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Original Research Article

Feasibility of laparoscopy in management of ectopic pregnancy: experience from a tertiary care hospital

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ABSTRACT

Background: Ectopic pregnancy is an important cause of maternal morbidity and mortality. For surgical management, laparoscopy is preferred option. In developing world for ruptured ectopic pregnancy laparotomy is done at most of places. In this study we have assessed feasibility of laparoscopic management in both ruptured and unruptured ectopic pregnancy.

Methods: A prospective study, conducted over period of 1 year from July 2014 to July 2015 in Department of Obstetrics & Gynecology, All India Institute of Medical Sciences, New Delhi. In 110 patients of ectopic pregnancy parameters studied were age and parity, symptoms, risk factors, diagnostic methods, site of ectopic, management and its outcome. Primary objective was to evaluate management outcome of ectopic pregnancy and to assess feasibility of laparoscopy in ectopic pregnancy. Ruptured ectopic pregnancy with massive hemoperitoneum were analyzed separately. Secondary objective was to study demographic characters and risk factors of ectopic pregnancy.

Results: Surgical management was required in 93.6% patients, out of which 86.4% were managed laparoscopically. Unruptured ectopic pregnancy was managed successfully by laparoscopy in 96.6% (29/30) patients. Ectopic was ruptured in 73 (66.3%) cases, laparoscopy was attempted in 91.7% (67/73). In 10.4% (7/67) patients laparoscopy had to be converted to laparotomy and it was successful in 89.5%. Out of 16 patients with massive hemoperitoneum, 12(75%) were managed laparoscopically. There was no mortality.

Conclusions: In most of cases laparoscopy is safe and successful. Laparoscopy is feasible in ruptured ectopic cases including selected cases with massive hemoperitoneum thus avoiding unnecessary laparotomy and associated morbidity. Timely diagnosis and management prevents mortality.

Keywords: Ectopic pregnancy, Laparoscopy, Laparotomy

INTRODUCTION

Ectopic pregnancy has always been a challenge for obstetrician, despite development of sensitive modalities of diagnosis. By definition it is implantation of fertilized ovum outside endometrial cavity.

In 1992, Centre for Disease Control has calculated ectopic pregnancy rate as 1.97 percent of all pregnancies. Study by Stulberg DB et al has estimated incidence of

ectopic pregnancy as 2.22% of all pregnancies.¹ There has been an increasing trend in the incidence of such pregnancies from 19.2 to 26.2 per 1000 pregnancies.² But the case fatality rate has gone down due to early diagnosis and timely intervention.^{3,4}

It is still high in developing world. It is an important cause of maternal morbidity and mortality accounting for around 18% deaths in 1st trimester and around 4.6% of all pregnancy related deaths. Management can be medical or

surgical depending on patient profile and future fertility desire.^{5,6}

Surgical management can be either open or laparoscopy, later being preferred option, it is gold standard for diagnosis also. Cochrane review by Hajenius PJ et al. concluded that laparoscopy is cost effective than laparotomy. But in developing world for ruptured ectopic pregnancy laparotomy is done at most of the places.⁷⁻¹¹

Objective of this study was to assess the feasibility of laparoscopic management of both ruptured and unruptured ectopic pregnancy. Patients of ruptured ectopic pregnancy with massive haemoperitoneum were analyzed separately also.

METHODS

This prospective study was conducted over a period of 1 year from July 2014 to July 2015 in one clinical unit of Department of Obstetrics and Gynecology at All India Institute of Medical Sciences, New Delhi.

The study population included all the females admitted with diagnosis of ectopic pregnancy. A total of 110 cases of ectopic pregnancy during this period were admitted. Past medical or surgical history with a detailed obstetric history was taken.

The parameters studied were age and parity distribution, symptoms at presentation, associated risk factors, diagnostic methods used, site of ectopic, management method used and outcome of management.

Patients with ruptured ectopic pregnancy and with massive hemoperitoneum were analyzed separately for its management outcome. Massive hemoperitoneum was taken as ≥ 800 ml intraperitoneal blood collection.¹² Total number of deliveries occurring in that time period was also noted. Data was collected in preconceived format and analyzed.

Data analysis was carried out using SPSS software IBM version 20.0.

Descriptive statistics such as mean, standard deviation (SD) was calculated for continuous variables like age of patients and period of gestation(POG) at presentation. Frequencies of outcomes across categories were represented as frequency and percent values.

RESULTS

Mean age of the patient was 28.65 ± 4.19 years (range 20-42 years).

The age distribution of patients is shown in Table 1, most commonly affected age group was 26-30 year. Mean POG at presentation was 7 weeks 4 day ± 8.5 day.

Table 1: Age wise distribution of ectopic pregnancy.

Age Group	No. of cases (n/%) (N=110)
15-20	2 (1.81)
21-25	23 (20.9)
26-30	59 (53.6)
31-35	18 (16.3)
36-40	7 (6.3)
41-42	1 (0.9)

Table 2 shows the risk factor evaluation of ectopic pregnancy.

Table 2: Risk factors for ectopic pregnancy.

Risk factor	No. of cases (n/%) (N=110)
Previous induced abortion	36 (32.7)
Infertility	34 (30.9)
Prev. Tubal Surgery	21 (19)
Genital Koch's	17 (15.4)
Pelvic inflammatory disease	15 (13.6)
Recurrent Ectopic	12 (10.9)
ART(IVF) + OVI	11 (10)
Prev. LSCS	9 (8.1)
Prev. tubal Sterilization	9 (8.1)
Contraception (Cu-T+ Pills)	4 (3.6)
No risk factors	24 (21.8)

Table 3 shows the site of ectopic pregnancy, ampullary part of the fallopian tube was the most common site.

Table 3: Site of ectopic pregnancy.

Site	No. of cases (n/%) (N=103) *
Ampullary	75 (68.1)
Isthmic	8 (7.2)
Tubal abortion	8 (7.2)
Tubo-ovarian mass	3 (2.7)
Fimbrial	1 (0.9)
Infundibular	2(1.8)
Cornual	3 (2.7)
Rudimentary horn	1 (0.9)
Ovarian	2 (1.81)

Table 4 shows the management method used for ectopic pregnancy. Medical management was done in 10% patients, failure rate of which was 36%. Surgical management was required in 93.6% patients, out of which 86.4% were managed laparoscopically. Unruptured ectopic pregnancy was managed successfully by laparoscopy in 96.6% patients.

Ectopic was ruptured in 66.3% cases, laparoscopy was attempted in 91.7% of them. Conversion rate of laparoscopy to laparotomy was 10.4%.

Table 5 shows the outcome of surgical management in both ruptured and unruptured ectopic pregnancy.

Table 4: Management method used.

Method of management		No. of cases (n/%)
Medical management (N=11)	Failed f/b surgery	4 (36.3)
	Successful	7 (63.6)
Surgical management (N=103)	Laparoscopic	89 (86.4)
	Laparoscopic salpingectomy	87 (84.4)
	Laparoscopy f/b Laparotomy+ salpingectomy	7 (6.7)
	Laparotomy + salpingectomy	5 (4.8)
	Salpingo-oophorectomy	1 (0.9)
	Laparotomy+ Ovariectomy	1 (0.9)
	Laparotomy + rudimentary horn excision	1 (0.9)
	Laparoscopic cornual excision	1 (0.9)
	Laparoscopic Salpingostomy	1 (0.9)

Total 16 patients had massive hemoperitoneum (>800 ml), out of them 12 (75%) were managed successfully by laparoscopy. There was no mortality reported in this

study. Heterotopic pregnancy was seen in one case where ectopic pregnancy was surgically removed without disturbing ongoing intrauterine pregnancy.

Table 5: Feasibility of laparoscopy in ruptured and unruptured ectopic pregnancy.

		Ruptured ectopic(N=73)	Unruptured ectopic* (N=30)
Attempted Laparoscopy (n/%)	Successful	67 (91.7)	60 (89.5)
	Followed by laparotomy	7 (10.4)	0 (0)
Straightaway laparotomy (n/%)		6 (8.2)	1 (3.3)

* Medical management was successful in 7 unruptured ectopic pregnancy

Total 15 patients received blood transfusion, 12 patients needed one unit, two patients got two units and one got three units.

DISCUSSION

Ectopic pregnancy is a life-threatening emergency. Proportion of patients managed surgically in our study was higher than that mentioned by other studies where surgical management rate was around 30-40%.^{2,13} It was similar to that reported by de Bennetot M et al.¹⁴ Reason being almost two third of our patients had ruptured ectopic at presentation and most of the unruptured ectopic patients presented late to us, were not suitable candidates for medical management.¹⁴ Laparoscopy was done in most of the patients (86.4%), in both ruptured and unruptured ectopic cases. Only one patients with unruptured ectopic needed laparotomy, that too because patients had rheumatic heart disease with severe mitral stenosis, a relative contraindication for operative laparoscopy. The mode of surgery to a large extent also depends on surgeon's experience and facilities available other than patient's clinical condition. In study by Ayaz A et al. laparotomy was done in all of the ruptured and laparoscopy in all unruptured cases.¹⁰ In the study by Lowani et al. laparotomy was done in all the patients because their center lacked functional diagnostic and

therapeutic laparoscopic equipment for laparoscopy, further 95.6% of their patients had ruptured ectopic at presentation.⁹ But the proportion of patient who presented with shock in this study was similar to our study(10.2% vs. 7.2%). Choudhary P et al did laparoscopic surgery in 100% patients.¹⁵ Only 0.9% patients had salpingostomy in our study this was much less than that done by Choudhary P et al.¹⁵ The reason for both low salpingostomy and laparoscopic management in our study compared to Choudhary P et al was proportion of ruptured ectopic was much less in their study (20.4% Vs. 66.3%).¹⁵ Cochrane review by Hajenius PJ et al. in 2007 has showed that laparoscopic salpingostomy when compared with open salpingectomy was associated the higher persistent trophoblast rate. According to RCOG guideline 2016, laparoscopic salpingectomy should be performed in presence of healthy contralateral tube but salpingotomy should be considered as the primary treatment if there is contralateral tubal disease and the desire for future fertility.¹⁶ A randomized study has shown that intrauterine pregnancy rate is similar after conservative or radical surgery. But a population-based study has shown significantly higher intrauterine pregnancy rate after conservative surgery.^{17,14} One third of our medically managed patients required surgery. Large uncontrolled studies have reported that less than 10% of women treated with methotrexate will require

surgical intervention.^{13,18} The reason for this high failure in our study may be late referral of patients to our institution. But the success rate of medical management was similar to that reported by Mohamed AA et al.¹⁹ Majority of our patient (75%) with massive hemoperitoneum underwent laparoscopic surgery comparable to study by Cohen A et al where proportion was 80%.¹² They concluded in their study that in ruptured ectopic pregnancy and massive hemoperitoneum (>800ml), laparoscopy is feasible and safe, with significantly shorter operating times compared with laparotomy.

CONCLUSION

In most of the cases of both ruptured and unruptured laparoscopy is safe and successful. Ruptured ectopic pregnancies with massive hemoperitoneum can also be managed laparoscopically.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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