yadav DP et al (2016)¹⁹ and Basu G et al (2017) in which ectopic pregnancy was more in Hindu population²⁰.

As presented in Table V classes of socioeconomic status was based on the Modified Kuppaswamy's socioeconomic scale 2007²¹. This scale classifies the study populations into high, middle and low socioeconomic classes on the basis of the education and occupation of the head of the family along with monthly income of the family. 34 patients (33.33%) were of lower class, 51 (50%) were of lower middle class, 14 (13.73%) were of upper middle class and 3 (2.94%) was of upper class. Percentage of patients of lower economic strata were, more involved, we may attribute this high incidence to unhygienic living conditions leading to pelvic inflammatory diseases. So, there was no proportion of the population where ectopic pregnancy were not seen.

Table VI shows the incidence according to parity of the patients. Nullipara were affected in 31.37% i.e. 32 cases while 27 (26.47%) cases were para 1, 21 (20.59%) were para 2 and 12 (11.77%) were para 3 and 10 cases (9.80%) were grand-multipara. Thus parity had no role to play in the present series, which is in accordance to the findings of Myerscough (1982) who found it to be of little influence on the occurrence of ectopic pregnancy²². It is not in accordance to Toumivaara (1980) who after an analysis of 552 patient of ectopic pregnancy reported more incidence in 2nd paras. But as nulliparous were highest in number it indicates that whatever the etiology, it is affecting them at early reproductive age and as chances of future ectopic pregnancy is more after an ectopic pregnancy, it becomes a matter of great concern²³.

V. Conclusion

The glaring features of ectopic pregnancy in the present study can be concluded as follows:- Incidence was high in the present series, mainly due to increased prevalence of PID and tuberculosis. Ectopic pregnancy was more prevalent in nulliparous women. Average age incidence was lower in the population studied. It shows that the predisposing factors sets in the affected women in early reproductive life and as no parity status or age was spared, it proved that the factors are found in all age groups throughout a women's reproductive life. Although women with ectopic pregnancy frequently have no identifiable risk factor, increased awareness of risk factors (PID, previous tubal surgery, H/O tuberculosis) help in identifying women at higher risk in order to facilitate early diagnosis. Early diagnosis is crucial for preservation of future fertility, thus, should be the aim preferably aided by transvaginal ultrasonography and quantitative assay of serum B HCG and laparoscopy. Treatment should be decided upon by assessing the individual cases. Salpingostomy and closure by secondary intention offers better result in preserving future pregnancy rate. Salpingectomy is most efficient treatment if patient does not require future fertility. It is quite evident that, there is basic need to educate people and make them understand the need and importance of early booking, registration and proper antenatal follow up so that she could properly be investigated keeping in mind the risk of ectopic pregnancy in high risk patients. Health professionals at all levels should be taught to identify the warning signs and symptoms and be trained to deal with the cases if the patients conceive in the presence of the predisposing factors. There should be proper transportation facilities for timely referral of the patients. PHC and CHC should be strengthened with manpower and blood transfusion facilities. As the incidence of ectopic pregnancy increases, ways and means have to be found to reduce the associated morbidity and mortality and to preserve future fertility. With the emphasis shifting from radical to conservative therapy; prevention of risk factors and early diagnosis has become very important.

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