

## A STUDY OF INCIDENCE, CLINICAL PRESENTATION AND RISK FACTORS ASSOCIATED WITH ECTOPIC PREGNANCY

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**ABSTRACT:** In the past two decades the incidence of ectopic pregnancy has been increasing dramatically worldwide. **AIM:** The aim of present study is to know the incidence, risk factors, clinical presentation of Ectopic pregnancy. **MATERIALS AND METHODS:** Three year study of 192 cases of diagnosed ectopic pregnancy from 2011 December to November 2014 was conducted in the department of Obstetrics and gynaecology, King George hospital, Visakhapatnam. Factors like age, parity, risk factors like smoking, pelvic inflammatory diseases, h/o Tubectomy, treatment for infertility, previous abortion, IUCD (Intra Uterine Contraceptive Device)usage, H/o previous ectopic pregnancy, dilatation and curettage, surgeries, clinical presentations and treatment were included and analyzed. Exclusive criterion is intra uterine pregnancy. **RESULTS:** Incidence of ectopic pregnancy in present study is 1 in 88 pregnancies. Out of 192 cases 34.37% belonged to 26-30 years, 31.28% in 21-25 years, 40% were multipara, 33.5% were associated with failed tubectomy. 21% had previous abortion, 10.9% were treated for infertility, 2.3% had previous ectopic pregnancy. Almost all the patients presented with abdominal pain, 39% presented in shock, and 78.1% had anaemia. Culdocentesis was positive in 46.9%. The most common site was ampullary part of tube. Least common site was interstitial part of tube. In 85.1% of cases had haemoperitoneum was more than 250 ml. In 62.5% of the cases were presented with right sided ectopic pregnancy. 96.8% required blood transfusion. Post-operative period was uneventful in all cases. Conclusion: The incidence of ectopic pregnancy has been increasing especially after the year 2000. The risk increases with tubectomy, IUCD users, Infertility, Previous abortion and D&C, PID. On other hand oral contraceptive pills has got very good protection against ectopic pregnancy.

**KEYWORDS:** Ectopic pregnancy, Risk factors, Rupture.

**INTRODUCTION:** The blastocyst usually implants in the endometrial lining of the uterine cavity. Implantation anywhere else other than the uterine cavity is called as ectopic pregnancy. It is derived from ektopos i.e. out of place. According to the ACOG (2008) 2% of all first trimester pregnancies are ectopic pregnancies. In India the incidence of ectopic pregnancy is 1-2%. The most common site of ectopic pregnancy is tube. Among the all tubal pregnancies 95% are in Ampulla. The remaining 5% of ectopic pregnancies occur in ovary, peritoneal cavity, within cervix. Most recently the previous Caesarean scar also found to be one of the sites for implantation. As per the data on demographic trends indicate the highest rates of ectopic pregnancy occurred in women aged 35 to 44 years.

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**ETIOLOGY:** In 1718, Dionis attributed tubal pregnancy to mechanical ovotubal disproportion. The causes of tubal pregnancy may be divided into 3 groups. 1. Conditions retard the passage of fertilized egg, such as salpingitis, (Krohn and associates 1951, and Johnson and Beecham 1951). Levin and associates demonstrate the risk of ectopic pregnancy is increased in women with history of PID<sup>[1]</sup> congenital malformations, tumours, (Magrath, Kelly, Cullen) pelvic adhesions, spasm, previous operations on tube.

Conditions which increase the tubal receptivity such as ectopic endometrium, tubal decidual reactions

Factors intrinsic in the conceptus include transmigration of ovum, delayed ovulation, and abnormal ovum or sperm and also fetal sex

The risk factors for ectopic pregnancy.

Previous ectopic pregnancy, Tubal corrective surgery, Tubal sterilization,<sup>[2]</sup> intra uterine device,<sup>[3]</sup> documented tubal pathology, infertility, Assisted reproductive technology, previous genital infection, chlamydial infection (ACOG 1998), smoking, prior abortion, multiple sex partners, prior caesarean delivery etc (Data from Bakken 2007a, b); Barnhart (2006); Bouyer (2003); Gala (2008); Karaer (2006); Virk (2007), and all their colleagues), failed contraception like some forms of tubectomy, high estrogen emergency contraception, minipills<sup>[4]</sup> (Ory, Sivin). Ectopic pregnancy is the most life threatening emergency in pregnancy leading to maternal deaths (Lewis G. The Confidential Enquiry into maternal and child health (CEMACH). Saving Mothers live: reviewing maternal deaths to make motherhood safer 2003-2005.<sup>[5]</sup>

**Termination of tubal pregnancy:** Tubal abortion result in complete resorption or complete abortion, incomplete abortion, missed abortion or tubal mole, tubal rupture either intra ligamentary or intra peritoneal rupture, or viable intra tubal pregnancy or intra uterine extrusion, chronic ectopic obscure or delayed or occult tubal rupture. Clinical diagnosis by amenorrhea, pain,<sup>[6]</sup> bleeding or spotting, other symptoms like syncope, collapse and unconsciousness. In case of pelvic haematocele act of micturition initiates new bout of pain and rectal symptoms like tenesmus, constipation.<sup>[7]</sup>

**Physical examination:** While the history is more valuable, the physical findings are also helpful for the diagnosis. In the obvious acute cases the diagnosis is usually apparent with obvious signs of intra peritoneal haemorrhage and associated with vascular collapse. Even with modern diagnostic methods women with ruptured ectopic pregnancy present with hypovolemia and shock.<sup>[8]</sup> Abdominal examination shows infra umbilical distention with relatively flat hypochondrium is seen which is an evidence of intraperitoneal haemorrhage. Tenderness over abdomen. Vaginal examination shows arterial pulsations may be felt on affected side. A pelvic mass is felt on adnexa with chronic ectopic with tenderness. Tender cervical movements. Uterine changes with decidualization. Bimanual examination reveals a rounded swelling in pouch of Douglas. Rare clinical signs of ectopic gestation Cullen's sign: bluish discoloration around umbilicus, Perioral halo, Halo sign.

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**Differential Diagnosis:** Abortion of early intra uterine pregnancy, Abortion complicated by salpingitis, Early intra uterine pregnancy complicated by pelvic tumor, Retroverted gravid uterus, Acute or sub-acute salpingitis, Dysmenorrhea, Rupture of follicular cyst or corpus luteal cyst, Torsion of ovarian cyst or pedunculated fibroid, Acute appendicitis, Reaction to intra uterine contraceptive device.

Additional aids to diagnosis: Urine pregnancy test, doubling time of serum HCG, serum progesterone, culdocentesis, curettage HPR, ultrasound –absent intra uterine gestational sac from sixth week or presence of adnexal mass, the sonographic appearance of small sac in very early weeks or a collapsed sac may actually be a blood clot or decidual cast.<sup>[9]</sup> Transvaginal scan report with empty uterus with serum HCG levels 1500 Miu/ml or higher was 100% accurate in identifying an ectopic pregnancy.<sup>[10]</sup> Vaginal color or pulsed Doppler ultra sound is used in identifying the ring of fire pattern and a high velocity low impedance flow pattern that is compatible with placental perfusion. It is also used to diagnose cervical pregnancy and to monitor the regression following Methotrexate therapy.<sup>[11,12]</sup> Laparoscopy helps in diagnosis (an un ruptured ectopic pregnancy is seen on laparoscopy as an oval, smooth egg shaped enlargement of the tube with a dusky blue cyanotic coloring) as well as therapeutic Treatment: Treat the shock with blood transfusion. Morphine or pethidine. Surgery conservative salpingostomy, salpingotomy, salpingectomy if the tube is extensively damaged.<sup>[13]</sup> with or without ipsilateral oophorectomy. Segment resection and anastomosis. Hysterectomy is indicated in women over 40 years with widespread pelvic adhesions or diseased uterus. In case of Rh negative blood Anti - D should be given for the protection against isoimmunization. Auto transfusion is advised in cases of severe blood loss. Other rare sited ectopic pregnancy are Angular pregnancy, cornual pregnancy and ovarian pregnancy

**MATERIALS AND METHODS:** This study was undertaken at obstetric and Gynecological department, King George hospital Visakhapatnam between December 2011 to November 2014 after obtaining clearance from the hospital ethical committee. The total ectopic pregnancies were 192 out of 17000 pregnancies. All the diagnosed cases of ectopic pregnancies were enrolled in the study. A detailed history and clinical evaluation was done and analyzed. Inclusive criteria: all diagnosed cases of ectopic pregnancy admitted in KGH during three year period of study. Exclusive criteria: all intra uterine pregnancies.

**RESULTS:** The incidence of ectopic pregnancy in the present study group was 1 in 88. The maximum number of ectopic pregnancies seen at the age between 26-30 years. The youngest was 18 years and oldest was 40 years.

Age groups	No. of cases	Percentage
15-20	40	20.8
21-25	56	29.2
26-30	63	32.81
31-35	21	10.94
36-40	12	6.25
<b>Total</b>	<b>192</b>	<b>100</b>

Table 1: Ectopic pregnancy in relation to age

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Parity	No. of cases	Percentage
Nulliparous	58	30.2
1	52	27
2	63	32.8
3	15	7.8
4	4	2.1
<b>Total</b>	<b>192</b>	<b>100</b>

Table 2: Distribution of cases based on parity

When review of the previous reproductive performance was studied, highest incidence occurred among the second gravida. Majority of the cases seen with low socio economic status group people. The incidence of ectopic pregnancy increased with increased interval between the pregnancies.

Risk factors	No. of cases	Percentage
None	30	15.6
Oral contraceptive pills	0	0
Tubectomy	65	33.8
Dilatation and curettage	18	9.4
IUCD	05	2.6
Previous abortion	40	20.8
Previous ectopic	5	2.6
Infertility	21	10.9
Appendectomy	2	1.1
Pelvic inflammatory disease	6	3.1
<b>Total</b>	<b>192</b>	<b>100</b>

Table 3: The risk factors associated with ectopic pregnancy

There was no risk factor identified in 15.6% cases with ectopic pregnancy. 33.8% of cases were noted in women with tubectomy. Nearly 10% of the cases associated with previous dilatation and curettage. Around 11% of the cases were seen with infertility. 20.8% cases of Ectopic pregnancy seen with h/o previous abortion. The incidence of ectopic pregnancy in IUCD users and recurrence of ectopic pregnancy seen in 2.6% of each. 4% of the ectopic pregnancies seen in women with Pelvic inflammatory disease. All the cases of ectopic pregnancy were presented with pain abdomen. 70% of the cases presented with amenorrhea. More than half of the cases seen with bleeding per vaginum. Approximately 30% of cases presented with other symptoms like giddiness, retention of urine, loose stools, nausea and vomiting. 70 % of cases presented with gross pallor and 40% were seen with shock. Less than 10%of the cases presented with fever. On examination abdominal tenderness was found to be a significant finding in 75% of cases. Abdominal distention was seen in 50% of the cases due to intraperitoneal

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haemorrhage. Guarding and rigidity seen in only 27% of cases. 15.6% of cases were seen without any symptoms. On speculum examination bleeding per vagina seen in only one third of cases. The size of the uterus was normal in 80% of the cases of ectopic pregnancy. 20% of cases presented with bulky uterus.

<b>Cervical tenderness</b>	<b>No. of cases</b>	<b>Percentage</b>
Absent	38	20
Present	154	80
<b>Total</b>	<b>192</b>	<b>100</b>

Table: 4 cervical tenderness

<b>Forniceal tenderness</b>	<b>No. of cases</b>	<b>Percentage</b>
absent	39	20.3
Tenderness alone	132	68.7
Tenderness with mass	21	11.0
<b>Total</b>	<b>192</b>	<b>100</b>

Table 5: Forniceal tenderness

Majority of the cases experienced tenderness alone. Only 11% had presented with mass also. Out of 192 cases in study group 39 cases presented without forniceal tenderness. Culdocentesis positive in 48% of the cases. More than 80% of the cases were ruptured ectopic pregnancy on Ultrasound. Most of the cases were right sided only.

<b>Urine pregnancy test</b>	<b>No. of cases</b>	<b>Percentage</b>
Negative	5	2.6
Positive	187	97.4
<b>Total</b>	<b>192</b>	<b>100</b>

Table 6: Urine pregnancy test in ectopic pregnancy

<b>Site</b>	<b>No. of cases</b>	<b>Percentage</b>
Ampullary	132	68.7
Isthmal	16	8.50
Interstitial	7	3.64
Cornual	1	0.52
Fimbrial	24	12.4
Ovarian	8	4.16
Cervical	1	0.52
Abdominal	3	1.56
<b>Total</b>	<b>192</b>	<b>100</b>

Table 7: Site of ectopic pregnancy on laparotomy

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Majority of the cases of ectopic pregnancy (68.7%) were in ampullary part of tube followed by fimbria (12.4%) and isthmus (8.5%). Ovarian pregnancy was seen in 4.16%, and interstitial 3.64%, abdominal 1.56% and cornual 0.52%. Significantly more number of cases admitted with rupture (70.3%) and 14.9% cases with tubal abortion. Rest of the cases were unruptured (10.1%).

Most of the patients were referred from outside with diagnosis of ruptured ectopic pregnancy. Hence our mode of treatment was mainly surgical. More than 50% of cases had salpingectomy with contralateral tubectomy and unilateral salpingectomy (36%). In remaining cases, bilateral salpingectomy in 4.7%, bilateral salpingo oophorectomy in 3.1% and unilateral salpingo oophorectomy in 1.6%. More than 90% of the cases had blood transfusion as well as plasma expanders infusion.

**DISCUSSION:** The incidence of ectopic pregnancy has been increasing over the past 20 years. This may be due to number of factors like increased frequency of infections, tubal surgery and diagnostic facilities. Ectopic pregnancy can occur at any time from menarche to menopause. The incidence is 1 in 88 pregnancies in the present study where as it was 1 in 151 in Paran Jyothy study 1965, and gradually the incidence has come down to 1 in 341 in a study conducted by Sheila 1995. In another study conducted by Savitha Devi, 2000 the incidence was 1.7 in 100 deliveries. The incidence is more in the age group of 21-30 years and in 2<sup>nd</sup> gravida in Rose (2002) study which is similar to the present study. But Munro Kerr and East man contradicts the relation between parity and ectopic. Significant incidence of prolonged infertility and its causal relationship to ectopic pregnancy has been observed by several authors such as Eastman, (1976) Iffy (1961, 63), Greenhill (1965). Several authors have also reported primary infertility as a significant risk factor (Arora et al 1998, Mitra et al 1980). PID is also important predisposing factor for the occurrence of ectopic gestation (25% in the study of Savitha Devi 2000, 34.4% in Study of Rose et al 2002). But in our study only 4% of the cases were seen with the history of PID. Jeffcoate mentioned that the risk of ectopic pregnancy will be 15 folds in women with previous ectopic pregnancy. And previous abdominal surgery also one of the risk factors. The intra uterine contraceptive device caused 2.3% of cases of ectopic pregnancy in present study whereas the incidence of 11.9%, 7.69%, 33% were quoted by March Bunks et al (1998), Savitha Devi (2000) and Wills & Mohanambal (1991) respectively.

Risk factor	Wills & Mohanbal (1991)	March Bunks (1998)	Savitha Devi (2000)	Rose et al (2002)	Present study (2011)
None	-	-	-	32.2%	15.7%
OCP	-	1.6%	-	-	0
Tubectomy	15%	5.6%	13.46%	5.4%	33.5%
D&C	-	-	-	19.35%	9.5%
IUCD	33%	11.9%	4.69%	21.5%	2.3%
Previous abort	-	2.5%	1.92%	25.8%	21%
Previous Ectop	-	-	-	3.2%	2.3%

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Infertility	-	2.9%	48.07%	15.1%	10.9%
Appendectomy	-	-	-	-	0.8%
PID	20%	4%	25%	34.4%	4%

Table 8: Risk factors for ectopic pregnancy

Almost all the symptoms and signs produced by tubal pregnancy are caused by ultimate rupture of tubal wall or abortion with resultant haemorrhage into peritoneal cavity. In the present study it was found that only certain proportion of cases of tubal presented a text book picture of amenorrhea, bleeding per vaginum, fainting attacks, abdominal pain tenderness and adnexal mass.

Symptoms/signs	Pendse (1981)	Rose (2002)	Present study
Amenorrhea	72.7%	78.5%	68.7%
Pain abdomen	73.6%	92.4%	100%
Bleeding	65.4%	66.6%	54.6%
Others	30.9%	31.2%	31.2%
Pallor	84.5%	70.9%	70.3%
Shock	13.5%	9.7%	39%
Fever	-	-	7.8%
None	-	-	23.4%
Abdominal tendernesss	89%	83.9%	74.2%
Guarding	5.4%	-	27.3%
Distension	16.3%	49.5%	45.3%
Cervical movements	86.3%	55.9%	78.1%
Fornix fullness	54.5%	46.2%%	11%

Table 9: Symptoms and signs of ectopic pregnancy

The present study has shown almost the similar incidence of symptoms and signs which are seen in Rose (2002) and Pendse (1981) studies. But the incidence of shock in the present study group were more than other two studies. Probably due the patients were from remote areas where there were no proper transport facilities. 7.8% cases of the present study were seen with fever and 11% with forniceal fullness.

Site	Wills & Mohanambal	Savitha Devi	Present study
Ampulla	34%	61.53%	68.7%
Isthmus	56%	13.46%	7.8%
Interstitial	3%	-	3.9%
Ovary	1%	1.92%	4.7%

Table 10: Site of ectopic pregnancy



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The most common tubal site of ectopic pregnancy is ampulla which was shown in both Savitha Devi and Present study. Conversely in Wills & Mohanambal study isthmus was the frequent site of tubal pregnancy.

**CONCLUSION:** There is an increased incidence of ectopic pregnancy during the past two decades. The mode of treatment has also been changed from radical to conservative surgery and even to medical and expectant management. But in the present study though the early diagnostic tools available, most of our study group patients landed for emergency surgery due to late referral. If the woman in reproductive age group comes with lower abdomen pain irrespective of presence or absence of amenorrhea and underwent tubectomy or not, diagnosis of ectopic pregnancy should be ruled out.

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