International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Shrivastava M et al. Int J Reprod Contracept Obstet Gynecol. 2017 Jun;6(6):2485-2490
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20172336

Original Research Article

A clinical study of ectopic pregnancy in a tertiary care centre in Central India

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Received: 27 March 2017
Accepted: 26 April 2017

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ABSTRACT

Background: Ectopic pregnancy is an obstetric emergency with high morbidity and mortality. The incidence of ectopic pregnancy is on a rise globally. Risk factors and causes for ectopic pregnancy may vary with the setting and geographically.
Methods: A retrospective analysis of all operated ectopic pregnancies over a 5-year period; between June 2011 to May 2016, was done. Surgically confirmed cases were included in this study and a detailed analysis of presenting symptoms, age, parity and high risk factors was carried out.
Results: A total of 50 patients were operated for ectopic pregnancy at our hospital during the study period. Analysis was done for 47 of these due to incomplete data for 3 patients. Majority (62%) of patients belonged to the age group 20-29 years and were gravida 3 and above. Ninety two percent were ruptured ectopic. Sixty two percent ectopic pregnancies were on right side. The common presenting complaints were pain in abdomen (81%) and bleeding/spotting per vaginum (43%). The mean duration between onset of symptoms and reporting to hospital was one and a half day and the average time between admission to hospital and surgery was 9 hours. The ectopic pregnancies were managed surgically in all cases. No obvious risk factors were identified in 34% patients. Among the remaining, previous MTP (17%), previous ectopic (9%) and PID (7%) were identified risk factors. There was no mortality.
Conclusions: Surgical treatment was done more often because of patients reporting late to the hospital. Screening of high risk cases, early diagnosis and early intervention reduces the morbidity and mortality in ectopic pregnancies.

Keywords: Ectopic, Emergency, Pregnancy

INTRODUCTION

Ectopic pregnancy is defined as when the gestational sac implants itself outside the uterus, i.e. fallopian tubes, ovary, cervix and peritoneum. It is an obstetric emergency with high morbidity and mortality. It is the fifth most common cause of death according to the most recent triennial report and also the most common cause of maternal mortality in first trimester.[1] The rate is about 1-2% of that of live births in developed countries, though it is as high as 4% in pregnancies involving assisted reproductive technology.[2] It has been observed all over the world that incidence of ectopic pregnancy has increased during the last few years. A number of causes have been attributed to it of which most are due to changing living trends of the society; increasing maternal age, tubal surgeries, pelvic inflammatory diseases, endometriosis, exposure to diethylstilbestrol (DES) in utero, taking hormonal pills containing estrogen, use of an intrauterine device (IUD), history of tuberculosis and assisted reproductive techniques. A meta- analysis has identified four strongly associated risk factors from the

history, which are; previous ectopic pregnancy, previous tubal surgery, evidence of tubal pathology and in utero exposure to DES.[3] The current incidence of ectopic pregnancy is difficult to estimate from available data (hospitalizations, insurance billing records) because inpatient hospital treatment of ectopic pregnancy has decreased and multiple health care visits for a single ectopic pregnancy have increased, and also because it is difficult to determine the denominator (incidence of ectopic pregnancies/1000 pregnancies), as early pregnancy failures that do not result in delivery or hospitalization are often not counted.[4]

Symptoms most of the times are non-specific and mimics many other medical and surgical conditions and hence can be a reason for misdiagnosis.[4] Between 93-97% of ectopic pregnancies are located in a fallopian tube.[2] Of these,13% are located in the isthmus, 75% are located in the ampulla, and 12% in the fimbriae.[4] Nearly 2% of all ectopic pregnancies become established in other areas including the ovary, the cervix or the intra-abdominal region.[5] Rupture of an ectopic pregnancy is a surgical emergency.[2,6] History and clinical examination of patient together with serum beta HCG measurements and TVS examinations are done to reach to a final diagnosis.[5] Early treatment of an ectopic pregnancy with methotrexate is a viable alternative to surgical treatment.[3,7] Surgical treatment becomes necessary if rupture has already occurred. Laparoscopy or laparotomy is performed in such cases and the affected fallopian tube is incised with removal of only the pregnancy (salpingostomy) or the affected tube is removed with the pregnancy (salpingectomy).

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.

This study was done with an aim of studying various parameters associated with ectopic pregnancy for better understanding of this condition which can help us in early diagnosis and timely intervention and help decrease mortality and morbidity associated with it.

METHODS

A retrospective analysis of all operated ectopic pregnancies was done over a 5-year period; between 30 June 2011 to 31 May 2016, in the department of Obstetrics and Gynecology of People's hospital, Bhopal, India (affiliate teaching hospital of People's college of medical sciences and research Centre, Bhopal, India). All patients with a history suggestive of ectopic pregnancy and in whom diagnosis was confirmed by clinically, ultrasound or direct observation at laparotomy were included in the study. The case sheets of the patients with ectopic pregnancy were traced through the labor room registers and operation theatre registers. Patients who were diagnosed as ectopic pregnancy on laparotomy, were included in the study whereas, those with incomplete records were excluded from the study. Details of demographic characteristics, clinical symptoms and signs, risk factors, treatment given for the ectopic pregnancy as well as associated morbidity and mortality were obtained. All the surgeries were done by laparotomy under spinal/general anesthesia. Detailed analysis was done using simple descriptive statistics and presented as percentages in tables and graphs. The study was initiated after approval from the institutional ethics committee.

RESULTS

50 patients were admitted with ectopic pregnancy in our hospital in the study period. The data was analyzed for a total of 47 patients due to incomplete availability of the data. The incidence of ectopic pregnancy in the present study was 0.96%.

Age distribution

Majority (62%) of the patients belonged to the age group 20-29 years. The mean age of the patients in the whole group was 27.4 years (range 19-37 years; SD±4.85). (Table 1 and Table 2).

Table 1: Distribution of patients with age (N=120).

Age (In years)	Number of cases (N=47)
<19	1
20-24	14
25-29	15
30-34	10
>35	7
Total	47

Table 2: Details of age distribution (N=47).

Mean Age (In years) (N=47)	Range (In years)	Standard Deviation (±)
27.4	19-37	4.85

Gravidity

Gravida status ranged from nulligravida to fifth gravida. Majority patients were gravida 3 and above (62%). One patient was unmarried (Table 3).

Table 3: Distribution of patients according to gravidity (N=47).

Gravida	Number of patients (%)
1	8 (17.0)
2	10 (21.3)
3	21 (44.7)
4	7 (14.9)
>4	1 (2.1)
Total	47 (100)

Clinical presentation

Amenorrhea was present in all the patients. Of the 47 patients, 38 (80.9%) presented with pain in the abdomen followed by bleeding/spotting per vaginum in 20 (42.6%) patients.11 (23.4%) patients had vomiting and 6 (12.8%) patients had one or more fainting episode. 7 (15%) of the patients were brought in a state of shock (Table 4).

Classic triad of pain, bleeding and amenorrhea was seen in 15 (31.9%) patients.

Table 4: Distribution of patients according to clinical presentation.

Presenting complaint	Number of cases (N=47)	%
Pain of abdomen	40	85.1
Nausea	3	6.4
Vomiting	11	23.4
Fainting	6	12.8
Bleeding per vaginum	20	42.6
Urinary retention	1	2.1
Obstipation	1	2.1
Abdominal distention	1	2.1
Shock	7	14.9

*Patients presented often with more than one complaint.

Risk factors

Risk factor could not be identified in about 16 (34%) patients. Of the various risk factors, 8 (17%) patients had history of medical abortion followed by, history of Lower Segment Caesarean section in 6 (13%) patients.

History of previous ectopic, history of dilatation and curettage, history of receiving infertility treatment in this pregnancy and history of tuberculosis were present in 4 (9%) patients each. History of having one or more spontaneous abortions, history of bilateral tubectomy (i.e. failure of tubectomy) and pelvic inflammatory disease was present in 3 (6%) patients each.

History of tubal recanalization was present in 2 (4%) patients. One patient had unicornuate uterus and one had ectopic right kidney (Table 5).

Type of ectopic pregnancy

Majority (91.5%) patients had a ruptured ectopic pregnancy at the time of admission. Unruptured ectopic pregnancy was seen in only 4 (9%) patients (Table 6).

Site of ectopic pregnancy

In the majority (45 of 47) of patients, the ectopic pregnancy was in fallopian tube. Of these, in about 25 (53.2%) the exact location could not be made out in ultrasonography and laprotomy both due to extensive tubular damage. In 9 (19%) patients ectopic was located in ampullary part of fallopian tube, followed by isthmic part in 4 (9%) and interstitial in 3 (6%) patients. Fimbrial and ovarian ectopic was seen in 2 (4%) patients (Table 7).

Table 5: Distribution of patients according to risk factors.

Risk Factor	Number of patients (N=47)	%
Unknown	16	34
H/O Medical abortion	8	17
H/O Lower segment ceasarean section	6	12.8
H/O Curettage	4	8.5
H/O Infertility	4	8.5
H/O Tuberculosis	4	8.5
H/O Previous ectopic	4	8.5
H/O Pelvic inflammatory disease	3	6.4
H/O Tubal ligation	3	6.4
H/O Spontaneous abortions	3	6.4
H/o Tubal recanalization	2	4.3
H/o Diagonostic laproscopy	2	4.3
Diabetes mellitus	2	4.3
Unicornuate uterus	1	2.1
Total	47	100

* Patients had more than one risk factor

One patient had heterotopic pregnancy. However, there were also two patients who had negative laparotomies, of which one was suspected heterotopic and the other was a case of tubo-ovarian mass. An incidental finding was that the right fallopian tube was found to be more commonly affected (62% patients) (Table 8).

Table 6: Distribution of patients according to type of ectopic pregnancy.

Type of ectopic	Number of patients (N=47)	%
Ruptured	43	91.5
Unruptured	4	8.5
Total	47	100

Table 7: Distribution of patients according to site of ectopic pregnancy.

Site of Ectopic pregnancy	Number of cases (N=47)	%
Ampulla	9	19.1
Isthmus	4	8.5
Fimbriae	2	4.3
Interstitial	3	6.4
Fallopian tube but unspecified	25	53.2
Ovary	2	4.3
Heterotopic	1	2.1
Adhered to bowel	1	2.1
Total	47	100.0

Type of surgery

Laparotomy was done in all the patients. The most common procedure which was done was salpingectomy in 22(70%) of the patients. Salpingo-oophorectomy was done in 4 (8.5%) patients. 4 patients had ruptured interstitial pregnancy which was repaired. There was one ruptured heterotopic pregnancy for which unilateral salpingectomy with suction and evacuation was done. (Table 9). Mean duration of patient taken for surgery about 9 hours.

Table 8: Distribution of patients according to the involved side of fallopian tube in ectopic pregnancy.

Side of fallopian tube	Number of patients (N=47)	%
Right	29	61.7
Left	17	36.2
Other	1	2.1
Total	47	100

Mean duration of patients reporting to hospital is about one and a half day. All of the patients had blood transfusions intra-operatively and postoperatively. The postoperative period was uneventful in all the patients. No mortality occurred. Average duration of hospital stay was about 12 days.

Table 9: Distribution of patients according to type of surgery.

Type of surgery	Number of patients (N=47)	%
Milking of tube with tubectomy	3	6.4
Salpingostomy	1	2.1
Partial unilateral salpingectomy	4	8.5
Total unilateral salpingectomy	22	46.8
Total unilateral salpingectomy with opposite tubectomy	7	14.9
Salpingo-oophorectomy	4	8.5
Salpingo-oophorectomy with opposite tubectomy	1	2.1
Cornual repair	3	6.4
Cornual repair with bilateral tubectomy	1	2.1
Total unilateral salpingectomy with Suction and Evacuation	1	2.1
Total	47	100%

DISCUSSION

In the present study, the incidence of ectopic pregnancy was 0.96%, comparable to the recent data.[2] Majority (62%) of the patients in our study were in the age group 20-29 years, which is comparable to many studies.[8-10] We have observed that amenorrhea was present in all the patients. Pain in abdomen, bleeding per vaginum, and vomiting was presented in 80.9%, 42.6% and 23.4% patients respectively. 12.8% patients had one or more fainting episode. This is comparable to the study by AO Igwegbe et al. where majority, 80.6% (75/93) presented with abdominal pain and 35.8% (33/93) presented with vaginal bleeding.[11] The studies by Perveen F et al, Manthan et al and Shivkumar HC et al also found almost similar trends of presenting complaints.[8,12,13] However in the study of Hassan N et al, abdominal pain was seen in 70.97%, amenorrhea only in 51.61% and irregular vaginal bleeding in 25.81% patients.[14] In our study about 15% patients were brought in the state of shock. This is in contrast to the study of Shaikh BN et al and Shanti Suri Asuri where 38% and 40.5% patients were brought in a state of shock.[16,8]

Classic triad of pain, bleeding and amenorrhea was seen in 15 (31.9%) patients in our study which is similar to the study of Priyadarshini B. et al.[8]

In the present study, previous medical abortions and previous lower segment caesarean section were present in 17% and 12.8% patients respectively, which is quite comparable to the studies done by Priyadarshini Et al, Shanti Suri Asuri, Yadav et al and Saha et al.[8,16,18,19] We found that history of infertility treatment was there in 8.5% patients almost similar to the studies of Shanti Sri Asuri, March Banks and Arora et al.[16,20] In contrast it was quite higher in the studies of Mitra et al (55.2%), Savitha Devi et al(48.07%), Priyadarshini B. et al (21%) and Rose et al (15.1%).[8,16,21,22] In our study history of PID was present in 6.4% patients. Relative risk as per ICMR multicentric case control study was 6.4, which is similar to our study.[18] It has been found to be an associated risk factor with variable magnitudes in various other studies also.[20,23-25] Tubal diseases are almost always bilateral and thus there is a strong tendency for ectopic pregnancy to occur on the other side also.[26] It becomes the most important risk factor for ectopic pregnancy. It confers a 10-fold increase in the likelihood of another ectopic pregnancy.[27,28] In our study 8.5% patients had pervious ectopic pregnancy, comparable to the studies of Priyadarshini et al, Shanti Suri Asuri.[8,16] However Rashmi et al and Rose et al found lower rates (2.7% and 3.2% respectively) of previous ectopic in their study. In our study, there were 6.4% patients who had history of tubal ligation similar to study of Priyadarshini et al.[8] In the present study, factors like previous spontaneous abortions, previous curettage and history of tuberculosis, were noticed in 6.4%, 8.5% and 8.5% patients respectively. Priyadarshini et al and Rose et al have reported tuberculosis as nearly 7% and 3.2% of risk factors in their study.[8,22] In the study of Shanti Sri Asuri the incidence of ectopic following curettage was 8.06%.[16] Anatomical abnormality was also present in 2.1% of our patients; similar to Yadav et al study.[18] Priyadarshini B. et

al found malformation of uterus in 10.5% of cases, which is very high as compared to that of our study. No risk factor could be identified in 34% of patients in our study as in many other studies.[8, 16-19]

We found that majority of patients had tubal ectopic pregnancy as in other studies.[18,29] However the exact site could not be made out in 53.2% patients during laparotomy due to extensive tubular damage. 19% had ectopic in ampulla, followed by isthmus (9%), interstitial (6%) and fimbriae (4%).Ovarian ectopic was seen in 4% patients. One (2.1%) patient had heterotopic pregnancy. Almost similar trend was noticed in Bouyer et al's 10-year study on 1800 patients, who suggested sites of ectopic pregnancy as ampullary (70%), isthmic (12%), fimbrial (11%), interstitial (2.4%), ovarian (3.2%) and abdominal (1.3%).[25]

In our study majority (91.5%) patients had a ruptured, while only 8.5% had an unruptuerd ectopic pregnancy at the time of admission. The incidence of tubal rupture has been found to vary greatly between various studies from 16%, 36%, 56%, 83.1, 84.9%.[8,16,18,30-32] Since most of our patients had ruptured tubal pregnancy, they needed an emergency laparotomy as a life saving measures. The most common procedure which was done was salpingectomy (70%) Salpingo-oophorectomy and salpingostomy was done in 8.5% and 2.1% patients respectively. 4 patients had ruptured interstitial pregnancy which was repaired. Unilateral salpingectomy with suction and evacuation was done for the ruptured heterotopic pregnancy. In Yadav et al's study also, the most common surgeries done were total unilateral salpingectomy (70.58%), Salpingooophorectomy (11.76%) and salpingostomy (5.88%). Similar findings were also noted in different studies.[18,33-35]

There was no maternal mortality due to ectopic pregnancy in the present study as in other studies.[8,16,18] This may be as a result of prompt and proper management of the patients after reporting to the hospital.

Hence it is seen clearly that while there is an increase in incidence of ectopic pregnancy, mortality has reduced significantly, which can be because of improved diagnostic and treatment modalities.

CONCLUSION

Overall, it can be said that if identification and prevention of the known risk factors and screening of the high-risk cases, is done then it is likely that incidence of the ectopic pregnancy may decrease. It is also of utmost importance that a high index of suspicion is present, which can help in making an early diagnosis and timely intervention, and hence help to improve the prognosis of patients in terms of fertility, morbidity and mortality. However, more prospective studies are required to compare different modalities of treatment of ectopic pregnancy in our scenario.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Shrivastava M, Parashar H, Modi JN. A clinical study of ectopic pregnancy in a tertiary care centre in central India. Int J Reprod Contracept Obstet Gynecol 2017;6:2485-90.