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Original Research Article

## A clinical study of trends of ectopic pregnancy and its management in a tertiary care hospital

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### ABSTRACT

**Background:** Ectopic gestation is a gynaecological emergency which culminates in pregnancy loss and causes significant maternal morbidity, mortality besides jeopardizing future conception. The study discusses the incidence, risk factors, symptomatology and management of ectopic pregnancy in a tertiary care teaching hospital.

**Methods:** This was a prospective study of 45 cases of ectopic pregnancies at a tertiary care teaching hospital from January 2012 to December 2013. Information was collected in a structured proforma, tabulated and descriptive analysis was carried out.

**Results:** The incidence of ectopic pregnancy was 1.17%. Majority of the patients (80%) belonged to 20-30 yrs age group. Second gravidas predominated (42.2%). Fallopian tube was the most common site (95.5%). Rudimentary horn ectopic accounted for 4.65%. Previous abdominopelvic surgery (31.1%), IUCD usage (22.2%), PID (20%), abortions (20%), tubectomy (15.5%) were the principal risk factors. 42% of the patients had no risk factor. The triad of amenorrhea, bleeding per vaginum and abdominal pain was seen in 51.1% of cases. Ultrasound, UPT,  $\beta$ -hCG estimation were the diagnostic tools. Ruptured ectopic pregnancy accounted for 64.4%. Nearly 95.5% of patients underwent surgery; salpingectomy (76%). Methotrexate was successful in 4.44%. There was no maternal mortality.

**Conclusions:** Mostly diagnosis, prompt surgical or medical management is cornerstone of treatment. Primary prevention such as improved access to family planning services, sex education, treatment of STI, PID, surgical asepsis and haemostasis, implementing legislation for dispensing MTP drugs ameliorate risk factors and hence reduce ectopic pregnancy.

**Keywords:** Ectopic pregnancy, Methotrexate, Pelvic inflammatory disease, Risk factors, Salpingectomy

### INTRODUCTION

The first known description of an ectopic pregnancy is by Al-Zahrawi in the 11th century.<sup>1</sup> The term "Ectopic" is derived from a Greek word "EXTOPOS" meaning "out of place". EP is defined by the diagnostic code O00 by International Statistical classification of diseases and related health problems 10<sup>th</sup> revision (ICD-10).

Ectopic pregnancy is a gynaecological emergency that occurs in approximately 1-2% of all pregnancies; the incidence increasing with the advent of ART and IVF.<sup>2</sup>

Ectopic gestation accounts for 2% of first trimester pregnancies, eventually culminating in pregnancy loss; increasing the incidence of maternal morbidity, mortality, and jeopardizing future conception.

It causes more than three-quarters of maternal deaths occurring during the first trimester of pregnancy.<sup>3</sup> Ectopic pregnancy contributes towards 4-10% of total pregnancy-related deaths.<sup>4</sup>

The most common location of ectopic gestation is the fallopian tube, predominantly the ampullary region of the

fallopian tube (98%). Implantation outside the fallopian tube: in the cervix, ovary, myometrium, abdominal cavity, and interstitial portion of the fallopian tube or coincidentally with an intrauterine pregnancy occurs in less than 10% of ectopic pregnancies.

In pertinence to the high case-fatality rates in developing countries, it is imminent to achieve early diagnosis and timely intervention thereby reducing maternal morbidity and mortality and aid in preserving future fertility.

**METHODS**

The present study was carried out in the department of obstetrics and gynaecology at a tertiary care teaching hospital. This was a prospective descriptive study. Ethical committee clearance was obtained for the study.

**Inclusion criteria**

- All patients diagnosed with ectopic pregnancy.

**Exclusion criteria**

- Patients diagnosed with intrauterine gestation.

During the study period from January 2012 to December 2013, 45 cases were diagnosed with ectopic pregnancy. The details of history included age, gravidity, presenting symptoms, past obstetric history, past history of surgeries, medical disorders, endometriosis, use of contraception, history of infertility, ovulation induction, any documented tubal pathology, STDs, PID and use of medical abortifacients. A detailed general physical examination, abdominal and bimanual examination was done. All the patients were subjected to urine pregnancy tests and ultrasound. Culdocentesis was done in few patients. Routine blood and urine investigations were done.

Majority of the patients underwent surgical treatment. Intra operative findings, surgical procedure, blood requirement, post-operative morbidity and outcome were recorded. Four patients were given methotrexate, however only two patients could be successfully managed.  $\beta$ -hCG estimation was done initially and repeated after 48 hours. Methotrexate was administered (1mg/kg body weight) intramuscularly on alternate days for 3 days.  $\beta$ -hCG estimation was repeated weekly in patients who underwent methotrexate therapy.

**Statistical analysis**

Information was collected in a structured proforma, tabulated and descriptive analysis was carried out.

**RESULTS**

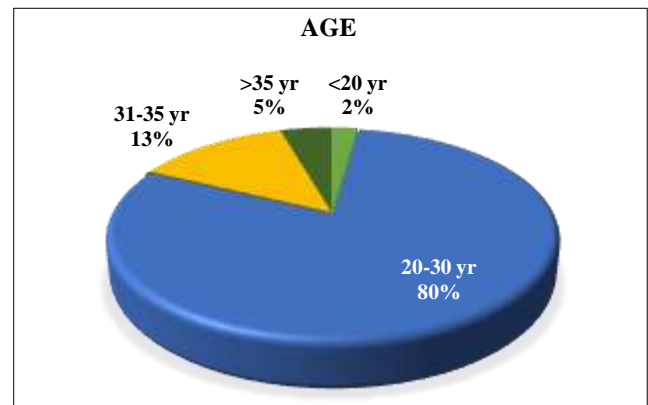
During the study period, there were 3821 deliveries and 45 ectopic pregnancy cases; the incidence being 1.17%.

Nearly 60% of cases hailed from rural areas. Study population comprised of 88.88% Hindus, 8.88% Muslims and 2.22% Christians.

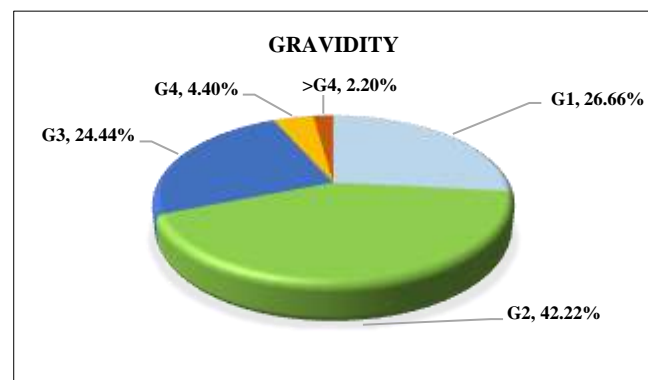
Almost 80% of patients were in the 20-30 year age group. Women in the age groups of 20-25 years and 26-30 years accounted for 48.88% and 31% of cases. Figure 1 shows age distribution of the cases.

Second gravida predominated; comprising of 19 patients (42.22%). Twelve patients were primi gravida (26.6%). Only one patient was a fifth gravida (2.22%). Figure 2 shows distribution of patients according to gravidity. A gestational age of <6 weeks and >6 weeks was documented in 35% and 64.4% of patients.

Ectopic gestation in women with married life of < 5 years, 5-10 years and >10 years was 55.55%, 35.55% and 8.88% respectively. Fifty percent of ectopic patients had delivered within 5 years. Fifteen women had their last child birth between 5-10 years.



**Figure 1: Distribution of patients according to age.**



**Figure 2: Distribution of patients according to gravidity.**

Preponderance of cases was found in the months of October (15.55%) and December (13.33%).

Absence of risk factors was demonstrable in 42% of patients. Previous pelvic or abdominal surgery was the

foremost risk factor in our study (31.11%). Figure 3 shows distribution of cases according to risk factors. Usage of medical abortifacients was registered in 4.44% of patients. Endometriosis and hypothyroidism was noted in 2.2% of cases.

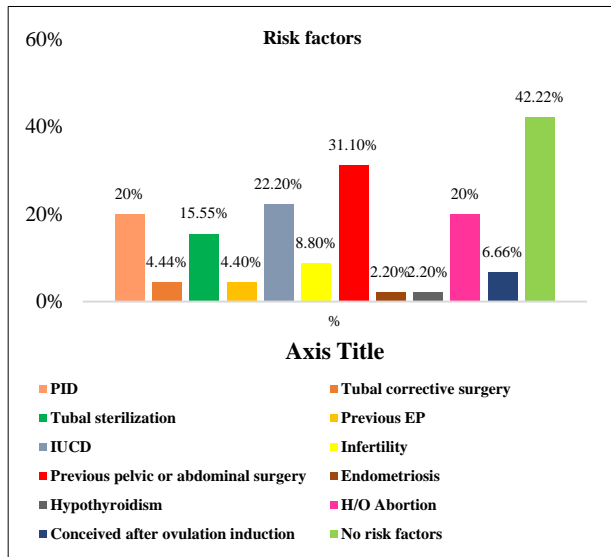


Figure 3: Distribution of cases according to risk factors.

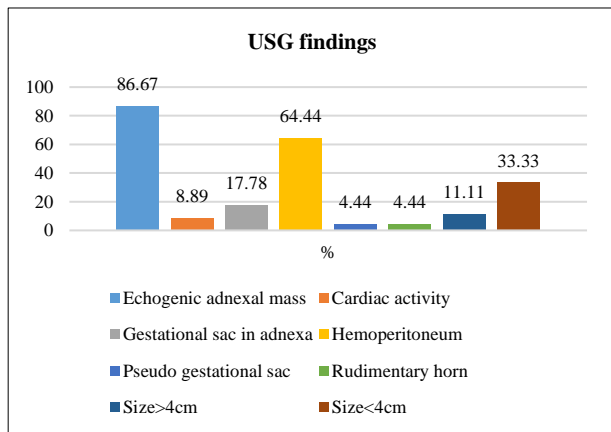


Figure 4: USG findings.

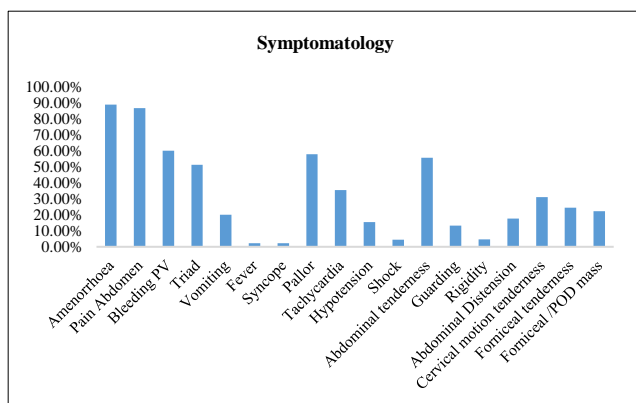


Figure 5: Symptomatology of the patients.

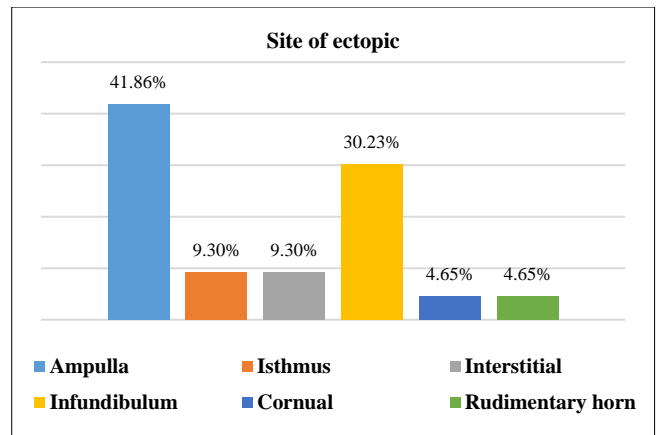


Figure 6: Distribution of cases according to site of ectopic.

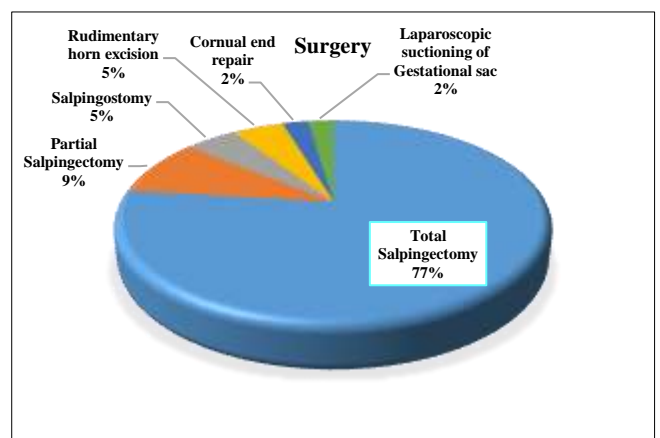


Figure 7: Distribution of cases according to type of surgery.

Many of ectopic patients were anaemic (64.44%). Severe anaemia was observed in 17.77% of pregnant women. Urine pregnancy test was done in 36 cases; positive in 30 cases (66%) and negative in 6 cases (13.33%). Quantitative estimation of  $\beta$ -hCG was done in 22.22% of women. Amongst these 10 women, 17.77% had values less than 3,000 IU. Two patients (4.44%) had values exceeding 3000 IU.

Ultra-sonographic examination was performed in all patients. Nearly 86.67% of patients had an echogenic adnexal mass; the size being less than 4cm and greater than 4cm in 33.33% and 11.1% of subjects respectively. Hemoperitoneum was visualised in 29 patients (64.44%). Figure 4 shows USG findings of cases.

Culdocentesis and abdominal paracentesis were performed in 13.33% and 2.2% of cases respectively. Two thirds of patients with ruptured ectopic presented with acute symptoms. History of amenorrhoea, pain abdomen, bleeding per vaginum was documented in 88%, 86% and 66% of cases respectively. Triad of amenorrhoea, pain abdomen, bleeding per vaginum was observed in 51.1% of cases. Figure 5 shows the

symptomatology of patients. Two patients in shock required inotropes. One patient had syncope and seven had hypotension. Four patients (8.88%) required ICU admission.

Right sided ectopic (53.33%) escalated over left sided cases (46.66%). Nearly 95.55% of the implantations were in the fallopian tube; wherein 41.86% were in the ampulla, infundibulum (30.23%), isthmus (9.3%), interstitium (9.3%) and cornual (4.65%) areas. Rudimentary horn pregnancy was seen in 2 patients (4.65%). Figure 6 shows distribution of cases according to site of ectopic.

Four women consented for medical management, wherein two had treatment failure and underwent surgery. Methotrexate was successful in 4.44% of cases. Surgery was the cardinal treatment modality (95.5%, n=43). Thirty one patients were operated on the day of admission amounting to 72% of the cases. Twenty eight women (65.1%) underwent emergency laparotomy. A third of cases underwent laparoscopy. Nearly 76.4% of patients underwent total salpingectomy. Figure 7 shows distribution of cases according to type of surgery.

Almost 62.79% had hemoperitoneum compared to 37% of patients who were hemodynamically stable. Two patients had massive hemoperitoneum of 1500 ml. The blood loss was <250 ml, <500 ml, 500-750 ml, 750-1000 ml in 15 (33%), 13 (30.23%), 5 (11.62%) and 8 (18.60%) patients respectively.

Twenty four patients (53.33%) received blood transfusion. One patient had transfusion related reaction. Multiple blood units (>2) were transfused in 88% of patients. A total of 48 units of blood was transfused. Predominantly patients were found to be Rh +ve (93.3%), whereas only three (6.6%) were Rh -ve. The blood groups of patients were O, A, B and AB in 46.66%, 26.66%, 22.22% and 2.22% respectively. General anaesthesia and spinal anaesthesia was administered to 48.88 % and 51% of patients respectively.

## DISCUSSION

Worldwide, ectopic pregnancy complicates 0.25- 2.0% of all pregnancies. The incidence of ectopic pregnancy in our study is 1.17%; comparable to studies of Mooij (1.3%), Pradan P (1.2%), Pranathi L (1.08%), Gaskins AJ (1%) and Singh S (1%) et al.<sup>5-9</sup>

Up to 50 % of women diagnosed with EPs have no identifiable risk factors; however, a number of risk factors have been associated with EP. These include age, smoking, history of EP, tubal surgery or tubal damage, prior pelvic infection, DES exposure, IUCD and pregnancy conceived by ART.

Approximately 42% of our study patients had no risk factors, which is homogenous with 38.71%, 37.83% of

Chate MT, Gaddagi R et al.<sup>10,11</sup> Risk factors was ascertained in 58% of patients comparable to 61.29%, 62.17% in studies of Chate MT, Gaddagi et al.<sup>10,11</sup>

Women of younger age (20-25 years) comprised of 48.88% of the cases akin to studies of Shalini Kumari (48%), Ganitha G (48%), Dasari U (46.2%), Trina Karmakar (46%) et al.<sup>12-15</sup> About 80% of patients were in the 20-30 year age group analogous to 80%, 82% of Singh S, Ganitha et al.<sup>9,13</sup>

Age is theorized to affect tubal function, including delay of oocyte transport, thereby increasing the risk of ectopic gestation. Only two women were above 35 years of age (4.44%) parallel to 3.75%, 4%, 4% of studies of Mehta A, Trina Karmakar, Singh S et al respectively.<sup>9,15,16</sup>

Second gravidas comprised of 42.22% of study subjects corresponding to studies of Sudha VS (32.45%), Shetty VH (38%) et al.<sup>17,18</sup> The higher incidence in multigravida is probably due to previous miscarriages and infection resulting in tubal damage. Primi gravidas amounted to 26.6% of ectopic cases analogous to 23.07%, 24% of Wakankar, Shetty VH et al.<sup>18,19</sup> Third gravida comprised of 24.44 % of the patients similar to 28% of Shetty VH et al.<sup>18</sup>

Fourth gravida accounted for 4.44%, akin to 10% of Shetty VH et al. The lowest incidence of 2.22% was discerned in 5th gravida homogenous to 5.7% in studies of Wakankar R et al.<sup>19</sup> Gestational age ranged between 4 and 15 weeks. Most cases presented at 6-8 weeks akin to studies by Wakankar et al.<sup>19</sup>

Fifty percent of ectopic patients had delivered within 5 years similar to 40.3% of patients in study by Soren M et al. Fifteen women (50%) had their last child birth between 5-10 years corresponding to 27.8% in study by Soren M et al.<sup>20</sup>

Seasonal variation of ectopic was noticed with maximal incidence in the colder months of October (15.55%) and December (13.33%) similar to Mamdoh Eskandar study.<sup>21</sup> More than half of cases were reported in second half of the year amounting to 53.33% which is comparable to 61.33% rates of Shetty KS et al.<sup>22</sup> Previous pelvic or abdominal surgery was the predominate risk factor in our study (31.11%) as against 32.69%, 33.33% of Wakankar, Pranathi L et al.<sup>7,19</sup> Any cause of pelvic adhesions, including endometriosis, appendicitis, or other pelvic surgeries distort the anatomy of the fallopian tube, thereby contributing to genesis of ectopic implantation. Endometriosis was seen in 2.2% of cases which is identical to 2% rates of Ganitha et al.<sup>13</sup>

Current IUCD use does not predispose to EP, though a higher proportion of pregnancies conceived with an IUCD in place are ectopic as compared to the general population. A history of usage of intrauterine contraceptive device was second most common risk

factor in our study (22.2%) which is analogous to 19.23%, 18.91%, 16.26% of Wakankar, Gaddagi, and Li et al.<sup>11,19,23</sup> IUCDs predispose to PID or induce inflammatory changes in the endosalpinx leading to subsequent ectopic pregnancy. PID accounted for 20% of risk factors in our study in semblance with studies of Singh S (16%) Karmakar (20%), Wakankar (25%) et al.<sup>9,15,19</sup>

Inflammation in the fallopian tubes may induce 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. Following tubal damage by smoking or infection; up regulation of pro-inflammatory cytokines has been observed, promoting embryo receptivity, invasion and angiogenesis in the tube. History of abortion accounted for 20% of risk factors which correlates with studies of Ganitha (20%), Buragohain S (21.95%), Karmakar (22%), Dasari (22%) et al.<sup>13-15,23,24</sup>

Prior Tubal sterilisation was the salient risk factor in 15.55% of patients akin to 12.9%, 16.21%, 18.75% of studies by Asuri SS, Gaddagi R, Spandana N et al.<sup>11,25,26</sup> Improper surgical technique and formation of peritubal fistulas may result in ectopic pregnancy. In postpartum period, edematous, congested and friable tube increases the chance of incomplete tubal occlusion resulting in ectopic implantation. A history of infertility preceded 8.88% of the cases synchronous with 6.25%, 7%, 8% of Mehta A, Sudha VS, Ganitha et al.<sup>13,16,17</sup>

Ovulation induction history was found in 6.6% of the study subjects comparable to 1.25%, 4% of Mehta A, Shetty VH et al respectively.<sup>16,18</sup> Hormonal alterations caused by clomiphene and other ovulation induction agents may predispose to tubal implantation.

Prior ectopic history was elicited in 4.44% of cases analogous to 3.75%, 4%, 4.2% of Mehta A, Shalini Kumari, S Tahmina et al.<sup>12,16,27</sup> Tubal corrective surgery was documented in 4.44% of the study subjects which corresponds to 3.29%, 4%, 5.7% of Li, Karmakar, Assouni Mindjah YA et al respectively.<sup>15,23,28</sup> Use of medical abortifacients was documented in 4.44% of our patients parallel to 9.7% of Shetty KS et al.<sup>22</sup> The overall risk of rupture of EP by OTC abortifacient is as high as 1.9% to 6.5% as demonstrated in studies by Sarojini and Kavina S et al.<sup>29,30</sup> There is a dire need to institute an ultrasound mandatory before medical abortion, and bring in legislation seeking a protocol on the sale of MTP pills over the counter. Anomalous uterus was seen in 2 patients, accounting for 4.65% of the cases equivalent to 4% each of Shalini Kumari, Prasanna B and 9.1% in Gaddagi R et al.<sup>11,12,31</sup>

Urine pregnancy test was done in 36 cases (80%) corresponding to 73.86% of study by Mooij et al.<sup>5</sup> UPT was positive in 30 cases (83%) akin to 86%, 87.1%, 88.1% of N Spandana, Shetty KS, Most. Yeasmin S et

al.<sup>22,26,32</sup> UPT was found to be negative in 6 cases (13.33%) relatable to 6% in studies by Prasanna B et al.<sup>31</sup>

Culdocentesis was done in 6 cases (13.33%) kindred to studies by Gupta V (16%), Gaddagi R (37.8%), Ganitha (40%) et al.<sup>11,13,33</sup> The first successful ultrasound diagnosis of ectopic pregnancy was reported by Kobayashi in 1969. Nearly 86.67% of patients had documented ultrasound findings of echogenic adnexal mass relatable to 83%, and 84% of Nair L and Wakankar et al.<sup>19,34</sup> Hemoperitoneum was visualised in 29 patients (64.44%) similar to 62.5%, 66.6% of Debnath J, Sudha VS et al.<sup>17,35</sup> Gestational sac in adnexa was appreciated in 17.78% (n = 8) of individuals akin to 11%, 14% in studies by Mooij, Ganitha G et al.<sup>5,13</sup> Ectopic cardiac activity was detected in four patients (8.89%) homologous to 12.5%, 16% in studies by Debnath J, Shetty VH et al.<sup>18,35</sup> Pseudo gestational sac was noted in 4.4% patients corresponding to 12%, 16% of studies by Debnath J, Shetty VH et al.<sup>18,35</sup> Rudimentary horn was seen in 4.4% patients analogous to 9.1% in studies by Gaddagi R et al.<sup>11</sup>

The classical triad of amenorrhoea, pain abdomen, bleeding per vaginum was discerned in 23 women (51.11%) corresponding to 48%, 53.84%, 54.2%, of Karmakar, Wakankar, Soren M et al.<sup>15,19,20</sup> History of amenorrhoea was seen in 88% equivalent to 84%, 86.25%, 88%, 88.09% of Shalini, Mehta A, Shetty VH, Pranathi et al.<sup>7,12,16,18</sup> About 86% of ectopic patients presented with pain abdomen kindred to studies by Sudha VS (82.4%), Wakankar (86.53 %), Shetty VH (88%), Most. Sabina Yeasmin (89%) et al.<sup>17-19,32</sup>

Bleeding per vaginum was perceived in 66% of patients homogenous to 63.3%, 63.5%, 65.3%, 68% of studies of Sudha VS, Most. Sabina Yeasmin, Wakankar and Ganitha et al.<sup>13,17,19,32</sup> Abdominal tenderness was elicited in 55.5% parallel to 51.6%, 64.5% of Dasari, Most. Sabina Yeasmin et al. Cervical motion tenderness was elicited in 31.1% similar to 31.8% of Kaveri Patel, et al.<sup>36</sup>

Forniceal /POD mass was palpable in 22% of patients akin to 32% of Shetty VH et al.<sup>18</sup> Vomiting was perceived in 20% of cases corresponding to studies by Shetty VH (22%), Ganitha (36%) et al. Abdominal distension was observed in 17.77% of women similar to 18.1%, 22%, 24% of Soren M, Prasanna, Shetty VH et al. Guarding was elicited in 13.33% of patients comparable to 9.7% of Soren M, 14% each of Shetty VH, Prasanna et al.<sup>18,20,31</sup>

Pallor was observed in 57.77% of cases analogous to 56%, 60% of studies by Prasanna, Singh S et al. Pre-existing anaemia with superimposed acute blood loss explains the higher incidence of pallor in ruptured ectopic pregnancy. Nearly 64.44% of ectopic patients were anaemic similar to 56%, 59.5% of Prasanna B, Lawani et al.<sup>31,37</sup> Moderate anaemia was identified in 31.1% akin to 52.38% of Spandana N et al. Severe anaemia was

observed in 17.77% of pregnant women analogous to 28%, 28.5% of Prasanna B, Spandana N et al.<sup>26,31</sup>

Tachycardia was recorded in 35.55% of the ectopic patients identical to 34% as in study by Karmakar et al.<sup>15</sup> Methotrexate is employed in medical management of ectopic pregnancy. This is a folic acid antagonist that interferes with DNA synthesis and is effective against trophoblastic tissue. It was first used successfully in the treatment of ectopic pregnancy in Japan in 1982.

Only four women consented for medical management, wherein two had treatment failure and were managed surgically. Methotrexate was successful in 4.44% of cases akin to 5.5%, 6.14% of Dasari and Sudha VS et al respectively.<sup>14,17</sup>

The first successful surgical intervention to treat an ectopic pregnancy was by John Bard, a surgeon in New York, in 1759. For the first time in 1883, Robert Lawson Tait from Scotland, the father of gynaecologic surgery introduced salpingectomy for the management of ruptured ectopic pregnancy successfully. It was not until 1950 that salpingostomy was considered an alternative to salpingectomy for preserving fertility. Much later, in 1973, Shapiro and Adler described treatment of ectopic pregnancy by laparoscopy.

Surgery was the cardinal treatment modality (95.5%) comparable to 93.86%, 94.4%, 97.5% of Sudha VS, Dasari, Mehta A et al.<sup>14,16,17</sup> Twenty-eight women (65.1%) underwent emergency laparotomy corresponding to 87.5%, 92.5%, 94% of Soren M, Dasari, Ganitha et al. A third of surgically treated cases underwent laparoscopy. Sixteen patients (35%) were found to be hemodynamically stable analogous to 44% of Prasanna B et al.<sup>31</sup>

Two thirds of operated cases had ruptured fallopian tube (64.4%) equivalent to 62.3%, 65.3%, 66.66% of Sabina Yeasmin, S Tahmina, Sudha VS et al.<sup>17,27,32</sup> Salpingectomy is the treatment of choice when tube is extensively damaged and contralateral tube is healthy. Nearly 76.4% of patients underwent total salpingectomy comparable to 74.15%, 75.26%, 79% of Asuri SS, Chate MT, Mooij et al.<sup>5,10,25</sup> About 9.09% patients underwent partial salpingectomy akin to 11.1% of Soren M et al.<sup>20</sup>

Salpingostomy was performed in 4.65% of cases equivalent to 3.75%, 6.5 % of Mehta A, Buragohain S et al. Salpingostomy should be reserved for those women with pathology in contralateral tube or with only one tube. The incidence of rudimentary horn resection was 4.6% analogous to 8.1% of Gaddagi R et al. Cornual end repair was done in 2.32% of cases similar to 2.7%, 3.8% of Gaddagi R, Wakankar et al. One case was of tubal abortion amounting to 2.32% comparable to 1%, 2.02% of Mooij, Buragohain S et al.<sup>5,24</sup>

General anaesthesia was administered to 48.88 % corresponding to 38%, 51.92% of Shetty VH, Wakankar et al. Nearly 51% of patients were operated under spinal anaesthesia parallel to 46.15%, 62% of Wakankar, Shetty VH et al.<sup>18,19</sup>

Preponderance of the implantations were in the fallopian tube (95.55%) akin to 94.4%, 94.71%, 96%, 96.2% of S Tahmina, Sudha VS, Singh S, Wakankar et al. Ampullary ectopics amounted to 41.86% similar to Porwal S (40%), Mehta A (42.5%), Singh S (44%) et al.<sup>9,16,38</sup> Ectopic in isthmus was documented in 9.3% of the patients analogous to 8%, 9.52%, 10.76% of Ganitha, N. Spandana, Chate MT et al.<sup>10,13,26</sup> Interstitial ectopic accounted for 9.3% of cases corresponding to 4% each of Mooij and Shetty VH, 6.25% in Kaur N et al.<sup>5,18,39</sup> Cornual ectopic (4.65%) was the least common site equivalent to 4.65%, 4.76% of studies by Choudhary, N. Spandana et al.<sup>26,40</sup>

Non tubal ectopic was seen in two cases (4.65%). Both were pregnancies in rudimentary horn akin to studies by Gaddagi R (9.1%), 4% each of Shalini Kumari and Prasanna B et al.<sup>11,12,31</sup> Right sided ectopic cases were paramount accounting to more than 50% of the cases homogenous to studies of Kaveri Patel (50%), Wakankar (55.76%), Sabina Yeasmin (57.44%) et al.<sup>19,32,36</sup> About 21 women (46.66%) had left sided lesions comparable to 40%, 42.5% of Shetty VH, Sabina Yeasmin et al.<sup>18,32</sup>

Nearly 62.79% had hemoperitoneum analogous to 65.3%, 70% of studies by S. Tahmina, Sabina Yeasmin et al. Absence of hemoperitoneum was noticed in 37.2% of patients who were hemodynamically stable in accordance with 22.5%, 24.5% of studies of Shetty KS, Sabina Yeasmin et al. The blood loss of less than 500 ml was observed in 13 women (30.23%) comparable to 21.15% of Wakankar et al.<sup>19</sup> Hemoperitoneum amounting to 1000 ml or less was noted in 30.2% akin to 36.6% of Kaveri Shaw et al.<sup>36</sup> Hemoperitoneum exceeding 500 ml was documented in 15 cases (34.88%) corresponding to 63.46% of cases in study by Wakankar et al.<sup>19</sup>

Twenty four patients (53.33%) received blood transfusion analogous to 54.8%, 54.9%, of Shetty KS, Pranathi et al.<sup>7,22</sup> Multiple blood units (>2) were transfused in 88 % of patients parallel to 57.69% of subjects in studies by Wakankar et al.<sup>19</sup> Two patients (4.44%) in shock required inotropic support akin to 11.11% in studies by Dasari U, and 14% each in studies by Shetty VH<sup>18</sup> and Karmakar et al.<sup>15</sup> These patients presented late with signs of rupture and hypovolemia. Decompensation with shock is a sign of significant intraperitoneal haemorrhage. Four patients (8.88%) required ICU admission corresponding to 7.14%, 13.4% of Pranathi, Wakankar et al.<sup>7,19</sup>

There were no maternal deaths in the study period parallel to studies by Mooij, Pranathi, Dasari and S. Tahmina et al.<sup>5,7,14,32</sup>

## CONCLUSION

The rise in the incidence of ectopic pregnancy is synchronous with the rise of STIs, tubal sterilization and reversal, delayed child bearing, ART, increased awareness and improved diagnostic modalities. Early diagnosis and prompt conservative surgical or medical management is the need of the hour, thereby reducing maternal morbidity, mortality and aid in preservation of fertility.

Effective health education on safe sex practices and universal provision of affordable family planning services at the grass root level prevent STIs and unwanted pregnancies; thereby reducing the incidence of pelvic infection and post-abortal complications. These interventions facilitate amelioration of ectopic pregnancy and subsequent loss of reproductive potential.

Policies on reducing the cost of screening and treatment of STIs should be instituted to promote timely and universal access to healthcare for reducing PID and subsequent Ectopic pregnancy. Strict protocols for dispensing of MTP drugs to be followed and unsupervised usage of MTP pill intake should be discouraged.

PID, abortions, abdomino-pelvic surgeries are modifiable risk factors which contribute to the development of subsequent ectopic pregnancy. Early diagnosis and treatment of PID, performing D and C under strict asepsis, ensuring haemostasis during surgeries, employing methods to reduce post-operative adhesions during surgery and adequate antibiotic cover help in reducing the incidence of ectopic pregnancy.

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