

Original Article

Comparison between Laparoscopy and Laparotomy in the Management of Ectopic Pregnancy

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Abstract

Introduction: Ectopic pregnancy has become one of the most alarming causes of maternal mortality and morbidity and the number of maternal death due to ectopic pregnancy is also in increasing trend. Usually ruptured ectopic pregnancy is managed by laparotomy. But nowadays due to improved anesthesia and cardiovascular monitoring support together with advanced laparoscopic surgical skills and experience, operative laparoscopy for surgical management of ectopic pregnancy is justified, even in women with significant hemoperitoneum. **Objectives:** The aim of this study was to assess the clinical profile, risk factors and diagnostic modalities for ectopic pregnancy and to assess the operative findings, operative procedure and post-operative condition in laparoscopy and laparotomy cases. **Materials and Methods:** It was a cross-sectional observational study, conducted in the Department of Obstetrics & Gynecology in Enam Medical College & Hospital, Dhaka, Bangladesh. The study period was from July 2018 to July 2020. A total 72 patients were included for the study. All the patients were managed according to the hospital protocol. Data were analyzed by using Statistical Package for Social Sciences (SPSS) version 11.5. **Results:** A total of 72 cases were the study subjects. Laparotomy was done in 45 (62.5%) cases and laparoscopy in 27 (37.5%) cases. Most of the patients came with abdominal pain. Twenty seven patients (37.5%) who came with shock and all were managed by laparotomy. Commonest site of ectopic pregnancy was ampullary region –27 (37.5%) and were managed by laparotomy and 23 (31.94%) by laparoscopy. Most of the ectopic pregnancies were ruptured and 14 (19.44%) ruptured cases were managed laparoscopically. Hemoperitoneum (1000–2000 mL) was present in 25 cases, among them 7 (9.72%) were managed by laparoscopy. Salpingectomy was the commonest surgery—by laparoscopy 26 (36.11%) and by laparotomy 42 (58.38%). In laparotomy 32 (44.44%) cases and in laparoscopy 9 (12.5%) cases needed blood transfusion, which was comparatively less in laparoscopy. There was no wound infection in laparoscopy cases. Post-operative morbidity was also less in laparoscopy than in laparotomy. **Conclusion:** Ectopic pregnancy is considered as a life-threatening severe health condition and the number is dramatically increasing day by day. For the treatment of ectopic pregnancy, emergency intervention is must. Nowadays, laparoscopic management might be the most effective procedure with maximal safety and efficacy.

Key words: Ectopic pregnancy; Laparoscopic; Laparotomy

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Introduction

Ectopic pregnancy has become one of the most alarming cause of maternal mortality and morbidity and the number of maternal death due to ectopic pregnancy is also on rise increasing trends.¹ A study in USA reported that the incidence of ectopic pregnancy had raised from 1.3 to 2%.² The study has also reported that 6% of all pregnancy-related deaths were caused by ectopic pregnancy.^{3,4} Ectopic pregnancy is a major clinical emergency which can be tackled by many ways—such as expectantly, medically and surgically depending on the patients' clinical condition, hemodynamic status and the expertise of the surgeon. But most of the studies say surgery is the mainstay of treatment.⁵ The first successful surgical intervention was reported in 1759.⁶ For more than next 200 years, laparotomy was the primary surgical treatment.⁶ However, with the advancement in medical field, most of the cases of ectopic pregnancy are diagnosed in early stage.⁶ Although many advancements in medical field has happened but in developing countries the reality is different. Delay in diagnosis is so common here and in most of the cases of ectopic pregnancy usually being diagnosed after rupture.⁷ Till date surgery remains the mainstay of treatment.⁵ According to most of the physicians in this field, the laparoscopy is the preferred and effective surgical treatment for ectopic pregnancy unless a woman is hemodynamically unstable.⁸ But the situation is changing now with advanced laparoscopic surgical skills and experience, which justifies operative laparoscopy for surgical treatment of ectopic pregnancy even in women with significant hemoperitoneum.^{6,9-11} Over the last one and half decades a dramatic shift towards laparoscopic management is evident as some advantages has been achieved in terms of shorter operative time, less blood loss, less analgesia requirement and shorter hospital stay.¹²⁻¹⁴ It is also pleasing that the cost of the treatment is also reduced.¹⁵ The present study shows the efficacy and advantage of laparoscopic approach over laparotomy in the management of ectopic pregnancy.

The objective of this study is to find out the age wise distribution of the participants and to assess the clinical profile, risk factors and diagnostic modalities for ectopic pregnancy, to assess the operative

findings and operative procedure at laparoscopy and laparotomy and to compare the postoperative morbidity in laparoscopy and laparotomy and number of days of hospital stays.

Materials and Methods

It was a cross-sectional observational study conducted in the Department of Obstetrics & Gynecology in Enam Medical College Hospital, Dhaka, Bangladesh. The study period was from July 2018–July 2020. The sample size was 72, among these 45 cases were under laparotomy and 27 cases were under laparoscopy. Informed consent was taken from all patients. All the patients were managed according to the hospital protocol. The number of days of hospital stay was also noted in both groups. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 11.5.

Patients with confirmed ectopic pregnancy and patients who were incidentally diagnosed to have ectopic pregnancy during surgery performed for other causes were included in the study and patients diagnosed as ectopic pregnancy clinically and sonographically but were not so during surgery and patients who were unwilling to give consent were excluded from the study.

Results

Table I shows age-wise distribution of the study patients. It is observed that the demographic variables (mean age group) were well matched in both 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 difference in the two groups were not significant.

Table II shows significant clinical profile of two groups. All patients with shock were managed by laparotomy. Table III shows the sites of ectopic pregnancy in two groups (peroperative). 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 IV shows types of ectopic pregnancy in two groups. Most of the patients came in acute condition with ruptured ectopic pregnancy. Most of them were

managed by laparotomy, but 14 ruptured cases were managed by laparoscopy. In unruptured cases 13 were managed by laparoscopy, but 10 cases were managed by laparotomy due to their financial crisis and fear. Table V shows that in most of the cases hemoperitoneum was between 1000–2000 mL. Patients with severe hemoperitoneum (>2000 mL) were managed by laparotomy in majority cases.

Table VI shows in both groups the mainstay of mode of surgery was salpingectomy. In 02 cases ovarian

wedge resection was done and healthy ovarian tissue was preserved. Table VII shows comparison of post-operative requirement of blood transfusion and wound infection between two groups. It shows that blood transfusion requirement was more in laparotomy cases in comparison to laparoscopy cases. Number of wound infection was only two in laparotomy cases and in laparoscopy it was null. Table VIII shows more analgesia was required in laparotomy cases in comparison to laparoscopy cases. Duration of hospital stay was less in laparoscopy cases.

Table I: Age-wise distribution of the study patients (N=72)

Age in years	Laparotomy (n=45)		Laparoscopy (n=27)	
	Number	Percentage	Number	Percentage
18–25	30	41.67	16	22.22
26–30	9	12.50	7	9.72
>31	6	8.33	4	5.56
Mean±SD	24.89± 4.37		24.33±4.25	

Table II: Significant clinical profile of two groups (N=72)

Clinical features	Laparotomy (n=45)		Laparoscopy (n=27)	
	Number	Percentage	Number	Percentage
Abdominal pain	45	62.5	27	37.5
P/V bleeding	25	34.72	20	27.78
Shock	27	37.5	0	0

Table III: Sites of ectopic pregnancy in two groups (peroperative) (N=72)

Sites	Laparotomy (n=45)		Laparoscopy (n=27)	
	Number	Percentage	Number	Percentage
Ampullary	27	37.5	23	31.94
Isthmic	4	5.56	0	0.0
Infundibular	2	2.78	2	2.78
Fimbrial	2	2.78	0	0.0
Cornual	2	2.78	2	2.78
Ovarian	3	4.17	0	0.0

Table IV: Types of ectopic pregnancy in two groups (N=72)

Types	Laparotomy (n=45)		Laparoscopy (n=27)	
	Number	Percentage	Number	Percentage
Ruptured	35	48.61	14	19.44
Unruptured	10	13.88	13	18.05

Table V: Hemoperitonium status in two groups

Volume (mL)	Laparotomy (n=45)		Laparoscopy (n=27)	
	Number	Percentage	Number	Percentage
None	2	2.78	7	9.72
0–1000	11	15.28	11	15.28
1000–2000	18	25.00	7	9.72
>2000	14	19.44	2	2.78

Table VI: Types of operation in two groups (N=72)

Operation	Laparotomy (n=45)		Laparoscopy (n=27)	
	Number	Percentage	Number	Percentage
Salpingectomy	42	58.33	26	36.11
Salpingostomy	0	0.0	1	1.39
Partial salpingectomy	1	1.39	0	0.0
Ovarian wedge resection	2	2.78	0	0.0

Table VII: Comparison of post-operative requirement of blood transfusion and wound infection between two groups (N=72)

Outcome	Laparotomy (n=45)		Laparoscopy (n=27)	
	Number	Percentage	Number	Percentage
Blood transfusion required	32	44.44	9	12.50
Wound infection	2	2.78	0	0.0

Table VIII: Comparison of durations of analgesia requirement and hospital stay between two groups (N=72)

Requirements	Laparotomy (n=45)	Laparoscopy (n=27)
Analgesia	5 days	3 days
Hospital stay	3–4 days	1–2 days

Discussion

In this study, there were some clinical profile of ectopic pregnancy. In our study, patient present with per vaginal bleeding- 34.72% in laparotomy and 27.78% in laparoscopy and it was consistent with some other studies.¹⁶⁻¹⁹ Under laparotomy 62.5% came with abdominal pain and 37.5% came under laparoscopy.

In this study, the age range of most of the patients was 18–25 years. In laparotomy it was 41.67% and in laparoscopy 22.22%, which is consistent to other studies.^{17,18}

In our study, comparatively stable patients were managed by laparoscopy. So patients with shock in

laparoscopy was nil and 37.5% patient presented with shock were managed by laparotomy. Some other study also showed the result that is convenient to our study.^{16,17}

The present study demonstrated that most common site of ectopic pregnancy was ampullary region. 37.5% cases were managed by laparotomy and 31.94% managed by laparoscopy. The second most common site was isthmic region; 5.56% in laparotomy and under laparoscopy there was no such case. In infundibular, fimbrial and cornual cases were same that was 2.78% in laparotomy and also it was same in laparoscopy except fimbrial case.

In the present study, there were total 49 unruptured

and 23 ruptured ectopic pregnancy cases. Among them 48.61% managed by laparotomy and 19.44% were managed under laparoscopy. 13.88% unruptured cases were managed by laparotomy and 18.05% managed by laparoscopy.

Amount of hemoperitoneum also varies here according to patients condition. Most of the cases without having any hemoperitoneum (9.72%) and having collection <1000 mL (15.28%) were also managed by laparoscopy. Patients having massive hemoperitoneum >2000 mL and (1000–2000) mL peritoneal collection were managed by laparotomy and the percentage were 19.44 and 25.0.

In our study, most of the cases were managed by salpingectomy. In laparotomy it was 42 and in laparoscopy it was 26. Post-operative outcome in laparotomy and laparoscopy was also studied here. In laparotomy 44.4% cases needed blood transfusion and 12.5% cases in laparoscopy. As most of the patients came in acute condition with severe anemia and were managed by laparotomy, blood transfusion requirement was more in comparison to laparoscopy.

In laparoscopy there was no wound infection and in laparotomy it was 2.78%. In laparotomy patients needed more analgesia (5 days) than laparoscopy cases (3 days). Laparoscopy patients got discharged from hospital within (1–2) days whereas laparotomy patients got discharged a little bit later (3–4 days) comparatively lower in laparoscopy group compared to laparotomy group. Similar results are shown in different studies and this was noted as an advantage.²⁰⁻²²

Ruptured ectopic pregnancy is an emergency condition and it is increasing day by day. For its treatment, emergency intervention is must with skilled laparoscopic surgeon, improved anesthesia and cardiovascular monitoring system it is justified to do laparoscopy for the surgical management of ectopic pregnancy even in patient with significant hemoperitoneum. But in some cases, laparoscopy also becomes a failure and controversial especially in those cases where the women are hemodynamically unstable. However, there is nothing with unmixed blessing. All things have both the success and failure and laparoscopy is also not beyond this rule. And

in the last it can be said that laparoscopic treatment of ectopic pregnancy might be the most effective procedure with maximal safety and efficacy.

Limitations of the Study

This study has some limitations as well. As this study is conducted in only one hospital, hence there was no scope for the comparison with others hospitals condition. There were only 72 respondents in this study which is another limitation. The lack of budget, limited study period, unavailability of proper data, unwillingness of all the patients to response were the major limitations of this study.

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