

Original Research Article

"RISK FACTOR ANALYSIS IN CASES OF ECTOPIC PREGNANCY- AN OBSERVATIONAL STUDY IN A TERTIARY CENTRE OF REWA"

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ABSTRACT

Background & objectives: Observation and analysis of the risk factors associated with ectopic pregnancy.

Material and Methods: It is a Cross-sectional study where 75 diagnosed cases of ectopic pregnancy were recruited after taking informed consent. Data collected on the basis of detailed history and clinical evaluation.

Results: The incidence was 6.3 per 1000 deliveries. Majority of the cases (57.3%) belonged to the upper lower socio-economic class and rural area (66.7%) with maximum incidence between the age group of 26-35 years (66.6%). Nulliparous women (40%) and women with 5-10 year of active married life (46%) had more incidence. 26.6% of cases do not have risk factors. Two most common risk factors identified in our study were history of prior pelvic procedure (37.3%) and pelvic inflammatory diseases (34.6%). Third important risk factor was previous abortion and contraception seen in 21.3% of cases. 16% took infertility treatment. Other risk factors include prior ectopic pregnancy (4%), abortifacient intake in present pregnancy (6.6%) and past medical illnesses (12%).

Conclusion: There is a rising trend in the incidence of ectopic pregnancy. it will never be completely prevented, but its incidence can be decreased by prevention of risk factors and effective diagnostic and interventional strategies directed at those women who are at high risk.

Keywords: contraception, cross-sectional study, ectopic pregnancy, infertility.

1. INTRODUCTION

Ectopic pregnancy occurs when fertilized ovum get implanted and develops outside the normal endometrial cavity. It is an awful abdominal emergency a gynecologist has to meet in day to day practice and a woman might have to face any time during her reproductive age group.

Ectopic pregnancy has been accounted for 1.5-2% of all reported pregnancies and complications related to it account for 4-10% of pregnancy related deaths.^{1,2} ICMR 1990 task force conducted a multi-centric case control study in India, and reported incidence was 3.12 per 1000 pregnancies or 3.86 per 1000 live birth in hospital reported pregnancies.³ Although, exact contribution is not known but few studies reported 3.5- 7% of maternal deaths were due to ectopic pregnancy.⁴ Escalating impact of social and life style changes, assisted reproductive technologies and advances in diagnostic techniques, sexually transmitted infections, induced abortions, late child bearing in career women, are the important elements for rising incidence of ectopic pregnancy globally. Apart from maternal mortality and morbidity, future fertility of the patient is also an important aspect through which a patient suffers mentally, physically and economically.

This study aimed to determine the potential risk factors for ectopic pregnancy and to assess the contribution of the risk factors associated with it. Successful identification, evaluation, its contribution and prevention of risk factors before conception will help us in early recognition, more conservative approach towards management, to prevent maternal morbidity and future fertility of patients.

2. MATERIALS AND METHODS

It is an Cross-sectional study conducted in Shyam Shah Medical College and Sanjay Gandhi Memorial hospital, Rewa (M.P.) from 1st March 2019 to 30th Aug 2020 where all diagnosed cases of ectopic pregnancy were recruited for the study after taking informed consent for participation. A total of 75 pregnant women were selected who were satisfying inclusion and exclusion criteria of the study.

The diagnosis of ectopic pregnancy was made mainly by history-taking, clinical physical examination, laboratory (urine pregnancy test), and radiological (ultrasound) investigations, which were later confirmed surgically. Data collected on the basis of detailed history and clinical evaluation done on all diagnosed cases.

Detail history of the patients included: patient's particulars, socio-demographic distribution, detail menstrual and obstetric history including history of infertility, history of previous ectopic pregnancy, previous history of abortion, history of previous pelvic procedure-dilatation and curettage, tubal surgeries, tuboplasty or any other abdominal surgery, history of pelvic inflammatory disease or related symptoms or tuberculosis and treatment received for it in either partner, history of contraception - IUCD, oral contraceptive pill or permanent method, abortifacient intake in this pregnancy. Apart from this, relevant personal history like history of smoking and relevant past medical history was also taken. Relevant

ultrasonographic and intraoperative findings were recorded. Management was done as per standard treatment protocols.

All the information was recorded in a pre-structured proforma, entered in MS excel spread sheet and analyzed by appropriate statistical method like percentage method using Bar chart and pie chart.

Study was ethically approved by Institutional Ethical Committee. After ethical approval study was started and enrolled patients after their written informed consent.

Confidentiality and privacy of the participants were maintained. All the data was kept in strict confidentiality with access to only the researcher and mentor.

3. RESULTS

In present study the incidence of ectopic pregnancy was 6.3 per 1000 deliveries. Maximum number of ectopic gestation occurred between the age group of 26-35 years (66.6%), out of which 41.3% occurred between 31-35 years and 25.3% occurred between 26-30 years (Table 1). Majority of women belonged to rural area (66.7%), while 33.3% of cases belonged to urban population. Majority of them (57.3%) belonged to the upper lower socio-economic class while none of them belonged to the high socio-economic status. Most of cases reported with regular menstrual history (90.7%), while 9.3% of them had irregular menses. Nulliparous women (40%) had more incidence, followed by parity 2 (30.7%), parity 1 (16%) then multipara (13.3%) (Table 2). Out of 75 cases of ectopic pregnancy, 3 cases (4%) were unmarried, ectopic pregnancy was found to be affecting more women with 5-10 year of active married life (46%) followed by less than 5 year (29.3%) (Table 3).

Table 1: Ectopic pregnancy in relation to age

Age group	No. of cases	Percentage
<20 YEARS	6	8.0%
21-25 YEARS	1	1.3%
26-30 YEARS	19	25.3%
31-35 YEARS	31	41.3%
36- 40 YEARS	14	18.7%
>40 YEARS	4	5.3%
TOTAL	75	100.0%

Table 2. Distribution of cases based on parity

Parity	Number of cases	Percentage
Nullipara	30	40.0%
Parity 1	12	16%
Parity 2	23	30.7%
Parity 3	7	9.3%
Parity 4 or more	3	4 %
Total	75	100%

Table 3. Relation between marital life and ectopic pregnancy

Interval	No. of cases	Percentage
Unmarried	3	4%
<5 YR	22	29.3%
5-10 YR	35	46.6%
>10 YR	15	20%
Total	75	100

26.6% of cases in present study found to have no risk factors, while 73.3 % of the cases had one or more identifiable risk factors (Table 4). Out of which, 34.6% had only one followed by 18% had two, 13% had three and 6% had four identifiable risk factors. Two most common risk factors identified in our study were history of prior pelvic procedure (37.3%) and pelvic inflammatory diseases (34.6%). Third important risk factor was previous abortion and contraception seen in 21.3% of cases. 12 cases (16%) took infertility treatment in form of ovulation induction. Other risk factors include prior ectopic pregnancy (4%), abortifacient intake in present pregnancy (6.6%) and past medical illnesses (12%). History of previous abortion was found in 16 cases (21.3%). Out of which 14.6% of cases were induced abortion by medical methods and 6.6% were aborted spontaneously. Among cases using temporary contraception, 5.3% used intrauterine contraceptive devices while 2.6% used oral contraceptive pills. 13.3% cases had history of tubal ligation and 78.6% cases did not use contraception (Table 4).

Table 4. The risk factors in cases of ectopic pregnancy

Risk factors	No. of cases	Percentage
No risk factor	20	26.6%
History of infertility treatment (ovulation induction)	12	16.0%
Previous abortion	16	21.3%
Contraception	16	21.3%
PID or related symptoms in either partner	26	34.6%
Prior ectopic pregnancy	3	4%
Prior pelvic procedure	28	37.3%
Abortifacient intake in present pregnancy	5	6.6%
Past medical illnesses	9	12%

One of the most common risk factor identified in our study was history of prior pelvic procedure (37.3%). On segregating it, dilatation and curettage (14.6%) and tubal ligation (13.3%) were found in most of cases. 8% of cases were previous LSCS. 4% of them undergone laparotomy for prior ectopic pregnancy while 2.6% of cases undergone laparoscopy as part of infertility treatment. 1 patient (1.3%) had history of recanalization

surgery (Table 5). Significant past medical illnesses was found in 12 % cases, 5.3% among these had tuberculosis and took treatment for it, 5.3% of cases had thyroid disorders and 1.3% have other unrelated illnesses.

Table 5. Type of prior pelvic surgery or procedure

Type of prior pelvic surgery or procedure	Number of cases	Percentage
LSCS	6	8%
TUBAL LIGATION	10	13.3%
D&C	11	14.6%
LAPAROTOMY FOR PREVIOUS ECTOPIC	3	4%
LAPARASCOPY FOR INFERTILITY	2	2.6%
RECANALIZATION	1	1.3%
TOTAL CASES HAVING HISTORY OF PELVIC PROCEDURE	28	37.3%
NO HISTORY OF ANY PELVIC PROCEDURE	47	62.6%
TOTAL CASES	75	100%

Majority of cases of ectopic pregnancy were on right side (56%), while 44% were on left side. The most common type of ectopic pregnancy was Tubal ectopic pregnancy, most common site in our study was ampullary 42.7% followed by cornual (16%), isthmus (5.3%) and fimbrial (2.7%). In 30.7% of cases, exact site could not be identified due to extensive damage to tube because of rupture. Apart from tubal ectopic, one case (1.3%) was of ovarian ectopic pregnancy and one was of caesarean scar ectopic pregnancy (1.3%) (Table 6). Majority of cases (73.3%) were ruptured ectopic pregnancy on laparotomy, 13.3% cases were tubal abortion, 9.3% were chronic ectopic pregnancy and only 4% were unruptured.

Table 6. Distribution of cases according to site of ectopic pregnancy

Site	No. of cases	Percentage
Cornual	12	16.0%
Isthmus	4	5.3%
Ampullary	32	42.7%
Fimbrial	2	2.7%
Tubal (exact site not specified)	23	30.7%
Ovarian	1	1.3%
Scar ectopic	1	1.3%
Total	75	100.0%

Ultrasonography was used for diagnosis in 73.3% of cases, while due to limited resource setting in emergency hours and presentation of cases as an acute emergency, 26.7 % of the diagnosed by clinical assessment with or without using culdocentesis. Surgical management was done in 98.7% of cases. Only one patient (1.3%) with unruptured ectopic pregnancy shows complete remission with medical management using MTX regimen.

4. DISCUSSION

Ectopic pregnancy is grave emergency in early pregnancy. It carries a high rate of morbidity and mortality when not recognized and treated immediately and is an important cause of first trimester maternal deaths.

The purpose of this study was to evaluate all cases of ectopic pregnancy arrived at tertiary center during study period and to determine incidence, socio-demographic distribution, risk factors and various important features related to it.

Ectopic pregnancy has been accounted for 1.5-2% of all reported pregnancies and complications related to it account for 4-10% of pregnancy related deaths.^{1, 2} It is not precisely known about the exact contribution of maternal mortality rates in the developing countries including India due to ectopic pregnancy but the data from few studies reported 3.5-7% of maternal deaths were due to ectopic pregnancy⁴. Indian council of medical research (ICMR) 1990 task force conducted a multi-centric case control study in India, where they evaluated 871 cases of ectopic. The incidence reported by them was 3.12 per 1000 pregnancies or 3.86 per 1000 live birth in hospital reported pregnancies.³In present study the incidence was 6.3 per 1000 deliveries. Comparison of incidence reported by several other authors is represented in following table.

Authors	Year	Incidence
Present study	2019	6.3 per 1000 deliveries
Salodia Lakshmi et al ⁵	2017	4.86 per 1000 deliveries
Shetty S et al ⁶	2014	5.6 per 1000 deliveries
Porwal Sanjay et al ⁷	2012	2.461 per 1000 deliveries.
ICMR ³	1990	3.12 per 1000 pregnancies

Socio-demographic distribution of ectopic pregnancy

Age

In present study, maximum number of ectopic gestation occurred between the age group of 26-35 years (66.6%), out of which 41.3% occurred between 31-35 years and 25.3% occurred between 26-30 years (Table 1). This age correlate with age of peak sexual activity and reproduction. The youngest case was of 18 years and oldest was of 45 year in our study. It was almost similar to the most of studies from developing countries. Hoover KW and

colleagues studied that, “rate of ectopic pregnancy rises with increasing age, 0.3% among girls and women aged 15-19 years and 1.0% among women aged 35-44 years”.⁸

The mean age group described by ICMR 1990 task force was 28 years with maximum number of cases in 25 to 35 years of age group, which is consistent with our study.³ Some other studies reported the incidence of ectopic pregnancy showing a steady increase with increasing maternal age, like 1.4% of women had ectopic pregnancies at the age of 21 years, whereas 6.9% of pregnancies in women aged 44 years and older were ectopic.⁹The likely cause for this high incidence is the continuous loss of the myoelectrical activity in the fallopian tube with age, which is responsible for tubal motility.

In contrast, studies by Rashmi et al¹⁰, Panchal D et al¹¹ and Prasanna et al¹² shows more incidence in women below 30 years of age group. Prevalence in age group shows variability like it can be increased in younger age groups as well, owing to the fact that they are more active sexually, predisposed to sexually transmitted infections, pelvic inflammatory diseases and their complications and trends of marriage in our country that women here enter in to married life earlier and end reproduction earlier too.

Residence

In our study, 66.7% of cases of ectopic pregnancy belong to rural area, while 33.3% of cases belong to urban population which is relatable with Patel UM et al.¹³ Women are generally not aware of symptoms of *pelvic inflammatory diseases* in rural population of India. They seek health care unless alarming symptoms develops and sometimes may directly present with complications. Women in rural area experience poorer health outcomes and have less access to health care than urban women.

Socioeconomic status

Majority of the cases (43%) belonged to the upper lower socio-economic class and none of them belonged to the high socio-economic status in our study. This finding consistent with study by Poonamet al¹⁴ and Prasanna et al¹². The elevated incidence in low socioeconomic status can be due to a well-known fact that women belonging to low socioeconomic status will have poor personal hygiene and lack of immunity, making them vulnerable for pelvic inflammatory diseases including tuberculosis. Also the study population in our study mostly belongs to low socioeconomic status as they prefer economically convenient government setup, while cases from high socioeconomic status prefer going to private setup.

Menstrual history

As per present study, 90.7% cases were having regular menstrual history, while 9.3% of them had irregular menses. Similar finding was reported by Parmar S et al¹⁵ Irregular menses may not have direct correlation with ectopic pregnancy but it could be associated with risk factors predisposing to it like pelvic inflammatory disease and infertility. Also, it is easy for a patient to suspect pregnancy with regular menses by missed period, irregular

menses lead to misconception in patients and they ended up with life threatening complications of rupture and present with high morbidity in their first visit to hospital.

Obstetric history

Nulliparous women (40%) had more incidence in our study, followed by parity 2 (30.7%), parity 1 (16%) then multipara (11.3%) (Table 2). Study by ParmarS et al¹⁵, Saeed et al¹⁶ and Soren M et al¹⁷ had also found similar pattern of incidence. There seems to be no significant influence of parity on the incidence of ectopic pregnancy, however the relatively high incidence of it among nulliparous may be explained by the increased use of fertility drugs (ovulation induction drugs) and infertility due to pelvic inflammatory diseases and other tubal factors. Similarly in the cases with parity 2, the incidence may be high due to use of temporary and permanent contraceptive methods, as most of them have already completed their family. Pregnancy in multiparous females is less common and hence the incidence of ectopic pregnancy.

Married life

In present study, out of 75 cases of ectopic pregnancy, 3 cases (4%) were unmarried, ectopic pregnancy was found to be affecting more women with 5-10 year of active married life (46%) consistent with Patel UM et al (50%)¹³ (Table 3). In contrast, studies by Puttaraju CM et al¹⁸ and ParmarS et al¹⁵ ectopic pregnancy was found to be affecting more women with less than 5 years of active married life.

Risk factor analysis

In present study, 26.6% of cases, had no risk factors, while 73.3 % of the cases had one or more identifiable risk factors. Out of which, 34.6% had only one followed by 18% had two, 13% had three and 6% had four identifiable risk factors.

Infertility treatment

In present study, 16.0% of cases had history of infertility treatment, mainly ovulation induction (Table 4). Due to incomplete records, drug used for ovulation induction could not be demonstrated. This data is comparable with Sindhura M et al (18.9% cases)¹⁹, Parmar S et al (13%)¹⁵ and Islam A (22.2%)²⁰. ICMR stated that women who had treatment for infertility had 12 fold increased risk of getting ectopic pregnancy as compared to woman who never had these problems³. Infertility and ectopic pregnancy has complex association, as it can be a complication of infertility as well as its cause. Infertility due to previous pelvic infection and tubal pathology can lead to ectopic pregnancy. At the same time, Hormonal alterations caused by clomiphene and other ovulation induction agents used as a treatment, also predispose to tubal implantation. Culmination of pregnancy into ectopic is very disheartening for an infertile couple, who has lots of hopes pinned on the treatment outcome, especially because of the cost invested as well as the mental and physical trauma both have gone through during the treatment process. The expected risk of ectopic pregnancy after infertility treatment is defined by epidemiological studies which also enabled us to develop early

diagnostic strategies to improve the selection of patients for initial medical or surgical treatment.

Previous abortion

Out of 75, 16 cases have history of previous abortion (21.3%) (Table 4). Out of which 14.6% of cases were induced abortion by medical methods and 6.6% were aborted spontaneously. 11 cases out of 16, requires dilatation and curettage for complete remission.

This data is compared Sindhura M et al (18.9%)¹⁹, Prasanna B et al (16%)¹² and Puttaraju CM et al (20%)¹⁸. ICMR task force also found higher proportion of cases of ectopic pregnancy had history of induced abortion (13.2%). The risk of ectopic pregnancy is almost double in women who had history of induced abortion (RR 1.8) in comparison to women who never had induced abortion³. The correlation between prior abortions and ectopic pregnancy is explained by the postabortal infections leading to tubal damage. The illegal abortions which were not done under aseptic precautions and lack of proper antibiotic coverage leads to post-abortal infections were. If process of abortion is complicated by infection or retained products of conception, there seems to be a markedly elevated risk. This draws our attention towards the safe abortion practices, and need to spread awareness regarding consulting a trained physician, not a local quack for abortion.

Temporary Contraception

In present study, temporary contraception is used by 8% of cases. Out of total cases 5.3% cases were using IUCD, comparable with 6% in Prasanna B et al¹², Shetty K et al⁶(6.4%), Shrestha et al (5%)²¹ and W.M. Fageeh et al (5.8%)²². In a meta-analysis it is stated, that current IUD use, does not increase the risk of the ectopic pregnancy. A pregnancy with an IUD in situ is more likely to be an ectopic one than a pregnancy with no IUD. Past IUD use could mildly elevate the risk of ectopic pregnancy.²³ Simply because IUCDs prevents intrauterine pregnancy, so, implantation is likely to occur in an ectopic location. IUCDs also predispose to PID or induce inflammatory changes in the endosalpinx leading to subsequent ectopic pregnancy. On comparing, ectopic pregnancy in patients on OCPs, only 2 cases (2.6%) were found which is comparable with Sindhura M et al.(5%)¹⁹, Prasanna B et al (6%)¹², but is quite low. However, ICMR in their study found that past and current users of contraceptives either IUD or oral pills were not associated with increased risk of ectopic pregnancy³. There is need to educate patients regarding proper hygienic practices to avoid infection and failure rate of IUCDs and OCPs, so that she herself could suspect pregnancy after a missed period and report to hospital early.

PID or related symptoms in either partner

Present study found Pelvic inflammatory diseases as second important risk factor, contributing to 34.6% (Table 4), which is comparable with Prasanna B et al (26%)¹², Parmar S et al (30%)¹⁵, Puttaraju CM et al (20%)¹⁸ and Patel UM et al (17.3%)¹³. This finding is mainly based on history given by the patient whether they have had symptoms of PID in them as well as in there partner. ICMR stated that a past history of PID had six fold increased risk

of ectopic pregnancy (RR 6.4) as compared to woman who never had PID³. Fallopian tubes inflammation leads to tubal dysfunction or damage that may lead to retention of an oocyte or embryo, and promote embryo implantation in the fallopian tube via inflammatory cytokines. Ectopic implantation occurs due to endosalpingitis that damages the mucosa and may entrap the migrating embryo. On the other hand, peritubal adhesions, impairment in peristaltic movements, inadequate transportation are complications of exosalpingitis. Therefore, there is dire need of intensive behavioral counseling for all adolescents and adults at increased risk of sexually transmitted infections and screening for *C. trachomatis* and *N. gonorrhoeae* in all women younger than 25 year and those who are at risk. Screening and early treatment of sexually transmitted infections can decrease the incidence of PID and its complications.

Prior ectopic pregnancy

Previous ectopic pregnancy increases the risk of ectopic as it reflects the underlying tubal pathology which is mostly bilateral. Our study reported three cases (4%) with history of prior ectopic pregnancy (Table 4). All three cases presented earlier as ruptured ectopic pregnancy and undergo laparotomy with salpingectomy of one tube, unfortunately, now also they presented similarly and undergo laparotomy with salpingectomy of other tube. Study by Prasanna B et al (6%)¹², Sindhura M et al (5%)¹⁹, Puttaraju CM et al (4.4%)¹⁸ and Mehta A et al (3.7%)²⁴ shows similar results. Early recognition of tubal pathology and its timely management will prevent ectopic pregnancy. Also proper counselling of patients regarding the second chance of ectopic pregnancy after the first, will help them to become more vigilant towards it, leading to its early recognition and more conservative approach towards management, to prevent maternal morbidity and to save future fertility of patients.

Prior pelvic procedure

The most common risk factor identified in our study was history of prior pelvic procedure (37.3%) (Table 4), studies from Puttaraju CM et al (31.1%)¹⁸, Wakankar et al (32.6%)²⁵ and Pranathi et al (33.3%)²⁶ also reported that previous pelvic or abdominal surgery was the predominant risk factor in their study. Anything that lead to pelvic adhesions, including appendicitis, endometriosis, or other pelvic surgeries distort the anatomy of the fallopian tube, thereby give rise to genesis of ectopic implantation.

On segregating it, dilatation and curettage (14.6%) and tubal ligation (13.3%) are found to be in most of cases. 8% of cases are of previous caesarean section . 4% of them undergone laparotomy for prior ectopic pregnancy while 2.6% of cases undergone laparoscopy as part of infertility treatment. 1 case (1.3%) had history of recanalization surgery in present study (Table 5), consistent with Mehta A et al (1.2%)²⁴

Other studies from Puttaraju CM et al (15%)¹⁸ Mehta A et al (11.2%)²⁴ Devi S et al (13.4%)²⁷ also reported similar incidence of tubal ligation in their research. ICMR stated that pregnancy rates following sterilization are low, but if conception occurs it is more likely to be ectopic due to partial tubal occlusion. It is evident from the observation that the prevalence of sterilization was significantly higher in ectopic cases when compared with pregnant controls (RR 15.4)³. Therefore, every patient undergoing sterilization must be educated about the failure rate of the procedure.

Saeed et al (5.7%)¹⁶ Mehta A et al (11.2%)²⁴ Muffi et al (10.5%)²⁸ showed comparable incidence of ectopic pregnancy in previous LSCS patients.

Abortifacient intake in present pregnancy

The overall risk of ectopic pregnancy by over the counter abortifacient is as high as 1.9% to 6.5% as demonstrated in studies by Sarojini TR et al²⁹, KavinaS et al³⁰, Puttaraju CM et al (4.44%)¹⁸ and Shetty KS et al (9.7%)⁶ consistent with 6.6% in present study (Table 4). All the patients, who took abortifacient in present pregnancy presented as ruptured and hemodynamically unstable, in our study. This is an important issue needs immediate attention. The patients with undiagnosed ectopic pregnancies, who take abortifacient, remain under the delusion of undergoing a normal abortion process and usually report late to health care facilities and mostly as ruptured ectopic, which is, not only disastrous for patient's life, but also abolishes the opportunity to treat the patient medically and compromise on future fertility. It signifies the mandatory role of ultrasound before medical abortion and placement of a proper law and order on over the counter sale of abortifacient pills.

Past medical illnesses

Out of 75 cases 12% have significant past medical illnesses. 5.3% among these have tuberculosis and took treatment for it, consistent with Patel UM et al¹³ (9.6%). ICMR concluded that the woman who had positive history of tuberculosis of genital tract had 19 fold increased risk of getting ectopic pregnancy³. Sharma et al conducted a three year study and concluded that genital tuberculosis was responsible for 13.2% of all cases of ectopic pregnancy, which is quite high as compared to our study³¹. One of the major cause of infertility in women is genital tuberculosis. Due to the asymptomatic nature of the infection and its diagnostic challenges, the disease is usually underestimated. There is requirement for early diagnosis, proper treatment and close follow up on pregnancy in these females.

5.3% of cases in present study have thyroid disorders consistent with Puttaraju CM et al.(2.2%)¹⁸. There are no studies available showing correlations between above two. This topic needs further research.

Descriptive features of ectopic pregnancy

Present study showed right sided predominance of ectopic pregnancy, having 56% of patients on right side, and 44% on the left. Studies by SindhuraM et al¹⁹ and Puttaraju CM et al¹⁸ shows similar finding. A 12 year retrospective study including 6186 patients also shows right sided predominance (54%)³². Probable explanation for above could be that ovulation in the right ovary is significantly more often than in the left ovary as stated in some studies³³. In contrast, ICMR stated almost equal occurrence of ectopic on both sides³. The most common type of ectopic is Tubal pregnancy, most common site in our study is ampullary (42.7%) consistent with by SindhuraM et al¹⁹ and Puttaraju CM et al¹⁸, followed by cornual (16%), isthmus (5.3%) and fimbrial (2.7%). In 30.7% of cases, exact site could not be identified due to extensive damage to tube because of rupture. Apart from tubal ectopic, we were fortunate enough to encounter one patient (1.3%) of ovarian ectopic pregnancy and one of caesarean

scar ectopic pregnancy (1.3%) (Table 6). No cervical pregnancy noted. Tubal rupture is the most common fate of tubal pregnancy in our study (73.3%), followed by tubal abortion (13.3%), chronic ectopic pregnancy (9.3%) and lastly unruptured (4%). SindhuraM et al¹⁹ and Patel UM et al¹³ also reported ruptured ectopic as most common presentation. Therefore it is important to draw attention on its early diagnosis before rupture. Ultrasonography was used for diagnosis in 73.3% of cases, while due to limited resource setting in emergency hours and presentation of patient as an acute emergency, 26.7 % of the diagnosed by clinical assessment with or without using culdocentesis. As most of patient were of ruptured ectopic pregnancy, tubal abortion and chronic ectopic, 98.7% of patient in our study undergo surgical management. Only one patient (1.3%) with unruptured ectopic pregnancy shows complete remission with medical management using MTX regimen. Fortunately, in our study there was no mortality due to timely diagnosis and prompt treatment.

DRAWBACKS

1. Present study is observational –cross sectional type of study where only data was collected and observed. Comparison between cases and cases was not made.
2. Recall bias - As the data collection was based on the previous history of patients, participants may not have remembered previous events or experiences accurately or have omitted details.

5. CONCLUSION AND CLINICAL SIGNIFICANCE

The rising trend in the incidence of ectopic pregnancy, is apparent by outcomes of present study as well as various other studies in India and abroad. This can be accredited to various factors. Fortunately, some of the factors are preventable. Despite the fact that, ectopic pregnancy will never be completely prevented, but incidence can be decreased. Much of the morbidity and mortalities can be reduced by prevention and effective diagnostic and interventional strategies directed mainly at those women who are at high risk for the condition and by taking proper precaution. These high risk women are handled such that there is minimum maternal morbidity and better outcome for future fertility if required. Modifiable risk factors which contribute to the development of subsequent ectopic pregnancy are pelvic inflammatory diseases, abortions, previous pelvic surgeries. Productive health education on safe sexual practices and provision of economical family planning services at the grass root level for all couples will prevent sexually transmitted infections and unwanted pregnancies; thereby, decreasing the incidence of pelvic infection and post-abortal complications. Strategies on reducing the cost of screening and treatment of sexually transmitted infections should be generated. Unsupervised usage of MTP pill intake should be dismayed and illiberal protocols for supply of MTP drugs must be implicated. Incidence of ectopic pregnancy due to prior pelvic procedure can be reduced by early diagnosis and treatment of pelvic inflammatory diseases, securing haemostasis during surgeries, executing dilatation and curettage under strict asepsis, adequate antibiotic coverage and implementing

methods to reduce post-operative adhesions during surgery. It facilitates amelioration of ectopic pregnancy and successive loss of reproductive potential. All high risk women should be screened at the earliest with serum β -HCG and transvaginal ultrasonography. Here also comes the role of per-vaginal examination and ultrasonography in early trimester, which help in confirmation of location of pregnancy before acute complications. Lastly, the key message is women, who are high risk for ectopic pregnancy should be identified timely and modifiable factors should be treated promptly. The main strategy should direct towards primary prevention, early diagnosis of ectopic pregnancy before its rupture and as much as possible conservative management of the patient to save the future fertility.

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