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## A comparative assessment of laparoscopy and laparotomy for ruptured tubal ectopic pregnancy

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### Abstract

**Background:** Ectopic pregnancy is one of the most emergency condition during the pregnancy period, in which the fertilized egg implanted outside the uterine cavity. The present study was conducted to compare laparoscopy and laparotomy for ruptured tubal ectopic pregnancy.

**Materials & Methods:** 92 patients of ectopic pregnancy were divided into 2 groups of 46 each. Group I patients were managed with Laparoscopy and group II with Laparotomy. Parameters such as gravida, parity, previous spontaneous loss, previous MTP, Hb at admission, period of gestation, total blood loss and hemoperitoneum were recorded.

**Results:** The mean age in group I was 31.1 years and in group II was 32.4 years, parity was 1 in each group, gravida was 2 and 3, previous spontaneous loss (%) was 14.5 and 21.6, Hb at admission (mg) was 7.5 and 8.2, previous MTP (%) was seen in 16.7 and 18.2, acute abdomen (%) was seen in 82 and 70 and incidental (%) was 14 and 28 in group I and II respectively ( $P < 0.05$ ). The location was ampulla in 56% and 60%, corneal in 12% and 15%, fimbrial in 11% and 11%, interstitial in 21% and 14%. No of PRBC transfusions (%) was 11.2 and 13.4 and duration of hospital stay was 4.1 days and 7.3 days in group I and II respectively. The difference was significant ( $P < 0.05$ ).

**Conclusion:** Laparoscopy was advantageous over laparotomy in terms of shorter hospital stay and speedy recovery.

**Keywords:** Ectopic pregnancy, laparoscopy, laparotomy

### Introduction

Ectopic pregnancy is one of the most emergency condition during the pregnancy period, in which the fertilized egg implanted outside the uterine cavity<sup>[1]</sup>. The occurrence of ectopic pregnancy accounts for approximately 2% of total pregnancy in worldwide, whereas in India the incidence is 3.5 to 7.1% and is a major cause of maternal morbidity and mortality with pregnancy loss<sup>[2]</sup>. Most of the ectopic pregnancies are fallopian tube pregnancy and generally, the diagnosis happens after seven weeks of amenorrhoea with or without symptoms. Tubal rupture is sudden and life-threatening emergency, which needs immediate attention<sup>[3]</sup>.

In recent decades, new techniques for minimally invasive surgery have experienced numerous changes and developments. Laparoscopy has a well-established role in the modern era of surgery, yielding less postoperative pain, a shorter hospital stay, a faster recovery, and better esthetic results<sup>[4]</sup>. Recently, natural orifice transluminal endoscopic surgery (NOTES), as a new minimally invasive surgical approach, has been increasingly reported. Given the established safety profile of the colpotomy, the transvaginal approach has been adopted clinically, with the proposed benefits of reduced surgical trauma and cosmetic outcomes compared with standard laparoscopic approaches<sup>[5]</sup>.

For ruptured tubal ectopic pregnancy management, Laparoscopic procedures implemented with an aim to reduce intra operative blood loss, analgesic requirements, hospital stay and higher recovery as well as its effectiveness in patients with massive hemoperitoneum. However, Laparotomy is still preferred surgery in low resource set ups<sup>[6]</sup>. The present study was conducted to compare laparoscopy and laparotomy for ruptured tubal ectopic pregnancy.

### Materials & Methods

The present study comprised of 92 patients of ectopic pregnancy. All were informed regarding the stud and their written consent was obtained. Ethical clearance was also obtained before starting the study.

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Demographic profile such as name, age etc. was recorded. Patients were divided into 2 groups of 46 each. Group I patients were managed with Laparoscopy and group II with Laparotomy. Parameters such as gravida, parity, previous spontaneous loss, previous MTP, Hb at admission, period of gestation, total blood

loss and hemoperitoneum were recorded. Physical and transvaginal diagnosis were carried over on the basis of location of rupture, abdomen condition and blood loss. Results thus obtained were analysed statistically with p value considered significant below 0.05.

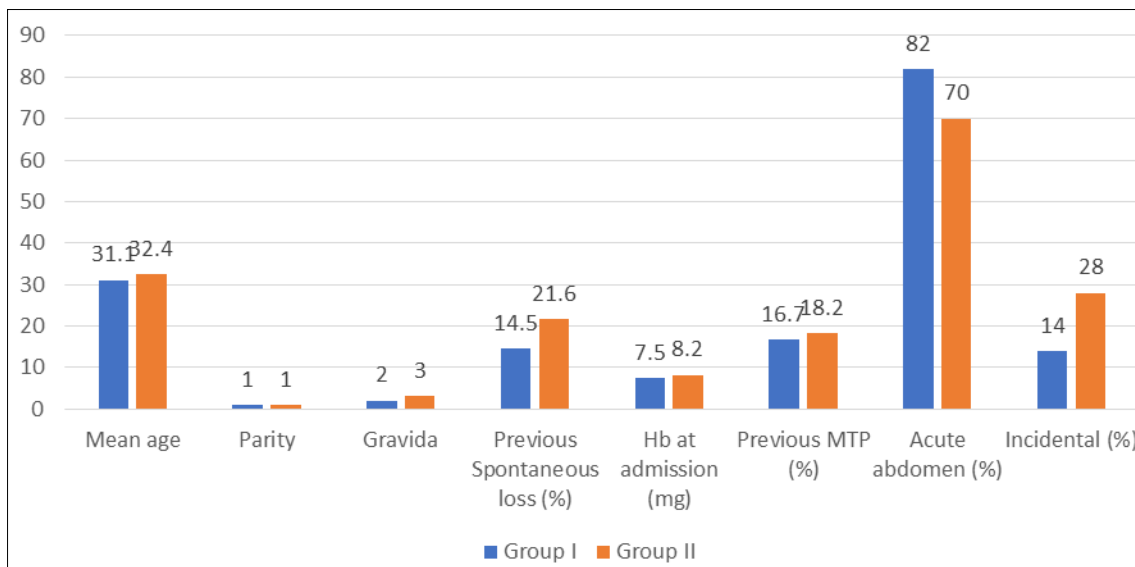
## Results

**Table 1:** Characteristics of patients

| Characteristics               | Group I | Group II | P value |
|-------------------------------|---------|----------|---------|
| Mean age                      | 31.1    | 32.4     | 0.91    |
| Parity                        | 1       | 1        | 1       |
| Gravida                       | 2       | 3        | 0.05    |
| Previous Spontaneous loss (%) | 14.5    | 21.6     | 0.04    |
| Hb at admission (mg)          | 7.5     | 8.2      | 0.09    |
| Previous MTP (%)              | 16.7    | 18.2     | 0.15    |
| Acute abdomen (%)             | 82      | 70       | 0.05    |
| Incidental (%)                | 14      | 28       | 0.02    |

Table I, graph I shows that mean age in group I was 31.1 years and in group II was 32.4 years, parity was 1 in each group, gravida was 2 and 3, previous spontaneous loss (%) was 14.5 and 21.6, Hb at admission (mg) was 7.5 and 8.2, previous MTP (%)

was seen in 16.7 and 18.2, acute abdomen (%) was seen in 82 and 70 and incidental (%) was 14 and 28 in group I and II respectively ( $P < 0.05$ ).



**Graph 1:** Characteristics of patients

**Table 2:** Distribution of patients on the basis of location and post-operative recovery

| Location                         | Group I | Group II | P value |
|----------------------------------|---------|----------|---------|
| Ampula                           | 56%     | 60%      | 0.09    |
| Cornual                          | 12%     | 15%      | 0.12    |
| Fimbrial                         | 11%     | 11%      | 1       |
| Interstitial                     | 21%     | 14%      | 0.17    |
| No of PRBC transfusions (%)      | 11.2    | 13.4     | 0.21    |
| Duration of hospital stay (days) | 4.1     | 7.3      | 0.01    |

Table II shows that location was ampula in 56% and 60%, cornual in 12% and 15%, fimbrial in 11% and 11%, interstitial in 21% and 14%. No of PRBC transfusions (%) was 11.2 and 13.4 and duration of hospital stay was 4.1 days and 7.3 days in group I and II respectively. The difference was significant ( $P < 0.05$ ).

## Discussion

Numerous data have been reported on NOTES with transvaginal

access to perform cholecystectomy, appendectomy and peritoneoscopy. Notes for gynecologic surgery, including transvaginal hydrolaparoscopy, tubal ligation, and so on, has advanced slowly and has been reported rarely [7]. Ectopic pregnancy is the most common life-threatening emergency in early pregnancy [8]. Currently, the surgical treatment for tubal ectopic pregnancy is laparotomy and laparoscopic surgery, and laparotomy has generally been replaced by laparoscopic surgery because of its minimal invasiveness and cosmetic outcomes. Laparoscopy and Laparotomy both are established in gynaecology for several years [9]. Since early 1990s, minimally invasive surgery is considered to be the safest and effective surgical technique. In the developed countries laparoscopy is widely used for management of ruptured ectopic pregnancy because of the availability of skilled manpower, logistics, improved anaesthesia and cardiovascular monitoring, well organised surgical care and good healthcare insurance [10]. For ruptured tubal ectopic pregnancy management, Laparoscopic procedures implemented with an aim to reduce intra operative

blood loss, analgesic requirements, hospital stay and higher recovery as well as its effectiveness in patients with massive hemoperitoneum [11]. The present study was conducted to compare open and minimal invasive surgery for ruptured tubal ectopic pregnancy.

In present study, the mean age in group I was 31.1 years and in group II was 32.4 years, parity was 1 in each group, gravida was 2 and 3, previous spontaneous loss (%) was 14.5 and 21.6, Hb at admission (mg) was 7.5 and 8.2, previous MTP (%) was seen in 16.7 and 18.2, acute abdomen (%) was seen in 82 and 70 and incidental (%) was 14 and 28 in group I and II. Mishra *et al.* [12] conducted a study in which a total of 90 confirmed case of ruptured tubal ectopic pregnancies were divided into 2 groups, laparoscopy (n=68) and laparotomy (n=22). The main outcome measures the demographic features like age, gravida, parity, previous spontaneous loss, previous MTP, Hb at admission, period of gestation, total blood loss and hemoperitoneum and post-operative parameters blood loss, blood requirement and duration of hospital stay. No significant differences observed in age, gravida, parity, previous history of spontaneous loss and previous MTP in both laparoscopy and laparotomy procedure. Common demographic features were age (30 to 32 years), gravida (2-3) and parity (1). Patients with heavy blood loss >1000ml and massive hemoperitoneum were also undergone for laparoscopic procedure. Hospital stay and PRBC blood transfusion were less in patient undergone laparoscopic surgery. We observed that location was ampulla in 56% and 60%, cornual in 12% and 15%, fimbrial in 11% and 11%, interstitial in 21% and 14%. No of PRBC transfusions (%) was 11.2 and 13.4 and duration of hospital stay was 4.1 days and 7.3 days in group I and II respectively. Xu *et al.* [13] recorded the estimated blood loss, time of anal exhaust, postoperative pain score, length of stay, and scar assessment scale associated with transvaginal endoscopic access (n = 18) (natural orifice transluminal endoscopic surgery) and laparoscopic salpingectomy (n = 20) (control group) for tubal ectopic pregnancy. The transvaginal salpingectomy was performed with a double-channel endoscope through a vaginal puncture. The group that underwent the transvaginal endoscopic procedure reported lesser pain at all postoperative visits than the group that underwent the laparoscopic approach. The duration of time for transvaginal endoscopic surgery was slightly longer than that for the laparoscopic approach. However, there was no statistically significant difference between the two groups in the duration of operative time. The group that underwent transvaginal endoscopic surgery was more satisfied with the absence of an external scar than the group that underwent the laparoscopic procedure, which left a scar. The estimated blood loss, time of anal exhaust, and length of stay were the same in both groups.

### Conclusion

Authors found that laparoscopy was advantageous over laparotomy in terms of shorter hospital stay and speedy recovery.

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