A Study on Management, Morbidity and Mortality of Ectopic Pregnancy Attending a Tertiary Care Centre

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Abstract

Background: To study the management modalities and their outcome, morbidity and mortality in women with ectopic pregnancy.

Methods: 50 cases of ectopic pregnancy were diagnosed and recruited for the study after taking their consent for participation. Detailed clinical history and Serum β-hCG assay Transabdominal USG, Transvaginal USG were done.

Results: 35 (70%) patients were managed by laparotomy and 12 patients underwent laparoscopy. 17 patients had less than 1000 ml, 22 patients had hemoperitoneum of 1000-2000 ml and 4 patients had >2000 ml of hemoperitoneum intraoperatively. The most common site for ectopic was found in ampulla in 29(61.7%). 40 patients (85.1%) presented with ruptured ectopic pregnancy. 35 patients were managed by salpingectomy (74.4%), followed by salpingo-oophorectomy in 6 (12.7%) patients. 12 patients underwent laparoscopy.

Conclusion: Early diagnosis and prompt conservative surgical or medical management reduces maternal morbidity, mortality and also helps in preserving fertility.
INTRODUCTION

Ectopic pregnancy is a catastrophic and life threatening condition & one of the commonest acute abdominal emergency in day-to-day practice. It has been recognized for over 400 years and continues to be an increasing affliction affecting approximately 2% of all pregnancies. It remains as an important contributor to maternal morbidity and mortality & one of the commonest causes of first trimester maternal death.1

Women affected with ectopic pregnancy are not only exposed to complications from the ectopic pregnancy and the related treatment procedures, but are also at a greater risk of another ectopic pregnancy, and future reproductive challenges can be distressing.

Over subsequent years, the advent of aseptic techniques, anesthesia, antibiotics, and blood transfusions combined to save the lives of many women, but late diagnosis and intervention were still common. In recent years, attention shifted from saving lives to preserving fertility.

Many improvements were done to diagnose and treat ectopic pregnancies, thereby limiting its impact on women’s health. The concept of “discriminatory cutoff” of β-hCG was developed in 1985 for the diagnosis and management of suspected ectopic pregnancies by medical and conservative surgical procedures to make the women eligible for future fertility.2 It is defined as, the level of β-hCG at which a normal intrauterine pregnancy can be visualized by ultrasonography with sensitivity of 100%.2 It is widely accepted that, above the discriminatory zone of 1,500 mIU/mL-2,500 mIU/mL, a normal intrauterine pregnancy should be visible by TVS. The absence of such implies abnormal gestation.3

Laparoscopy is the gold standard for diagnosing ectopic pregnancy and also it is possible to do conservative surgical procedures and other management modalities with less morbidity.4,5

The first successfully used drug in clinical practice for unruptured ectopic pregnancy is methotrexate, a folic acid antagonist. In 1985 Chotiner was the first in English literature to describe a patient with tubal pregnancy treated successfully with systemic methotrexate.6

MATERIALS AND METHODS

Source of Study: This is a prospective study conducted in the Department of Obstetrics & Gynecology, Narayana Medical College & Hospital, Nellore for a period of 2 years (October 2012 – September 2014).

50 cases of ectopic pregnancy were diagnosed and recruited for the study after taking their consent for participation.

Inclusion Criteria: All the cases diagnosed as ectopic pregnancy admitted to Narayana Medical college & Hospital, Nellore during the study period of 2 years.

Exclusion Criteria: All intrauterine pregnancies

Patient Analysis:

- Detailed history was taken.
- General, systemic, abdominal and vaginal examination were done.
- Informed consent was taken and data were recorded on the proforma.
- TVS / TAS was done to diagnose and to know the severity of the condition.
- Apart from routine surgical profile, β-hCG assay, UPT, coagulation profile, Renal function tests, Liver function tests were done.
- Patients were treated by different treatment modalities based on their hemodynamic stability.
- The diagnosis of ectopic pregnancy was confirmed by histo-pathological examination of the specimen after surgery.
- The morbidity and mortality associated with ectopic pregnancy was assessed.

Serum β-hCG assay: Modern assays for the β-subunit of hCG are highly sensitive and specific, with detection levels below 5 mIU/mL.

Transabdominal USG: In transabdominal USG, intrauterine gestational sac should appear when the serum hCG levels are 6000 - 6500 mIU/mL. The absence of an apparent intrauterine sac with hCG levels at or above 6000 mIU/mL suggests an abnormal pregnancy, either ectopic or spontaneous abortion.

Transvaginal USG: Transvaginal USG is superior to transabdominal USG in diagnosing ectopic pregnancy. A 3 - 5 MHz transvaginal transducer allows for a deeper penetration of the pelvis than transducers of higher frequency, whereas a 7.5 MHz transvaginal transducer provides better near-resolution at the cost of shallower penetration. High frequency endovaginal transducers were used in our hospital.

Frequency and percentage of each parameter was calculated and analysed.

RESULT

In the present study 50 patients with ectopic pregnancy were recruited, management and outcome were analysed under the following headings.

Management: In the present study group, out of 50 patients, 4 patients were managed by medical therapy. Out of 4 patients, 1 patient required laparotomy for ruptured ectopic. 35 (70%) patients were managed by laparotomy and 12 patients underwent laparoscopy (Figure 1).

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Figure 1. Ectopic pregnancy – Management

Medical management: In the present study group, 4 patients were recruited for medical therapy. Out of 4 patients, 3 (75%) were managed successfully by single dose therapy and 1 (25%) patient was given double dose. Patient on double dose therapy required laparotomy for ruptured ectopic (Table 1). 3 out of 4 patients showed Successful and 1 out of 4 cases showed unsuccessful by medical management.

Operative Findings:

Ectopic pregnancy – Hemoperitoneum: In our study group, there was no hemoperitoneum in 4 cases, 17 patients had <1000 ml, 22 patients had hemoperitoneum of 1000-2000 ml and 4 patients had >2000 ml of hemoperitoneum intraoperatively (Table 2). Intraoperative findings of ruptured cornual pregnancy and unruptured cornual pregnancy have been analysed (Figure 2).

Table 1 – MTX treatment schedule

<table>
<thead>
<tr>
<th>S. No</th>
<th>Initial β-hCG (mIU/mL)</th>
<th>Size of sac (cms)</th>
<th>No. of doses of MTX</th>
<th>β-hCG (mIU/mL) D4</th>
<th>β-hCG (mIU/mL) D7</th>
<th>Final β-hCG (mIU/mL)</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1648.33</td>
<td>2 × 1.3</td>
<td>Single dose</td>
<td>832.2</td>
<td>384.1</td>
<td>D28 - 5.32</td>
<td>Successful</td>
</tr>
<tr>
<td>2</td>
<td>1858.64</td>
<td>2.2×1.5</td>
<td>Single dose</td>
<td>1047.8</td>
<td>654.8</td>
<td>D11 - 4.49</td>
<td>Successful</td>
</tr>
<tr>
<td>3</td>
<td>1504.30</td>
<td>1.9×1.9</td>
<td>Single dose</td>
<td>981.6</td>
<td>769.2</td>
<td>D21 - 4.21</td>
<td>Successful</td>
</tr>
<tr>
<td>4</td>
<td>2769.64</td>
<td>2×1.6</td>
<td>Double dose</td>
<td>2490.4</td>
<td>2154</td>
<td>D7 - 2154</td>
<td>Failed</td>
</tr>
</tbody>
</table>

Table 2. Ectopic pregnancy - Hemoperitoneum

<table>
<thead>
<tr>
<th>Hemoperitoneum (ml)</th>
<th>n/t</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>4/47</td>
<td>8.5</td>
</tr>
<tr>
<td>&lt; 1000 ml</td>
<td>17/47</td>
<td>36.1</td>
</tr>
<tr>
<td>1000 – 2000 ml</td>
<td>22/47</td>
<td>46.8</td>
</tr>
<tr>
<td>&gt; 2000 ml</td>
<td>4/47</td>
<td>8.51</td>
</tr>
</tbody>
</table>

Ectopic pregnancy – Site of ectopic: In the present study group, 3 patients with tubal pregnancy were successfully treated by medical therapy. In 47 patients surgical intervention was required. The most common site for ectopic was found in ampulla in 29(61.7%) patients, followed by isthmus 9 (19.1%), infundibulum 3 (6.3%), ovary 3 (6.3%), interstitial 2 (4.2%) and rudimentary horn 1 (2.1%). Heterotopic pregnancy was seen in 1 patient (2.1%), in which along with an intrauterine pregnancy an ampullary pregnancy was present (Table 3).

Table 3. Ectopic pregnancy – Site of ectopic

<table>
<thead>
<tr>
<th>Site of ectopic</th>
<th>n/t</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampulla</td>
<td>29/47</td>
<td>61.7</td>
</tr>
<tr>
<td>Isthmus</td>
<td>9/47</td>
<td>19.1</td>
</tr>
<tr>
<td>Infundibulum</td>
<td>3/47</td>
<td>6.3</td>
</tr>
<tr>
<td>Interstitial</td>
<td>2/47</td>
<td>4.2</td>
</tr>
<tr>
<td>Rudimentary horn</td>
<td>1/47</td>
<td>2.1</td>
</tr>
<tr>
<td>Ovary</td>
<td>3/47</td>
<td>6.3</td>
</tr>
<tr>
<td>Heterotopic site (Ampulla)</td>
<td>1/47</td>
<td>2.1</td>
</tr>
</tbody>
</table>
Ectopic pregnancy – State of ectopic at the time of surgery: Out of 47 patients, 40 patients (85.1%) presented with ruptured ectopic pregnancy, 4 (8.5%) had unruptured ectopic and 3 patients (6.3%) had tubal abortion at the time of surgery.

Ectopic pregnancy - Procedure done: In this study group, 35 patients were managed by salpingectomy (74.4%), followed by salpingo-oophorectomy in 6 (12.7%) patients. Salpingostomy and fimbrial expression were done in 2.1% and 4.25% respectively. Resection of horn, cornual resection and TAH were done in 2.1% each (Table 4).

Table 4. Ectopic pregnancy - Procedure done

<table>
<thead>
<tr>
<th>Procedure</th>
<th>n/n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salpingectomy</td>
<td>35/47</td>
<td>74.4</td>
</tr>
<tr>
<td>Salpingostomy</td>
<td>1/47</td>
<td>2.1</td>
</tr>
<tr>
<td>Salpingo-oophorectomy</td>
<td>6/47</td>
<td>12.7</td>
</tr>
<tr>
<td>Fimbrial expression</td>
<td>2/47</td>
<td>4.25</td>
</tr>
<tr>
<td>Resection of horn</td>
<td>1/47</td>
<td>2.1</td>
</tr>
<tr>
<td>Cornual resection</td>
<td>1/47</td>
<td>2.1</td>
</tr>
<tr>
<td>TAH</td>
<td>1/47</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Ectopic pregnancy – procedure done on laparoscopy: In the present study group, out of 40 patients 12 patients underwent laparoscopy. Salpingectomy was done in 4 patients, salpingo-oophorectomy in 3 patients and fimbrial expression was done in 2 patients. Salpingostomy, resection of horn and cornual resection was done in 1 patient each.

Ectopic pregnancy – Blood transfusion: In our study out of 50 patients, 20 (40%) patients required blood transfusions and 30 (60%) women did not require any transfusion.

Ectopic pregnancy – Morbidity: In our study group, post-operative complications like fever and wound infection were present in 6 (12.7%) and 2 (4.25%) cases respectively. 4 (8.51%) cases were admitted in ICU.

DISCUSSION

In the present study group, medical therapy was given in 4 (8%) patients which is close to the study done by Khaleque F et al. Ectopic pregnancies with sac measuring less than 3.5 cms, absence of fetal cardiac activity, and those with hCG levels lesser than 3,000 mIU/mL were taken as inclusion criteria for medical therapy.

Among 4 patients, 3 patients were managed successfully by single dose MTX. Their β-hCG level came to pre-pregnancy level (<5mIU/mL) and USG showed complete resolution of ectopic by 2nd – 4th week during follow up. out of 4 patients 1 patient (25%) had treatment failure with MTX.

In the present study group, 12 (24%) patients underwent laparoscopy which is minimally invasive and is the gold standard for diagnosing ectopic pregnancy. This decreases morbidity and helps in preserving future fertility. 35 (70%) women underwent laparotomy which is close to the study done by Shrestha et al. Many women presented late after rupture with signs of shock and hemodynamic instability requiring laparotomy. Out of 35 patients, 1 patient on medical therapy underwent emergency laparotomy for ruptured ectopic.

In the present study group, hemoperitoneum was present in 91.41% of the cases which is close to the study done by Shrestha et al (87.5%). Massive hemoperitoneum of about 2000-2500 ml was present in 4 cases.

On laparotomy ectopic pregnancy was present on right side in 53.1% of the patients which correlates with the studies done by Kopani et al (56.2%) and Etuknwa Bassey Tom et al (51.4%). The right sided preponderance was due to sub-clinical appendicitis.

Ectopic pregnancy in ampulla was present in 61.7% of the cases which correlates with the study done by Poonam et al (62.6%). Most of the studies show ampulla as the common site for ectopic pregnancy. This may be because fertilization occurs in the ampullary region. Ampulla has numerous plica and these plica agglutinate due to PID leading to entrapment of zygote. Ischmic pregnancy was seen in 19.1% of the cases which correlates with the study done by Uzma Shabab et al (18.9%). Ectopic pregnancy in infundibulum was seen in 6.3%, interstitial pregnancy in 4.2%, pregnancy in rudimentary horn in 2.1% which is correlating with the study done by Panchal D et al (5%), 3.33% and 1.66% respectively. Ovarian pregnancy was diagnosed in 6.3% of the cases which correlates with the study done by Shreidda Shetty K et al (6.5%). Heterotopic pregnancy was present in 2.1% which correlates with the study done by Uzma Shabab et al (2.7%). She underwent left salpingectomy and intraterine pregnancy was continued and had uneventful outcome. Early intervention in this case helped to salvage viable intrauterine pregnancy.

In the present study, 85.1% of the cases had ruptured ectopic and is correlating with the study done by Yakasai et al (86.14%). 8.5% of the patients had unruptured ectopic which is correlating with the study done by Rashmi A Gaddagi et al (8.1%). Tubal abortion was noted in 6.3% and is not correlating with any other study.

In the present study group, depending on hemodynamic stability and patients wish to retain fertility, various procedures were done by laparotomy or laparoscopy. Salpingectomy was done in 74.4% of the patients which
is close to the study done by Poonam et al\textsuperscript{11} (69.3\%) as most of the cases were with ruptured ectopic.

Salpingo-oophorectomy, fimbrial expression and cornual resection were done in 12.7\%, 4.25\% and 2.7\% respectively which correlates with the study done by Rashmi A Gaddagi et al.\textsuperscript{16} Salpingostomy and resection of rudimentary horn were done in 2.1\% each.

Fimbrial expression was done in 2 patients, 1 patient with ectopic at infundibulum and other had at distal ampulla, both were in the process of tubal abortion. Laparoscopic cornual resection was done in 1 patient. 1 patient required TAH in view of ruptured cornual pregnancy with torrential hemorrhage and signs of severe shock. In this patient TAH was done as a life-saving procedure.

12 patients underwent laparoscopy. 4 patients underwent salpingectomy, 3 patients had salpingo-oophorectomy and fimbrial expression was done in 2 patients. Salpingostomy, resection of rudimentary horn and cornual resection was done in 1 patient each.

In the present study group, post-operatively wound infection was present in 4.2\% of the patients, 12.1\% of the patients had fever and 8.51\% were admitted to MICU. 40\% of the patients received blood transfusions for correcting blood loss, 4 women were admitted to ICU as they were critically ill. No case of mortality was registered during the study period.

CONCLUSION
Ectopic pregnancy is the commonest cause of pregnancy related deaths in the first trimester. Worldwide there is an increased incidence over the past three decades accounting for 1.8 - 2\% of all pregnancies. High index of suspicion is necessary for early diagnosis before its rupture as it gives an opportunity for conservative treatment. Early diagnosis and prompt conservative surgical or medical management not only reduces maternal morbidity and mortality but also helps in preserving fertility.

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COMPETING INTERESTS
None declared.

REFERENCES