

## A CLINICAL STUDY OF RUPTURED ECTOPIC GESTATION AND ITS OUTCOME IN A TERTIARY CARE CENTRE

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### Abstract

**Background:** Ruptured ectopic pregnancy is an acute emergency condition and is associated with maternal mortality and morbidity especially in developing countries. The incidence is around 1-2%. Commonest site is fallopian tube (95%). Even though the incidence was small, it accounts for 3% of pregnancy related deaths. The present study aims to study the incidence, socio-demographic risk factors, and clinical risk factors and to assess the maternal outcome in ruptured ectopic pregnancy. **Materials and Methods:** It is a prospective study conducted over a period of 1 year from March 2021 to February 2022. The study population is cases of ruptured ectopic pregnancy admitted to the department of Obstetrics & Gynaecology, Siddhartha Government Medical College, Vijayawada, Andhra Pradesh. The material for the present study was collected from patients who were admitted in the department of obstetrics with ruptured ectopic gestation. Depending on clinical features, CBP, BGT, Viral markers, urine pregnancy test, Trans vaginal sonography and Trans abdominal sonography was done to detect the site of ectopic pregnancy, adnexa and hemoperitoneum. Abdominal paracentesis and culdocentesis were also done. Patients were treated surgically and followed up to 2 weeks after discharge. **Results:** Statistical analysis was done using SPSS software version 21.0. 60 cases were admitted in the study period. All the patients were unbooked. Highest incidence of ectopic pregnancy among the age group 20-30 years 40 cases (66.6%). 50 (83.3%) of patients belong to low socio-economic group. In our study majority of them were with history of previous Caesarean section 32 (53.4%). 34 (56.6%) presented between 6-8 weeks of amenorrhoea. Common symptoms were abdominal pain 47 (78.4%), pain abdomen with vaginal bleeding 8 (13.4%), vaginal bleeding 2 (3.3%), shock 3 (4.8%). Commonest risk factors were previous Caesarean 32 (53.3%), followed by previous history of abortion 9 (15%), PID 7 (11.7%), Tubectomy failure 4 (6.6%) of cases. Site of ectopic pregnancy ampulla 29 (48.5%), isthmus 21 (35%), fimbria 4 (6.6%), cornua 4 (6.6%), scar ectopic 1 (1.6%). Most of them were left side ectopic 33 (55.1%), Right side 27 (44.9%). In majority of cases, Exploratory laparotomy with salpingectomy 57 (95.1%) was done. Local excision of scar ectopic in 1(1.6%). Laparoscopic salpingectomy in 2 (3.3%) cases. Hemoperitoneum of 24(40%) (500-1000ml) and blood transfusion of 2 units in 26 (43.4%) of patients. 40 (66.7%) patients have no post-operative complications and discharged after 7<sup>th</sup> post-operative day. **Conclusion:** Ectopic pregnancy is one of the leading cause of maternal mortality and morbidity in the reproductive women. Early diagnosis and management in the form of conservative surgery like salpingostomy or definitive surgery salpingectomy not only reduces the maternal mortality and morbidity, but also preserves future fertility.

## INTRODUCTION

Ectopic pregnancy is derived from the Greek word 'ektos' meaning 'out of place'. Ectopic pregnancy

is defined as the implantation and development of blastocyst at a site other than the endometrial lining of the uterine cavity.<sup>[1,2]</sup> It is a significant cause of maternal mortality and morbidity throughout the

world. Maternal mortality related to ectopic pregnancy is in decreasing trend over the last two decades due to availability of quantitative beta human chorionic gonadotrophin (beta HCG) testing, transvaginal ultrasound and laparoscopy which allow for early diagnosis and intervention.<sup>[3]</sup> Recent work has shown that factors effecting patients access to healthcare, such as COVID 19 pandemic, delay the timely diagnosis of ectopic pregnancy and increase morbidity and mortality by increasing the rate of tubal rupture and bleeding.<sup>[4]</sup>

The incidence of ectopic pregnancy is raising from 1 in 150 pregnancies to about 1:40 – 1:25 in present times.<sup>[5]</sup> The incidence is about 2% in women undergoing assisted reproductive techniques. The rate of ectopic pregnancy increases with age, 0.3% pregnancies occurring between 15-19 years of age and 1% between 24-44 years of age. The most common site of ectopic pregnancy is fallopian tubes in about 95% of cases.<sup>[6]</sup> In the fallopian tube, ampulla (70%) is the most common site of implantation followed by isthmus (12%) fimbria (11%), interstitial (2-3%). The ampullary portion of the fallopian tube is more distendable than other areas. Ectopic pregnancies in this location may result in tubal abortion and not be recognized clinically. The isthmus of the fallopian tube is not able to expand to accommodate a growing ectopic pregnancy and is more prone to rupture. Non tubal ectopic pregnancies and heterotopic pregnancies (1-3%) occur at sites like ovary (3%), cervix (<1%), primary and secondary abdominal ectopic (1%) or prior caesarean scar (1%), broad ligament or intra ligamentous ectopic pregnancy. Very rarely ectopic pregnancy has been reported either in the prolapsed fallopian tube, at the vault following total abdominal hysterectomy or subtotal hysterectomy in the cervical stump.<sup>[7]</sup> Non tubal ectopic pregnancies are less common but are associated with high mortality. The incidence of heterotopic pregnancy is 1 in 4000 pregnancies and is more common in cases of assisted reproduction. Ruptured ectopic gestation is an acute obstetric emergency. In developing countries like India, majority of the patients present late with rupture in a hemodynamically compromised state and is associated with maternal mortality and morbidity. Mortality from ectopic pregnancy varies with race. African American women having 6.8times the risk of maternal mortality from ectopic pregnancy than Caucasian American women. There has been an increase in incidence of ectopic pregnancy over the past three decades but the number of hospitalizations is decreasing because of increasing outpatient management with methotrexate to unruptured ectopic.

#### **Risk Factors**

The risk of ectopic pregnancy is greater in people with Prior ectopic pregnancy with a recurrence risk of 10-15% after first ectopic pregnancy and 25% recurrence in women with 2 or more ectopic pregnancies.<sup>[8]</sup> A positive history of PID, including

gonorrhoea, infection caused by Chlamydia trachomatis is associated with a high risk of developing ectopic pregnancy.<sup>[9]</sup> chlamydia trachomatis has been linked to 30-50% of all ectopic pregnancies.<sup>[10]</sup> Sterilization reversal increases the risk of ectopic gestation. Tubectomy and tubal surgeries like tuboplasty also increases the risk of ectopic gestation.

History of treatment for infertility with ovulation induction, in vitro fertilization increases the risk of ectopic pregnancy. If women became pregnant with intrauterine device (IUD)<sup>[11]</sup> insitu, tubal ligation, progesterone only pills or Progestasert IUCD, they are at increased risk of ectopic pregnancy compared to women who conceive without an IUD or tubal ligation or POPs. Up to half of the women presenting with ectopic gestation have identifiable risk factors.<sup>[12]</sup> Smoking even “light” consumption of 1 to 9 cigarettes per day, increases the risk of ectopic pregnancy by up to two fold.<sup>[13]</sup> Alteration of tubal motility, ciliary activity and blastocyst implantation are associated with nicotine intake. Additionally genital surgeries, endometriosis and dysmenorrhea have been recognized as significant risk factors. There is an increased risk of ectopic pregnancy in women with mental health disorders like depression, anxiety, adjustment disorder and somatoform disorder.<sup>[14]</sup> It is possible that the medications used for treating such disorders disrupt embryo transport through the fallopian tube and more studies are needed to understand the association between mental health and ectopic pregnancy before drawing definitive conclusions.

Women with more than one lifetime sexual partner are at moderately increased risk for ectopic pregnancy.<sup>[15]</sup> The increasing rate of caesarean section has led to the identification of hysterotomy scar as an additional site for ectopic implantation, and caesarean scar ectopic pregnancy ranges from less than 1 to 6% of all ectopic pregnancies.<sup>[16]</sup> Prior induced abortions and developmental defects of the tube such as elongation, diverticulum and accessory ostia also increase the risk of ectopic pregnancy.

Classical clinical triad of ectopic pregnancy includes amenorrhea, pain abdomen and vaginal bleeding or spotting. In case of series of ectopic pregnancy, 98.6% patients present with pain abdomen, 74.1% with amenorrhea and 56.4% with irregular bleeding.<sup>[17]</sup> However these symptoms are neither sensitive nor specific for ectopic pregnancy. These symptoms are also present in patients with miscarriage. The pain usually comes with severe intensity that is localized unilaterally; nevertheless, it can be mistaken for rupture corpus luteum cyst or torsion ovarian cyst. However, certain signs and symptoms are suggestive of possible rupture with intra-abdominal haemorrhage. These signs and symptoms include pallor, abdominal tenderness, tachycardia, hypotension, hypovolemic shock and syncope; temperature may be slightly elevated to 38<sup>0</sup>C. Patients may also have pain in the right shoulder due to diaphragmatic irritation. The

principal concern in ruptured ectopic pregnancy is bleeding, and in absence of timely emergency care, women may bleed to death.

## MATERIALS AND METHODS

A prospective study was conducted at Siddhartha medical college, Vijayawada, Andhra pradesh for a period of one year, from March 2021 to February 2022 with clearance from the Institutional Ethics Committee. Ethical committee approval obtained on Date: 06/03/2021. (Ref: IEC\2021\044\SMC). Informed consent was consent was taken. 60 cases were studied with ruptured ectopic pregnancy who are admitted to the labour room and ward.

### Statistical Analysis:

Data collected and recorded in the proforma during the whole study period were entered in Microsoft Excel sheet and analyzed by using SPSS software 21.0 to identify risk factors for Ectopic Pregnancy and Maternal mortality and morbidity.

### Inclusion Criteria and Exclusion Criteria

Antenatal women with Ruptured ectopic pregnancy were included and antenatal women with unruptured ectopic gestation and with surgical emergencies other than ectopic were excluded.

Diagnosis was made based on history, general physical examination and pelvic examination. CBP, BGT, Viral markers, urine pregnancy test, culdocentesis, paracentesis and ultrasonography (TAS and TVS) were done. Transvaginal ultrasonography is the imaging modality of choice for evaluating the pelvic structures and location of newly diagnosed pregnancy. TVS can definitively diagnose an ectopic pregnancy if an extra uterine gestational sac with yolk-sac or embryo is visible. The presence of hemoperitoneum and placental blood flow within periphery of this mass on colour Doppler (“Ring of fire”) can aid in diagnosis<sup>18</sup>. TVS

alone can diagnose ectopic pregnancy in more than 90% of cases. Transabdominal ultrasound permits visualisation of the pelvis and abdominal cavity and should be done as a part of complete ectopic pregnancy evaluation to detect adnexal mass and hemoperitoneum. Complex or solid adnexal masses are frequently associated with ectopic pregnancy; however the mass may represent a corpus luteum, endometrioma, hydrosalpinx, ovarian neoplasm, or pedunculated fibroid. Presence of free fluid in cul-de sac is frequently associated with ectopic pregnancy. The presence of intraabdominal free fluid should raise the concern for tubal rupture. Patients who were in shock were treated and taken for surgery. Blood transfusion was given preoperatively, intraoperatively and postoperatively as per the requirement of the individual cases. Prophylactic antibiotics were given. In majority of cases, exploratory laparotomy with unilateral salpingectomy was done. Salpingectomy with contralateral tubectomy was done in patients who did not wish to conceive. Local excision of scar ectopic was done in cases of scar ectopic pregnancy. In few hemodynamically stable cases, laparoscopic salpingectomy was done. All Rh-negative women less than 12weeks gestation were given 50µg of Anti-D, more than 12 weeks gestational age were given 300µg of Anti D intra muscularly within 72 hours of surgery.

## RESULTS

In this present study that was conducted over a period of 1 year from March 2021 to February 2022, the total number of deliveries are 9944 resulting in 9636 live births and the total number of ruptured ectopic pregnancies are 60 giving an incidence of 6.03 per 1000 deliveries.

**Table 1: Analysis of ectopic gestation in relation to age**

Age in years	<20	21-25	26-30	>30
No. of patients	6	25	15	14
Percentage	10%	41.6%	25%	23.4%

**Table 2: Analysis of ectopic gestation in relation to socioeconomic status**

Socio-economic status	Lower	Middle	High
No. of patients	50	10	-
Percentage	83.3%	16.7%	-

**Table 3: Analysis of ectopic gestation in relation to parity**

Parity	Primi	Gravida 2	Gravida 3	Gravida 4 and beyond
No. of patients	10	25	17	08
Percentage	16.6%	41.7%	28.4%	13.3%

**Table 4: Analysis of ectopic gestation in relation to period of amenorrhoea**

Period of amenorrhoea in weeks	<6	6-8	8-12	>12
No. of patients	1	34	22	3
Percentage	1.6%	56.6%	36.8%	4.8%

**Table 5: Analysis of ectopic gestation in relation to clinical presentation**

Clinical presentation	No. of patients	Percentage
Pain abdomen	47	78.4%
Pain abdomen with Vaginal bleeding	08	13.4%
Vaginal bleeding	02	3.2%
Shock	03	4.8%

**Table 6: Analysis of ectopic gestation in relation to risk factors**

Risk factors	No. of patients	Percentage
PID	07	11.7%
Previous history of abortion	09	15%
Tubectomy failure	04	6.6%
Tuboplasty	01	1.6%
Past history of IUCD use	01	1.6%
History of infertility treatment	-	
History of previous ectopic	01	1.6%
History of pulmonary TB	-	
History of previous caesarean section	32	53.4%
History of other abdominal surgeries	02	3.4%
No risk factors	03	4.8%

**Table 7: Analysis of ectopic gestation in relation to previous surgical history**

Surgical history	No. of patients	Percentage
Previous LSCS	32	53.4%
Tubectomy	04	6.6%
Tubal recanalization	01	1.6%
Appendectomy	02	3.4%
No surgical history	21	34.9%

**Table 8: Analysis of ectopic gestation in relation to Diagnostic methods**

Method	No. of patients	Positive (%)	Negative (%)
UPT	60	58(96.6%)	02(3.4%)
Paracentesis	36	20(55.6%)	16(44.4%)
Culdocentesis	35	22(62.8%)	13(37.2%)
USG	60	55(91.7%)	5(8.3%)
Laparoscopy	02	02(100%)	-

**Table 9: Analysis of ectopic gestation in relation to site of EP**

Site of ectopic pregnancy	No. of patients	Percentage
Ampulla	29	48.5%
Isthmus	21	35%
Interstitial	01	1.6%
Fimbria	04	6.6%
Cornua	04	6.6%
Scar ectopic	01	1.6%

**Table 10: Analysis of ectopic gestation in relation to side of ectopic**

Side of Ectopic	No. of patients	Percentage
Left	33	55.1%
Right	27	44.9%

**Table 11: Analysis of type of surgery done**

Surgery	No of patients	Percentage
Salpingectomy	57	95.1%
Salpingo-oophorectomy	-	-
Local excision of scar ectopic	1	1.6%
Laparoscopic salpingectomy	2	3.3%

**Table 12: Analysis of ectopic gestation in relation to hemoperitoneum**

Hemoperitoneum (in ml)	No. of patients	Percentage
<500ml	12	20%
500-1000ml	24	40%
1000-1500ml	18	30%
1500-2000ml	04	6.7%
>2000ml	02	3.3%

**Table 13: Analysis of post-operative complications**

Post-operative complications	No of patients	Percentage
No complications	40	66.7%
Fever	06	10%
Needing ICU support	10	16.6%
Abdominal distension	04	6.7%

## DISCUSSION

Ectopic pregnancy is a common life-threatening gynaecological emergency especially when ruptured. Now days the incidence of ectopic pregnancy is increasing due to better diagnostic facilities and increased awareness.

Incidence of ectopic pregnancy in present study was about 6.03 per 1000 deliveries. There were 60 cases of ruptured ectopic pregnancies reported during one year study period from March 2021 to February 2022. A study done at Shri Ramachandra Bhanja Medical College in India reported an incidence of 18/1000 deliveries.<sup>[19]</sup>

High incidence was found to be in the age group of 20-25 years (41.6%) followed by 26-30 years (25%). This is comparable to Behera et al<sup>[20]</sup>. Who reported an incidence of 54.8% in 21-30 years age group? Most of the patients belonged to low socio-economic status (83.3%), similar to Bandhana Pradhan et al series who reported 81.25% incidence in low socio-economic people. Most of the cases are referred from rural areas surrounding our tertiary care hospital. Low socio-economic status is mainly responsible for late presentation after the rupture of ectopic pregnancy. In this present study, the incidence of ruptured ectopic pregnancy is most common in parous women with highest incidence in Gravida 2 (41.7%) with post caesarean pregnancy, for this pelvic adhesions might be the reason. Multiparous women had higher incidence of ectopic pregnancy due to previous infections, abortions, previous surgeries. Our study was similar to Sindhura et al.<sup>[21]</sup>

In the present study majority of the patients reported at 6-8 weeks of gestation (56.6%) followed by 8-12 weeks of gestation (36.8%). Extra uterine pregnancies are commonly diagnosed at 6<sup>th</sup> week through 9<sup>th</sup> week of gestation; most patients present with non-specific complaints.<sup>[22]</sup> The commonest risk factor in this study was previous history of caesarean section in 53.4% patients. 15% patients had history of abortions. This is comparable to a study conducted by Emmanuel Onyemanchi Eke et al,<sup>[23]</sup> pelvic inflammatory disease is present in 11.7% of patients. No identifiable risk factors were present in 5% of patients. Tubal surgeries like tubectomy and tuboplasty contributed to 8.2% of cases and it is comparable to Jyotsna et al.

Majority of the cases had left sided ectopic gestation (56%) than right sided ectopic gestation. This is comparable to a study done at Niger Delta University Hospital, South Nigeria (51.9%).<sup>[24]</sup> In our study, Ampulla is the commonest site (48.6%) followed by isthmus (35%). In a study by Bouyer et al, the commonest site is ampullary (70%) followed by isthmus (12%), fimbrial 11%, ovarian 3.2%, and abdominal 1.3%.

Salpingectomy (95.1%) was the commonest lifesaving procedure performed in 57 patients. Salpingo-oophorectomy which was performed in the

presence of dense adhesions or tubo-ovarian mass. Local excision of scar ectopic was done in 1 patient (1.6%), laparoscopic salpingectomy was done in 2 cases (3.3%).

Hemoperitoneum was present in all cases (100%). Among them 40% of cases (24 patients) presented with hemoperitoneum of 500-1000 ml, 30% (18 patients) with 1000-1500 ml. In 20% (12 patients) where hemoperitoneum was less than 500ml. Rashmi A et al., reported 86.4% of patients with hemoperitoneum on laparotomy.

Majority of the patients (40 out of 60, 66.7%) had no significant post-operative complications except slight morbidity. 10 patients (16.6%) were haemodynamically unstable after the operation, required ICU care for 3 days. 6 patients (10%) had post-operative fever which subsided within 3 days and 4 patients (6.7%) had abdominal distension which subsided with conservative management. Complications in the present study are similar to the other studies.

There was 1 maternal death in the present study, which was in shock at the time of presentation with 2500ml of hemoperitoneum. Salpingectomy was performed and post operatively shifted to ICU. She was kept on ventilator support, 3 units of blood were transfused. Patient died on post-operative day 3. Thus timely diagnosis and right intervention can prevent the fatalities caused by extra uterine pregnancy.

## CONCLUSION

Any women in reproductive age presents with amenorrhea, pain and vaginal bleeding, whether she is tubectomized or not, high index of suspicion of ectopic pregnancy should be kept in mind and they should be screened with beta HCG and TVS. All high-risk cases for ectopic pregnancy like PID, IUCD, and tubal sterilization, tuboplasty, prior ectopic should be identified, screened and treated. High index of suspicion is needed whenever these patients come with history of missed period. Around 70 % of women can become pregnant again without any assistance even if a tube is removed in surgery. Reducing the rate of caesarean sections may reduce the incidence of ectopic pregnancy. Early diagnosis and management will prevent rupture ectopic pregnancy.

### Limitations:

Further study with greater number of cases is needed to establish the role of medical management and fertility sparing surgery in ectopic pregnancy.

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