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## Original Research Article

# A retrospective study of ruptured tubal ectopic pregnancy managed by open and minimal invasive surgery

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## ABSTRACT

Ectopic pregnancy is a serious hazard to a woman's health and requires prompt attention and early aggressive intervention. These complications are not only fatal loss but also causes significant maternal morbidity and mortality. Minimal invasive surgery is considered to be safest effective surgical solution for tubal ruptured ectopic pregnancy to reduce intra operative blood loss, analgesic requirements and hospital stay.

**Materials and Methods:** A clinical retrospective study in an academic tertiary obstetrics and Gynaecology department of Pradyumna Bal Memorial hospital, Kalinga Institute of medical science (KIMS), Bhubaneswar, Odisha was conducted in the period of three years. 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 haemoperitoneum and post-operative parameters blood loss, blood requirement and duration of hospital stay.

**Results:** 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.

**Conclusion:** Laparoscopy is considered to be advantageous over laparotomy in terms of shorter hospital stay and speedy recovery and even in massive haemoperitoneum.

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## 1. Introduction

Ectopic pregnancy is one of the most emergency condition during the pregnancy period,<sup>1</sup> in which the fertilized egg implanted outside the uterine cavity. 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.<sup>3,4</sup> Tubal rupture is sudden and life threatening emergency, which needs immediate attention.

Laparoscopy and Laparotomy both are established in gynaecology for several years.<sup>5</sup> 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

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ruptured ectopic pregnancy because of the availability of skilled manpower, logistics, improved anaesthesia and cardiovascular monitoring, well organised surgical care and good healthcare insurance. 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 it's effectiveness in patients with massive haemoperitonium.<sup>6,7</sup> However, Laparotomy is still preferred surgery in low resource set ups.

## 2. Materials and Methods

A clinical retrospective study on ruptured tubal ectopic pregnancy was conducted at Pradyumna Bal Memorial hospital, Kalinga Institute of medical science(KIMS), Bhubaneswar, Odisha during the period of three years. A total of 90 cases with ruptured tubal ectopic pregnancy were admitted in an emergency condition and had undergone operative management. Out of them 68 cases were managed with laparoscopic method and 22 patients were managed with laparotomy procedure. The condition of ruptured tubal ectopic pregnancy was characterised based on age, gravida, parity, previous spontaneous loss, previous MTP, Hb at admission, period of gestation, total blood loss and haemoperitonium. Physical and transvaginal diagnosis were carried over on the basis of location of rupture, abdomen condition and blood loss. The selection of surgery method was not based on any specific criteria but dependent on the affordability and choice of patient. Post-operative parameters assessed here are Hb after surgery, blood transfusion and duration of hospital stay. Clinically and surgically acquired data were analysed by statistical analysis with the help of STATA software to generate mean, standard deviation, correlation coefficient, hypothesis test by Chi square and p value for significance and non-significance between different parameters P-value less than 0.05 was considered to be significant.

## 3. Results

During three years of study period, 90 ruptured tubal ectopic pregnancy patients presented at the hospital in an emergency condition. Patients were managed by both open surgery (Laparotomy) and minimal invasive Laparoscopic surgery on the basis of availability of facilities and logistics as well as skilled manpower. Characteristics of patients with ruptured tubal ectopic pregnancy were reported and statistically analysed. On the basis of Patient's history, clinical symptoms, physical examination and transvaginal sonography, patients were grouped into two and were managed with laparoscopy and laparotomy. A comparative demographic profile of clinical data of two groups are shown in Table 1. There was no significant difference between both the groups in age, gravida, parity, previous

history of spontaneous loss, previous MTP. Most of the patients were in 30 to 32 age group with 2-3 gravida and 1 parity. Previous history of spontaneous loss was observed in 13 - 22% patients in laparotomy and laparoscopic group respectively. Previous history of abortion was found in 16 - 18% of patients. Maximum number of patients of laparoscopic group were admitted in 6-10 weeks of gestational period and 45% patients were admitted with blood loss around 1000ml, which were preferably managed with laparoscopic surgery and were having massive hemoperitonium at presentation.

All operative outcome is summarized in Table 2 and all were presented with ruptured tubal ectopic pregnancy. Most of the ruptured cases were from ampulla region (55%) and from cornual 11%, Fimbrial 12%, interstitial 21%. The incidence of cornual rupture was more whereas, the incidence of ectopic rupture in interstitial location was less than other locations. The blood loss was based on the location of rupture. More than 1000 ml blood loss was observed in cornual and Interstitial location in 80% and 26% patients respectively, whereas in ampulla location it was observed in 12% patients. The ruptured tubal ectopic pregnancy cases had taken for laparoscopic and laparotomy surgery based on the availability of skilled person, OT facilities and patient's willingness. Infusion of red blood cell (3 PRBC) was more in patients having ectopic rupture at interstitial location (26%) whereas in ampulla and Cornual location the requirement of PRBC was observed in 4% patients. (Table 3) Hospital stay was also more in tubal rupture at ampulla and interstitial location. In case of laparoscopic group the FFP blood transfusion was less than laparotomy procedure. And hospital stay was also reduced to 4 days than laparotomy (7 days).

## 4. Discussion

Tubal ectopic pregnancy is a major Life risk complication during pregnancy period. Excision of tubal ectopic pregnancy by laparoscopic approach was done for the first time by Shapiro & Adler.<sup>8</sup> Advancement in the field of minimal access surgery has increased the scope of laparoscopic management. Laparoscopic approach for management of ectopic pregnancy has largely replaced laparotomy.<sup>9</sup> In the present study ruptured tubal ectopic pregnancy was managed with laparoscopic approach in 75.5% cases. All the ruptured tubal ectopic pregnancy cases (90) were taken for emergency operative procedures either laparoscopy or laparotomy. Age, gravida, parity, previous history of spontaneous loss and previous MTP were having no significance in selection of laparoscopic and laparotomy procedure. In the laparoscopic group, haemoperitonium with estimated with blood loss more than 1000ml was observed in 68% patients and were successfully operated with laparoscopic procedure. Laparoscopic procedure is not only safe for early ectopic pregnancy but also appropriate

**Table 1:** Characteristics of ruptured ectopic pregnancy managed with both

Characteristic	Laparoscopy (n=68)	Laparotomy (n=22)
Age (median) in years	30	32
Gravida (median)	2	3
Parity (median)	1	1
Previous Spontaneous loss (%)	13.2	22
Previous MTP (%)	16.2	18.1
Hb at admission	7 mg	8mg
<b>Presentation</b>		
Acute abdomen (%)	80	68
Incidental (%)	16	31
Period of gestation (%)	< 6 weeks: 35	< 6 weeks: 27
	6-10 weeks: 55	6-10 weeks: 68
	> 6 weeks : 8	> 6 weeks : 4.5
Total blood loss (%)	<500 mL: 34	<500 mL: 36
	500-1000mL: 44	500-1000ml: 36
	>1000mL : 22	>1000mL : 27
Hemoperitoneum	46	16

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

Location	Laparoscopy	Laparotomy
Location	Ampulla: 54.4%	Ampulla: 59%
	Cornual: 10%	Cornual: 13.6%
	Fimbrial: 13%	Fimbrial: 9%
	Interstitial: 22%	Interstitial: 18%
	No of PRBC transfusions (%)	11.8
Duration of hospital stay (days)	4	7

Laparoscopy and laparotomy method

**Table 3:** Location wise tubal ruptured ectopic pregnancy in total 90 patients

Location of Sac	Blood loss >1000ml (%)	3 PRBC (%)	Hospital stay (7 days) (%)
Ampulla	12	4	22
Cornual	80	4	10
Fimbrial	18	0	5
Interstitial	10	26	21

for tubal rupture with haemoperitonium. (tubal ectopic pregnancy LS Vs LT). The most common symptom like acute abdomen was observed in 80% cases of laparoscopic group. Laparoscopic surgery was successfully conducted in 22% cases of patients with more than 1000 ml blood loss at the presentation. Similar results were reported by other authors.<sup>7</sup> In the present study, laparoscopic procedure was applied successfully in tubal ectopic pregnancy of different location. An ampullary pregnancy was managed in a better way through laparoscopic procedure than other locations. Cornual pregnancies mostly operated with laparotomy and surgical excision. Whereas, in the present study, 10% corneal localized ectopic pregnancies were managed with laparoscopy and 13.6% were managed with laparotomy.<sup>10,11</sup> Hospital stay was 4 days in case of laparoscopic procedures, whereas in case of laparotomy it was 7 days. Shorter hospital stay can help patients for faster

recovery, decreased need of analgesic and better quality of life.<sup>12-16</sup>

## 5. Conclusion

In our study, laparoscopy is found to be advantageous over laparotomy in terms of shorter hospital stay and speedy recovery. Even, massive haemoperitoneum is not a contraindication for minimal invasive surgery.

Generalised availability of logistics and skilled team will make laparoscopic surgery cost effective. This will have positive impact on outcomes of ruptured ectopic pregnancies in periphery and low cost set ups.

## 6. Source of Funding

None.

## 7. Conflict of Interest

The author declares no conflict of interest.

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