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Original Research Article

## A retrospective study on ectopic pregnancy: incidence, clinical presentation, risk factors, treatment and morbidity and mortality associated with ectopic pregnancy- one year study

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### ABSTRACT

**Background:** Diagnosis of ectopic pregnancy was frequently missed and rising trend in incidence of ectopic pregnancies necessitates awareness about risk factors, resultant morbidity and mortality. to determine the incidence, clinical presentation, risk factors, treatment and morbidity and mortality associated with ectopic pregnancy. Aims and Objectives were to determine the incidence, clinical presentation, risk factors, treatment and morbidity and mortality associated with ectopic pregnancy.

**Methods:** Retrospective analysis of ectopic pregnancy was done in Government Medical College Baroda, from September 2021 to August 2022. The following parameters: age, parity, gestational age, risk factors, clinical presentation, diagnostic methods, mode of treatment and morbidity were noted.

**Results:** Out of 7521 deliveries, 74 were ectopic pregnancies (0.98 %). Women with age 20-30 years had highest incidence (62.16%) and with least below 20 years (4%). Ectopic pregnancies were common in multiparous women (78.3%) than primigravida (21.62%). Common symptoms: abdominal pain (82.4%), amenorrhea (78.4%), bleeding per vaginum (63.3%), adnexal tenderness (46.2), asymptomatic (12%) patients. Urine pregnancy test positive in 96.4%. Etiology was pelvic infection (15.78%), infertility (7.01%), previous ectopic (8.33%), contraception failure (8.71%), surgeries including LSCS and tubal surgeries (4%). Right sided ectopic was more common. Site of ectopic was common in fallopian tube- ampullary region (88%), cornu (4%) followed by others (8%) then caesarean scar, rudimentary horn pregnancy. About 81.08% of ectopic was ruptured, 3/4<sup>th</sup> of these patients presented with shock at the time of presentation. Tubal abortions were seen in 4.01% of patients. Most of cases being ruptured ectopic pregnancies, salpingectomy in 72.9% and salpingo-opherectomy in 6.7%. Morbidity was blood transfusion (76.31%), wound complications 4.38 and no mortality.

**Conclusions:** Early diagnosis, identifying of underlying risk factors and timely intervention in the form of conservative or surgical treatment will help in reducing the morbidity and mortality associated with ectopic pregnancy.

**Keywords:** Amenorrhea, Ectopic pregnancy, Risk factors, Salpingectomy, Transvaginal ultrasonography

### INTRODUCTION

An ectopic pregnancy is one that occurs in a site outside the uterine cavity, but usually in an adjacent site. In over 98% of ectopic pregnancies, the primary site is in the fallopian tube and the remainder will be in the abdominal cavity, the ovary, or the cervix. In the fallopian tube, about

80% of the pregnancies will occur in the ampullary region.<sup>1</sup>

The management of ectopic pregnancy has changed over the past 20 years because of several important developments: Recognition of high-risk individuals-amenorrhea, increased sensitivity of home pregnancy tests,

early referral to dedicated EPCs in hospital settings, development and refinement of high-resolution TVUS, accurate and rapid estimation of serum  $\beta$ -hCG. Laboratory techniques allowing 24-hour access to automated sample processing.

The most recent report on maternal deaths in the United Kingdom shows an increase in ectopic pregnancy rates over the previous 20 years, from 8.6/1000 pregnancies in 1985 to 1987, to 11.1/1000 pregnancies in 2003 to 2005.

Deaths from ectopic pregnancies in that report are no better than 20 years previously: 4.7 compared with 4.8 deaths/1,000,000 maternities. Although the death rate expressed as a proportion of ectopic pregnancies in that time span (6.1 compared with 3.5/1000 ectopic pregnancies) is an apparent fall, in real terms, there have been about 10 deaths in each triennium from 1985 to 2005. A major recommendation from the most recent report on maternal deaths suggests that every unit should have clear guidelines for the management of pain and bleeding in early pregnancy because "there are persisting failures to recognise these conditions (ectopic pregnancies) promptly".<sup>2</sup>

Risks are blood loss and its consequences, implications for future reproductive performance and psychological effects of the loss of the pregnancy.

### **Diagnosis symptoms**

Diagnosis of an ectopic pregnancy can be difficult. Some, all, or none of the following symptoms may be elicited in a woman presenting with an ectopic pregnancy: abdominal pain, vaginal bleeding, fainting, shoulder tip pain.

Associated risk factors are peak age-specific incidence 25-34 years infertility (fourfold increased risk), Sexually transmitted disease (especially chlamydia) raised chlamydia antibody titer, tubal sterilization and reconstruction, intrauterine contraceptive device, endometriosis.

### **Signs**

At presentation- many women with an ectopic pregnancy may have few or no signs. Unilateral iliac fossa pain is more in keeping with ectopic pregnancy, but bilateral pain is not uncommon. Guarding, rigidity, and signs of peritonism may be elicited on abdominal palpation. Guarding may be reduced if the knees are drawn up to relax the abdominal muscles. On vaginal examination, it may be possible to elicit tenderness on the affected adnexal side by manipulating the cervix laterally ("cervical excitation") or by direct adnexal palpation. Cervical motion tenderness has long been thought to be an important sign for the diagnosis of ectopic pregnancies. However, it is seen only in half the women with an ectopic pregnancy.<sup>3</sup> Because the uterus moves in the opposite direction owing to rotation around the fulcrum of the

transverse cervical ligaments, there is increased tension on the side where the ectopic pregnancy is sited. The uterus may be softer and even enlarged slightly in the presence of an ectopic pregnancy owing to the softening effect of increased levels of progesterone on the endometrium and myometrium. The practical implications of this change in practice means that greater clinical acumen is required in managing those women presenting with pain and bleeding in early pregnancy.

### **Investigations**

The diagnosis of ectopic pregnancy needs to be differentiated from other causes of lower abdominal pain in a woman of reproductive years. Critical to the diagnosis of ectopic pregnancy are TVUS and serum  $\beta$ -hCG, and to a lesser extent, serum progesterone. Ultrasonography is probably the single most important investigation in a woman with bleeding in early pregnancy.<sup>4</sup> Confirmation of the diagnosis by laparoscopy is not always necessary. Laparoscopy is indeed not even the absolute answer, having a false-negative rate of 3% to 4% (being done too early) and a false-positive rate of 5% (owing to retrograde uterine bleeding).<sup>5</sup>

Serum progesterone is also considered to have a role in the differentiation of an ectopic pregnancy. Its use is not as widespread as  $\beta$ -hCG and TVUS. Serum progesterone concentrations well into the normal range for early pregnancy (>80 nmol/l) are associated with a high probability of the pregnancy being normal and intrauterine in site.<sup>6</sup>

Conversely, values lower than 15 nmol/l are highly likely (98%) to be associated with a nonviable pregnancy.<sup>7</sup>

The patient presenting acutely with obvious intraabdominal bleeding will be diagnosed without difficulty.

### **Management options**

Management of the acutely ill woman differs from the more common presentation of a woman who is clinically stable, in which situation there are a number of treatment options. The acute presentation with hypotension, tachycardia, pain, and other signs of shock, usually, though not always, associated with amenorrhea is generally dealt with by laparotomy. The acute symptoms are usually due to fallopian tube rupture and/or significant intraperitoneal bleeding. Surgical treatment usually requires partial or total salpingectomy, securing hemostasis and removing blood and products of conception from the abdominal cavity.

In the less acute situation, there are several treatment options, which include expectant, medical, and surgical (conservative and radical) management. Serum  $\beta$ -hCG rising above a critical threshold in the absence of an

intrauterine gestation sac will usually be an indication for surgical intervention.

Whether by laparoscopy or laparotomy will depend on the patient's past surgical history, the TVUS findings, and the absolute level of  $\beta$ -hCG and its rate of rise. The Royal College of Obstetricians and Gynaecologists recommends that surgical treatment by laparoscopic salpingectomy is the preferred method of treatment for an ectopic pregnancy when the fallopian tube on the other side is normal.<sup>8</sup> Furthermore, open surgery may be the more appropriate route as concluded by a meta-analysis, involving women with unruptured tubal pregnancies, which showed laparoscopic conservative surgery had more failures (defined as persistence of trophoblastic tissue and raised hCG levels) than an open surgical approach [odds ratio (OR) 0.28; 95% CI 0.09-0.86].<sup>9</sup> There is insufficient evidence from RCTs to answer the questions raised in the salpingectomy/salpingotomy debate and opinions vary. In the management of an ectopic pregnancy, removal of the fallopian tube (salpingectomy) is considered to be the safest, most clinically effective, cost-effective technique.<sup>10-12</sup> Ninety-eight per cent of ectopic pregnancies will resolve when the pretherapy level is less than 1500 IU/l. When pre therapy level is over 5000 IU/l, success rates fall to 85%.<sup>13</sup>

## METHODS

It was a retrospective analysis of ectopic pregnancy done in Government Medical College Baroda, for a period of 1 year from September 2021 to August 2022.

### Selection criteria

All patients diagnosed with ectopic pregnancy during the period of study were selected.

### Procedure

The case sheets of the patients with ectopic pregnancy were traced through the labour ward registers and operation theatre registers. Information regarding the total number of ectopic pregnancies in the study period, details of demographic characteristics, clinical symptoms and signs, diagnostic tools used, treatment, risk factors for the ectopic pregnancy as well as associated morbidity and mortality were obtained.

### Ethical approval

Study was approved by Ethics Committee of Baroda Medical College.

### Statistical analysis

Analysis of data and identifying incidence, clinical presentation, risk factors, treatment and morbidity and mortality associated with ectopic pregnancy.

## RESULTS

During the study period of one year, there were 7521 deliveries in our hospital and 74 cases were diagnosed as ectopic pregnancy giving the incidence of 0.98%.

**Table 1: Age of study population.**

Age	Number	Percentage
< 20 years	3	4
20-30 years	46	62.16
>30 years	24	32.4

A majority of the patients (62.16%) belonged to the age group of 20-30 years.

**Table 2: Parity in study population.**

Gravida	Number	Percentage
Primigravida	16	21.62
Multigravida	58	78.3

In the present study, 78.3% were multigravida and 21.62% were primi gravida.

### Clinical presentation

In the present study, 82.4% had abdominal pain, followed by history of amenorrhea in 78.5%, history of bleeding pervaginum in 63.3%, signs of adnexal tenderness in 46.2% and asymptomatic in 12%.

**Table 3: Clinical presentation in study population.**

Symptoms	Percentage
Abdominal pain	82.4
History of amenorrhea	78.5
History of bleeding per vaginum	63.3
Adenaxal tenderness	46.2
Asymptomatic	12

### Diagnosis

UPT was positive in 96.4% of cases, USG revealed ruptured ectopic pregnancy in 66.66% of cases, unruptured in 14.03% of cases, heterogeneous mass with minimal free fluid in POD in 20.17% of cases.

**Table 4: Diagnosis in study population.**

Diagnosis	Percentage
UPT positive	96.4
USG showing ruptured ectopic pregnancy	66.6
USG showing unruptured ectopic pregnancy	14.03
USG showing heterogenous mass with minimal free fluid in pod	20.17

### Risk factors

56.14% patients had no risk factors, 15.78% had history of pelvic infection, 7.01% had history of infertility and ART, 8.33% had previous ectopic, history of IUCD failure in 2.14%, history of previous tubectomy in 6.57%, history of previous C-section in 4%.

**Table 5: Risk factors in study population.**

Risk factors	Percentage
No risk factors	56.14
History of pelvic infection	15.78
History of infertility and art	7.01
Previous ectopic	8.33
History of IUCD failure	2.14
History of tubectomy failure	6.57
History of previous c-section	4

### Definitive diagnosis

Ruptured ectopic was present in 81.08% cases on laparotomy, tubal abortion in 4.01% cases, unruptured ectopic in 14.8%.

**Table 6: Definitive diagnosis in study population.**

Definitive diagnosis	Percentage
Ruptured ectopic pregnancy	81.08
Tubal abortion	4.01
Unruptured ectopic	14.8

### Management

The most common procedure done was unilateral salpingectomy in 72.9% of cases followed by salpingo-oophorectomy in 6.7% and Hysterectomy in 1.3% of cases. 6.7% of cases were medically managed with intramuscular methotrexate, 4% patients were given expectant management, suction and evacuation was done in 4% cases for cesarean scar ectopic.

**Table 7: Management.**

Management	Percentage
Unilateral salpingectomy	72.9
Unilateral salpingo-oophorectomy	6.7
Hysterectomy	1.3
Methotrexate injection	6.7
Expectant management	4
Scar ectopic (D and E)	4

### Morbidity and mortality

Morbidity included anaemia (73.68%), blood transfusion (76.31%) and ventilatory and ionotropic support in 4.38%.

**Table 9: Morbidity and mortality.**

Morbidity	Percentage of patients
Anemia	73.68
BT	76.31
Ventilatory and ionotropic support	40.38

### DISCUSSION

The incidence of ectopic pregnancies is on the rise, as was evident by the findings of this study. The incidence of scar ectopic is also increasing.

All the cases were diagnosed with a high index of clinical suspicion and the USG findings added to the diagnosis.

Though the recent trend in the management of ectopic pregnancy is the use of a conservative surgical or medical line of management, salpingectomy was the treatment modality which was used in the present study.

This was mainly because a majority (80%) of the cases were referred or they came late to the hospital after the ectopic pregnancy has ruptured. But fortunately, there has not been even a single mortality.

A meta-analysis of nine well designed comparative studies showed intrauterine pregnancy rates whether salpingectomy (49%) or salpingotomy (53%) was used.<sup>14</sup> But in present study most patients under went salpingectomy as in current study majority of patients had normal contralateral fallopian tube. Hence there were decreased rates of persistent trophoblastic tissue.<sup>14</sup>

That paper and a separate meta-analysis showed higher subsequent ectopic pregnancy rates after salpingotomy (15% versus 10%).<sup>14,15</sup>

There is general agreement that salpingectomy would be appropriate if a women desired no further children, if a second ectopic occurred in the same fallopian tube, if bleeding could not be controlled, or if the tube was severely damaged by the ectopic pregnancy. If salpingotomy is undertaken, further quantitative  $\beta$ -hCG monitoring is required to confirm successful treatment because persistence of the ectopic pregnancy occurs in 8% to 19% of cases.<sup>14,16</sup>

Limitations were lack of comparison group, limited possibility of generalizing the validity of study and the impossibility of establishing a causal relationship and selection bias can be present (only the patients who presented to SSG hospital were included).

### CONCLUSION

All women of reproductive age should be considered as having the potential for an ectopic pregnancy by clinicians

since an early diagnosis is essential to lowering maternal mortality and increasing treatment success rates. Clinicians can assist patients feel safe and autonomous by having a thorough awareness of the treatments, eligibility requirements, required follow-up, and benefits and drawbacks of each treatment option.

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## REFERENCES

1. James DK, Steer PJ, Weiner CP, Gonik B. Bleeding and pain in early pregnancy. In: High Risk Pregnancy Management Options. 4th edn. Saunders; 2010.
2. Cantwell R, Clutton-Brock T, Cooper G, Dawson A, Drife J, Garrod D, et al. Saving mothers; lives: reviewing maternal deaths to make motherhood safer: 2006-2008. The eighth report of the confidential enquiries into maternal deaths in the United Kingdom. *BJOG.* 2011;118:1-203.
3. National Collaborating Centre for Women's and Children's Health. Ectopic pregnancy and miscarriage: Diagnosis and initial management in early pregnancy of ectopic pregnancy and miscarriage. Royal College of Obstetricians and Gynecologists. RCOG Press, London; 2012.
4. Crochet JR, Bastian LA, Chireau MV. Does this woman have an ectopic pregnancy? the rational clinical examination systematic review. *JAMA.* 2013;309:1722-9.
5. Ling FW, Stovall TG. Update in the diagnosis and management of ectopic pregnancy. In: Rock J, ed. *Advances in Obstetrics and Gynecology.* Chicago, Mosby; 1994:55-83.
6. Stovall TC Long FW Carson SA, Boster JE Serum progesterone and uterine curettage in differential diagnosis of ectopic pregnancy. *Fertil Steril.* 1992;57:456-8.
7. Lipscomb CH, Stovall TC, Ling FW. Nonsurgical treatment of ectopic pregnancy. *N Engl J Med.* 2000;343:1325-9.
8. Fernando RJ, Williams AA, Adams EJ. Royal College of Obstetricians and Gynaecologists. The management of third and fourth degree perineal tears. RCOG Green top Guidelines No 29. 2007.
9. Hajenius PJ, Mol F, Mol BW, Bossuyt PM, Ankum WM, Van der Veen F. Interventions for tubal ectopic pregnancy. *Cochrane Database Syst Rev.* 2007(1).
10. Carson SA, Buster JE Ectopic pregnancy. *N Engl J Med.* 1993;329:1174-81.
11. Dubuisson JB, Morice P, Chapron C, De Gayffier A, Mouelhi T. Salpingectomy-the laparoscopic surgical choice for ectopic pregnancy. *Hum Reprod.* 1996;11(6):1199-203.
12. Mol BW, Hajenius PJ, Engelsbel S, Ankum WM, Hemrika DJ, van der Veen F, et al. Is conservative surgery for tubal pregnancy preferable to salpingectomy? An economic analysis. *BJOG.* 1997;104(7):834-9.
13. Lipscomb GH, McCord ML, Stovall TG, Huff G, Portera SG, Ling FW. Predictors of success of methotrexate treatment in women with tubal ectopic pregnancies. *N Engl J Med.* 1999;341(26):1974-8.
14. Yao M, Tulandi T. Current status of surgical and nonsurgical management of ectopic pregnancy. *Fertil Steril.* 1997;67:421-33.
15. Clausen I. Conservative versus radical surgery for tubal pregnancy. A review. *Acta Obstet Gynecol Scand.* 1996;75(1):8-12.
16. Gray D, Thorburn J, Lundorff P, Lindblom B. Laparoscopic treatment of ectopic pregnancy. *Lancet.* 1995;346(8976):706-7.

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