

# Clinico-epidemiology and outcome of ectopic pregnancy: An experience of 7 years in St. Stephen's hospital, Delhi

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**Abstract**— Ectopic pregnancy is an important cause of maternal morbidity & mortality in the first trimester. Treatment of ectopic pregnancy was limited to surgery. In spite of advancement of diagnosis & management it is still a very serious threat to maternal safety, so this case-series type of study was conducted on 58 ectopic pregnancies to study the clinico-epidemiology and outcome of medically managed ectopic pregnancy at a tertiary level hospital. Out of total 20,354 pregnancies, 443 (2.1%) were ectopic pregnancies. Most common site of ectopic pregnancy was Fallopian tubes in 94.8% cases followed by ovary in 3.4% cases and heterotopic in 1.7%. Age range was 17 years to 36 years with mean age  $28.12 \pm 4.10$  years. Parity wise maximum were nulliparous (53.4%) followed by para one (25.9%), para two (19%) and para three (17.2%). Ectopic pregnancies on right side were found in 55.2% while in left side in 44.8%. 75.8% had bleeding per vaginam and 74.1% had pain abdomen as their chief complaints. History of abortion was found in 44% cases and past history of ectopic pregnancy was found in 8.6% cases whereas past history of pelvic inflammatory disease in 22.4% cases and infertility in 13.8% cases. 1.7% cases had IUCD in situ while 5.2% cases had history of past IUCD insertion. History of ovulation induction was present in 8.6% cases, 3.4% cases were IVF conceived and 1.7% underwent laparohysteroscopy for infertility treatment. In this study success rate of methotrexate therapy was found 93.1%. Emergency surgery was needed only in 6.9% of cases. So it can be concluded that bleeding per vagina and pain abdomen may be investigated for ectopic pregnancy and ectopic pregnancies should be treated first line with methotrexate before surgery.

**Keywords:** Ectopic Pregnancy, Methotrexate, Clinico-epidemiology.

## I. INTRODUCTION

Ectopic pregnancy is a global problem and has showed a rising incidence during last three decades.<sup>1</sup> It is also the most important cause of maternal morbidity & mortality in the first trimester.<sup>2</sup>

Incidence of ectopic pregnancy is about 1-2%, out of which 98% are in fallopian tube but also can be implanted at various sites such as ovaries, abdomen, broad ligament, and previous caesarean scar.<sup>3</sup>

This increase incidence is associated with increase rate of pelvic infections, advances in assisted reproductive technology (ART), tubal surgeries & sterilizations, use of intrauterine devices etc.<sup>4</sup> Chlamydia trachomatis has been linked to 30-50% of all ectopic pregnancies.<sup>5</sup>

Ectopic commonly presents with pain & vaginal bleeding, syncope & hypotension between 6-10 week of gestation.<sup>6</sup> The implanted ovum burrows actively into the tubal lining & its vessels and is responsible for bleeding. Pain is caused by prostaglandin release at site of implantation & also by free blood in peritoneal cavity acting as a local irritant.<sup>3</sup>

The concept of combining transvaginal ultrasound and quantitative serum  $\beta$ -hCG measurement within a

diagnostic algorithm has resulted in a profound change occurring in both the diagnosis and management of ectopic pregnancy.<sup>7</sup>

Historically the treatment of ectopic pregnancy was limited to surgery. With evolving experience of using methotrexate, the treatment of ectopic has revolutionized.

In spite of advancement of diagnosis & management it is still a very serious threat to maternal safety & hence an open field to study.

So this study was conducted to study the clinico-epidemiology and outcome of medically managed ectopic pregnancy at a tertiary level hospital.

## II. METHODOLOGY

This case-series type of study was conducted from 1<sup>st</sup> July 2009 to 30<sup>th</sup> June 2016 in the department of Obstetrics & Gynaecology, St. Stephen's Hospital, New Delhi. Cases for study were selected from the patients presenting with early pregnancy to Obstetrics and Gynaecology Department, St. Stephen's Hospital with complaints of pain abdomen, spotting per vaginum or features suggestive of ectopic pregnancy.

For the purpose of sample size calculation, success rate in medical management in ectopic pregnancy was assumed ( $p$ ) = 70%, precision error of estimation ( $d$ ) = 0.15 and  $\alpha$  = 0.05; with these assumptions sample size was calculated 40 subjects. Total 58 eligible ectopic pregnancies were studied in this study.

All diagnosed cases of hemodynamically stable unruptured ectopic pregnancy applicable for medical therapy admitted to St. Stephen's hospital during 7-year period were included in this study. Cases who had with signs/symptoms of active bleeding or hemoperitoneum, who had hypersensitivity to methotrexate and who had disease which may interfere in treatment were excluded from study. Finally, out of total ANCs, 58 were included in study.

After taking written informed consent from patients they were explained about medical management of ectopic pregnancy and its risk and benefits. Medical treatment protocol was as follows:-

Day 0: Obtain baseline  $\beta$  hCG levels

Day 1: Injection Methotrexate 50 mg/m<sup>2</sup> intramuscular single dose

Day 4: Repeat  $\beta$  hCG levels

Day 7: Obtain  $\beta$  hCG levels

If the  $\beta$ -HCG level had dropped 15% or more since day 4, weekly  $\beta$ -HCG levels were measured until they have reached the negative level for the lab. If fall in  $\beta$ - hCG levels from day 4 to day 7 is less than 15 % than second dose of methotrexate was given and patient observed similarly. If no drop had occurred by day 14, surgical therapy was indicated.

If the patient developed increasing abdominal pain with methotrexate therapy, transvaginal ultrasonographic scan was repeated to evaluate for possible rupture. Patients who were Rh negative, Rh immunoglobulin were also given.

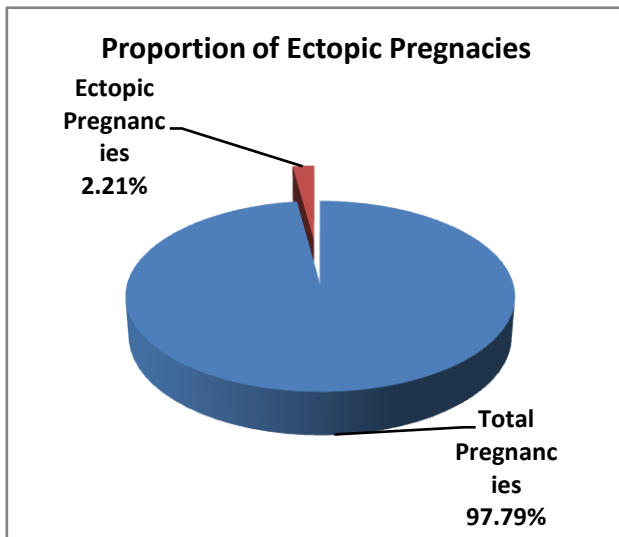
Descriptive statistics were analyzed with SPSS version 17.0 software (Trial version). Continuous variables were presented as mean $\pm$ SD. Categorical variables were expressed as frequencies and percentages. Nominal categorical data between the groups were compared using Chi-squared test or Fisher's exact test as appropriate. And  $p < 0.05$  was considered as significant.

### III. RESULT

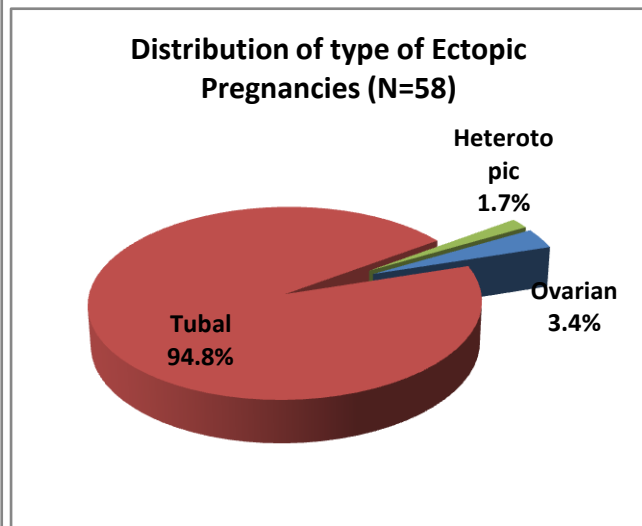
During the study period of 7 years, there were a total of 20,354 pregnancies in this hospital including 443 (2.1%) cases of ectopic pregnancies. (Figure 1)

Fallopian tubes were the most common site of implantation in 94.8% cases, ovary in 3.4% cases. In 1.7% cases heterotopic pregnancy was noted. (Figure 2)

**Figure 1**



**Figure 2**



In the present study 19% cases were from the age group 17-25 years, 53.4% cases were from the age group 26-30 years, 27.6 % were from the age group of >30 years. Age range was 17 years to 36 years with mean age  $28.12 \pm 4.10$  years. (Table 1)

In the present study parity wise, 53.4% cases were nulliparous, 25.9 % cases were para-1, 19% cases were para-2 and 17.2 % cases were para-3. Interval between last normal intrauterine pregnancy and present ectopic pregnancy was <1 year in 5.2% cases, 1-5 years in 32.8% cases, and > 5 years in 8.6% cases. Mean interval between last normal intrauterine pregnancy and present ectopic pregnancy was  $3.80 \pm 3.00$  years. (Table 1)

In the present study 55.2% ectopic pregnancies implanted on the right side while 44.8% ectopic pregnancies implanted on left side. (Table 1)

**Table 1**  
**Epidemiological profile of study population (N=58)**

		No. of cases	Frequency in percent(%)
Age	17-25 Years	11	19.0
	26 - 30 Years	31	53.4
	>30 Years	16	27.6
Parity	0	31	53.4
	1	15	25.9
	2	10	17.2
	3	2	3.4
Period from last normal pregnancy	<1 yr	3	5.2
	1 - 5 yrs	19	32.8
	>5 yrs	5	8.6
Side of tubal pregnancy	Left	26	44.8
	Right	32	55.2

In this study 89.6% patients had amenorrhoea, 75.8% had bleeding per vaginum and 74.1 % had pain abdomen as their chief complaints. Other associated symptoms were vomiting in 10.3 % and fainting attack in 1.7% cases. (Figure 3)

In the present study on USG uterine cavity was empty in 87.9% cases, showed decidual reaction in 8.6% cases, Cu T in situ in 1.7% cases. Intra uterine G sac was seen in one case of heterotopic pregnancy. Adnexal mass was present in all the cases. Uterine enlargement was noted in 13.8% cases. Minimal free fluid was noted in 12% cases. (Figure 4)

Figure 3

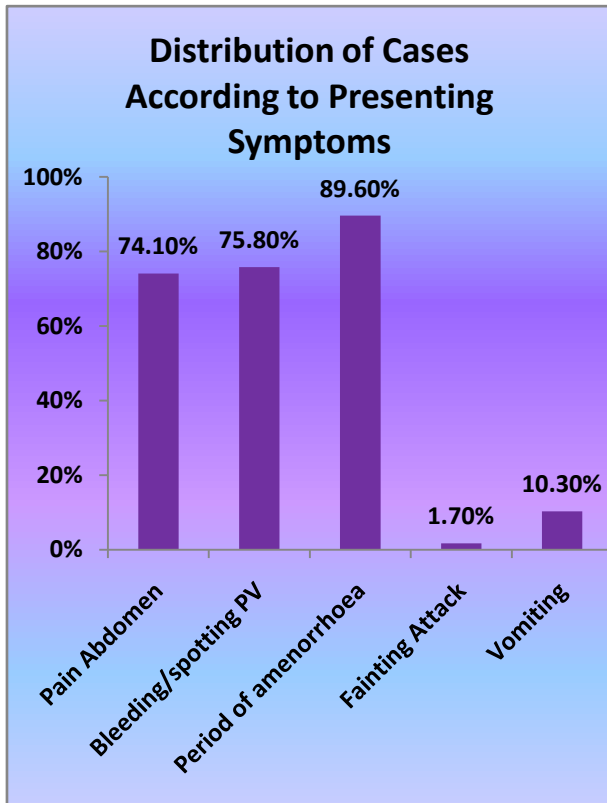
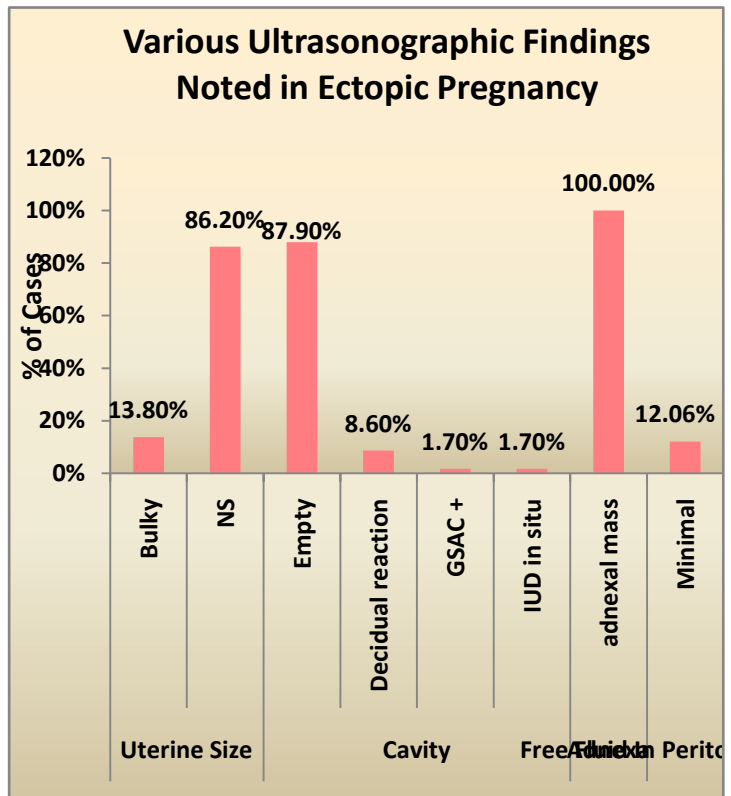


Figure 4



In this study, history of induced abortion was present in 19% cases, history of spontaneous abortion in 24.1% cases and past history of ectopic pregnancy was present in 8.6% cases. (Table 2)

Past history of pelvic inflammatory disease in 22.4% cases and infertility in 13.8% cases. 6.9% cases had history of primary infertility and 6.9% cases had history of secondary infertility. (Table 2)

1.7% cases had IUCD in situ while 5.2% cases had history of past IUCD insertion. 1.7% cases were using oral contraceptive pills. (Table 2)

History of previous surgery in form of D&E was present in 19% cases, caesarean section in 17.2% cases, and surgery for previous ectopic pregnancy in 6.9% cases, and 1.7% had tubal surgery for infertility. (Table 2)

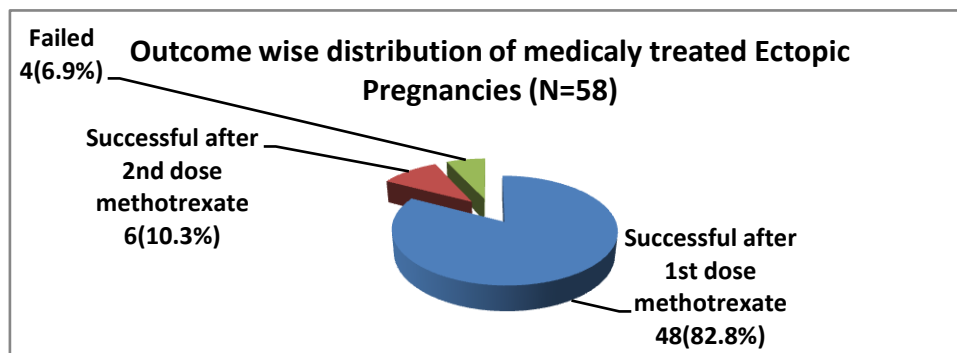
History of ovulation induction was present in 8.6% cases, 3.4% cases were IVF conceived and 1.7% underwent laparohysteroscopy for infertility treatment. (Table 2)

**Table 2**  
**Associated risk factors in study population**

S. No.	Associated risk factors	No. of cases	Frequency in percent(%)
1	A. Factors in obstetric history a. Induced abortion b. Spontaneous abortion c. Past history of ectopic pregnancy	11 14 5	19.0 24.1 8.6
2	B. Past history of a. Pelvic inflammatory disease b. Genital tuberculosis c. Infertility { primary Secondary	13 0 4 4	22.4 0.0 6.9 6.9
3	C. History of contraceptive use Abdominal a. Sterilization { Laparoscopic Current use b. IUCD { Past use c. Oral contraceptive pills	0 1 3 1	0 1.7 5.2 1.7
4	D. History of previous surgery a. D&E b. Caesarean section c. For previous ectopic pregnancy d. Tubal surgery for infertility	11 10 4 1	19.0 17.2 6.9 1.7
5	E. History of infertility treatment a. Ovulation induction b. IVF c. Laparohysteroscopy	5 2 1	8.6 3.4 1.7

In this study success rate of methotrexate therapy in was found 93.1%. Emergency surgery was needed in 6.9% of cases. (Figure 5)

**Figure 5**



#### IV. DISCUSSION

In the present study age range of ectopic pregnancy cases was 17 years to 36 years with mean age 28.12  $\pm$  4.10 years. Other authors also reported maximum cases from 20 years to 30 years i.e. 72.5% by Gupta R et al,<sup>8</sup> 71.6% by Panchal D et al<sup>9</sup> and 66.5% by Barnhart KT et al.<sup>10</sup>

In the present study nearly half of the cases (53.4%) occurred in nulliparous women. Present study was supported by a study Barnhart KT et al<sup>10</sup> which and Gupta R et al<sup>8</sup> who reported ectopic pregnancy in 47.4% and 40% in nulliparous respectively. Its preponderance in first and second pregnancy is not surprising as this may be explained by the fact that major risk factors of sexually transmitted infection and abortions precede the ectopic pregnancy in a cause effect relationship.

In the present study, history of abortion was present in 43.1% of cases. Shaikh NB et al<sup>11</sup>, Udigwe GO et al<sup>12</sup> and Shetty S et al<sup>13</sup> reported almost similar observation i.e. 33%, 32.9% and 29% history of abortion respectively in their series.

Past history of ectopic pregnancy was reported in 8.6% cases of ectopic pregnancy in this study. Almost similar (7.8%) was reported by Shah N et al<sup>14</sup>, 6% by Shetty VH et al<sup>13</sup> and 5% by Gupta R et al<sup>8</sup>.

Prior pelvic inflammatory disease has been thought to have a strong association with ectopic pregnancy. In present study it was found in 22.4% of cases, which was supported by Barnhart KT et al<sup>10</sup> who found 24.5 % in their study. Indian Council of Medical Research Task force project<sup>15</sup>(1990) noticed a 6-fold high risk of ectopic pregnancy among patients who had PID as compared to women who never had PID. PID causes damage to the fallopian tube by distorting the tubal architecture and having an effect on tubal microenvironment.

History of infertility was found in 14 % of cases in present study. ICMR task force project 1990 concluded that women who had treatment of infertility had 12 fold increased risk of ectopic pregnancy as compared to women who never had this problem.<sup>15</sup> Several authors have reported higher incidence of infertility preceding ectopic pregnancy as compared to present study: Shetty VH et al<sup>16</sup> 20%, Gupta R et al<sup>8</sup> 22.5% and Shah N et al<sup>14</sup> 23.6%, whereas lower incidence than present study was reported by Udigwe GO et al<sup>12</sup> 6.6%. Although incidence reported by Panchal D et al<sup>9</sup> 11.6% is quite similar to incidence reported in present study.

In this study 8.6% cases of ectopic pregnancy were followed by ovulation induction for infertility treatment. Similar incidence (10.3%) was reported by Khaleeque F et al<sup>17</sup>.

Use of intrauterine device was found in 6.9% cases in present study. Out of them 1.7% cases had IUCD in situ whereas 5.2% had history of previous use of IUCD. Incidence of ectopic pregnancy with history of IUCD as reported by Shetty S et al<sup>13</sup> is 6.4%, Shetty VH et al<sup>16</sup> is 6%, Barnhart KT et al<sup>10</sup> is 5.5% and Khaleeque F et al<sup>17</sup> is 5.1%, which is quite comparable to the present study.

17.2% cases of ectopic pregnancy in this study had history of prior Caesarean section. This incidence is quite comparable to that reported by Lee KR et al<sup>18</sup> (13.4%). Etiology may be adhesions resulting from previous surgery which can cause tubal kinking and damage. History of tubal surgery in cases of ectopic pregnancy in this study was 1.7% which is quite comparable to incidence reported by Shah N et al<sup>14</sup> (2.6%) and Shetty S et al<sup>13</sup> (3.2%).

Abdominal pain was present in 74.1% cases and bleeding per vaginum was present in 75.8% cases in

the present study. Khaleeque F et al<sup>17</sup> reported pain abdomen (79%) and Barnhart KT et al<sup>10</sup> reported bleeding per vaginum in 75.7% in their study. Pain may be due to stretching of tubal serosa, tubal contraction and peritoneal irritation.

In this study, right sided ectopic pregnancy is more common than left sided ectopic pregnancy (55.2% v/s 44.8%). A significant prevalence of right ectopic pregnancy in present study as compared to left side coincides well with the studies of Udigwe et al<sup>12</sup> (69.4%), Khaleeque et al<sup>17</sup> (60%), and Shetty VH et al<sup>16</sup> (60%). The right sided preponderance is attributable to appendicitis. Subclinical infection of appendix is very common which leads to a favourable atmosphere in the right fallopian tube for developing ectopic pregnancy.

Most common (94.8%) site for ectopic pregnancy was found fallopian tube in present study. is the most common site of implantation of ectopic pregnancy, accounting for 94.8% cases. Ovary was involved in 3.4% cases. Almost similar was reported by Panchal D et al<sup>9</sup> 94.9%, Shetty S et al<sup>13</sup> 93.7%, Shetty VH et al<sup>16</sup> 96% and Khaleeque F et al<sup>17</sup> 92.3%.

Overall success rate of ectopic pregnancy with methotrexate therapy was found 93.1% in present study. Cirik DA et al<sup>19</sup> reported a similar overall success rate of 93% in their study which is well in resonance with present study.

## V. CONCLUSION

This present study concludes that proportion of ectopic pregnancies were 2.1% among total pregnancies. Most common site was Fallopian tubes in 94.8% followed by ovary. Parity wise as parity increases chances of ectopic pregnancy decreases. Ectopic pregnancies were observed in 55.2% in right side while in left side in 44.8%. 75.8% of cases had bleeding per vaginum and 74.1 % had pain abdomen as their chief complaints. History of abortion was present in 44% cases and past history of ectopic pregnancy was found in 8.6% cases. Past history of pelvic inflammatory disease in 22.4% cases and infertility in 13.8% cases. 1.7% cases had IUCD in situ while 5.2% cases had history of past IUCD insertion. History of previous surgery in form of D&E was present in 19% cases, caesarean section in 17.2% cases, and surgery for previous ectopic pregnancy in 6.9% cases, and 1.7% had tubal surgery for infertility. History of ovulation induction was present in 8.6% cases, 3.4% cases were IVF conceived and 1.7% underwent laparohysteroscopy for infertility treatment. In this study success rate of methotrexate therapy in was found 93.1%. Emergency surgery was needed in 6.9% of cases.

So it can be concluded that bleeding per vagina and pain abdomen may be investigated for ectopic pregnancy and ectopic pregnancies should be treated first line with methotrexate before surgery.

## CONFLICT OF INTEREST

None declared till now.

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