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THE INCIDENCE OF SURGICAL COMPLICATIONS FOLLOWING ECTOPIC PREGNANCY MANAGEMENT: LAPAROSCOPY VS OPEN SALPINGECTOMY

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ABSTRACT

Background: Ectopic pregnancy is a gynaecological emergency that requires urgent treatment as it is life-threatening. Laparoscopy and open salpingectomy (laparotomy) are the two methods of surgery commonly used. The techniques vary about invasiveness, recovery period and complication rates.

Place and Duration of Study: The study was carried out in the Department of Gynaecology and Obstetrics of a Lahore General Hospital, Lahore from July 2021 to December 2022.

Objective: To compare the rate of surgical complication after the management of ectopic pregnancy in laparoscopy and open salpingectomy.

Methodology: This cross-sectional study was comparative and comprised 288 patients with ectopic pregnancy. The WHO sample size calculator formula was used to calculate the sample size. Two groups of patients were separated in accordance with the surgical intervention laparoscopy and open salpingectomy. A structured proforma with the following data collection criteria was used to collect data, namely, demographic data and intraoperative findings and postoperative complications, including haemorrhage, infection, and length of stay in the hospital. Statistical analysis was done in SPSS.

Results: Among the 288 patients, 144 had laparoscopy and the rest 144 were done using open salpingectomy. Laparoscopy group had considerably less complications such as reduced postoperative infection and reduced length of stay in hospital. Open salpingectomy was linked to excessive blood loss and prolonged period of recovery.

Conclusion: Laparoscopy is relatively safe and more effective in treating ectopic pregnancy, complications are lower and recovery is faster compared to open salpingectomy.

Keywords: Ectopic pregnancy, laparoscopy, salpingectomy, surgical complications, laparotomy, postoperative outcomes, gynaecology

INTRODUCTION

Ectopic pregnancy is a significant maternal morbidity and mortality complication in every country, particularly in developing countries, which has poor outcomes, because of late diagnosis and lack of adequate healthcare facilities [1]. It occurs when the fertilized ovum implanted is not present in the uterine cavity, and is the most common in the fallopian tube. Failure to address it in time may cause a rupture of the tubes, huge blood loss in the abdomen, and even fatalities [2].

Ectopic pregnancy has been on the rise in the past decades because of inflammatory diseases to the pelvic area, assisted reproductive methods and the existence of previous tubal surgeries[3]. Transvaginal ultrasound and serum beta-chg. levels have been found to be useful in early diagnosis, but surgical management is inevitable in most cases where rupture is suspected, or medical management has been ineffective [4].

The two predominant surgical interventions in the treatment of ectopic pregnancy laparoscopy and open salpingectomy (laparotomy) are used [5]. Laparoscopy is a relatively safe procedure which allows seeing the

ectopic pregnancy and treating it with minimal incisions. It is linked to decreased postoperative suffering, less hospitalization, faster healing, and enhanced cosmetic results [6]. Conversely, the open salpingectomy procedure implies a bigger abdominal opening and is usually more desirable in patients with hemodynamic instability, or where laparoscopic equipment is not present[7].
Although laparoscopy has benefits, open salpingectomy is commonly still done in most resource-limited locations because of an absence of experience or equipment or emergency situations [8]. Nevertheless, open surgery is said to be characterized by a greater number of complications, such as more blood loss, postoperative infections, prolonged hospitalization, and delayed normal activities [9]. It is crucial to make comparisons between the frequency of surgical complications of these two approaches to make evidence-based clinical choices.[10] Knowledge of which approach yields superior results may assist in maximizing patient care, morbidity reduction, and the use of resources in the healthcare system [11].

Objective
To compare the frequency of surgery complications in patients who have undergone ectopic pregnancy management with laparoscopy or open salpingectomy and to find out which of the two surgical techniques is associated with a superior postoperative outcome, fewer complications and excellent recovery in a tertiary care setting.

METHODOLOGY

It is a comparative cross-sectional study which occurred in the Department of Obstetrics and gynaecology of Lahore General Hospital, Lahore from July 2021 to December 2022. A total of 288 patients diagnosed with ectopic pregnancy were enrolled in the study. The calculation of sample size was based on the WHO sample size calculator formula and prevalence rates found in the prior studies and the 95% confidence interval with a 5 percent margin of error. The patients were split into two equal groups, Group A (laparoscopy, n=144) and Group B (open salpingectomy, n=144). They were allotted depending on clinical status, choice of the surgeon and availability of surgical facilities. The data was gathered in a structured proforma comprising of demographic information, clinical presentation, intraoperative findings as well as postoperative outcomes. Operative time, blood loss, hospital stay, wound infection, fever and blood transfusion requirement were the variables that were tested. Ethical approval was obtained by the institutional review board, and all the patients gave informed consent. Confidentiality of patient data was greatly taken care of. Statistical analysis was done using SPSS version 25. Mean and standard deviation were used to express the quantitative variables and frequencies and percentages were used to express the qualitative variables. Categorical variables were used to apply the Chi-square test, and a p-value less than 0.05 was taken to be statistically significant.

INCLUSION AND EXCLUSION CRITERIA
Inclusion Criteria: All women with ectopic pregnancy and who need surgical intervention (18-45 years old) were included in the study.
Exclusion Criteria: The patients who had a severe comorbidity, hemodynamic instability and required urgent laparotomy were excluded together with patients with incomplete medical records.

DATA COLLECTION
The data were collected in the gynaecology emergency and surgical units of the hospital. The patients with ectopic pregnancy diagnosed by clinical examination, ultrasound, serum beta-chg. levels were enrolled by informed consent. The detailed information was collected in a pre-structured proforma. This incorporated demographics including age, parity and reproductive history. Clinical data has involved the presentation of symptoms such as abdominal pain, vaginal bleeding and rupture signs. The patients were divided into two different groups according to the type of surgery made: laparoscopic surgery and open salpingectomy. The decisions were made regarding the procedure based on the stability of the patient, skills of the surgeon, and the presence of laparoscopic equipment. The intraoperative parameters were noted in duration of surgery, amount of estimated blood loss and requirement of blood transfusion. Close monitoring was done on the postoperative outcomes such as wound infection, fever, pain score, hospital stay and time to ambulation. Follow-up during hospital stay through to discharge. All the complications that developed during the postoperative stage were recorded in a systematic manner. All the data gathered was to be analyzed in SPSS software. Checks on data validation were conducted to check against accuracy and completeness. This research was carried out in a confidential manner, and the names of the patients were not disclosed. The data obtained was used to statistically compare the two groups of surgery and establish the incidence of complications as well as the general outcome.

RESULTS

The researchers employed 288 patients in the research (144 patients per group). There was no difference in the mean age of patients. The laparoscopy group showed greatly improved results as opposed to the open salpingectomy. Laparoscopic group experienced significantly fewer complications after surgery with a reduced

wound infection (6.2% vs 18.7%), reduced incidence of fever and less blood transfusion. The laparoscopy group (2.8 ± 1.1 days) had a lower average length of stay compared to the open surgery (5.6 ± 1.9 days). The laparoscopy was slightly more in the operation time and faster recovery. The rate of overall complications was much larger in open salpingectomy group ($p < 0.05$). These results imply that laparoscopy is a less risky surgical procedure with better post-surgery results.

TABLE 1: Age Distribution

Age Group	Laparoscopy	Open Surgery
18–25	40	38
26–35	70	72
36–45	34	34

The age had no significant difference between the two groups, with the majority of patients aged between 26 and 35 years. This suggests that ectopic pregnancy is common among women of reproductive age. There was no significant bias with age between laparoscopic and open surgery groups, which made the results of the study comparable across both groups.

TABLE 2: Complications Rate

Complication	Laparoscopy	Open
Infection	6.2%	18.7%
Fever	8.3%	21.5%

There was a considerable increase in postoperative complications with open salpingectomy. Large incision size and extended recovery increased the rates of infection and fever. Laparoscopy was associated with decreased tissue trauma and quicker healing resulting in less post operative infectious and inflammatory complications than the open surgical procedures.

TABLE 3: Hospital Stay

Group	Mean Stay
Laparoscopy	2.8 days
Open Surgery	5.6 days

The laparoscopy group had a much shorter hospital stay. Minimal invasive procedure enabled early ambulation and quicker recuperation. Conversely, open surgeries had more extended postoperative care because of some pain, wound management, and complication rates, which prolonged the number of hospitalization and healthcare expenses.

TABLE 4: Blood Loss

Group	Mean Blood Loss
Laparoscopy	120 ml
Open Surgery	310 ml

The laparoscopic surgery was estimated to have significantly less blood loss than open salpingectomy. The use of smaller incisions and enhanced visualization led to improved haemostasis. Open surgery also had higher levels of intraoperative bleeding, which predisposes to transfusion, as well as postoperative weakness.

TABLE 5: Operative Time

Group	Time
Laparoscopy	65 min
Open Surgery	55 min

The length of operative time was slightly increased in laparoscopy because of technical set up and skills. This was not however a significant difference. Open surgery was quicker, but had higher postoperative morbidity thus laparoscopy was overall more favourable despite the duration of the procedures.

DISCUSSION

Ectopic pregnancy continues to be a serious gynaecological crisis that needs urgent surgical interventions to avert morbidity and mortality of the mother [11]. This research involved the comparison of the results of laparoscopic surgery and open salpingectomy operation in 288 patients and the after-effects and recovery processes .

The results established that laparoscopy is accompanied by much less complication rates than the open surgery[12]. This is in line with the international literature that emphasizes the benefits of a minimally invasive surgery that reduces the postoperative infections, pain and hospitalization [13]. Laparoscopy has resulted in the minimization of tissue trauma leading to quicker wound healing and minimization of inflammatory response [14]. In the present investigation, the rate of infections was significantly lower in laparoscopic group [16]. This is owed to smaller incision, and internal tissues are not exposed as much [17]. Likewise, the incidence of fever was also lower; this means that there is less postoperative inflammatory burden [18].

The other notable observation was the much-reduced stay in hospital in laparoscopy group. Early discharge was facilitated by early mobilization, reduced postoperative pain, and rapid recovery [19]. This has significant impacts on healthcare systems, in that it decreases bed occupancy and total cost of treatment .

The laparoscopic procedures had a great reduction in blood loss [20]. The improved visualization of the surgical field enables the accurate coagulation and reduces the vascular injuries. Conversely, with open surgery, there are bigger incisions and more handling of tissue leading to loss of blood and more need of transfusion .

The great difference in operative time, though a bit, is compensated by the advantages of postoperative results. As surgical skill level increases along with better equipment's, time spent in the operating rooms will continue to reduce .

Open salpingectomy continues to be relevant in cases of emergency such as when patients are not hemodynamically stable or there are no laparoscopic facilities. Nevertheless, its correlation with greater morbidity cannot be disregarded . Overall, the findings are quite convincing that laparoscopy is the method of surgical intervention in ectopic pregnancy in stable patients. It is superior in clinical results, fewer complications and recovery .

CONCLUSION

The conclusions of this study are laparoscopic treatment of ectopic pregnancy is much better than the open salpingectomy in terms of postoperative outcome. Laparoscopy is linked with decreased infection rates, minimal blood loss, short stay and quick recovery. Operative time might be a little longer, but the advantages are greater than this disadvantage. Open salpingectomy is still required in emergency and resource constrained cases; nevertheless, it has a risk of complications and lengthy hospital stay. Thus, laparoscopy can be said to be the choice of surgery to adopt in the treatment of ectopic pregnancy where possible. Implementation of least invasive procedures can be of great help in patient care and outcome, decreased health care expenditure, and recovery in gynaecology.

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