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Original Research Article

Study of ectopic pregnancy in a tertiary care hospital

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ABSTRACT

Background: Ectopic pregnancy, occurring in 1.5-2% of pregnancies globally, is a serious, life-threatening complication and a leading cause of maternal morbidity and mortality in the first trimester. It poses risks to the mother's life and future fertility by causing potential damage to the fallopian tubes and ovaries.
Methods: This retrospective study was conducted at a tertiary care hospital in Ahmedabad, India, from February 2023 to January 2025, involving 40 women diagnosed with ectopic pregnancies. Detailed computerized patient records, including complaints, vital signs, demographics, medical history, and risk factors such as amenorrhea duration, pelvic pathology, surgeries, and infertility treatments, were analyzed. Ultrasound findings, urine pregnancy tests (UPT), and intraoperative observations were also recorded. Data were entered into a pre-structured proforma and analyzed using percentage-based methods.
Results: The majority of patients were aged 26-30 years, with 60% in their second pregnancy. Common risk factors included previous ectopic pregnancy (17.5%) and pelvic inflammatory disease (12.5%). Symptoms included amenorrhea (57.5%) and abdominal pain (60%). Among cases, 45% were ruptured tubal pregnancies, and 10% received methotrexate treatment.
Conclusions: Ectopic pregnancy should be considered in women of reproductive age with lower abdominal pain, regardless of amenorrhea or sterilization history. Early diagnosis through ultrasound and beta hCG tests is crucial to prevent maternal morbidity and mortality. Timely intervention can reduce complications and significantly improve outcomes.

Keywords: Amenorrhea, Beta hCG, Ectopic pregnancy, Ultrasonography

INTRODUCTION

Ectopic pregnancy occurs when a fertilized egg implants outside the normal uterine cavity.[1] Ectopic comes from Greek "Extropos," meaning out of place. This condition is a significant cause of maternal morbidity and mortality, particularly in developing countries, where many patients present to healthcare providers in advanced, life-threatening stages with altered and deteriorating hemodynamics.[2] Ectopic pregnancy also contributes to fetal loss and has been linked to an increased risk of recurrence and potential fertility issues in future pregnancies.[3] The worldwide incidence of ectopic pregnancy is approximately 1.5-2%.[4] Blastocyst insertion and implantation require fallopian tube smooth muscle contractions and ciliary beating. The etiology of ectopic pregnancy includes anatomical changes or damage to the fallopian tube, hindering normal embryo transport. Other factors involve defects in fertilized egg, delayed ovulation, or post-mature eggs implanting before reaching the uterus. Increased smooth muscle activity and tone in the fallopian tube, often due to high estrogen, can also cause the fertilized ovum to stay in tube. Elevated progesterone levels reduce smooth muscle activity, further slowing tubal movement and promoting ectopic pregnancy. Successful embryo transport and implantation likely require a balance

of estrogen and progesterone. Fallopian tube pathologies can raise likelihood of ectopic pregnancy. In recent decades, incidence of ectopic pregnancies has risen, largely due to factors such as the increased prevalence of increasing maternal age, tubal surgeries, pelvic inflammatory diseases (PID), endometriosis, exposure to diethylstilbesterol (DES) in utero, use of an intrauterine device (IUD), history of tuberculosis, venereal diseases, greater use of contraceptives, shorter birth spacing, and the growing reliance on assisted reproductive technologies.[5] The incidence of ectopic pregnancy after ART conception is around 2-2.5%.[6] Previous surgical procedures, including laparotomy for past ectopic pregnancy, tubectomy, cesarean section/appendectomy, can cause tubal damage, thereby raising likelihood of subsequent ectopic pregnancies.[7] Tubal EPs are the most common type and have high maternal morbidity and mortality when ruptured.[8] Most common tubal site is ampulla (55%), isthmic (25%), fimbrial (17%) and interstitial (2%). Extra tubal sites can be the uterus itself (cornual, cervical or in a rudimentary horn of the uterus), ovary, broad ligament and abdominal cavity.

Caesarean scar pregnancy is a special type of ectopic where the implantation of a gestational sac is within the scar of a previous caesarean surgery. It is a life-threatening condition with higher risks of uterine rupture, severe hemorrhage, loss of future fertility and maternal mortality. Methotrexate is used as a first line medical management method. Blind uterine curettage, not reaching the gestation sac, may result in heavy bleeding and should not be used. It can be removed surgically by operative hysteroscopy or laparoscopy, depending on the location of the g-sac. In cases where these methods are ineffective or unavailable, open surgical treatment with wedge resection should be considered, especially for women who present after rupture/lack facilities and expertise for operative endoscopy.

History and clinical examination of patient together with serum beta HCG measurements and transvaginal ultrasound (TVS) examinations are done to reach to a final diagnosis. TVS is the preferred diagnostic tool for symptomatic patients, offering a sensitivity of 90.9% and a specificity of 99.9%. Absence of intrauterine gestational sac on TVS, coupled with beta hCG levels exceeding 1500 IU, suggests an ectopic pregnancy. Awareness of possible risk factors might help in early diagnosis and hence timely intervention (medical and conservative surgical measures in stable patients), which can help in decreasing subsequent morbidity, complications and mortality. Surgical methods remain the primary approach in management of ectopic pregnancy, with laparoscopic surgery currently considered the gold standard.[9]

METHODS

This is a retrospective study on 40 women diagnosed with ectopic pregnancies carried out in the department of obstetrics and gynecology at a tertiary care hospital in Ahmedabad, Western India, between June 2023 to January 2025.Our institute serves patients from urban, semi-urban, and nearby rural areas. After obtaining necessary permissions, a detailed analysis was conducted on the computerized records of women admitted for ectopic pregnancy management. Study reviewed patients' medical histories, clinical features, vital signs, and findings from general, abdominal, and vaginal exams, along with any history of pelvic pathology, surgery/infertility treatment. Data was analyzed to assess diagnosis and management of ectopic pregnancies. All patients diagnosed with ectopic pregnancy were included in study, and statistical analysis was performed using appropriate software.

RESULTS

As the above table shows, the maximum number of ectopic pregnancies in this study were seen between the age group of 26-30 years. The majority of ectopic pregnancies 24 (60%) were observed in second gravida patients. Five (12.50%) cases of ectopic pregnancies were seen in primigravida patients.

Majority of cases (52.50%) 21 out of 40 ectopic pregnancies occurred with presence of any known risk factors in our study.[10] Most common risk factor being prev ectopic pregnancy (17.50%), followed by PID (12.50%). PID causes damage of tubal mucosa, peritubal adhesions leading to hindrance in transportation of embryo.

The classical triad of amenorrhea, abdominal pain and bleeding per vaginum was seen in many cases.[11] the 24 (60%) patients presented with pallor out of which 19 (79.17%) patients were diagnosed with ruptured ectopic pregnancy, and amongst them 5 patients presented with characteristics of shock. The 23 (57.50%) patients required blood transfusions in form of packed cells, fresh frozen plasma and cryoprecipitate. Lower abdominal tenderness was seen in 18 (45%) patients of ectopic pregnancy, out of which 14 (35%) were diagnosed with ruptured ectopic pregnancy. While guarding was seen in 4 (10%) ectopic pregnancies in our study.

Out of 40 cases, 18 (45%) cases were that of ruptured tubal ectopic pregnancy and the most common site was isthmus (25%). The 15 (37.50%) cases were that of unruptured tubal ectopic pregnancy and the most common site was Ampulla (32.50%). Three (7.50%) cases were reported of scar ectopic pregnancy and were managed by laparotomy. Two (5%) cases were diagnosed as adnexal masses, of which one case was later diagnosed as chronic unruptured tubal ectopic pregnancy and the other case was that of tubal abortion presenting as mass in POD. Two (5%) cases were that of heterotopic pregnancy with both cases of intrauterine pregnancy coexisting with tubal pregnancy, one tubal pregnancy was ruptured while in other cases tubal pregnancy was unruptured.

Out of the total 40 ectopic pregnancies, 20 patients were ruptured ectopic pregnancy diagnosed clinically and

confirmed by USG and were directly shifted for surgical management. Beta hCG levels were done in 20 patients and from that, 4 patients whose beta hCG was below 5000 IU/mL, were medically managed keeping view of the clinical history, vital stability and laboratory investigations. All patients whose beta hCG levels were above 5000 IU/mL were managed surgically. Initially 4 patients were started on medical management by Inj. methotrexate by following strict criteria. Two cases were managed successfully by medical management, in other 2 cases medical management failed and hence a decision of surgical management was taken.

The 31 patients underwent laparotomy, out of them- 28 underwent unilateral open salpingectomy and rest of 3 patients underwent laparotomy for caesarean scar pregnancy. Surgical management is imperative in the clinical scenario of a ruptured ectopic pregnancy. Laparotomy (unilateral salpingectomy) was the most common mode of management.

Table 1: Demographic characteristics of the patients.

Variables		N	Present study (%)	Attri P et al[4]
Age (In years)	21-25	12	30	39.28%
	26-30	22	55	35.71%
	31-35	4	10	11%
	>35	2	5	-
Parity	Primigravida	5	12.5	43.87%
	Second gravida	24	60	30.61%
	Multigravida (third and above)	11	27.5	25.34%

Table 2: Risk factors for ectopic pregnancy.

Risk factors	N	Present study (%)	Attri P et al[4]
Previous ectopic	7	17.50	19.41%
PID	5	12.50	2.04%
Previous history of TB	3	7.50	19.39%
Infertility	3	7.5	22.45%
Previous tubal surgery	2	5	6.12%
IUCD	1	2.50	10.20%
Total risk factors	21	52.50	

Table 3: Signs and symptoms at presentation.

Signs and symptoms	N	Present study (%)	Attri P et al[4]
Amenorrhea	23	57.50	89.79%
Abdominal pain	24	60	46.93%
Bleeding	8	20	52.04%
Pallor	24	60	-
Lower abdominal tenderness	18	45	73.46%
Shock	5	12.50	-
Dizziness/syncope	4	10	-
Guarding	4	10	32.65%
Others	7	17.50	-

Table 4: Ultrasonography findings.

Findings			N (%)	Total no. of cases
Ruptured	Site of tubal ectopic	Ampullary	7 (17.50%)	18 (45%)
		Isthmal	10 (25%)	
		Interstitial	1 (2.5%)	
Unruptured	Site of tubal ectopic	Ampullary	13 (32.50%)	15 (37.50%)
		Isthmal	2 (5%)	
		Interstitial	-	
Scar ectopic	Ruptured		1 (2.50%)	3 (7.50%)
	Unruptured		2 (5%)	
Adnexal mass				2 (5%)
Heterotopic				2 (5%)

Table 5: Medical vs Surgical management and its association with serum beta hCG levels.

Beta hCG levels (IU/ml)	Medical management only	Surgical management only	Surgery after failure of medical management
<5000	4 (20%)	5 (25%)	2 (10%)
5000-10000	0	6 (30%)	0
>10000	0	3 (15%)	0

Table 6: Surgical management of ectopic pregnancy.

Operative procedure done	Present study	Attri P et al[4]
Laparotomy	31 (86.11%)	75.90%
Laparoscopic salpingectomy u/l	4 (11.11%)	2.409%
Salpingostomy	1 (2.78%)	2.409%
Total	36 (100%)	

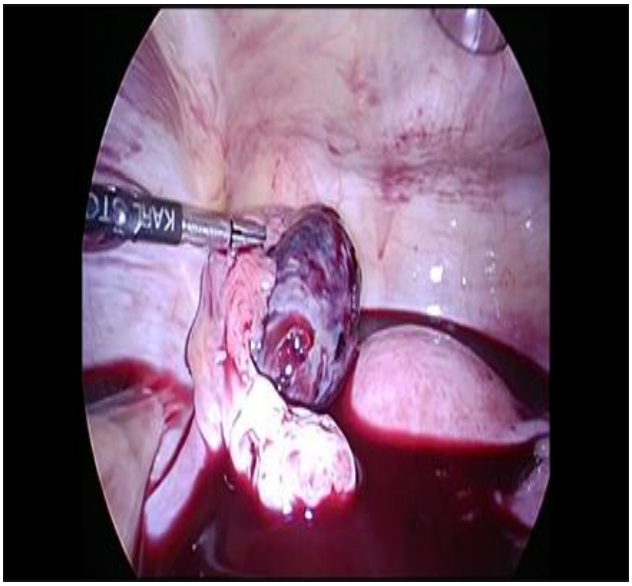

Figure 1: Intraoperative ruptured tubal ectopic pregnancy.

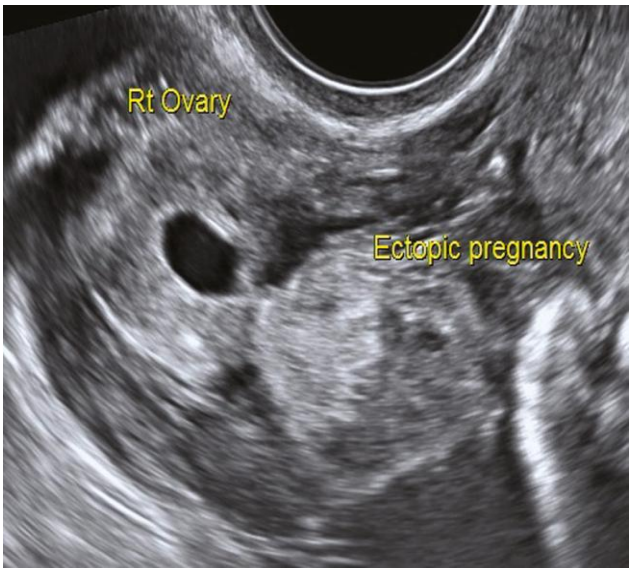

Figure 2: Ectopic on TVS.

DISCUSSION

This retrospective study was conducted between February 2023 and January 2025, involving 40 patients with ectopic pregnancies at a tertiary healthcare center. In the present study most of the patients belonged to the age group of 21-30 years, because in India most women marry at an early age, and hence fewer pregnancies are expected beyond the age of 30 years. There is no teenage ectopic pregnancy. Most of the patients were multipara. Similar findings were noticed by Majhi and Roy et al in their analysis of 180 cases of ectopic pregnancy.[11] Half of the patients (52.50%) had known risk factors, with a history of previous ectopic pregnancies (17.50%) and pelvic inflammatory disease (12.50%) being the most common risk factors. According to the study Pritti et al infertility was the most common risk factor.[4] Majhi and Roy et al found almost similar incidence of risk factors in their study on ectopic pregnancy of which most common was history of abortion (26.1%).[11] Khaleeque et al also identified previous abortion (12.9%) as most common risk factor in a similar study conducted by them.[12] The most commonly encountered symptoms in this study were amenorrhea (57.50%) and abdominal pain (60%). The classical triad of abdominal pain, amenorrhea, and vaginal bleeding was found in only 25% of cases. Signs of shock were observed in 5 out of 36 patients, all of whom were diagnosed with ruptured ectopic pregnancies. Abdominal tenderness, guarding, and cervical motion tenderness were significantly associated with ruptured ectopic pregnancies.in the study Pritti et al it was seen that 89.79% patients had amenorrhea as the most common presenting symptom.[4] The most common site for ectopic pregnancy was the ampulla (50%), and the most common site for ruptured ectopic pregnancy was the isthmus (25%). Out of the 40 cases, 18 (45%) were diagnosed as ruptured tubal ectopic pregnancies, 15 (37.50%) as unruptured tubal ectopic pregnancies, and 3 (7.50%) as caesarean scar pregnancies.

On comparing the results with another study, Mullany a review which compiles 64 literature articles using the online standard search engine, it was seen that dilatation and curettage (88.90%) had higher sensitivity rates for

ectopic pregnancy diagnosis in comparison to endometrial biopsy pipelles (70.10%).[13]

Serum beta hCG levels below 5000 IU/ml were associated with unruptured ectopic pregnancies. Conservative medical management with methotrexate injection was performed in 4 patients with unruptured ectopic pregnancies, but 2 of them required surgical management due to inadequate response to methotrexate and persistent high beta hCG levels with a ruptured ectopic mass. Laparoscopic management was conducted in 11.11% of cases, while laparotomy was performed in 86.11% of patients. In the study Pritti et al it was observed that 75.90% patients had undergone laparotomy and about 2.5% patients had undergone laparoscopic salpingectomy unilaterally and salpingostomy.[4] Sixty-one percent of patients required blood transfusion in the form of packed red cells, cryoprecipitate, and fresh frozen plasma. No mortality was reported in this study.

CONCLUSION

Ectopic pregnancy remains a significant challenge in obstetrics due to its unpredictable clinical presentation and is a leading cause of pregnancy-related deaths in the first trimester. Early diagnosis of ectopic pregnancy is crucial to prevent unnecessary maternal morbidity and mortality. The risk of ectopic pregnancy shows definitive correlation with some traditional risk factors including previous ectopic pregnancy, previous infertility, previous adnexal surgery, previous/current use of IUDs, OCPs, and female sterilization. Nowadays, with the diagnostic techniques, such as hormonal test, trans-vaginal sonography and laparoscopy early diagnosis of ectopic pregnancy is possible, which causes decrease in maternal mortality. The treatment approach for ectopic pregnancy has evolved from radical surgery to more conservative approaches, including medical and conservative management. However, despite the availability of early diagnostic tools, a significant number of cases still presented as surgical emergencies or experienced failure of medical management. Early diagnosis and prompt treatment are crucial in reducing morbidity and mortality. Gynecologists should remain highly vigilant, prioritize early detection, and facilitate timely referrals to minimize the consequences of this serious condition. The rising incidence of ectopic pregnancies serves as a warning, emphasizing the need for increased efforts in early diagnosis and intervention to reduce maternal morbidity and mortality.

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