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Original Research Article

A clinical study on ectopic pregnancy in a tertiary care hospital over one year

Sharvari A. Khandkar*, Rahi Modi, Mahima Jain

Department of Obstetrics and Gynecology, B. J. Medical College, Ahmedabad, Gujarat, India

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***Correspondence:**
Dr. Sharvari A. Khandkar,
E-mail: sharvarik29@gmail.com

ABSTRACT

Background: Ectopic pregnancy is a life threatening emergency in obstetrics presenting in the 1st trimester. The incidence is about 1% globally. We have aimed to study the incidence, presentation and management of ectopic pregnancy. Various risk factors were identified which may be helpful in reducing maternal mortality.
Methods: A one year retrospective study involving detailed medical records of patients who underwent obstetric hysterectomy between 1st November 2022 and 31st October 2023.
Results: The overall incidence of ectopic pregnancy was 0.8% in this study. The incidence was highest in 26-30 year age group (40%) followed by 21-25 year age group (36.4%). 95.2% cases presented with tubal ectopic while 2.4% each of cervical ectopic and caesarean scar ectopic pregnancies. LSCS was the most common risk factor associated with ectopic pregnancy, other risk factors included pelvic inflammatory disease in 33.3% cases, 29.5% patients with infertility treatment. 59% were ruptured ectopic pregnancies, 40% with unruptured ectopic pregnancy and 1% case of chronic ectopic. Multiple signs were seen in majority of patients including tachycardia, hypotension, abdominal tenderness, guarding and rigidity, vaginal forniceal fullness and tenderness. Management included laparotomy (58.8%), laparoscopy (31.7%), dilatation and evacuation (3.5%), medical management (3.5%) and hysterectomy (2.3%). No case of maternal mortality was noted.
Conclusions: Ectopic pregnancy is still a major challenge in obstetrical practice because of its bizarre clinical presentation. Maternal outcome depends upon timely diagnosis and urgent management of such patients.

Keywords: Ectopic pregnancy, Hemoperitoneum, Laparoscopy, Laparotomy, Salpingectomy

INTRODUCTION

Ectopic pregnancy (EP) is a condition presenting as a major health problem for women of childbearing age. The incidence of EP varies with the population, but it has been accounted for 1-2% of all reported pregnancies. Accordingly, it is speculated that the main risk factors for ectopic pregnancy are conditions or procedures, which can result in tubal damage.[1]

The risk is increased by several factors: previous ectopic pregnancy, tubal damage from infection (pelvic inflammatory disease) or surgery, a history of infertility, therapy for in vitrofertilization, increased age, and smoking. The risk of an ectopic pregnancy is increased 7-fold after an episode of acutesalpingitis. This is particularly true if the causal agent is *Chlamydia trachomatis.*[2]

With tubal pregnancy, because the fallopian tube lacks a submucosal layer, the fertilised ovum promptly burrows

through the epithelium. The zygote comes to lie near or within the muscularis, which is invaded by rapidly proliferating trophoblast. Potential outcomes from this include tubal rutpture, tubal abortion, or pregnancy failure with resolution. The classic triad is amenorrhea followed by pain and vaginal bleeding.[3]

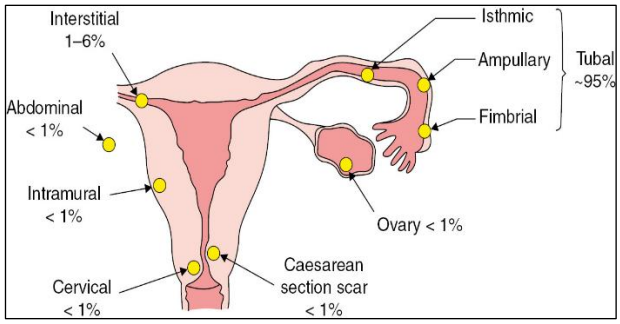

Figure 1: Sites of ectopic.[2]

METHODS

A one-year retrospective observational study conducted at obstetrics and gynaecology department, BJ medical College and Civil Hospital, Ahmedabad, involving detailed medical records of patients who underwent obstetric hysterectomy between 1st November 2022 and 31st October 2023. During the one year period total number of ectopic pregnancies presenting were 85 of 10,450 total admissions, which comprised of 0.8% incidence rate of ectopic pregnancies.

Inclusion criteria

Inclusion criteria were the all diagnosed cases of ectopic pregnancy presenting to labour room, civil hospital Ahmedabad.

Exclusion criteria

All intrauterine pregnancies and induced abortions were excluded.

Statistical analysis

The data for all parameters were collected, tabulated, and frequency and percentage were analysed.

The diagnosis of ectopic pregnancy was based on clinical history, ultrasonography and serum beta HCG correlation. The information regarding demographic characters, type of ectopic pregnancy, clinical profile and management were obtained.

On admission detailed history and clinical examination was done. Clinical evaluation included-(1) General examination of patient included vital signs, presence of pallor, shock, respiratory and cardiovascular system. (2) Abdominal examination-for signs of free fluid in peritoneal cavity, guarding, rigidity, tenderness and (3) Vaginal examination for presence of bleeding, its nature, colour of the vaginal mucosa, position of the cervix, tenderness on movement of the cervix, size of the uterus, mobility and consistency, presence of mass and/or tenderness in any of the fornices.

After a detailed examination, a sample of blood was drawn for blood grouping, Rh typing and cross-matching to arrange blood for transfusion. Investigations like Hb%, hematocrit, routine blood tests as advised by anaesthesiologists; TLC, DC, ESR if necessary; urine pregnancy test and ultrasonography were carried out. Hemodynamically unstable patients were taken up for surgery and blood transfusion given as per need. As majority of the patients had ruptured tubal gestation, a decision for removal of the tube i.e., unilateral salpingectomy was made.

RESULTS

There were 40% of ectopic pregnancies noted amongst 26-30 year age group patients followed by 21-25 year age group (36.4%). Only 24% cases were noted in 31-35 year group. This shows the maximum incidence in the reproductive age group (Table 1).

Table 1: Age distribution (n= 85).

Age	Number of patients	Percentage
21-25	31	36.4
26-30	34	40
31-35	20	24

Table 2: Gravida distribution (n= 85).

Gravida	Number of patients	Percentage
Primi gravida	20	24
2nd gravida	24	29
3rd gravida	22	27
4th gravida	17	20

Total 24% ectopic pregnancies were noted in primigravida patients while the rest 76% in multigravida patients, of which 29% in 2nd gravida and 27% patients in 3rd gravida group. This data suggests that the incidence of ectopic pregnancy is seen in multigravida patients due to certain risk factors like previous caesarean section (Table 2).

Table 3: Type of ectopic (n=85).

Type of ectopic	Number of patients	Percentage
Ruptured ectopic	50	59
Unruptured ectopic	34	40
Chronic ectopic	1	1

Table 4: Presenting symptoms (n=85).

Symptoms	Number of patients	Percentage
Abdominal pain	82	96
Spotting PV	68	80
Dizziness	41	48
Amenorhhea	85	100
Fever	1	1
Vomiting	26	30

Majority of cases presented with ruptured ectopic pregnancies (59%) while 40% with unruptured ectopic and 1 case of chronic ectopic was noted. This hospital being a tertiary care centre, more number of complicated cases were seen, notably ruptured ectopic pregnancies. This also shows that majority of patients become symptomatic once the ectopic gestational sac ruptures, due to hemoperitoneum (Table 3).

Presenting symptoms were amenorrhea (100%), abdominal pain (96%), spotting per vaginum (80%), dizziness (48%), vomiting (30%) and fever (1%). Majority of patients presented with more than one symptom. The classical triad of amenorrhea, spotting per vaginum and abdominal pain was seen (Table 4).

Table 5: Presenting clinical signs (n=85).

Signs	Number of patients	Percentage
Tachycardia	82	96.4
Hypotension	60	70.5
Abdominal tenderness	54	67
Guarding/rigidity	42	49.4
Vaginal forniceal fullness and tenderness	78	91.7

Clinical sings included tachycardia (96.4%), hypotension (70.5%), abdominal tenderness (67%), guarding and rigidity (49.4%), vaginal forniceal fullness and tenderness (91.7%). Multiple signs were seen in majority of patients suggestive of ectopic gestation. Forniceal fullness and tenderness corresponded with tubal ectopic while abdominal tenderness and guarding with concomitant hemoperitoneum (Table 5).

Management included laparotomy (58.8%), laparoscopy (31.7%), dilatation and evacuation (3.5%), medical management (3.5%) and hysterectomy (2.3%). Patients of cervical ectopic were managed with D&E and one patient of caesarean scar pregnancy. In 1 patient of cervical ectopic pregnancy balloon tamponade was performed due to severe bleeding per vaginum (Table 6).

Total 82% patients were transfused with blood products. While 18% patients did not need any transfusion. Moderate to gross hemoperitoneum warranted transfusion especially in hemodynamically unstable patients (Table 7).

Table 6: Management (n=85).

Approach	Number of patients	Percentage
Medical	3	3.5
D&E	3	3.5
Laproscopy	27	31.7
Laprotomy	50	58.8
Hysterectomy	2	2.3

Total 95.2% cases presented with tubal ectopic while 2.4% each of cervical ectopic and caesarean scar ectopic pregnancies. No case of ovarian ectopic pregnancy was noted. Hence tubal ectopic pregnancy is the most common site of ectopic pregnancy (Table 8).

Table 7: Blood transfusion (n=85).

	Number of patients	Percentage
Products transfused	70	82
No transfusion	15	18

Total 18.8% patients had no past surgical history or any history of instrumentation, 40% patients had previous caesarean section, while 35.2% with D&E, 3.5% had past history of laparoscopy and 2.3% with history of laparotomy. Therefore this shows that previous caesarean section and past abortion act as risk factors for ectopic pregnancy (Table 9).

Table 8: Site of ectopic (n=85).

Site	Number of patients	Percentage
Tubal ectopic	81	95.2
Cervical ectopic	2	2.4
Scar ectopic	2	2.4

Table 9: Risk factors (n=85).

Procedure	Number of patients	Percentage
No past surgical history	16	18.8
D&E	30	35.2
Laproscopy	3	3.5
Laprotomy	2	2.3
Previous CS	34	40

Preoperative findings included hemoperitoneum noted in 100% cases, bowel and bladder adhesions in 48% cases and changes of pelvic inflammatory disease in 33% cases. Hemoperitoneum caused majority of symptoms and is responsible for hemodynamic instability. Pelvic inflammatory disease and adhesions were risk factors owing to incidence of ectopic gestation (Table 10).

Total 29.5% patients had conceived using infertility treatment while 70.5% patients had conceived

spontaneously. Infertility treatment hence acts as a risk factor for ectopic pregnancy (Table 11).

Table 10: Preoperative findings (during laproscopy and laprotomy) (n= 79).

Findings	Number of patients	Percentage
Hemoperitoneum	79	100
Changes of PID	26	33
Adhesions	38	48

Table 11: Type of conception (n=85).

	Number of patients	Percentage
Spontaneously conceived	60	70.5
Infertility treatment conceived	25	29.5

DISCUSSION

Ectopic pregnancy is a life-threatening emergency in obstetrics. It remains as an important contributor to maternal morbidity and mortality, and is one of the commonest causes of 1st trimester maternal deaths.[6]

The overall incidence of ectopic pregnancy was 0.8% in this study. Incidence of ectopic pregnancy has definitely increased over the last decade, probably attributed to better diagnostic modalities and more couples resorting to assisted reproductive techniques. In a study by it was found that incidence was 13.03/1000 deliveries. Global incidence is about 1%.[2] No maternal deaths due to ectopic pregnancy was reported in this study. Maternal mortality due to ectopic pregnancy is reported between 0% and 1.3% in various studies.[6-8]

A study by Soren et al showed that the highest incidence of ectopic pregnancies was noted in 21-30 year age group (56%) which was found in this study as well.[4] The incidence was highest in 26-30 year age group (40%) followed by 21-25 year age group (36.4%), which is the reproductive age group. Minimum incidence was found in >30 year age group.

95.2% cases presented with tubal ectopic while 2.4% each of cervical ectopic and caesarean scar ectopic pregnancies. No case of ovarian ectopic pregnancy or abdominal pregnancies were noted. Amongst tubal ectopic pregnancy, ampulla was the most common site, while interstitial and cornual ectopic were uncommon. This was found in other studies as well.[4,9,13]

LSCS was the most common risk factor associated with ectopic pregnancy found in as study by Barik et al, this was corroborated in our study in which a 40% incidence was found.[5] 5 patients with operative history had diagnostic hystero-laparoscopy (done in view of infertility) and ectopic pregnancy. Therefore past history of ectopic pregnancy was also a risk factor for ectopic pregnancy. Pelvic inflammatory disease in 33.3% cases and hence PID was a major risk factor. This was also found in other studies, 19% in a study by Barik et al. 29.5% patients had conceived using infertility treatment that became a risk factor due to use of progesterone that impeded tubal motility which may favour tubal implantation, and with a low threshold for usage of ovulation induction drugs, the rate of ectopic pregnancies is on the rise. A past history of abortion also formed a risk factor and was noted in 35.2% cases in this study, similar results were found in a study by Mehta et al.[6]

Of 85 cases 79 patients presented to labour room with acute ectopic while 1 case of chronic ectopic (1%) was noted. Chronic ectopic pregnancy was also seen in 18.75% of cases in the study by Mehta et al. Intraoperative diagnosis for the same was made by presence of organized mass in POD.[6] Declining incidence of chronic ectopic could be due to earlier diagnosis and prompt management. Of the patients presenting acutely 59% were ruptured ectopic pregnancies and 40% with unruptured ectopic pregnancy, this was similar to findings in study by Shetty et al and Mehta et al and Wankar et al.[6-8]

The classical triad of amenorrhea+ abdominal pain+ spotting per vaginum was noted. Vomiting and dizziness was classically noted in patients of moderate to gross hemoperitoneum. Fever was noted in only case of ectopic pregnancy which was later diagnosed to be a case of caesarean scar pregnancy presenting with sepsis. These symptoms corresponded with other studies.[5,10-12] While absence of amenorrhea was noted in 23% cases in a study by Oumachigui et al and 15% a study by Soren et al.[5,12]

Clinical sings included tachycardia (96.4%), hypotension (70.5%), abdominal tenderness (67%), guarding and rigidity (42%), vaginal forniceal fullness and tenderness 91.7%). These sings were suggestive of hemoperitoneum and were associated with anaemia owing to blood loss and such patients with moderate to gross hemoperitoneum subsequently required blood transfusion. These common clinical findings were also reported in other studies.[4] Patients with unruptured ectopic pregnancy had abdominal tenderness and vaginal fullness and tenderness but usually were found to be hemodynamically stable.

Management of ectopic pregnancy was mainly based on hemodynamic stability. Patients who were hemodynamically unstable were taken for laparotomy and was followed by salpingectomy. In this study majority of patients underwent laparotomy followed by salpingectomy (58.8%); similar results were found in study by Soren et al.[5] 2.3% patients underwent laparotomy followed by obstetric hysterectomy in view of ruptured uterus and adherent ectopic with septic focus, as both these cases were of caesarean scar ectopic pregnancies. 31.7% patients underwent laparoscopy followed by salpingectomy. All these patients were hemodynamically stable with beta hcg

values less then 1500Miu/ml. 2 patients who had undergone expectant management further underwent laparoscopy due to rising beta hcg titres. 3 Patients (3.5%) that underwent medical management fulfilled criteria for the same and were managed using single dose parenteral Methotrexate 50mg/m^2 IM without folinic acid. While in as study by Wankar et al only 2% patients were medically managed. Medical management has a risk of failure and may require emergency laparotomy for hemoperitoneum, which is possible in a tertiary centre. Dilatation and evacuation was done in 3.5% patients of cervical ectopic pregnancy, of which one patient required balloon tamponade due to severe bleeding per vaginum.

In all cases of operated ectopic pregnancy, retrieved sample was sent for histopathological examination and were confirmed to be products of conception hence confirming diagnosis of ectopic pregnancy.

Limitations of this study are that it is conducted at a tertiary care centre hence most of the patients presented with ruptured ectopic pregnancy and hence rates of laparotomy are high (in view of late presentation), while other management modalities such as medical management is not properly evaluated. Moreover, it was carried out at a single centre over a short period of time hence the findings of this study cannot be generalised to the population.

CONCLUSION

Ectopic pregnancy is still a major challenge in obstetrical practice because of its bizarre clinical presentation. It can be diagnosed early by keeping a high index of suspicion and personnel training. Despite exhaustive efforts to prevent ectopic pregnancies the numbers are constantly rising due to increased reporting of the cases and improved diagnostic modalities. Delay in referral causes significant morbidity and diminishes the chances of preserving future fertility.

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