



ECTOPIC PREGNANCY: A RETROSPECTIVE STUDY ON CLINICAL PRESENTATION, MODE OF MANAGEMENT AND CLINICAL OUTCOME OF PATIENTS

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ABSTRACT

INTRODUCTION: Ectopic pregnancies are a global issue with an increasing incidence. Data from a few studies indicate that 3.5-7.1% of maternal deaths in underdeveloped nations are attributable to EP. **MATERIAL AND METHODS :** This was a 3 year retrospective cross-sectional study. All the ectopic pregnancies in our center from January 2018 to December 2021 were included. The following parameters age, parity, risk factors, clinical presentation, mode of management, intra-operative findings, and outcome in terms of morbidity and mortality were assessed. **RESULTS:** Total 6572 deliveries occurred during the study period, incidence of ectopic pregnancies at our center is 1.14%. Diagnosis of ectopic pregnancy was made on clinical findings alone in 65 patients which was later on confirmed by an added modality of ultrasound. Patients who were haemodynamically stable, had a gestational sac size measuring less than 4cm by transvaginal ultrasonography, had serum beta hCG (human Chorionic Gonadotropin) levels less than 10,000 U/ml and no free fluid in the pelvic cavity, were managed medically. 53 women underwent salpingectomy and 4 women underwent salpingo-oophorectomy. 34 (45.33%) patients presented as ruptured ectopic gestation. Admission to intensive care unit was required either due to haemodynamic instability or owing to complications like atelectasis and Transfusion Related Acute Lung Injury (TRALI). **CONCLUSION :** Ectopic pregnancies are a major cause of maternal morbidity and mortality in first trimester. If timely diagnosed and treated, it can be reduced certainly.

KEYWORDS

ectopic, serum beta hCG, methotrexate, hemodynamic

INTRODUCTION

Ectopic pregnancy (EP) is a first-trimester pregnancy associated, potentially life threatening condition in which the embryo implants outside the uterus. Due to the high mortality and morbidity rates connected with it, ectopic pregnancy is a potentially fatal disorder that requires enormous and immediate gynaecological attention, particularly in the underdeveloped countries of the world. It is responsible for 10-15% of all maternal deaths and is the main cause of maternal mortality in the first trimester. 1 In addition to the loss of the foetus, maternal death, and morbidity, repeat ectopic gestations and decreased future fertility are also linked to ectopic pregnancy. 2

Ectopic pregnancies are a global issue with an increasing incidence over the past three decades. This increase is linked to an increase in pelvic infections, improvements in assisted reproductive technology, sterilisations and tubal procedures, the use of intrauterine devices, a history of prior abortions, a history of ectopic pregnancies, infertility, race, and age above 35. 3,4 The pelvic inflammation is the most frequent risk factor along with history of abortions. 5,6 Ectopic pregnancies, however, can happen even in the absence of a clear risk factor. 5 The triad, of abdominal pain, vaginal bleeding, and amenorrhea is only found in 30%-40% of ectopic pregnancy instances, therefore diagnosing EP requires a high index of clinical suspicion.

A diagnostic work-up to identify ectopic pregnancy should be performed on women of reproductive age who report with a history of amenorrhea, abdominal pain, vaginal bleeding, syncopal attack, and a positive pregnancy test. The clinical condition of the patient, the location of the ectopic pregnancy, the patient's desire for future fertility, and the facilities and technology available all have an impact on how the condition is treated. If EP is not promptly identified and treated, it may result in significant morbidity and mortality. The EP spectrum includes asymptomatic patients as well as ruptured ones that go into shock. Increased morbidity and occasionally even fatality are consequences of delayed diagnosis.

Data from a few studies indicate that 3.5-7.1% of maternal deaths in underdeveloped nations, including India, are attributable to EP; however, the exact percentage is unknown [7,8].

According to reports, 3.5-7.1% of all maternal mortality rates (MMR) in India are thought to be caused by ectopic pregnancies 9,10

In order to better understand the epidemiology, risk factors, clinical presentation, diagnosis, treatment modality, and morbidities of all

ectopic pregnancy cases that have occurred in the last three years in our tertiary care centre in Muzaffarnagar, North India, this study was conducted.

MATERIAL AND METHODS

This was a 3 year retrospective cross-sectional study derived from Medical record room in our hospital (muzaffarnagar medical college and hospital, muzaffarnagar) which is a tertiary care center. All the ectopic pregnancies (ruptured, unruptured, and chronic) managed at and referred to, our center from January 2018 to December 2021 were included in the study. Ethical clearance was taken from the institutional ethics committee.

For these demographic and clinical data, case record files, discharge summaries, ultrasound entries, operating room data and hospital admission/ discharge registers were screened. Possibility of ectopic pregnancy was suspected on basis of clinical symptoms which were amenorrhoea, pain in abdomen or bleeding per vaginum. Favouring signs were presence of adnexal mass and cervical motion tenderness, or hemoperitoneum. Ultrasound was done to assist the diagnosis. The following parameters age, parity, risk factors, clinical presentation, mode of management, intra-operative findings, and outcome in terms of morbidity (hospital stay, blood transfusion, intensive care unit requirement) and mortality were assessed. For continuous variables, mean with standard deviation was used. For categorical variables, frequencies and percentages were used.

RESULTS:

Table 1: Demographic Data, Presentation And Risk Factors

DEMOGRAPHIC DATA :		
CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE
1. AGE (in years)		
-< 20	01	1.33
-20-24	40	53.33
-25-29	27	36
-30-34	04	5.33
-35-40	02	2.67
->40	01	1.33
2. PARITY		
-Nullipara	22	29.33
-P1	35	46.67
-P2	07	9.33
-P3	06	8
->=P4	05	6.67

3. RESIDENCE		
-Urban	23	30.67
-Rural	52	69.33
PRESENTATION :		
CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE
SYMPTOMS :	2	2.67
ASYMPTOMATIC		
CLASSIC TRAIT	43	57.33
AMENORRHOEA		
-<= 6 WEEKS	14	18.67
-6-12 WEEKS	50	66.67
-> 12 WEEKS	03	4
ABDOMINAL PAIN	44	58.67
BLEEDING PER VAGINUM	23	30.67
SIGNS :	07	9.33
SYNCOPEAL ATTACK		
HEMODYNAMIC SHOCK	03	4
ABDOMINAL DISTENSION AND TENDERNESS	28	37.33
CERVICAL MOTION TENDERNESS	34	45.33
RISK FACTORS :		
CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE
H/O PREVIOUS INDUCED ABORTION	29	38.67
H/O INFERTILITY TREATMENT	16	21.33
PAST H/O PELVIC SURGERY	24	32
PAST H/O ECTOPIC	04	5.33
H/O PELVIC INFLAMMATORY DISEASE	31	41.33
H/O ATT INTAKE	08	10.67
H/O INTRAUTERINE DEVICE	03	4

Total 6572 deliveries occurred during the study period of 3 years, of which 75 were ectopic pregnancies, i.e., incidence of ectopic pregnancies at our center is 1.14%.

Demographic characteristics in terms of age, parity, residence are illustrated in Table 1. Maximum patients were between the age group of 20-24 years (53.33%) followed by 25-29 years (36%)

Maximum patients had parity of P1 (46.67%). Incidence of EP was seen more in the rural population (69.33%) as compared to urban.

The gestational age (calculated from last menstrual period) at presentation was maximum between 6-12 weeks(66.67%) . The classical triad was observed in 57.33% of women whereas 2.67% women at the time of presentation were asymptomatic. The most common symptom was lower abdominal pain seen in 58.67% of women.

Out of 75 cases, 67 women (93%) had a history of amenorrhea while the rest of the 08 patients did not have any overdue menstrual history although bleeding history in present menstrual cycle was only spotting. Cervical motion tenderness was present in 45.33 % of cases. Urine pregnancy test was done for all patients, and it was positive in 98% of cases. 07 women had an associated syncopal attack whereas 03 women presented with features of hemodynamic shock.

The most common risk factors found were PID (41.33%) and history of abortions (38.67%). Other associated risk factors were infertility (21.33%), history of pelvic surgery (32%), past history of ectopic in

previous pregnancies (5.33%), history of tuberculosis treatment(10.67%) and history of IUCD usage(4%)

TABLE 2: DIAGNOSIS, MANAGEMENT AND INTRA-OPERATIVE FINDINGS

DIAGNOSIS :		
CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE
CLINICAL ALONE	65	86.67
ULTRASONOGRAPHY	07	9.33
LAPAROSCOPY	03	4
MANAGEMENT :		
CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE
MEDICAL	16	21.33
SURGICAL		
-SALPINGECTOMY	53	89.83
-SALPINGOSTOMY	02	3.39
-SALPINGO-OOPHERECTOMY	04	5.33
INTRA-OPERATIVE FINDINGS :		
CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE
RUPTURED	34	45.33
UNRUPTURED	41	54.67
TUBO-OVARIAN MASS	4	5.33
TUBAL ABORTION	3	4
ADHESIONS	9	12
SITE		
-TUBAL		
1.AMPULLA	49	65.33
2.FIMBRIAL	20	26.67
3.ISTHMUS	08	10.67
-OVARIAN	02	2.67
SIDE		
-RIGHT	46	61.33
-LEFT	29	38.67
HEMOPERITONEUM		
-< 500ML	32	42.67
-500-1000ML	22	29.33
-1000-1500ML	12	16
-1500-2000ML	06	8
->2000ML	03	4

Examination included both clinical and radiological methods. Clinical examination was done in all patients, and clinical signs were diagnostic for 86.67 % of cases.

Diagnosis of ectopic pregnancy was made on clinical findings alone in 65 patients which was later on confirmed by an added modality of ultrasound and the most common presentation was presence of adnexal mass (93.12% of cases).The patients missed on clinical and diagnosed on ultrasound findings were 9.33% of the study population. In 3 patients ultrasound was inconclusive and the ectopic diagnosis was made on diagnostic laparoscopy.

Patients who were haemodynamically stable, had a gestational sac size measuring less than 4cm by transvaginal ultrasonography, had serum beta hCG (human Chorionic Gonadotropin) levels less than 10,000 U/ml and no free fluid in the pelvic cavity, were managed medically. Ability for regular follow-up was ensured before medical treatment.Sixteen (21.33%) women were managed medically with methotrexate. 11 of them had a single dose of methotrexate, while five needed a multiple dose regimen.

Among the 59 women managed surgically, 53 women underwent salpingectomy which was the most common surgical procedure employed and 4 women underwent salpingo-oophorectomy.

Above table shows that 34 (45.33%) patients presented as ruptured ectopic gestation at the time of presentation. 41 (54.67%) were in unruptured state and 3 (4%) had tubal abortion. 49 (65.33%) patients had gestation in the ampullary region of fallopian tube followed fimbrial region (20, 26.67%). Right sided(61.33%) ectopic pregnancies were more common as compared to the left side(38.67%) .

Out of 75 patients, 32 (42.67%) patients had hemoperitoneum less than 500 ml, 22 (29.33%) between 500-1000 ml, 12 (16%) patients had hemoperitoneum between 1000-1500 ml and 09 patients had hemoperitoneum more than 1.5 litres.

TABLE 3 : COMPLICATIONS

CHARACTERISTIC	NUMBER OF PATIENTS	PERCENTAGE
ICU ADMISSION	17	22.67
BLOOD TRANSFUSION REQUIREMENT	51	68
WOUND INFECTION	4	5.33
TRALI	2	2.67
BOWEL INJURY	1	1.33
MATERNAL MORTALITY	4	5.33

Admission to intensive care unit was required either due to haemodynamic instability or owing to complications like atelectasis and Transfusion Related Acute Lung Injury (TRALI). All ruptured ectopic patients required blood transfusion which ranged from minimum one transfusion to maximum seven transfusions.

More than half of the women needed blood transfusion (68%) and two women had transfusion related acute lung injury. 4 deaths were noted due to TRALI and hemodynamic shock. Abdominal wound infection was seen in four cases.

DISCUSSION

Ectopic pregnancy, an acute obstetrical emergency, accounts for about 3.5-7.5% of Maternal Mortality Rate (MMR) in India [10,11,12]. In our study, the incidence of ectopic pregnancy was found to be 1.14 %. Other studies reported 0.56-1.95% incidence among developing countries and 2.5 to 4.9 % in developed ones [11,12,13].

In our study, the most common age at time of presentation was from 20-24 years old (53.33%). It was similar to Osaheni et al who found a dominant bracket from 20 to 24 years old.[14] This corresponds to the reproductive age. The maximum incidence of ectopic pregnancy was seen amongst nulliparous women (29.33%) and primiparous women (46.67%). Similar observation was made by the authors who conclude that ectopic pregnancy is associated with low parity.[15,16]

The classical triad of abdominal pain, amenorrhoea and vaginal bleeding was seen in 57.33% of our cases. Other studies have reported this to be present in 28-95% women [17,11,12], pointing out that this is not a presenting symptom in most cases. A history of amenorrhoea was present in 89.34% of our cases.

Lower abdominal pain was the commonest clinical presentation in our subjects. The symptoms at the time of presentation: lower abdominal pain, amenorrhoea, syncopal attack and vaginal bleeding were as per noted globally.[16,17]

Mean gestational age at diagnosis of EP was 7.1 weeks in our study, while Khaleeqe et al., reported 6 weeks at the time of diagnosis [19]. Singh et al., reported that 52% of their cases did not have a preceding period of amenorrhoea [20]. Women may be unaware of being pregnant. Such patients are mostly attended to by a general practitioner hence careful history taking and sharp clinical diagnosis is a must.

In our study, history showed presence of at least one risk factor in 46.7% of the women, similar to other studies [19,20]. Among the risk factors, pelvic inflammatory disease was most common (41.33%) followed by previous pelvic surgery (32%), followed by previous abortions (38.67%) in our study, similar to that reported by Singh et al., and Mufti et al., in their respective studies [18-21].

A pregnancy test should be performed in all cases irrespective of their sterilisation status. Pregnancy must not be ruled out in women on such grounds.

Although clinical examination may raise suspicion of an EP, relying only on clinical signs and symptoms would have missed the diagnosis in 13.33% of our cases. Ultrasonography was useful in diagnosing most of these cases, with the exception of three cases which needed laparoscopy for diagnosis. Availability of ultrasonography is of utmost importance in avoiding delay in prompt diagnosis.

Most of the cases were managed surgically and a salpingectomy (89.83%) was performed. The fallopian tubes were the most common site of EP (94.4%). Most of the patients had ampullary (65.33%) ectopic pregnancy which was also noted to be the commonest site by other studies.[22] The prevalence of ectopic pregnancies on the right side is similar to the global trend.[22-25]

In developing countries, majority of patients are diagnosed after tubal rupture. Our centre being a tertiary level referral centre, 45.33% of the women had ruptured ectopic pregnancies at time of presentation and presented with a haemoperitoneum intraoperatively. 68 %women needed blood transfusion, which was similar to that in other studies [20,21,22,23]. Udigwe et al., reported a 94.4% need for blood transfusion, as all women presented with a ruptured ectopic pregnancy and underwent a laparotomy followed by salpingectomy.

There were 4 deaths due to EP during the period of our study. Maternal mortality due to EP was reported to be between 0% and 1.3% in various studies [20-26]. Mortality was mostly due to massive haemorrhage following rupture of the EP due to delayed referrals and diagnosis along with post operative complications of transfusion related lung injuries.

CONCLUSION

Ectopic pregnancies are a major cause of maternal morbidity and mortality in first trimester. If timely diagnosed and treated, it can be reduced certainly. Hence, early diagnosis, timely management, and avoidance of delay in referral are key points for best management of EP. In view of the presence of PID and history of induced abortions as the most significant risk factors, EP can be definitely avoided by controlling these risk factors. Since clinical examination is 100% sensitive, so high index of clinical suspicion for EP will be helpful in early diagnosis and best management. In comparison to medical management, surgical treatment has increased morbidity to the patient.

REFERENCES

- Tahmina, S., Daniel, M., & Solomon, P. (2016). Clinical analysis of ectopic pregnancies in a tertiary care centre in Southern India: a six-year retrospective study. *Journal of clinical and diagnostic research: JC DR*, 10(10), QC13.
- Omokanye LO, Balogun OR, Saladeen AG, Olatinwo AW, Saidu R. Ectopic pregnancy in Ilorin, Nigeria: a four year review. *Niger Postgrad Med J*. 2013 Dec;20(4):341-5. PMID: 24633280.
- Arup KM, Niloptal R, Kakali SK, Pradip KB. Ectopic pregnancy- an analysis of 180 cases. *Journal of the Indian Med Assoc*. 2007;105:308-14.
- Gharoro EP, Igbafe AA. Ectopic pregnancy revisited in Benin City, Nigeria: analysis of 152 cases. *Acta Obstet Gynecol Scand*. 2002;81(12):1139-43.
- Rana P, Kazmi I, Singh R, Afzal M, Al-Abbasi FA, Aseeri A, et al. Ectopic pregnancy: A review. *Arch Gynecol Obstet* 2013;288:747-57.
- Gharoro EP, Igbafe AA. Ectopic pregnancy revisited in Benin City, Nigeria: Analysis of 152 cases. *Acta Obstet Gynecol Scand* 2002;81:1139-43.
- SINGH, Nikita et al. Recent trends in risk factors of ectopic pregnancy: a retrospective study at a tertiary care centre. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, [S.I.], v. 11, n. 10, p. 2625-2629, sep. 2022. ISSN 2320-1789.
- Yadav K, Namdeo A, Bhargava M. A RETROSPECTIVE AND PROSPECTIVE STUDY OF MATERNAL MORTALITY IN A RURAL TERTIARY CARE HOSPITAL OF CENTRAL INDIA. *Indian J Community Health* [Internet]. 2013 Mar. 31 [cited 2022 Nov. 4]; 25(1):16-21. Available from: <https://www.iapsmupuk.org/journal/index.php/IJCH/article/view/282>
- Cornelius, A. C., Onyegbule, A., Uchenna, E. T., & Duke, O. A. (2014). A five year review of ectopic pregnancy at Federal Medical Centre, Owerri, South East, Nigeria. *Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria*, 23(3), 207-212.
- Taheri, M., Bharat, R. (2014). A UK national survey of trends in ectopic pregnancy management. *J Obstet Gynecol*, 34(6):508-11.
- Tahmina, S., Daniel, M., & Solomon, P. (2016). Clinical analysis of ectopic pregnancies in a tertiary care centre in Southern India: a six-year retrospective study. *Journal of clinical and diagnostic research: JC DR*, 10(10), QC13.
- Cornelius, A. C., Onyegbule, A., Uchenna, E. T., & Duke, O. A. (2014). A five year review of ectopic pregnancy at Federal Medical Centre, Owerri, South East, Nigeria. *Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria*, 23(3), 207-212.
- Ectopic pregnancy and miscarriage. (2014). NICE Quality standard. National Institute for Health and Clinical Excellence.
- Lawani OL, Anozie OB, Ezeonu PO. Ectopic pregnancy: a life-threatening gynecological emergency. *International Journal of Women's Health*. 2013;5:515-21.
- Meye JF, Sima-Zue A, Ole BS, Kendjo E, Engongah-Beka T. Current aspects of extra-uterine pregnancy in Libreville (Gabon): an account of 153 cases. *Sante*. 2002;12:405-8.
- Janecek J. Extra-uterine pregnancy. In: vokaer R. *Treaty of obstetric*, 1st edn MASSON; 1995:83-100.
- Arup KM, Niloptal R, Kakali SK, Pradip KB. Ectopic pregnancy- an analysis of 180 cases. *Journal of the Indian Med Assoc*. 2007;105:308-14.
- Olarewaju IAO, Ujah JA, Otubu M. Trends of ectopic pregnancy at Jos University Teaching Hospital Jos Nigeria. *Niger Med J*. 1994;2(26):57-60.
- Khaleeqe F, Siddiqui RI, Jafarey SN. Ectopic pregnancies: A three year study. *J-Pak Med Assoc*. 2001;51(7):240-42.
- Singh S, Mahendra G, Vijayalakshmi S, Pukale RS. Clinical study of ectopic pregnancy in a rural setup: A two year survey. *Natl J Med Res*. 2014;4(1):37-39.
- Mufti S, Rather S, Mufti S, Rangrez RA, Wasiq K. Ectopic pregnancy: An analysis of 114 cases. *JK-Pract*. 2012;17(4):20-23.
- Gharoro EP, Igbafe AA. Ectopic pregnancy revisited in Benin City, Nigeria: analysis of 152 cases. *Acta Obstet Gynecol Scand*. 2002;81(12):1139-43.

23. Sotubo O, Aboyeji AP. Ectopic pregnancy in Ilorin, Nigeria: a five-year review. Niger Med Pract. 1994;27(3):25-7.
24. Practice committee of the American Society of Reproductive Medicine. Medical treatment of ectopic pregnancy. Fertil Steril. 2008;90(5):206-12.
25. Musa J, Daru PH, Muthir JT, Ujah IA. Ectopic pregnancy in Jos Northern Nigeria- prevalence and impact on subsequent fertility. Niger J Med. 2009;18(1):35-8.
26. Udigwe GO, Umeononihu OS, Mbachu II. Ectopic pregnancy: a 5 year review of cases at nnamdi azikiwe university teaching hospital (NAUTH) Nnewi. Niger Med J. 2010;51(4):160.