

A STUDY ON THE EPIDEMIOLOGY OF ECTOPIC PREGNANCY IN A TERTIARY CARE CENTRE IN NORTH KERALA

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ABSTRACT: INTRODUCTION: Ectopic pregnancy is still the leading cause of maternal death in the first trimester. It is a nightmare for the obstetrician Globally, there is an increased incidence of ectopic pregnancy due to the increase in the incidence of sexually transmitted diseases, increase in the prevalence of ART procedures and tubal reconstruction surgeries. **OBJECTIVES:** Aim of the study was to find out the incidence of ectopic pregnancies the risk factors and to find out the relation between ectopic pregnancy and family planning practices and to evaluate the clinical presentation, methods of management and outcome. **SETTINGS:** A prospective descriptive study was conducted in the Institute of maternal and child health, Government Medical college, Kozhikode, Kerala, for a period of one year from 01/01/2013 to 31/12/2013. All patients with ectopic pregnancy and pregnancy of unknown location attending our OP and casualty were included in the study. **RESULTS AND CONCLUSION:** There were 270 cases of ectopic pregnancies during the study period of one year. Total number of deliveries during the period was 15727 thus giving an incidence of 1.72% of total deliveries. Mean age of presentation was 29±1. 90.3% of them were multigravidas. 69.4% of them had some risk factors identified and 30.6% had no risk factors. There were 50 cases of sterilization failures during this period. 40 cases presented with ruptured ectopic and only 10 cases were intrauterine. Among the risk factors identified, sterilization, infertility and genital infection topped the list. 68% of them had an acute presentation and 6.2% of them were brought in shock. 49.6% of them had laparotomy and surgical management. All surgically managed patients had a hospital stay of <1 week and conservatively managed had a stay of >1 week. There was no mortality in the present study. Theoretically, all women are at risk of ectopic pregnancy. Those with some risk factors are having a much higher risk. Risk factors may not be always present Hence ectopic pregnancy should be suspected in any woman of reproductive age group who presents with unexplained abdominal pain and or vaginal bleeding.

KEYWORDS: Ectopic pregnancy, PID, Sterilization, Infertility.

INTRODUCTION: Ectopic pregnancy is a life threatening condition that every obstetrician may face in her or his practice. Ectopic pregnancy occurs when a developing blastocyst becomes implanted at a site other than the endometrium of the uterine cavity.^(1,2,3,4) The most common extra uterine site is the fallopian tube which accounts for 98% of all ectopic pregnancies. Other locations are less common. Approximately 1% occur in ovary, cervix and abdomen.

Ectopic pregnancy is still the leading cause of the maternal death in the first trimester despite improved diagnostic methods leading to earlier diagnosis and treatment. The exact

incidence of ectopic pregnancy is largely unknown because the diagnosis is missed when the ectopic pregnancy resolves spontaneously at an earlier stage.

In developed countries between 1-2% of all pregnancies are ectopic pregnancies. The incidence is higher in developing countries but specific numbers are unknown. Although the incidence in the developed world has remained relatively static in recent years, between 1972 & 1992 there was an estimated 6 fold rise in the incidence of ectopic pregnancy⁽⁵⁾ This increase was attributed to increased incidence of PID, smoking and increased use of ART procedures.

Comparison of incidence of ectopic pregnancies in different countries is difficult because various authors use different denominators to express the results. The most commonly used denominators are, per thousand live births, per thousand reported pregnancies and per ten thousand women aged 15-44 years.

The etiology of ectopic pregnancy remains enigmatic. The most common etiologic theory is a delay in ovum transport. A likely consequence of delay is that the ovum becomes too large to pass through certain areas of the fallopian tube particularly the isthmic segment and utero tubal junction.

Theoretically, all sexually active women are at risk of experiencing an ectopic pregnancy. However, women of reproductive age group who are associated with some risk factors are having a much higher risk. There are a number of risk factors that can lead to tubal damage and dysfunction leading to ectopic pregnancy. High Risk factors include tubal surgeries like tubal sterilization, tubal corrective surgeries, previous ectopic pregnancy, intrauterine device and any documented tubal pathology. Moderate risk factors include infertility, previous genital infection and multiple sexual partners. Smoking, previous abdominal or pelvic surgeries are low risk factors. Some of them are idiopathic also.⁽⁶⁾

Natural history of an ectopic pregnancy includes tubal abortion, tubal rupture, or secondary abdominal pregnancy or it may resolve spontaneously.

Classic triads of symptoms are short period of amenorrhea, irregular vaginal bleeding, and abdominal pain. In ruptured ectopic pregnancy patient may be in shock, pallor, tachycardia and hypotension and cold and clammy extremities. The abdomen may be distended with blood in the peritoneal cavity. Vaginal examination reveals normal or bulky uterus with tenderness on moving the cervix. Fornices also may be tender and sometimes a tender adnexal mass may be felt. In unruptured ectopic, classical picture may not be present and clinical examination may be inconclusive. Urine pregnancy test will be positive and TVS and serial beta HCG monitoring is needed. TVS show empty uterine cavity and gestational sac in the adnexae (Bagel sign) or gestational sac with embryo with cardiac activity or fluid in the peritoneal cavity and POD due to rupture.

Laparoscopy is the gold standard for diagnosis. For ruptured ectopic, laparotomy, salpingectomy and blood transfusion is the management. For unruptured, surgical, medical, expectant methods are available.

AIM OF THE STUDY: The present study is conducted in the Institute of maternal and child health, Government Medical college Kozhikode where patients from five Northern Districts of Kerala are attending. A prospective study is conducted during January 20013 to December 2013

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for a period of 1 year to evaluate the risk factors of ectopic, to find out the incidence and to find out the relation between ectopic pregnancy and family planning methods, clinical presentation and diagnostic techniques used for identification, methods of management and the mortality and morbidity associated with ectopic.

MATERIALS AND METHODS: This is a descriptive study conducted in the department of obstetrics and gynecology in IMCH Kozhikode from 1/1/2013 to 31/12/2013 for a period of one year. All patients with ruptured and unruptured ectopic pregnancies and pregnancy of unknown location (PUL) were included in the study. Patients with serum beta HCG of $<5\mu\text{ml}$ were excluded from the study.

After taking a history regarding risk factors like tubal sterilization, tubal recanalisation, h/o CuT insertion, or current user of IUCD is also noted. History of recurrent genital infection in the form of vaginal discharge and pelvic pain for which they had undergone treatment from local hospitals is enquired into. H/O infertility and the method of treatment undergone are also noticed. Previous h/o abdominal or pelvic surgery also recorded. Risk factors for ectopic pregnancy like multiple sex partners, age of marriage reflecting the age of first coitus and history of smoking is also taken into consideration.

Symptoms and signs were noted carefully because it may influence the choice and aggressiveness of the treatment. A patient with unruptured ectopic is managed conservatively or expectantly and patients with signs and symptoms of ectopic need aggressive treatment.

The diagnosis of ectopic pregnancy was established by means of urine pregnancy test, ultra sonography and beta HCG estimation. Most of the patients were referred from outside with a trans abdominal ultrasound scan. Hence, in cases of doubt a trans vaginal ultrasound was done. In cases of unstable patients who could not be shifted to do an ultrasound, abdominal paracentesis was done to confirm intraperitoneal hemorrhage.

Cases with unruptured ectopic who were haemodynamically stable and ectopic sac size of $\leq 4\text{cm}$ in diameter and serum beta HCG of $<10000\text{ IU/ml}$ and without cardiac activity were given injection Methotrexate. Case with ruptured ectopic with haemoperitoneum, patients in shock and unruptured tubal pregnancy with cardiac activity were subjected to laparotomy. Cases with pregnancy of unknown location were managed expectantly.

Evidence of previous sterilization, pelvic adhesions, site of pregnancy and the amount of haemoperitoneum were noted. Method of surgery done and the amount of blood transfusion was also observed. Postoperative morbidity and mortality and the duration of hospital stay also was followed up.

The study was approved by the ethics committee of the Government Medical College Kozhikode.

RESULTS: A total of 270 cases of ectopic pregnancies were recorded during the study period of 1 year. Total no of deliveries during the period was 15727 thus giving a frequency of 1.72%. Mean age of the patient was 29 ± 2.914 (18-45) years (Figure 1). All of them were married, except one (Table 1). 90% of the patients belonged to low socioeconomic status. 90.3% of them

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were multigravidas (Table 2). Amenorrhea was not present in 9.2% of them. Majority presented between 5 & 8 weeks of gestation (63.9%) (Table 3).

69.4% of them had some risk factors identified and 30.6% had no risk factors. 14.8% of them were sterilization failures (Figure 2). There were 50 cases of sterilization failure during the study period. Out of this only 10 cases were intrauterine and another 40 cases were ectopic pregnancies.

Among the high risk factors identified sterilization (14.8%), infertility (16%) and genital infections (14.3%) topped the list. Recurrent ectopic was seen in 2.2% only (Table 4).

The majority had an acute presentation (68%) (Figure 3). Chief complaints were amenorrhea, abdominal pain and vaginal bleeding. Only 10.9% of them had pregnancy symptoms (Table 5). 6.2% of them were brought in shock (Table 6).

Diagnosis was made mainly by urine pregnancy test, ultrasonography and clinical signs (Table 7). 49.6% of patients had laparotomy (Table 8) and Fallopian tube was the site of ectopic (Table 10) and all had radical surgery in the form of salpingectomy because the majority had ruptured before surgery (Tables 8, 11). All of them required blood transfusion (Table 12). 11.1% of ectopic, had medical management with methotrexate and while on treatment two of them had ruptured and ended in laparotomy (Table 12). 38.2% had expectant management with beta HCG follow up.

98.5% of the surgically managed patients had a hospital stay of <1week and only 1.49% of them had a stay of >1week. All patients managed medically and expectantly had to stay for >1week (Table 13).

DISCUSSION: Ectopic pregnancy is one of the life threatening emergencies in gynecology. The center for disease control first began to report the incidence of ectopic pregnancy in the US in 1973. The incidence was 4.5/1000 pregnancies at that time. Now it has increased to 2% of all pregnancies. The increase in incidence is due to increased incidence of PID, availability of sensitive assays for Beta HCG and also increase in ART procedures.⁽¹⁶⁾

In the present study the incidence is 17.1/1000 deliveries in the year 2013. Westrim in 1981 in Sweden and Rubin et al in the USA reported that the incidence is increasing with age. Maximum incidence is seen in 21-30 age groups (71.4%) in the present study and the mean age of the patient was 29±2.914. Years. This difference may be because in Kerala most women marry at a younger age and undergo sterilization at less than 30 years. 15% Of the patients were primigravidas and the remaining were multigravidas. Kohl et al has reported that ectopic pregnancy is more in lower socioeconomic classes than the higher society which is also seen in our study. 90% of the patients belonged to the lower socioeconomic group.

9.2% of the patients had no amenorrhea at the time of diagnosis, which indicates that a simple urine pregnancy test is an important investigation for any woman in the reproductive age group with pain abdomen, pallor and hypotension. More than 2 /3rd of the patients presented between 5 & 8 weeks of gestation which indicates that an early ultrasound scan to confirm intrauterine pregnancy can save many lives.

No risk factors were identified in 1/3rd (30.6%). Among the high risk factors sterilization (14.8%), infertility (16%) and genital infection (14.3%) topped the list. Among the 50 cases of

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sterilization failure in the study, 40 were ectopic pregnancies and only 10 were intrauterine. When sterilization failure occurs pregnancy is more likely to be ectopic than it would be with a woman who has not been using contraception and becoming pregnant. In the CREST study, of the 143 pregnancies that occurred after failed sterilization, 1/3rd were ectopic pregnancies.⁽¹⁵⁾ Any sterilization failure should be carefully observed to rule out ectopic. The failure is due to recanalisation and the recanalised part of the tube may not be having the same caliber as the original fallopian tube leading to obstruction ending in tubal ectopic.

The most convincing evidence that PID is the most common cause of ectopic pregnancy comes from the work of Westrom (1975) and colleagues who reported 7 fold increase in the ectopic rate in women with laparoscopic ally proven salpingitis. In the present study 14.3% of the ectopic patients had some form of genital infections. Infertility may be secondary to PID, endometriosis and other medical factors that may cause ectopic and some of the drugs used to treat infertility and methods like IVF-ET also may lead to ectopic pregnancies. In the present study, 16% of the patients had infertility.

49.6% of the patients had surgical management because all of them had ruptured their tubes before diagnosis. Out of this 29.8% were following sterilization failures. This is due to the fact that pregnancy was not diagnosed before it ruptures in sterilization failures. Hence a simple urine pregnancy test is mandatory when they come with amenorrhea even in patients who had undergone sterilization years before. Theoretically, all women are at risk of experiencing an ectopic pregnancy. A woman who has undergone sterilization is having much higher risk than a non-sterilized woman.

OUTCOME: In the present study the incidence of ectopic pregnancy is 1.7% of deliveries. Ectopic pregnancy is more common in multi gravidas. But primis are also not without risk. Maximum incidence is seen in patients who had undergone sterilization, who had infertility and treatment for infertility and who had a history of genital infection. Nearly half of the patients had an acute presentation requiring laparotomy and blood transfusion. Hence, in any patient with amenorrhea, pain abdomen with or without bleeding per vaginum, ectopic pregnancy has to be excluded from doing a urine pregnancy test and ultrasonography especially in those with risk factors like sterilization, infertility and PID.

Unfortunately atypical presentations are also very common. In the present study, 9.2% of the patients had no amenorrhea. An ectopic pregnancy may mimic other gynecological disorders like salpingitis, rupture of ovarian cyst or corpus luteum cyst and gastrointestinal disease like appendicitis and urinary tract infection. The 1997- 1999, and 2010-2005 confidential enquiry into maternal death reports highlighted that most of the women who died from ectopic pregnancy was misdiagnosed in the primary care or accident or emergency settings.^(8, 9)

It was therefore recommended that all clinicians should be made aware of the atypical clinical manifestations of ectopic pregnancy. In the 2006-2008 centre for maternal and child enquiries (CMACE) reported that 4 of 6 women who died from early ectopic pregnancy complained of diarrhea, dizziness or vomiting as early symptoms without triggering any consideration for extra uterine pregnancy by their medical attendants.⁽¹⁰⁾ However it is difficult to diagnose ectopic pregnancy from risk factors, history and examination alone. Hence clinicians

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should always bear in mind the possibility of ectopic in any woman with abdominal pain or pelvic symptoms in the reproductive age.

In the 19th century the reported mortality due to ectopic was 70%. In the UK, ectopic pregnancy remains the leading cause of pregnancy related first trimester deaths (0.35/1000 ectopic pregnancies).⁽¹¹⁾ However, in the developing world, it has been estimated that 10% of women admitted to hospital with the diagnosis of ectopic pregnancy ultimately die from the cause.⁽¹²⁾ Timely diagnosis with the help of urine pregnancy test and ultrasound which is widely accessible now days has improved the diagnosis and management of these patients. There was no mortality in the present study.

There is no concrete way to prevent ectopic pregnancy. Pelvic infections caused by STDs can be reduced by promoting the use of condoms.

Among the risk factors tubal sterilization is found to be an important risk factor which is preventable. This can be prevented by promoting male sterilization and using a better method of contraception with least chance for ectopic. Two such devices are available now. One is LNG IUD and the other is Cu380 A.

In a 7 year prospective study, not a single ectopic pregnancy was encountered with LNG IUD in 8000 women years of experience. In randomized multicentre trials there has been a single ectopic pregnancy reported with T Cu 380A which is 1/10th the rate with Lippe's Loop or TCu200. The protection against ectopic pregnancy provided by T Cu380A and LNG IUDs makes these IUDs acceptable choices for contraception in women with previous ectopic pregnancies.⁽¹⁴⁾

It has been found that 14.3% of the patients had previous genital infections. There are three types of genital tract infections in women, endogenous infections (Candida, bacterial vaginosis), STI and iatrogenic vaginal infection (IUCD insertion, MR, MTP). RTI is largely ignored mainly because of the belief that these diseases primarily occur in sexually promiscuous adults and rarely a problem of the general population. Recently, medical officers and health workers in primary health care settings are being trained in screening, early detection and management of RTI and STI. This may help in the treatment of pelvic inflammatory diseases, thereby avoiding some of the life threatening ectopic pregnancies. Men are more symptomatic than women and partners can be included in the treatment to treat the asymptomatic infection in women.

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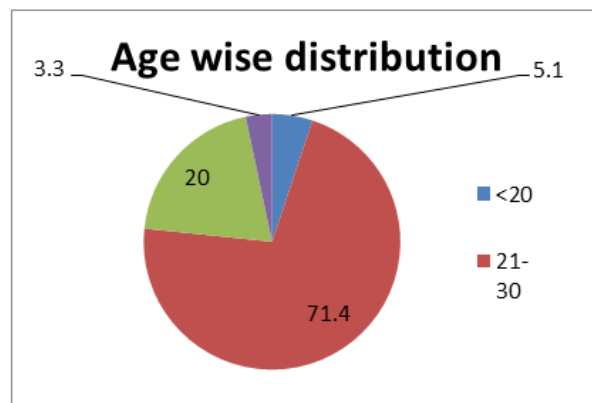


FIGURE 1

Marital status	No.	Percentage
Married	269	99.6%
Unmarried	1	0.4%

Table 1

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Gravidity	No.	Percentage
Primi	15	5.5%
G2	157	58.1%
G3	87	32.2%
G4	11	4.07%

Table 2

Gestational age	No	Percentage
No Amenorrhoea	25	9.2%
<5 weeks	56	20.7%
5-6weeks	98	36.2%
6-8weeks	75	27.7%
>8weeks	16	0.37%

Table 3

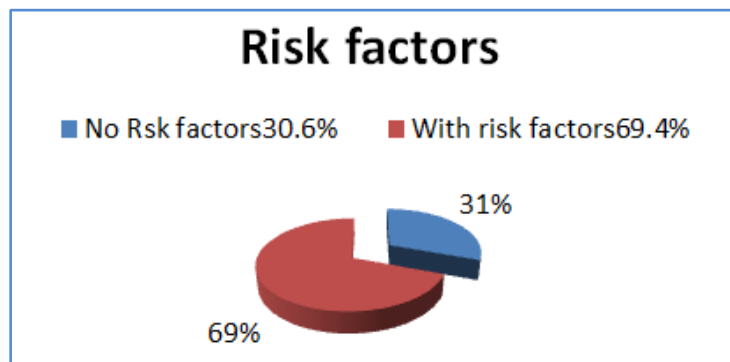


FIGURE 2

Risk factors	No.	Percentage
Sterilization	40	14.8%
Infertility	43.2	16%
Genital infection	38	14.3%
Previous ectopic	6	2.2%
Previous caesarian	15	5.5%
IUCD	10	3.7%
Age of coitus <18	56	20.7%
Previous abortion or MTP	82	30.7%
H/o Tuberculosis	1	0.3%

Table 4

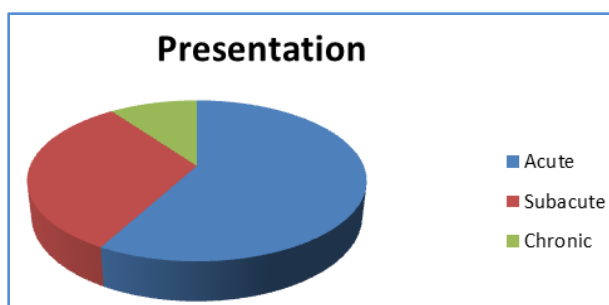


FIGURE 3

Symptoms	No.	Percentage
Abdominal pain	260	95.6%
Amenorrhoea	245	87.4%
Vaginal bleeding	165	61.2%
Fainting attack	72	26.7%
Passage of tissues	7	2.75
Urge to defecate	4	1.65
Pregnancy symptoms	29	10.9%

Table 5

Signs	No	Percentage
Shock	17	6.2%
Abdominal tenderness	237	81.9%
Adnexal tenderness	210	78.15%
Fulness in the fornix	19	2.7%
Uterine enlargement	67	25.1%
Orthostatic changes	37	13.7%
Free fluid	99	37.1%
Cervical excitation pain	83	30.6%
Adnexal mass	82	30.4%

Table 6

Diagnostic tests	No.	Percentage
UPT	270	100%
USG	242	87.9%
Beta HCG	116	43.2%
Paracentesis	29	10.9%

Table 7

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Presentation	No.	Percentage
Ruptured	112	41.4%
Unruptured	136	50.3%
Tubal abortion	14	5.1%
Chronic ectopic	6	2.2%

Table 8

Management	No.	Percentage
Surgical	134	49.6%
Medical	30	11.1%
Expectant	104	38.2%
Medical failed surgical	2	4.06%

Table 9

Sites of ectopic	No.	Percentage
Tubal	214	79.2%
Ovarian	0	0
Cervical	0	0
Abdominal	0	0
PUL	56	20.74%

Table 10

Types of surgery	No	Percentage
Radical	134	100%
Conservative	NIL	0%

Table 11

Blood transfusion	No	of patients Percentage
No transfusion	20	14.5%
One pint	27	23.1%
Two pints	65	48.5%

Table 12

Duration of hospital stay	<1 week	%	>1 week	%
Surgical	132	98.5	2	1.49
Medical	0	0	30	100
Expectant	0	0	104	100
Medical failed surgical	0	0	2	100

Table 13

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