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## Original Research Article

## A clinical analysis of ectopic pregnancies in a tertiary care centre: A one year retrospective study

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## ABSTRACT

**Introduction:** Following fertilization and fallopian tube transit, the blastocyst normally implants in the endometrial lining of the uterine cavity. An ectopic pregnancy occurs when a fertilized ovum implants outside the normal uterine cavity. Fortunately, beta-human chorionic gonadotropin ( $\beta$ -hCG) assays and transvaginal sonography (TVS) aid earlier diagnosis, maternal survival, and fertility conservation.<sup>1</sup> Ruptured ectopic is a surgical emergency.

**Aim:** To study and analyse ectopic pregnancies in a tertiary care centre.

**Objectives:** To determine the incidence, risk factors, clinical presentation, management, morbidity and mortality of ectopic pregnancy.

**Materials and Methods:** A retrospective analysis of ectopic pregnancies was done in Gandhi hospital, Secunderabad from October 2021 to September 2022 (1 year duration) with a sample of 97 cases of suspected ectopic pregnancies observed and treated, out of total 11252 pregnant women admitted.

**Results:** The incidence of ectopic pregnancy was 8 per 1000(0.81%) pregnancies, majority between the age of 20-30yrs (87.5%) and in higher order pregnancies (3or>3 pregnancies) (50.4%). Risk factors were multiparity (50.5%), h/o infertility treatment (12.3%), tubal sterilisation (7.2%). The typical triad of amenorrhoea, pain abdomen and bleeding p/v was observed in 69% of cases. In 16.4% cases the haemoglobin was <7gm% at presentation. Among 97 suspected cases of ectopic pregnancies, 90(92.7%) cases were found to have ectopic pregnancy. 27.8% of cases were presented in class 2 or more haemorrhagic shock. 79% cases were ruptured ectopic pregnancies. Ampullary ectopic pregnancies were predominant(62.9%) followed by cornual (14.6%) > fimbrial(13.4%) > ovarian(4.4%)> isthmus (2.2%). 2 women among 97 cases of suspected ectopic pregnancies were found to have Heterotopic pregnancy {tubal+intrauterine [missed abortion]}. Unilateral salpingectomy was done in 90.5% cases. Medical management was done successfully with single dose of methotrexate in 1 case. Blood transfusions were given in 69.9% cases. Post op wound complications were observed in 3.1% cases. Mortality is zero in present study.

**Conclusion:** Clinicians should be aware of the fact that any women in reproductive age group presenting with pain in lower abdomen or vaginal bleeding, ectopic pregnancy should be suspected irrespective of presence or absence of amenorrhoea, whether or not she has undergone sterilization, because early diagnosis is critical in reducing maternal morbidity and mortality and improving treatment success rates.

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## 1. Introduction

An ectopic pregnancy occurs when a fertilized ovum implants outside normal uterine cavity.

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The cardinal rule in the evaluation of early pregnancies with bleeding, especially in early 1<sup>st</sup> trimester, is to have a high index of suspicion for an ectopic pregnancy.<sup>2</sup>

Over 95% of ectopic pregnancies occur in fallopian tube's various segments. The ampulla [70%] is most frequent site followed by isthmus[12%], fimbrial[11%], interstitial[2%].<sup>1</sup>

Non tubal ectopic pregnancies comprise the remaining 5% and implant in ovary, peritoneal cavity, cervix, prior cesarean scar.<sup>1</sup>

Occasionally, a multifetal pregnancy contains one conceptus with normal uterine implantation and the other implanted ectopically-Heterotopic pregnancy.<sup>1</sup>

The classic triad of ectopic pregnancy is Amenorrhoea that is followed by Abdominal pain and Vaginal bleeding.

'When in doubt, do it' was indeed standard teaching in the management of ectopic pregnancy until the development and easy availability of serum beta-hcg testing, transvaginal ultrasound and laparoscopy. With highly sensitive urine pregnancy tests, if the test is positive and the uterus is empty on ultrasound, a diagnosis of ectopic pregnancy should be made unless proved otherwise.<sup>3</sup>

Because of the ready availability of both pregnancy test and the ultrasound, a number of ectopic pregnancies are now diagnosed even before any symptoms occur or at a very early stage with mild bleeding and discomfort and stable haemodynamic condition. This has opened up the possibility of treating ectopic pregnancies medically without the need for surgery.<sup>3</sup>

Ultrasound criteria of an ectopic gestation include failure to visualise an intrauterine pregnancy at a serum beta-hCG level greater than 1500 units, visualisation of an extrauterine gestation sac with or without a living embryo, a nonspecific, variably vascular, variably tender adnexal mass and free fluid in the pelvis.<sup>3</sup>

## 2. Aim of the Study

To study and analyse ectopic pregnancies in a tertiary care centre in one year.

## 3. Objectives

To determine the

1. Incidence
2. Risk factors
3. Clinical presentation
4. Management
5. Morbidity and Mortality of ectopic pregnancy.

## 4. Materials and Methods

Retrospective analysis of ectopic pregnancy was done in Gandhi hospital, Secunderabad from October 2021 to September 2022 { 1 year duration } with a sample of 97 cases

of suspected ectopic pregnancy observed and treated, out of total 11252 pregnant women admitted, are included in this study.

Age, parity, risk factors, clinical features, ultrasonography findings, mode of management, need for blood transfusions were noted.

Main outcome measures studied were incidence, risk factors, clinical presentation, management, morbidity and mortality.

## 5. Results

During the study period of 1 year, there were 11252 pregnant women admitted in the hospital and out of 97 suspected ectopic pregnancies 90 cases were found to have ectopic pregnancy giving the incidence of 0.8%(8 per 1000 pregnancies). 4 cases were found to have ovarian cyst, 1 case was found to have ovarian torsion and 2 cases were found to have negative laparotomy.

**Table 1:** Age of study population

Age ( yrs)	Number	Percentage
<20	4	4.1%
20-25	42	43.2%
26-30	43	44.3%
>30	8	8.2%

Majority of the patients (87.5% belonged to the age group of 20-30years.

**Table 2:** Gravidity

Gravidity	Number	Percentage
PRIMI	22	22.6%
2nd	27	27.8%
3rd	28	28.8%
4th	21	21.6%

In this study 77.4% were multigravida and 22.6% were Primigravida.

**Table 3:** Risk factors

Risk factors	Number	Percentage
Multiparity	49	50.5%
Tubal sterilisation	7	7.2%
Infertility Treatment	12	12.3%
H/O pelvic infection	4	4.1%
No risk factors	25	25.7%

In present study multiparity (50.5%) appears to be a most common risk factor.

In the present study the triad of amenorrhoea, pain abdomen, bleeding pv was seen in 69% of cases.

Out of 96 cases managed surgically, ultrasonography findings of 87(90.6%) cases correlated with laparotomy

**Table 4:** Mode of presentation

Presentation	Number	Percentage
Amenorrhoea	81	83.5%
Pain abdomen	97	100%
Bleeding PV	67	69%

**Table 5:** Correlation between UPT, ultrasonography findings and laparotomy findings

No.	UPT	Ultrasonography findings	Laparotomy findings
1	Positive	Left tubal ectopic pregnancy with minimal fluid in POD	Left ovarian ectopic gestation of 7*5 cms (confirmed by HPE) with 100ml haemoperitoneum
2	Positive	Right tubal ruptured ectopic pregnancy with moderate haemoperitoneum	Right ovarian ectopic (confirmed by HPE)+500ml blood loss+250gms clots.
3	Weakly positive	? right unruptured ectopic pregnancy	Right ovarian simple cyst of 4*3 cms
4	Weakly positive	?left unruptured ectopic pregnancy	Left ovarian simple cyst of 3*3 cms
5	Positive	?right tubal ectopic?right haemorrhagic ovarian cyst? corpus luteal cyst	Left ovary and tube normal, right ruptured haemorrhagic ovarian cyst, 150ml haemoperitoneum
6	Positive	?left tubal ruptured ectopic pregnancy ?left haemorrhagic ovarian cyst	Left haemorrhagic ovarian cyst, 200ml haemoperitoneum
7	Weakly positive	?right ruptured ectopic pregnancy	Right ovary was enlarged and cystic, left ovary was normal, right and left tubes were normal
8	Positive	?right ruptured ectopic pregnancy	B/L ovaries and tubes were normal
9	Positive	? right tubal ectopic pregnancy ?right haemorrhagic ovarian cyst	Right ovary and tube were gangrenous with ovarian ligament and infundibulopelvic ligament twisted around fallopian tube 3 times

findings. In remaining 9(9.3%) cases there was a disparity between ultrasonography and laparotomy findings (Table 5).

UPT was positive in all ectopic pregnancies.

False positive UPT was observed in 7 cases.

50%(1) cases of isthmic ectopic pregnancies, 30.7%(5) cases of cornual ectopic pregnancies, 26.6%(4) cases of fimbrial ectopic pregnancies, 20.7%(11) cases of ampullary ectopic pregnancies were presented with severe anaemia. P-value for the (Table 6) comparison is 0.68 which is statistically non significant.

Among 97 suspected ectopic pregnancies, intraoperatively, 89(92.7%) cases were found to have ectopic pregnancies, 4(4.2%) cases were found to have simple or haemorrhagic ovarian cyst, 1(1.04%) case was found to have ovarian torsion, 2(2.08%) cases were found to have negative laparotomy.(Table 7)

In present study ampulla is the common site of ectopic (62.9%).(Table 8)

In present study ruptured tubal ectopic pregnancies were found in 79% of cases and unruptured tubal ectopic pregnancies in 21% of cases.(Table 9)

In present study, >750ml blood loss (class II, III, IV haemorrhagic shock) was seen in 50% cases of isthmic ectopic pregnancies, 46.7% cases of cornual ectopic pregnancies, 33.4% cases of fimbrial ectopic pregnancies, 26.7% cases of ampullary ectopic pregnancies, 25% cases of ovarian ectopic pregnancies.(Table 10)

P-value for the Table 10 comparison is 0.46 which is statistically non significant.

Most common procedure done was unilateral salpingectomy (63.5%) one case was managed medically and successfully with single dose methotrexate.(Table 11)

In present study incidence of blood transfusion, postop wound complications was noted in 65.9%, 3.1% cases respectively. Mortality was zero in this study.(Table 12)

## 6. Discussion

In the present study, majority of the women belonged to the age group of 20-30 years (87.5%) which is close to the studies done by Samiya Multi et al (75.4%),<sup>4</sup> Panchal D et al (71.66%),<sup>5</sup> Gaddagi et al (70.2),<sup>6</sup> Sudha et al study (67.54%),<sup>7</sup> Chate, et al study(70.96%).<sup>8</sup>

We observed maximum incidence of Ectopic pregnancy was in multigravida i.e, 77.4% followed by primigravida i.e.22.6%. This correlates with the studies done by Shraddha Shetty K et al. (83.9),<sup>9</sup> Panchal D et al(81.66%)<sup>5</sup> Poonam et al. (83.6%),<sup>10</sup> Sudha, et al i.e.(82%).<sup>7</sup>

In present study, abdominal pain was present in 100% cases and amenorrhoea in 83.5% cases and bleeding pervaginum in 69% cases.Shetty S et al<sup>9</sup> observed the commonest symptoms were abdominal pain (80.6%), amenorrhoea (77.4%) and vaginal bleeding (61.3%) Gaddagi et al<sup>6</sup> observed that a majority of the cases presented with pain abdomen (89.2%), amenorrhoea (75.7%), spotting pv in 43.2%. Chate et al<sup>8</sup> study observed pain abdomen in 92.47% cases and amenorrhoea in 77.4% cases and bleeding pv in 58% cases. Sudha et al<sup>7</sup> observed amenorrhoea in 82.4% cases, pain abdomen in 78.5% cases

**Table 6:** Haemoglobin at presentation vs site of copic haemoglobin

Site of ectopic	>11gm%	9-10.9gm%	7-8.9gm%	4-6.9gm%	<4gm%	P-value
Cornua (13)	1(7.8%)	3(23%)	6(46.2%)	3(23%)	-	0.68
Isthmus (2)	-	1(50%)	-	1(50%)	-	
Ampulla (57)	10(17.5%)	27(47.3%)	10(17.5%)	9(15.7%)	1(1.7%)	
Fimbria (12)	3(25%)	3(25%)	4(33.3%)	2(16.7%)	-	
Ovary (4)	-	1(25%)	3(75%)	-	-	
Heterotopic (2)	-	1(50%)	1(50%)	-	-	

**Table 7:** Intraoperative findings (Out of 97 suspected cases 96 managed surgically)

Intraoperative findings	No. of cases	Percentage
Ectopic Pregnancies	89	92.7%
Haemorrhagic ovarian cyst/ Simple ovarian cyst	4	4.2%
Ovarian torsion	1	1.04%
Negative laparotomy	2	2.08%

**Table 8:** Site of ectopic pregnancy (89) (based on intraoperative findings)

Site of ectopic	Number	Percentage
Ampulla	56	62.9%
Fimbria	12	13.4%
Cornua	13	14.6%
Isthmus	2	2.2%
Ovary	4	4.4%
Heterotopic	2	2.2%

**Table 9:** Laparotomy findings in tubal ectopic pregnancies (86)

Condition of tube	No	%
Ruptured	68	79%
Unruptured	18	21%

**Table 10:** Site of ectopic vs average blood loss

Site of ectopic	Upto 750ml	750ml-1500ml	1500ml-2000ml	>2000ml	P-value
Cornua (13)	7(53.9%)	2(15.4%)	3(23%)	1(7.7%)	0.46
Isthmus (2)	1(50%)	-	1(50%)	-	
Ampulla (56)	41(73.2%)	9(16%)	5(8.9%)	1(1.7%)	
Fimbrial (12)	8(66.6%)	2(16.6%)	1(8.3%)	1(8.3%)	
Ovarian (4)	3(75%)	1(25%)	-	-	
Heterotopic (2)	2(100%)	-	-	-	

**Table 11:** Surgical procedure done (96)

Procedure	No.	%
U/L salpingectomy	61	63.5%
U/L salpingo-oophorectomy	3	3.1%
U/L salpingectomy +R/L tubectomy	23	23.9%
B/L salpingectomy	1	1.04%
R/L oophorectomy	2	2.08%
R/L ovarian cystectomy	4	4.2%
Negative laparotomy	2	2.08%

**Table 12:** Morbidity and mortality associated with ectopic pregnancy

Blood Transfusion	65.9%(64)
Post-op wound complications	3.1%(3)
Mortality	0

bleeding pv in 63.3% cases.

Urine pregnancy test was positive in 92.7% of the cases which correlated with the study done by Sudha et al,<sup>7</sup> Rashmi A Gaddagi, et al(97.3%)<sup>6</sup> and WM Fgeeh(96%).<sup>11</sup>

In present study, 12.3% of women with ectopic pregnancy were infertile which is correlating with the studies done by Panchal D, et al (11.66%),<sup>5</sup> Samiya Mufti, et al (8.77%),<sup>4</sup> Sudha et al(7.01%),<sup>7</sup> Chate et al(20.43%).<sup>8</sup>

In present study group, 7.2% of the women with ectopic pregnancy had tubal sterilization which correlates with the studies done by Uzmashabab, et al (5%),<sup>12</sup> Shrestha et al. (5%),<sup>13</sup> Sudha et al(6.57%),<sup>7</sup> Chate et al (23.65%).<sup>8</sup>

In 95.5% cases ectopic pregnancy was tubal. Commonest site for ectopic pregnancy was ampulla in present study accounting for 62.9% cases followed by cornua and fimbria in 14.6% and 13.4% cases respectively. Similarly, reported in Chate et al<sup>8</sup> study i.e. ampulla in 51.61%, fimbria in 19.3%.

Sudha et al<sup>7</sup> reported ampullary pregnancies in 63.15% cases, cornual in 13.15% cases fimbrial in 16% cases.

In the present study, the incidence of ruptured ectopic was 79% cases, followed by unruptured ectopic pregnancies in 21% cases. Similarly, reported in Chate et al<sup>8</sup> study i.e. ruptured ectopic 76.35%. Gaddagi R et al<sup>6</sup> reported that 78.3% cases showed a ruptured ectopic pregnancy on laparotomy. Sudha et al<sup>7</sup> reported that ruptured ectopic was present in 66.66% cases on laparotomy.

In present study right sided ectopic pregnancies (58.1%) were more than left sided ectopic pregnancies (41.9%). In Sudha et al<sup>7</sup> study right sided tubal pregnancy was present in 64% cases and left tubal involvement in 36% cases.

In present study, more than 750ml blood loss was observed in 30.3% cases of ectopic pregnancies.

In the present study, unilateral salpingectomy was done in 63.5% cases. In Sudha et al<sup>7</sup> study it was 90%, in Chate et al<sup>8</sup> study it was 75.2%. Shetty et al<sup>9</sup> observed the most common surgery done was unilateral salpingectomy in 90.3% cases.

In present study, ruptured haemorrhagic ovarian cysts were found in 2 cases, simple ovarian cyst was found in 2 cases, 1 case was found to have ovarian torsion and 2 cases had negative laparotomy.

Medical management was done in 1 case successfully with single dose Methotrexate.

Morbidity included anaemia, blood transfusion and wound infection.

In the present study Maternal mortality rate is zero consistent with Sudha et al<sup>7</sup> study and A, Abbas and H. Akram study.<sup>14</sup>

## 7. Conclusion

Clinicians should be aware of the fact that any women in reproductive age group presenting with pain in lower abdomen or vaginal bleeding, ectopic pregnancy should be suspected irrespective of presence or absence

of amenorrhoea, whether or not she has undergone sterilization, because early diagnosis is critical in reducing maternal morbidity and mortality and improving treatment success rates.

## 8. Source of Funding

None.

## 9. Conflict of Interest

None.

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