

CHANGING TRENDS AND TREATMENT MODALITIES FOR MANAGEMENT OF ECTOPIC PREGNANCY – A TERTIARY CARE CENTER EXPERIENCE

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DOI: [10.5281/zenodo.10016152](https://doi.org/10.5281/zenodo.10016152)

Abstract

Background: Ectopic pregnancy accounts for approximately 1.5% to 2.0% of all pregnancies. It is catastrophic and life threatening condition if not diagnosed timely. Although tubal ectopic pregnancy is the most common type of ectopic pregnancy but recently there is an increasing trend in the incidence of cesarean scar pregnancy (CSP). A high index of suspicion is required for early diagnosis of CSP. The choice of treatment including expectant, medical and surgical management depends on the location of the ectopic pregnancy, symptoms, gestational age, and desire to preserve Fertility. **Aim:** The main aim of the study was to analyze the management trends in ectopic pregnancy including an evaluation of clinical profile, distribution of site and management modalities of the cases. **Methods:** The present Retrospective study was conducted over a period of one year in the Department of Obstetrics and Gynecology at School of Medical Sciences and Research, Greater Noida, Uttar Pradesh. A total of thirty two women admitted to our tertiary care hospital, through emergency and Outpatient Department with tubal ectopic pregnancy were analyzed. **Results:** Total number of 32 cases of ectopic pregnancies were admitted during one year study period from Jan 2022 to Dec 2022 against 1054 deliveries giving an incidence of about 3%. Out of these 14 (43.75%) cases were ruptured tubal ectopic and 18 cases (56.25%) were unruptured. Majority of cases were in the age group of 25 to 29 years (37.5%). In present study, 11(34.3%)of cases had no identifiable risk factors. Amongst the various risk factors studied, Pelvic inflammatory Disease (PID) was found in 6 (18.75%) cases. This was followed by history of previous abortions in 5 (15.6%). Greater incidence was noted among multigravida 12 (37.5%). The most common site of ectopic pregnancy was tubal in 27 cases (84.3%). The typical triad of amenorrhea, pain abdomen and bleeding was observed in 24(75%) of cases. Approximately 43.75% of patients required surgical treatment. Open salpingectomy was the most common surgical route in 57.1%(8/14) followed by Lap salpingectomy in hemodynamically stable patients 2 (14.28%). Salpingostomy was done for only one patient with incomplete family and in whom contralateral tube was absent. Around 43.75% cases(14/32) were managed medically using intramuscular methotrexate and one patient had expectant management. Medical management was successful in 13/14 cases (92.8%). One case had failure to medical management and was taken up for surgery. There was only one case of ovarian pregnancy. Four cases of CSP were reported during the study period (12.5%). Out of these 4 cases one case was managed medically using systemic single dose methotrexate and other three cases needed surgical intervention in form of uterine artery embolization f/b D&C, laparoscopic excision of scar and total abdominal hysterectomy respectively. There was no maternal mortality. **Conclusion.** Early diagnosis of ectopic pregnancy and timely intervention in the form of medical treatment / conservative surgery not only reduces maternal mortality but also preserves future fertility. With increasing incidence of cesarean sections an awareness should be created among the radiologists and

obstetricians who are doing and interpreting early first trimester ultrasound to specifically look for the site of implantation of pregnancy in a scarred uterus. .

Keywords: Ectopic pregnancy, Haemoperitorium, Systemic Methotrexate, Salpingectomy , Cesarean scar pregnancy

INTRODUCTION

Ectopic pregnancy occurs when fetal tissue implants outside the uterus or attaches to an abnormal or scarred portion of the uterus. [1] It is a potential catastrophic and life threatening condition and one of the commonest acute abdominal emergency in day to day practice affecting approximately 2% of all pregnancies. [2] It is the most important cause of maternal mortality and morbidity in the first trimester.

Although women with ectopic pregnancy frequently have no identifiable risk factors, a prospective and case controlled study has shown that increase awareness of ectopic pregnancy and knowledge of the associated risk factors like pelvic inflammatory disease, history of previous ectopic pregnancy, tubal sterilization and any previous pelvic or abdominal surgery help in identifying women at higher risk in order to facilitate early and more accurate diagnosis.[3]

It commonly occurs in the fallopian tubes (97%).[4] Diagnosis requires a high index of suspicion as the classic triad of amenorrhea, abdominal pain and vaginal bleeding is not seen in all cases. [5] Women may present with non-specific symptoms, unaware of an ongoing pregnancy or may even present with hemodynamic shock. Maternal mortality related to ectopic pregnancy has plummeted over the last two decades due to the availability of quantitative beta-human chorionic gonadotropin (β HCG) testing, transvaginal ultrasound, and laparoscopy, which allow for early diagnosis and intervention. [6] Early diagnosis has led to the development of minimally invasive surgical and nonsurgical options. The choice of treatment includes expectant, medical, and surgical management depending on the location of the ectopic pregnancy, symptoms, gestational age, and desire to preserve fertility. Injection methotrexate intra muscular in a single dose of 50 mg/m²/kg body surface area and also more doses of 1mg/kg/body weight on days 0, 4 and 7 can be given if required as a medical method for management of ectopic pregnancy .It is recommended only for hemodynamically stable patients, otherwise the treatment of choice for hemodynamically unstable patients is laparotomy.[7]

With increasing number of cesarean sections incidence of Cesarean scar pregnancy is also increasing. Here the pregnancy is implanted in the lower uterus anatomically corresponding to the site of cesarean scar. It represents about 6.1% of ectopic pregnancy in women with at least one previous cesarean. When compared to other ectopic pregnancies the diagnosis may be missed or delayed if the patient is asymptomatic or can mimic a spontaneous miscarriage when symptomatic. There is no consensus on the best treatment modality for scar ectopic pregnancy .Various treatment options have been opted over the years according to the gestational age and clinical features at the time of presentation. Treatment modalities include expectant management, methotrexate administration with or without dilation and curettage, excision of scar ectopic pregnancy by vaginal, abdominal or laparoscopic route, hysterectomy and many other in different combinations. Major hemorrhage and hysterectomy are the main risks associated with CSP. Therefore, adequate counselling and availability of surgical expertise and blood transfusion should be part of a comprehensive management strategy.

Despite of advancement in diagnostic modality and treatment, ectopic pregnancy remains a prevalent cause of morbidity among women and can have long-term fertility issues. The objective of this study was to analyze the management trends in ectopic pregnancy including an evaluation of clinical profile, distribution of site and management modalities of the cases.

METHODS

The present retrospective study was conducted over a period of one year in the Department of Obstetrics and Gynecology at School of Medical sciences and Research, Greater Noida, Uttar Pradesh. A total of 32 women admitted to our tertiary care hospital, through emergency and outpatient department with ectopic pregnancy were analyzed. It is a tertiary care center getting referrals from nearby cities and other hospitals. The diagnosis of ectopic pregnancy was made mainly by history-taking, clinical physical examination, laboratory (urine pregnancy test/serum beta HCG), and radiological (ultrasound) investigations. These cases were traced through the registers kept in casualty, gynecology wards and OT records. The labour room register was used to determine the total number of deliveries during this period. The information of each patient was obtained from their case records kept in the medical records department. All the relevant demographic data was analyzed. Records were studied for a period of amenorrhea at the time of diagnosis, presenting complaints like pain abdomen, bleeding per vagina or acute abdomen. Predisposing high risk factors were also analyzed. A documentation of urine pregnancy test done, relevant ultrasound findings were also noted down. Treatment options offered and important intra operative findings were studied. All the information was entered in a pre-structured proforma. Data was analyzed by percentage method.

RESULTS

In the present study conducted over a period of one year, the total number of deliveries were 1054 and the total number of ectopic pregnancy were 32 giving an incidence of 3%.

Table 1: Distribution Of Cases According To Age:

Age Group	Number Of Cases	Percentage
< 20	1	3.1%
20 to 24	4	12.5%
25 to 29	12	37.5%
30 to 34	9	28.1%
35 to 39	4	12.5%
40 and above	2	6.25%

It was found that the majority of ectopic pregnancies, occurred in the females between age group 25-29 years (37.5%). (Table 1)

Table 2: Distribution Of Cases According To Gravida Status

Gravida	Number Of Cases	Percentage
G1	3	9.30%
G2	6	18.75%
G3	11	34.30%
G4	12	37.50%

Gravida 4 and above accounted for the maximum number of cases. (37.5%) (Table 2).

Table 3: Distribution Of Cases According To High Risk Factor:

High Risk Factors	Number Of Cases	Percentage
Previous Abortions	5	15.6%
Tubal Ligation	1	3.1%
LSCS	4	12.5%
PID	6	18.8%
IVF	1	3.1%
IUCD	1	3.1%
Previous Ectopic	2	6.3%
Pregnancy Tuboplasty	1	3.1%
No Identifiable Risk Factor	11	34.3%

There were no identifiable high risk factors in 34.3% cases. Amongst the various risk factors studied, PID was found in 18.75%. This was followed by a history of previous abortions [15.6%] Table 3

Table 4: Distribution Of Cases According To Per Op Findings:

Site	Number	Percentage
Ampullary	6	42.8%
Isthmic	2	14.2%
Fimbrial	1	7.14%
Interstitial	nil	
Ovarian	1	3.1%
Tubal Abortion	2	14.2%
T O Masses	2	14.2%

The most common site of tubal pregnancy was ampulla (42.8%) (Table 4). There was only one case of ovarian pregnancy. Four cases of CSP were reported during the study period [12.5%]. Upon opening the abdomen, tubal pregnancies of different acuity were found as mentioned above.

Table 5: Distribution Of Cases At The Time Of Diagnosis

Ectopic Pregnancy	Number	Percentage
Ruptured	14	43.75%
Unruptured	18	56.25%

There were 56.25% cases of unruptured ectopic pregnancy as patients presented early due to early diagnosis of ectopic pregnancy and 43.75% cases were that of ruptured ectopic pregnancy .[Table 5]

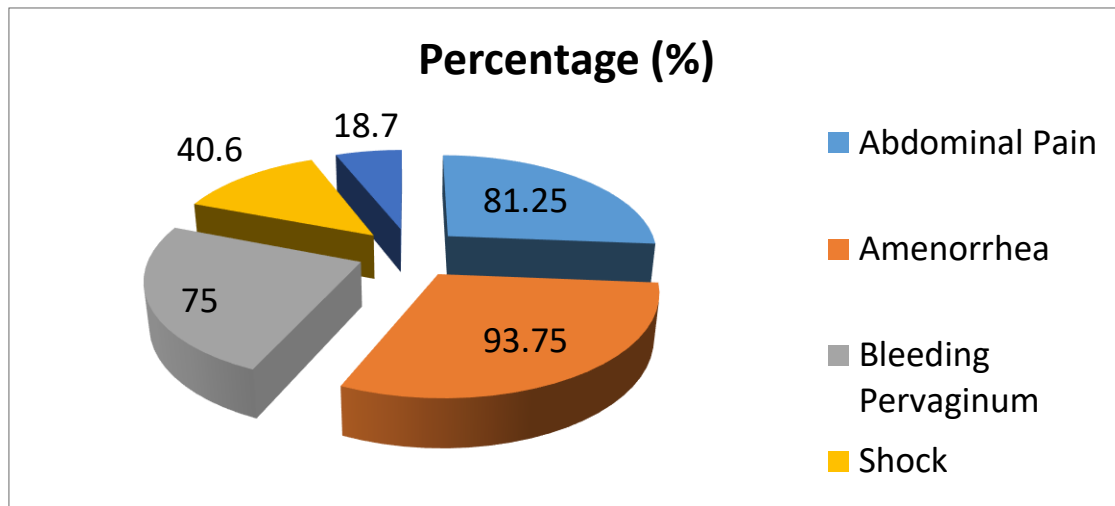


Figure 1: Distribution Of Cases According To Clinical Features:

The classic triad of abdominal pain, amenorrhea and vaginal bleeding was present in 24 (75%) of cases and six cases (18.7%) were asymptomatic. Shock was observed in 13 (40.6%) cases. Abdominal pain was complained by 26 (81.25%) cases. History of amenorrhea was elicited in 30 (93.75%) of cases. Urine pregnancy test was positive in 30 (93.75%) cases. (Figure 1).

Table 6: Distribution According To Type Of Surgery Done In Ruptured Cases:

Procedure	Cases	Percentage
Open Salpingectomy	8	57.1%
Lap. Salpingectomy	2	14.28%
Salpingostomy	1	7.14%
Salpingo - oophorectomy	1	7.14%
Partial Salpingectomy	NIL	
Open Salpingectomy with contralateral tubectomy	2	14.28%
Milking	NIL	

In our study, 46.87% of patients with tubal ectopic required surgical treatment. Open salpingectomy was the most common surgical route in (8/14) 57.1% patients as they presented in shock and were urgently taken up for laparotomy. Laparoscopy salpingectomy was performed in hemodynamically stable patients (2/14) 14.28%. Salpingostomy was done for only one patient with incomplete family and in whom contralateral tube was absent. Salpingo- oophorectomy was done for single case of ovarian ectopic pregnancy. [Table 6]

Caesarean Scar Pregnancy (CSP):

Table 7: Total four cases of scar ectopic were diagnosed during the study period

Diagnosis	Pog	High Risk Factor	Management
G3P2L1A1	8 WEEKS POG	Previous one LSCS	Uterine Artery Embolization f/b suction evacuation
G2P1LI	6 WEEKS POG	Previous one LSCS	Medical Management
G2P1L1	9 WEEKS POG	Previous one LSCS	Laparoscopic Excision of scar ectopic
G5P3L3A1	12WEEKS POG	Previous 3 LSCS with History of D&C	Total Abdominal Hysterectomy

DISCUSSION

Ectopic pregnancy (EP) is an enigma in medical science. Misdiagnosis or delay in timely management can be catastrophic. It is still one of the leading causes of maternal death in early pregnancy accounting for 3.5–7.1% of maternal mortality in India. [8] If not attended in time, it can be life-threatening. The key to prevent this lies in early clinical suspicion and detection so that more unruptured cases are treated conservatively. The incidence of ectopic pregnancy in our study was found to be 3% (32/1054). Various studies have shown it in the range of 1%–2%. [9] The reason for incidence toward higher side at our center is because of high number of referrals. Although tubal ectopic pregnancy is the most common type of ectopic pregnancy but recently there is an increasing trend in the incidence of cesarean scar pregnancy (CSP). With increasing incidence of cesarean section globally, we are unknowingly paving the way for more scar ectopic pregnancies in future.

In the present study majority of cases belonged to age group of 25-29 years (37.5%) similar to most of the studies from developing countries. Younger age group has higher prevalence because they are more active sexually, predisposed to sexually transmitted infections (STI), pelvic inflammatory disease (PID) and their sequelae. Studies in USA, however reported an increasing incidence of ectopic pregnancy with advancing age. The difference observed in our country might be owing to the fact that women here get married at early age and end reproduction earlier too. In the present study, maximum occurrence of ectopic gestation was seen predominantly in higher birth order. Some studies showed no specific relation to parity, but few reported that there is a decrease in the incidence of ectopic pregnancy with rising parity. [10] In our study, (11/32) 34.3% of patients had no identifiable risk factor. Association with risk factors, was observed in 66% which is similar to other studies. [11]

Maximum cases (6/32) 18.7% had PID followed by history of previous abortion, (5/32) 15.6% as a risk factor in our study. Explanation for high incidence of PID and induced abortions in our cases is because maximum are referred from low socioeconomic strata and they are multiparous women. Higher incidence (41.2%) of PID is also found in Seo *et al.* study. [12] However, PID as a risk factor for ectopic pregnancies has been found in 15%–20% patients and induced abortions in 36% in a study by Tahmina S. [13] The recurrence of ectopic pregnancy in our study was (2/32) 6.2%, and in literature, it ranges from 2% to 10%. Amenorrhea is not present in 100% of cases of ectopic pregnancies. In our study 30 patients (93.75%) had history of amenorrhea. In the absence of amenorrhea, patients may be unaware of their pregnancy and medical professional needs high index of clinical suspicion in the presence of abdominal pain and irregular vaginal bleeding. [14] A classic triad of amenorrhea, abdominal pain, and vaginal bleeding was present in 24 (75%) of cases.

However, some studies have shown it in range of 28%–95%. [15] The fallopian tube was the most common site of ectopic pregnancy in 27 cases (84.3%) One case (3.1%) was diagnosed with ovarian pregnancy for which salpingo-ophorectomy was done and confirmed by histopathology. In present study there were four cases of cesarean scar ectopic (12.5%). This high rise in our hospital is because it is a tertiary care center, getting referrals from nearby hospitals. Ruptured ectopic pregnancy was present in (14/32) 43.75% cases and the most common site of tubal ectopic was ampullary, as also shown in other studies. In a study by Manju Verma *et al.*, 64.8% of patients had ruptured ectopic pregnancy. In our study unruptured ectopic pregnancy was present

in (18/32) 56.25%. The decline in cases of ruptured ectopic pregnancy could be attributed to early diagnosis and intervention due to availability of serum β HCG, transvaginal ultrasound and laparoscopy. In our study, 43.75% of cases required surgical treatment. Open salpingectomy was the most common surgery done in (8/14) 57.1% cases as they presented in shock and were urgently taken up for laparotomy. Lap salpingectomy was performed in hemodynamically stable patients (2/14) 14.28%. In a study by Manju Verma et al 93% had salpingectomy. [16] In our study Salpingostomy was done for only one patient with incomplete family and in whom contralateral tube was absent. Requirement of surgical treatment can be reduced if these pregnancies are early diagnosed and medically managed, as shown in a survey by Taheri *et al.*, Cornelius *et al.*, and van den Berg *et al.* studies. [17, 18, 19]

The success rate for surgical treatment was 100%, as shown in other studies.[20] Cases who were diagnosed early and fulfilled the criteria for medical management were managed medically (14/32) 43.75% and (1/32) 3.1% had expectant management. Transvaginal ultrasound (TVS) is the best diagnostic method for extra uterine pregnancies. In our study we found sensitivity of TVS in detecting ectopic pregnancy to the tune of 90.6%. Diagnosis of ovarian ectopic and two cases of chronic ectopic pregnancies required serum beta HCG level estimation and diagnostic laparoscopy in addition to TVS. For medical management Injection methotrexate intra muscular in single dose 50 mg/m²/kg body surface area was given. Single dose methotrexate regime was successful in 13 cases (92.8%), and only one case required multiple dose regime. In a large series of 120 cases treated with single intramuscular dose of methotrexate, Stovall and Ling needed to use a second dose in only 3.3% of cases. One case (7.1%) had failure to medical management and was taken up for surgery. In present study four cases (12.5%) of scar ectopic were reported.

Out of the four cases three cases were referred from outside for management to our hospital, being a tertiary referral center. Gestational age at the time of presentation varied between 6 to 12 weeks. Majority of cesarean scar ectopic pregnancy present with clinical presentation similar to that of abortion. This frequently leads to misdiagnosing these patients as incomplete abortions and ultimately undergoing blind procedures like dilatation and curettage. The most frequent presenting complaint is the painless vaginal bleeding (39%). In our study two cases out of four cases were asymptomatic and other two cases presented with abdominal pain and vaginal bleeding. Three patients had h/o previous one LSCS and one patient had h/o previous three LSCS and D&C. Medical management with systemic methotrexate single dose was done for one patient @ 6 weeks POG with previous one LSCS who was asymptomatic. Another patient who presented with spotting per vagina at 8 weeks POG was managed by Uterine Artery Embolization f/b D&C post 48 hours.

Laparoscopic excision was done for one patient at 9 weeks POG who was asymptomatic. Patient with h/o previous 3 LSCS at 12 weeks POG presented to the Emergency Department in state of hemorrhagic shock and underwent total abdominal hysterectomy [TAH] as a lifesaving surgery. With the rising rate of cesarean deliveries worldwide, the incidence of CSP is increasing as well. [21] Maymon et al. found that 50% of the CSP patients underwent multiple cesarean sections while Jurkovic et al. have found that 72% of their patients underwent multiple (≥ 2) cesarean sections. [22, 23] In our study, the rate of multiple cesarean sections was 25% and 75% had history of previous one LSCS. Prior multiple cesarean deliveries predispose women to develop scar pregnancy. This may be due to the shortening of the viable scar-free

uterine segment available for implantation. There was no maternal mortality in present study, and all patients were managed successfully. The range of mortality in various studies is from 0% to 1.3%. [24] If ectopic pregnancy is timely diagnosed and treated, morbidity and mortality can be reduced certainly. Mortality usually occurs due to delayed referrals and non-availability of blood. In comparison to medical management, there is increased morbidity with surgical treatment. Hence, early diagnosis, and avoidance of delay in referral are key points for best management of these patients. High index of clinical suspicion for EP will be helpful in early diagnosis and best management.

CONCLUSION

Management of ectopic pregnancy has undergone a paradigm shift over the past two decades. Once it was reported as a leading cause of first trimester morbidity and mortality due to late diagnosis and heavy blood loss caused by rupture, However now we are able to diagnose and manage most cases well before rupture with medical management.

The incidence of Cesarean scar pregnancy has increased due to increase in number of Caesarean deliveries. Diagnosis of CSP requires a high index of suspicion as if missed, can lead to an array of complications leading to loss of fertility, morbidity and mortality. Increasing cesarean section rates imply that clinicians will encounter CSP from time to time, therefore an awareness should be created among the radiologists and obstetricians who are doing and interpreting early first trimester ultrasound to specifically look for the site of implantation of pregnancy in a scarred uterus. There are no uniform guidelines in the management of the CSP and consequently choosing the correct modality of treatment could be a dilemma. The fundamental step to avert the complications is early diagnosis and individualized treatment. As a preventive measure it would be prudent to reduce the number of primary CS performed without justified indications.

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