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Original Research Article

Comparative Assessment of Two Different Methods of Management of Ruptured Ectopic Pregnancy

Sanghmitra Kumari[1], Seema Singh[2], Manoj Kumar Shaw[3], Prem Sagar Chaudhary[4]

[1]Senior Resident, Department of Obstetrics and Gynecology, BMIMS, Pawapuri, Nalanda, Bihar, India

[2]Assistant Professor, H.O.D., Department of Obstetrics and Gynecology, BMIMS, Pawapuri, Nalanda, Bihar, India

[3]Assistant Professor, Department of General Surgery, BMIMS, Pawapuri, Nalanda, Bihar, India

[4]Senior Resident, Department of General Surgery, BMIMS, Pawapuri, Nalanda, Bihar, India

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Corresponding author: Dr. Prem Sagar Chaudhary

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Abstract

Aim: The purpose of this study is to know the description and comparison of a few variables towards laparotomy and laparoscopy surgery for the management of ruptured ectopic pregnancy.

Methods: The present study was conducted in the Department of Obstetrics and Gynecology, BMIMS, Pawapuri, Nalanda, Bihar, India, for the period of 1 year. Medical records of all the patients who underwent surgery for ectopic pregnancy at the study center were reviewed. During this period 100 cases of histopathology confirmed ectopic pregnancy were surgically managed.

Results: It was observed that the demographic variables (mean age group) were well matched in both the groups. The most common age group of presentation in our study was 18-25 years. Very few patients were in the age group > 31 years. Age differences in the two groups were not significant.

Conclusion: From this study, we conclude that laparotomy is still the preferred method of surgery for managing ruptured ectopic pregnancy. This might be caused by a lack of equipment or operator skills in managing ruptured ectopic pregnancy with laparoscopy.

Keywords: Surgery, Laparotomy, Laparoscopy, Ruptured Ectopic Pregnancy

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Introduction

Ectopic pregnancy, a life-threatening condition, occurs in approximately 1.3%–2% of all pregnancies. [1] Although deaths associated with ectopic pregnancy have decreased during the past 20 years, 9%–13% of all pregnancy-related deaths are associated with the condition. [2]

Laparoscopic surgery is the gold standard for treatment of ectopic pregnancy in hemodynamically stable women. [3] In

these women, the advantages of operative laparoscopy over an open approach are well recognized and include less operative blood loss, shorter operating time, less analgesic requirement, shorter hospital stay, shorter period of convalescence, and significant cost savings. [4-9]

There are many sites of ectopic pregnancy, such as tubal, ovarian, intra-ligament, cervical and abdominal pregnancy. The most common site in the ectopic pregnancy case is tubal which is around 90% . [10] Ruptured ectopic pregnancy is an emergency condition which is the most common cause of maternal death in the first trimester of pregnancy, due to high mortality and morbidity rate. Primary ovarian and abdominal pregnancy are very rare. [11]

Both laparotomy and laparoscopic surgery are the common surgical methods for the clinical treatment of acute ruptured ectopic pregnancy. Laparotomy operation is simple, can clearly reveal operation field, and is currently the most widely used way of ectopic pregnancy emergency surgery. [12,13] Laparoscopic surgery is the operation method rising in recent years, the endoscopic equipment enables surgical operation under minimally invasive condition, the vision is clearer and the operation is more delicate, it can choose oviduct excision or embryo removal retaining oviduct, and it is suitable for women at childbearing age and with fertility requirements. [14,15]

At present, more and more domestic and foreign scholars have adopted laparoscopic surgery for acute ruptured ectopic pregnancy and achieved positive effect, but there is no report about the stress response caused by the trauma after acute ruptured ectopic pregnancy.

The purpose of this study is to know the description and comparison of a few variables towards laparotomy and laparoscopy surgery for the management of ruptured ectopic pregnancy.

Materials and Methods

The present study was conducted in the Department of Obstetrics and Gynecology, BMIMS, Pawapuri, Nalanda, Bihar, India, for the period of 1 year. Medical records of all the patients who underwent surgery for ectopic pregnancy at the study center were reviewed. During this period 100 cases of histopathology confirmed ectopic pregnancy were surgically managed.

Inclusion criteria

- Age 18-45 years old
- Confirmed ectopic pregnancy on ultrasound
- Giving consent and having signed the consent form for this study
- Patients with confirmed histopathology report.

Exclusion criteria

- Patients with failed medical management
- With co-morbidities, e.g. hypertension, heart disease, peptic ulcer etc.
- Heterotopic pregnancy.

Methodology

Patients age, parity, pre-op haemoglobin levels were recorded. Fifty patients were managed by laparoscopic approach and fifty patients were managed by laparotomy. The decision regarding the route of surgery was taken by the attending surgeon based on the vitals of the patient, haemoglobin levels and their surgical expertise in laparoscopic surgery. In both groups all the patients underwent salpingectomy.

Statistical analysis

The statistical calculations were performed with SPSS software. A 2-tailed $p < 0.05$ was defined as statistically significant.

Results

Table 1: Age wise distribution in the two groups

Age group	Laparoscopy	Laparotomy
18-25	26	24
26-33	14	13
>34	10	13
Total	50	50

It was observed that the demographic variables (mean age group) were well matched in both the groups. The most common age group of presentation in our study was 18-25 years. Very few patients were in the age group > 31 years. Age differences in the two groups were not significant (Table 1).

Table 2: Frequency of site of tubal ectopic pregnancy

Age group	**Laparoscopy**	**Laparotomy**
Ampullary	30	28
Isthmic	12	12
Cornual	08	10
Total	50	50

In our study we found that, ampulla was the most common site of ectopic pregnancy in both the groups with isthmic part of the tube being the second most common site (Table 2).

Table 3: Data of Clinical Signs & Symptoms in Laparotomy and Laparoscopy of Women with Ruptured Ectopic Pregnancy

Variable	Laparoscopy	Laparotomy	%age
Clinical Signs & Symptoms			N=100
Vaginal Bleeding	7	6	13%
Abdominal Pain	15	10	25%
Vomiting	5	6	11%
Asymptomatic	7	4	11%
Slinger Pain	3	5	8%
Shock	1	3	4%

The most common clinical signs and symptoms is abdominal pain which is 25(25%) samples followed by vaginal bleeding (13%).

Discussion

Laparoscopy is the preferred management method in most cases of ruptured ectopic pregnancy. Laparoscopic surgery has been considered contraindicated in certain situations such as interstitial and cornual pregnancy, [16,17] obesity, [18] and severe adhesions. [19]

Emergency surgery is the first choice for treatment of acute ruptured ectopic pregnancy, and according to the ectopic pregnancy site and disease condition, the salpingectomy or the surgery retaining the oviduct can be selected. Acute ruptured ectopic pregnancy can cause a large amount of bleeding and blood volume loss, which will affect the blood perfusion of liver, kidney and other important organs and increase the risk of viscera function damage. [20] In clinical practice, the timely emergency operation can avoid further development of bleeding and ensure the safety of the patient's life. Laparotomy and laparoscopic surgery are the common ways of operation for acute ruptured ectopic pregnancy, the former is with simple operation, but large trauma, [21] and the latter is with small trauma and delicate operation, and can furthest meet the requirements of the childbearing age women to retain fertility. [22]

In this study, there are 50 samples that underwent laparotomy and 50 samples

underwent laparoscopy. This result is correlated with the study conducted by Kumar et al., [23] where laparotomy surgery is the preferred method of management of ectopic pregnancy, from a total of 63 patients, 37 (58,7%) patients underwent laparotomy while 26 (41,3%) patient underwent laparoscopy. In another study reviewed by Kumar et al. [9], the preferred surgery is mostly laparotomy, from a total of 101 patients, 76 (75, 3%) patients underwent laparotomy. The result is not compatible with the study conducted by M. Nabil et al., where management of ectopic pregnancy through laparoscopic surgery offers more benefits than laparotomy, as it is the gold standard for direct visualization of ectopic gestation. The benefits are lesser blood loss, less need for blood transfusion, less need for postoperative analgesia and shorter duration of hospital stay. [24]

In this study, 4 samples are in shock and both underwent laparotomy. In a study by Shrestha et al., [25] 12 (60%) patients are in shock and all underwent laparotomy surgery. The study follows the idea of the previous study conducted by Payal et al., [26] where patients which are hemodynamically unstable are the key to converting treatment with laparoscopy to laparotomy.

In this study, the most common clinical signs & symptoms are abdominal pain which is found in 25 samples, followed by vaginal bleeding which are 13 samples. This result is comparable with the study of Shresta et al., [25] the most common clinical signs & symptoms in her study too are abdominal pain which is found in all 32 patients, followed by amenorrhea which is 21 patients and vaginal bleeding which is found in 20 patients. In that study, patients who underwent laparotomy or laparoscopy mostly complained of abdominal pain.

Laparoscopic surgery is not only beneficial to retaining the fertility of childbearing-age patients with ectopic pregnancy, but can also reduce the surgical trauma and the stress reaction caused by trauma. Operation trauma is a strong stressor that can significantly activate the body’s stress response and cause the abnormal synthesis and secretion of a variety of endocrine hormones. [27]

In this study, there is no statistical correlation between maternal age and methods of surgery by laparotomy or laparoscopy. This result is similar with the study by Shrestha et al. [25] where there is no statistical correlation between maternal age and methods of surgery. In this study, there is no correlation between the duration of postoperative hospital stay and methods of surgery. This differs from the study by Jahan et al. [28] which states there is a statistical correlation, where patients who underwent laparoscopy have a shorter duration of postoperative hospital stays compared to laparotomy. This might be caused by the huge difference of samples, wherein this study 19 samples underwent laparotomy and 9 samples underwent laparoscopy. Meanwhile, in the study by Jahan et al., 70 samples underwent laparoscopy and 19 samples underwent laparotomy. [28,29]

Conclusion

From this study, we conclude that laparotomy is still the preferred method of surgery for managing ruptured ectopic pregnancy. Laparoscopy has a smaller incision, therefore minimal bleeding and transfusion are needed compared to laparotomy. Patients undergoing laparoscopy are hemodynamically stable, so transfusion can be minimized. A higher percentage of ectopic pregnancies can be managed laparoscopically if minimal access surgery experience is introduced in all the surgical units. Although this study is limited by its retrospective nature, it supports the idea that laparoscopic management of ectopic pregnancy might be the most beneficial procedure with maximal safety and efficacy. Laparoscopic management of ectopic pregnancy is a

safe, effective and beneficial option in the hands of an experienced laparoscopic surgeon.

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