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Original Research Article

Laparoscopic Approach for the Management of Ectopic Pregnancy in a District Level Hospital, Cox's Bazar

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Abstract

Introduction: An ectopic pregnancy occurs when a fertilized egg implants and grows outside of the uterine cavity. Ectopic pregnancy usually occurs as a result of delay or prevention in the passage of the blastocyst to the uterine cavity resulting in its premature implantation in the extrauterine tissues. It usually occurs in 2% of all pregnancies and is a major cause of maternal morbidity and mortality when misdiagnosed or left untreated and subsequent successful pregnancy is less than 50% of patients. About 95% of ectopic pregnancies originate in the tubes. Infrequently, it affects the ovary, the bicornuate uterus, and the cervix. The diagnosis of ectopic pregnancy has been performed using laparoscopy. Additionally, it is widely used for the surgical treatment of ectopic pregnancy. The benefit of laparoscopy for ectopic pregnancy over laparotomy is well-known. Laparoscopic surgery has been widely adopted and new technical innovations, procedures, and evidence-based knowledge are persistently emerging. The laparoscopic advantage over open surgery has also been confirmed in different fields. It is associated with shorter operative time, less intraoperative blood loss, reduce postoperative pain, less analgesic requirement, a shorter hospital stay, faster recovery, cost- effectiveness, and lower rate of postoperative complications. This study aimed to compare the outcome of laparoscopic management with laparotomy in the management of ectopic pregnancy. ***Methods:*** This was a prospective cross-sectional study that was carried out in a district level hospital at Cox's Bazar. This study was conducted from May 2020 to May 2022. A total of 59 subjects were selected for the study as per inclusion criteria. ***Result:*** Among 59 respondents, most of the subjects were of the 15-25 years age group which constituted 81.36%, followed by 13.56% of the 26-35 years age group, and the rest 5.08% were of >35 years age group. Laparoscopy was done on 40 (67.20%) patients and laparotomy was done on 19 (32.80%) patients. Approximately, 25% of laparoscopy patients and 52% of laparotomy patients had prior surgery. Prior ectopic surgery was performed on around 8.47% of laparoscopy patients and 13.55% of laparotomy patients. Regarding the comparison of laparoscopy and laparotomy procedure, total blood loss was less (30-50ml) in laparoscopy and more (≥60ml) in the laparotomy procedure. Hospital stay was also less (1-2 days) in laparoscopy and more (≥3 days) in laparotomy, duration of operation was shorter (20-30min) in laparotomy and comparatively longer (30- 60 min) in laparoscopy. Previous surgery was done on 25% and 52.17% patients who underwent laparoscopy and laparotomy respectively. Previous ectopic pregnancy was diagnosed on 8.33% and 47.83% of laparoscopy and laparotomy patients respectively. Moreover, previous PID was found in 5.55% patients who underwent laparoscopy and none who underwent laparotomy. 2.77% of patients who underwent laparoscopy had a history endometriosis. Recovery to normal activity was early in laparoscopy and late in laparotomy. Moreover, 27 (67.5%) patients conceived among 40 who underwent laparoscopy, and 3 (15.78%) patients conceived among 19 who underwent laparotomy. ***Conclusion:*** The management of ectopic pregnancy with laparoscopy may be the most helpful operation with the highest possible level of safety and effectiveness. Laparoscopy has both a diagnostic & therapeutic role in ectopic pregnancy. Laparoscopy is feasible and safer than laparotomy in surgical management of ectopic pregnancy.

Keywords: Ectopic Pregnancy, Laparoscopy, Laparotomy, PID.

INTRODUCTION

Ectopic pregnancy is life and fertility-threatening condition [1]. An ectopic pregnancy is defined as implantation of blastocyst anywhere other than the endometrial lining of the uterine cavity. It is a common cause of morbidity and occasionally mortality in women of reproductive age. The etiology of ectopic pregnancy remains uncertain although several risk factors have been identified [2]. Women who have one ectopic pregnancy are at increased risk for another such pregnancy and future infertility [3]. The strong risk in women with a previous EP, previous tubal surgery, documented tubal pathology, or in utero DES exposure justifies the exploration of a screening policy for EP among those women [4]. Conditions that predispose a woman to an ectopic pregnancy are damaged fallopian tubes from prior tubal surgery or previous pelvic infection, smoking, and conception using assisted reproduction. Many women without risk factors can develop an ectopic pregnancy. A diagnosed algorithm that includes the use of transvaginal ultrasonography and human chorionic gonadotropin (hCG) concentration in serum can definitively diagnose women at risk [5]. Ectopic pregnancy is a gynecological emergency per excellence and remains the leading cause of pregnancy-related first- trimester deaths. Its prevalence continues to rise because of an increase in the incidence of the risk factors predisposing to ectopic pregnancy. Usually, the diagnosis is based on a history of pelvic pain associated with amenorrhea, a positive pregnancy test with or without slight vaginal bleeding. While the immediate differential diagnosis includes threatened or inevitable miscarriage, the likelihood of ectopic pregnancy is increased if transvaginal sonography (TVS) reveals an empty uterine cavity, and is confirmed if an adnexal mass with or without an embryo is seen [6]. Recent studies have demonstrated lower costs and morbidity associated with the laparoscopic treatment of ectopic pregnancy [7]. There are several laparoscopic procedures for ectopic pregnancy, such as, salpingostomy, salpingectomy, suction and lavage of pelvic hematocele. In those who require surgery, the type of procedure depends on the clinical situation and the location of the pregnancy. Most of the cases can be performed by laparoscopy. Compared with laparotomy, the laparoscopic approach is associated with many advantages including short hospital stay, low cost, and less adhesion formation. In addition, hemoperitoneum is not a contraindication for performing laparoscopy. Linear salpingostomy is the procedure of choice when unruptured tubal pregnancy is found in women who want to preserve their fertility; otherwise, salpingectomy is performed. Fertility performance after salpingostomy and salpingectomy is comparable [8]. Ruptured ectopic pregnancy is a common gynecological emergency in resource-poor settings, and operative laparoscopy in women treated for ruptured ectopic pregnancy (REP) is feasible in a resource-poor setting and is associated with significantly less morbidity and a quicker return to economic activity [9]. In patients with ruptured ectopic pregnancy and massive hemoperitoneum, laparoscopy is feasible and safe, with significantly shorter operating times compared with laparotomy [10]. The role of laparoscopy in the diagnosis and treatment of ectopic pregnancy has undergone significant changes in recent years. However, there remain many concerns about whether these changes are justified and whether they should be more widely introduced [11]. The success rates of salpingostomy and salpingectomy under laparoscopy or laparotomy is said to be the same, but the length of hospital stay was shorter in those of laparoscopic salpingostomy and salpingectomy than those of laparotomic salpingostomy and salpingectomy [12]. This study aimed to compare the outcome of laparoscopic management with laparotomy in the management of ectopic pregnancy.

OBJECTIVE

General Objective

- To compare the outcome of laparoscopic approach with laparotomy in the management of ectopic pregnancy.

Specific Objectives

- To compare the duration of operation in laparoscopy and laparotomy procedures.
- To compare the duration of hospital stay and recovery to normal activity in the laparoscopic approach.
- To see the role of the laparoscopic approach in ruptured ectopic pregnancy.

METHODS & MATERIALS

This was a prospective cross-sectional study that was carried out in a district level hospital at Cox's Bazar. This study was conducted from May 2020 to May 2022. A total of 59 subjects were selected for the study as per inclusion criteria. Data were collected by a pre-structured questionnaire. Informed written consent was obtained from the study subjects before the commencement of the study. Subjects were also assured about their confidentiality and freedom to withdraw themselves from the study at any time. All information was kept confidential and used only for this study purpose. Data were processed and analyzed manually. Ethical clearance was obtained from the ethical committee of Cox's Bazar District Hospital.

Inclusion Criteria

- Women of reproductive age.
- Women who underwent surgery for ectopic pregnancy.
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Women with other chronic diseases.
- Women who did not give consent to participate in the study.

RESULTS

Among 59 respondents, most of the subjects were of the 15-25 years age group which constituted 81.36%, followed by 13.56% of the 26-35 years age group, and the rest 5.08% were of >35 years age group [Table 1]. Laparoscopy was done on 40 (67.20%) patients and laparotomy was done on 19 (32.80%) patients [Table 2]. Approximately, 25% of laparoscopy patients and 52% of laparotomy patients had prior surgery [Table 3]. Prior ectopic surgery was performed on around 8.47% of laparoscopy patients and 13.55% of laparotomy patients [Table 4]. Regarding the comparison of laparoscopy and laparotomy procedure, total blood loss was less (30-50ml) in laparoscopy and more (≥60ml) in the laparotomy procedure. Hospital stay was also less (1-2 days) in laparoscopy and more (≥3 days) in laparotomy, duration of operation was shorter (20-30min) in laparotomy and comparatively longer (30-60 min) in laparoscopy [Table 5]. Previous surgery was done on 25% and 52.17% patients who underwent laparoscopy and laparotomy respectively. Previous ectopic pregnancy was diagnosed on 8.33% and 47.83% of laparoscopy and laparotomy patients respectively. Moreover, previous PID was found in 5.55% patients who underwent laparoscopy and none who underwent laparotomy. 2.77% of patients who underwent laparoscopy had a history endometriosis [Table 6]. Recovery to normal activity was early in laparoscopy and late in laparotomy [Figure 2]. In this study, 27 (67.5%) patients conceived among 40 who underwent laparoscopy, and 3 (15.78%) patients conceived among 19 who underwent laparotomy [Figure 3].

Table 1: Age distribution of study subjects (N=59)

Age (years)	N	%
15-25	48	81.36
26-35	08	13.56
>35	03	5.08

Table 2: Type of approach done on respondents in this study (N=59)

Operation	N	%
Laparoscopy	40	67.20
Laparotomy	19	32.80

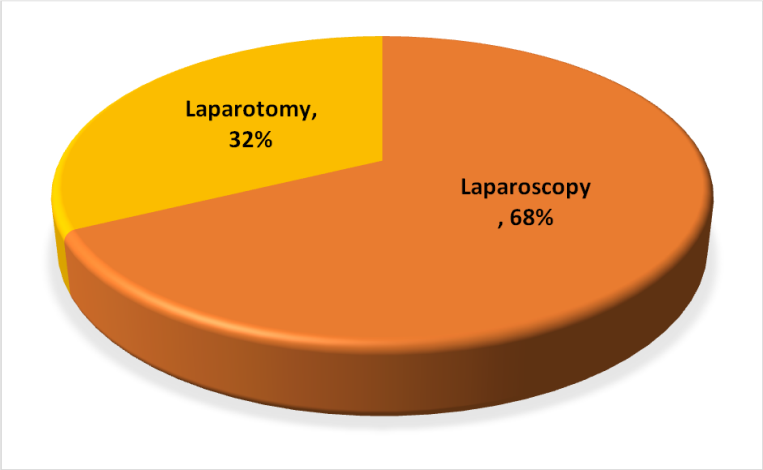

Figure 1: Distribution of respondents according to surgical approach (N=59)

Table 3: H/O prior surgery of study subjects (N=59)

Operation type	H/O prior surgery (N)	% (Approximately)
Laparoscopy	15	25
Laparotomy	30	52

Table 4: H/O prior ectopic surgery (N=59)

Operation type	H/O prior ectopic surgery (N)	% (Approximately)
Laparoscopy	5	8.47
Laparotomy	8	13.55

Table 5: Comparison of laparoscopy and laparotomy procedure (N=59)

Traits	Laparoscopy (n=40)	Laparotomy (n=19)
Blood loss (ml)	30-50	≥60
Hospital stay (day)	1-2	≥3
Duration of operation (min)	30-60	20-30

Table 6: Frequency distribution of predisposing factors of laparoscopy & laparotomy patients group (N=59)

Variables	Laparoscopy (%)	Laparotomy (%)	p-value
Previous surgery	25%	52.17%	>0.05
Previous ectopic pregnancy	8.33%	47.83%	
Previous PID	5.55%	0.0	
History of endometriosis	2.77%	0.0	

Table 7: Frequency distribution of patient characteristics for both laparoscopy and laparotomy (N=59)

Parameters	Laparoscopy (n=40)	Laparotomy (n=19)
Gestational age	6.1±1.5	6.6±1.2
Beta-hCG	654.68	750.78

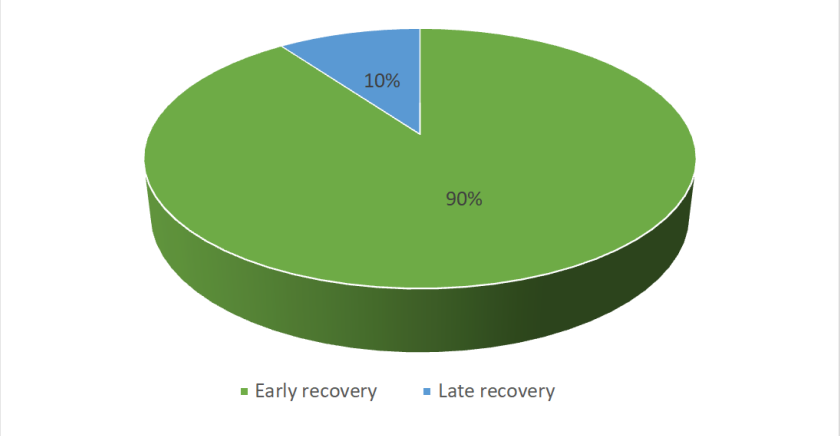

Figure 2: Recovery to normal activity in the laparoscopic approach

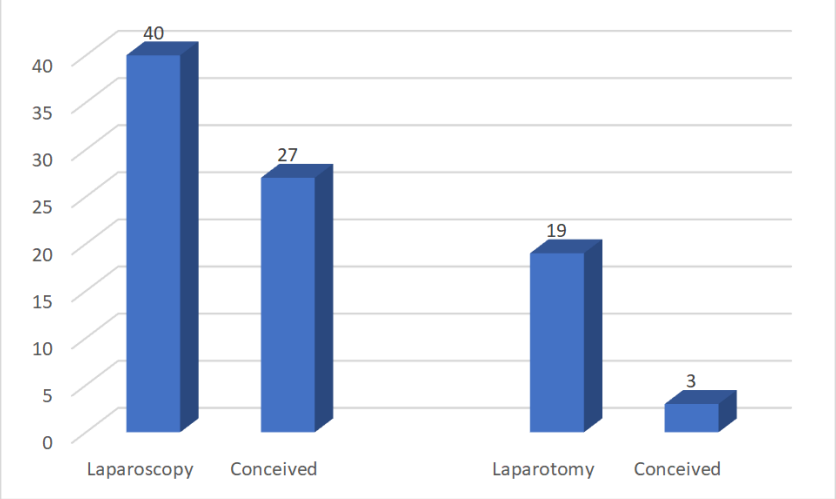

Figure 3: Distribution of respondents according to conception (N=59)

DISCUSSION

Among 59 respondents, most of the subjects were of the 15-25 years age group which constituted 81.36%, followed by 13.56% of the 26-35 years age group, and the rest 5.08% were of >35 years age group which was quite similar to another study [13]. Laparoscopy was done on 40 (67.20%) patients and laparotomy was done on 19 (32.80%) patients in this present study. Another study showed a comparatively higher rate of a laparoscopic approach [14, 15]. Approximately, 25% of laparoscopy patients and 52% of laparotomy patients had prior surgery. Prior ectopic

surgery was performed on around 8.47% of laparoscopy patients and 13.55% of laparotomy patients. According to a study, there is a widespread belief that salpingostomy is the treatment of choice for ectopic pregnancy. The ability to treat most ectopic pregnancies via a laparoscopic approach has been a major advance in gynecological surgery. Despite the benefits of laparoscopy over laparotomy only 50% of patients with ectopic pregnancies in Australia presently benefit from this surgical advance [16]. Regarding the comparison of laparoscopy and laparotomy procedures, total blood loss was less (30-50ml) in laparoscopy and more (≥60ml) in laparotomy procedures. Hospital stay was also less (1-2 days) in laparoscopy and more (≥3 days) in laparotomy. Moreover, recovery to normal activity was early in laparoscopy and late in laparotomy. However, the duration of operation was shorter (20-30min) in laparotomy and comparatively longer (30- 60 min) in laparoscopy in this present study. Another study also portrayed a similar picture and stated that laparoscopy was safe and effective in most women who were hemodynamically stable. Women who underwent laparoscopy do not worse than those who underwent laparotomy, and even those who required ICU admission still benefit from the advantages of operative laparoscopy [17]. In another study, the groups differed concerning total operation time (73 min for the laparoscopy group vs. 88 min for the laparotomy group), hospital stay (2.2 vs. 5.4 days), and convalescence period (11 vs. 24 days) [18]. Laparoscopy allows both diagnosis and treatment, and the outcome of the intrauterine pregnancy is comparable to that obtained with laparotomy [15]. Another author revealed that there were no intraoperative or postoperative complications except for primary port infection in a few (25%). Therefore, laparoscopy has a significant role in the diagnosis of ectopic pregnancy and laparoscopy is a safe approach with minimal complications [19]. Moreover, in women with ectopic pregnancy with massive hemoperitoneum, laparoscopic surgery can be safely conducted by experienced laparoscopists [20]. Furthermore, laparoscopic treatment of cornual pregnancy can be safely carried out with good results in an institution with trained laparoscopist and adequate facilities [21]. Another study showed that laparoscopic surgery for acute ruptured ectopic pregnancy causes less adrenal stress reaction and RAAS system stress reaction, and the overall level of trauma is lower than that of laparotomy [22]. Moreover, laparoscopic treatment of EP results in less impairment of the pelvic status compared with conventional conservative surgery which was quite relatable to this study [18]. The availability of optimal anesthesia and advanced cardiovascular monitoring, and the ability to convert rapidly to laparotomy if required, allow the safe performance of operative laparoscopic surgery in most women with hypovolemic shock. The superior exposure of laparoscopy, providing rapid diagnosis and control of the source of bleeding, makes it a highly suitable approach [22].

Limitations of the Study

The study was conducted in a single hospital with a small sample size for a short duration. Follow-up after the procedure for a longer period for every patient was not possible. So, the results may not represent the whole community.

CONCLUSION

Laparoscopy was associated with reduced operative morbidity and hospital stay, and early recovery to normal activities. Moreover, a laparoscopic approach also plays a great role in ruptured ectopic pregnancy. Thus, the management of ectopic pregnancy with laparoscopy may be the most helpful operation with the highest possible level of safety and effectiveness.

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Conflict of Interest: None declared.

Ethical Approval: The study was approved by the Institutional Ethics Committee.

RECOMMENDATION

Laparoscopy showed better outcomes, however, despite the aforementioned dramatic progress, women with previous ectopic pregnancies still have reduced fertility potential according to many studies. Preventive measures aimed at reducing its overall occurrence, therefore, seem to be the major factor in preserving a patient's future fertility potential. A further prospective clinical study, with long-term, follow up needs to be performed to evaluate fertility prognosis and complications after the laparoscopic approach. At laparoscopic operation the virulence of intestinal micro-organisms should be recognized while knowing the advantages of minimally invasive surgery, the surgeon should consider the complexity of this technique.

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