

Review of Laparoscopic Gynecological Procedures in Ethiopia

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ABSTRACT

Introduction: Laparoscopy provides an alternative approach to open surgery in addressing the surgical need of the society. The absence of adequately qualified personnel has limited its use in Ethiopia.

Objectives: To describe the laparoscopic gynecologic procedures and determine the prevalence of grossly visible endometriosis in Ethiopia.

Materials and methods: Facility-based cross-sectional study conducted from 2018 to 2022 GC at 14 university hospitals across the country. Women who had gynecologic laparoscopic surgery with adequate documentation were included. Data were collected by the investigators. Data were compiled and analyzed using SPSS version 25.

Results: Data were collected from 236 study participants. The participants' mean age was 30.6 years (± 5.43). Majority, 71.2% (168/236) were nulliparous. Tubal factor infertility alone was the commonest, 84.7% (200/236), indication for laparoscopy. Intraoperatively pelvic adhesion of different degrees was found in majority, 52.5% (124/236) of cases. The prevalence of grossly visible endometriosis was 3.4% (8/236). The prevalence of procedure-related intraoperative complications was 2.5% (6/236). Three of the six complications were inadvertent uterine perforation during inserting uterine manipulator for chromopertubation. All of the complications were detected intraoperatively and managed. No significant association was found between a dependent variable (presence of intraoperative complications) and selected independent variables.

Conclusions and recommendations: Tubal factor infertility was the commonest indication for laparoscopy in the present study. The prevalence of grossly visible endometriosis was low (3.4%). The prevalence of procedure-related intraoperative complications was low (2.5%) probably due to the less complex cases and procedures.

Keywords: Adhesions, Complications, Cross-sectional, Endometriosis, Infertility, Laparoscopy, Myoma.

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INTRODUCTION

Surgical diseases are estimated to account for 25–30% of the disease burden in the world; however, surgical care is not given the priority that it deserves in global health.¹ As a result, about 67% of the population in the world does not have timely access to affordable and safe surgical care.¹ Like in other low-to-middle-income nations around the globe surgical care is a major unmet need in Ethiopia.² Laparoscopy provides an alternative approach to open surgery in addressing the need.

Laparoscopy is an advanced surgical procedure where surgery is done using operating instruments inserted in to the peritoneal cavity through small incisions over the abdomen. It has been utilized in gynecologic surgery for over 40 years.³ Laparoscopy also has special place in family planning service provision including contraception and management of infertility. Laparoscopy today is preferred over open laparotomy for most minor and major gynecologic procedures in many parts of the world.^{4–16} In addition, laparoscopy is useful in locating and retrieving missed IUDs serving as a backup for IUD provision services.

Laparoscopy is especially useful in the diagnosis and management of endometriosis. Endometriosis is an underlying pathology responsible for considerable pathological cases of chronic pelvic pain and infertility.¹⁷ The prevalence of endometriosis is estimated to be between 2 and 10% in women of reproductive age.^{18,19} Laparoscopy is taken as the gold standard approach for endometriosis diagnosis and management in clinical practice.²⁰

Laparoscopy has numerous benefits it offers to patients. Prior reports have shown that laparoscopy is safer and less expensive, and has less postoperative pain and shorter recovery time leading to a faster return to normal activities compared with laparotomy.^{2,3,5}

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These advantages enable a better quality of surgical care and made laparoscopy very appealing to patients.

Laparoscopy is more complex and requires a higher cost to set up the service compared with that of open surgery. It requires a new set of equipments and consumables to initiate and maintain the service. It also requires a new set of skills that relatively take more time to fully develop. Hence, the higher initial cost and lack of well-trained health providers have been the main inhibitory factors for wide availability of laparoscopy in developing countries.

There are four levels in gynecologic laparoscopy. Diagnostic laparoscopy is labeled as level one. Minor laparoscopic procedures like biopsy taking and minor adhesiolysis are under level two. Major laparoscopic procedures, such as tuboplasty, ectopic pregnancy removal and extensive adhesiolysis are under level three. Advanced laparoscopy or level four is reserved for procedures including surgeries for pelvic malignancies, hysterectomy, and myomectomy.²¹

Laparoscopy like other surgical procedures is associated with complications. These complications are generally grouped into minor and major categories.⁴ Complications including minor bleeding, urinary tract infection and paralytic ileus are grouped under minor. Major complications include injury to the viscera (bowel, bladder, or ureter), bleeding or infection that require re-exploration, death or severe medical sequelae. Laparoscopy is associated with higher risk of injury to major pelvic vessels, bladder, and bowel.^{4,12}

Laparoscopy has now become the preferred approach to perform gynecologic surgical procedures in many countries. It is now incorporated in many medical school curriculums around the world. However, it is still underutilized in many developing countries.⁴ Lack of adequate funding to initiate and maintain laparoscopic services and lack of adequately trained manpower are the main reasons for the underutilization. Still, the progress observed in laparoscopy in many resource limited countries is encouraging.²²

In Ethiopia; though some apparatuses were availed in both governmental and private hospitals, the absence of adequately qualified personnel has limited its use. Most of them are providing only levels one and two laparoscopic procedures due to lack of adequate skill and consumables. There are very limited researches in Ethiopia which provide review of gynecologic laparoscopic procedures. This study provides background information for further investigation in gynecologic laparoscopic surgery in a resource limited setting. The main objective of this study was to describe the laparoscopic gynecologic procedures and their outcome at fourteen university hospitals in the country.

MATERIALS AND METHODS

This is a cross-sectional study done from 2018 to 2022 G.C. It was conducted at 14 university hospitals across the country which provide laparoscopic gynecologic procedure/surgery. The investigators provided laparoscopy surgical skills training to the 14 University Hospitals across the country from 2018 to 2020 G.C. In addition, the service and data collection continued at two of the target university hospitals after the phase out of the project. During the implementation of the project data on every laparoscopic surgical procedure was collected using a data collection format prepared for the purpose.

Women who had laparoscopic gynecologic procedure at the target hospitals and had adequate documentation were included in the study. Any intraoperative incident that changed the plan of surgery or required additional unplanned action like repair of laceration or laparotomy were taken as complication. Such complications include injury to major vessels and viscera (bladder, bowel, ureters), thromboembolism and postoperative peritonitis.

The presence or absence of intraoperative complications was the dependent variable. Independent variables included sociodemographic characteristic (age), Clinical characteristics (parity, abortion, ectopic, previous history (Hx) of pelvic/intraperitoneal infection, previous Hx of open abdominal/pelvic surgery, previous Hx of laparoscopic surgery, preoperative diagnosis), intraoperative/procedure data (nature of procedure, type of procedure, purpose of procedure, type of abdominal entry, primary trocar site, presence of adhesions, presence and degree of endometriotic lesions, duration of anesthesia, estimated blood loss, procedure duration), and postoperative data: postoperative course.

Table 1: Obstetric characteristics of women for whom laparoscopic gynecological procedures were done at 14 hospitals in Ethiopia from 2018 to 2022 G.C. (*n* = 236)

Variables	Frequency (<i>n</i>)	Percent (%)
Parity		
0	168	71.2
1	49	20.8
>1	19	8.0
Spontaneous abortion		
No	214	90.7
Yes	22	9.3
Induced abortion		
No	222	94.1
Yes	14	5.9
Ectopic pregnancy		
No	228	96.6
Yes	8	3.4
Previous surgery		
No	203	86
Yes	33	14
Previous laparoscopy		
No	235	99.6
Yes	1	0.4
Previous PID		
No	224	94.9
Yes	12	5.1

Data were compiled and analyzed using SPSS version 25. Surgical outcome was used as dependent variable dichotomized into complicated and uncomplicated. The association of the dependent variable against independent variables was analyzed with logistic regression. Variables with ≤ 0.2 significance level in the bivariate logistic regression analysis were included in the multivariable analysis. Odds ratio with 95% confidence interval (CI) and *p*-value of < 0.05 were used to determine the presence and degree of association between outcome and independent variables.

Ethical clearance to conduct the study was obtained from the IRB of College of Health Sciences, Addis Ababa University. Each study facility also provided permission to collect the required data. The review used secondary data. Hence, no study subjects were interviewed or contacted. Confidentiality was respected during collection and handling of data.

RESULTS

Data were collected from 236 study participants. The participants' age ranged 20–51 years. The mean age was 30.6 years (± 5.43). The majority, 71.2% (168/236), were nulliparous. Previous history of ectopic pregnancy and abdominal surgery were present in 3.4% (8/236) and 14% (33/236) of participants, respectively. Only one participant had prior laparoscopic procedure (Table 1).

Tubal factor infertility alone was the commonest, 84.7% (200/236), indication for laparoscopy. In additional 9.3% (22/236),

Table 2: Preoperative diagnosis of women for whom laparoscopic gynecological procedures were done at 14 hospitals in Ethiopia from 2018 to 2022 G.C. (n = 236)

Preoperative diagnosis	Frequency (n)	Percent (%)
Tubal factor infertility	200	84.7
Tubal factor infertility and others	22	9.3
BTL	4	1.7
Others	8	3.4

Table 3: Intraoperative findings of laparoscopy procedures done at 14 hospitals in Ethiopia from 2018 to 2022 G.C. (n = 236)

Variables	Frequency (n)	Percent (%)
Pelvic adhesions (n = 236)		
Not present	112	47.5
Present	124	52.5
Cul-de-sac obliterated (n = 124)		
No	62	50
Yes	62	50
Myoma (n = 236)		
Not present	222	94.1
Present	14	5.9
Grossly visible endometriosis (n = 236)		
Not present	228	96.6
Present	8	3.4

tubal factor infertility was additional indication combined with other clinical conditions (Table 2).

In 42.8% (101/236) of cases laparoscopy was done for combined diagnostic and interventional purposes. Laparoscopy was done combined with hysteroscopy only in 8.1% (19/236). Varis needle was used for abdominal entry in majority, 69.9% (165/236) of cases. In the rest of the 30.1% (71/236), blind entry through modified Palmer's point was used.

Intraoperatively pelvic adhesions of different degrees were found in 52.5% (124/236) of cases. In half of these cases, 50% (62/124), the adhesions were severe obliterating the cul-de-sac. Myoma of variable size was identified in 5.9% (14/236) of cases. The prevalence of grossly visible endometriosis was 3.4% (8/236). Five of the endometriotic lesions were chocolate cysts while the rest were dark nodules (Table 3).

The planned procedure was completed in most, 88.1% (208/236), of the cases. The procedure was converted to laparotomy only in one case due to difficulty to proceed with laparoscopy. In 11.5% (27/236) of cases the planned laparoscopy procedure was abandoned due to severe adhesions including frozen pelvis. The mean duration of the procedures was 43.3 ± 18.4 minutes.

The prevalence of procedure-related intraoperative complications was 2.5% (6/236). Three of the six complications were inadvertent uterine perforation during inserting uterine manipulator for chromopertubation. The rest were omental laceration (2/6) and bladder perforation (1/6) which were repaired subsequently. All of the complications were detected intraoperatively and managed accordingly.

Regression analysis was done for presence and strength of association between a dependent variable (presence of

intraoperative complications) and selected independent variables but no statistically significant association was found.

DISCUSSION

The present study provided a review of all types of gynecologic laparoscopic procedures performed during the study period. Tubal factor infertility was the commonest indication for laparoscopy in the present study. Indications for laparoscopy depend on the type of center or the qualification of the operator. Our finding is comparable to those reports from fertility/reproductive centers which reported infertility as indication in 60–76.3% of the cases.^{23–25} In non-fertility centers, infertility accounts for much less proportion of indications.²²

Pelvic adhesions are commonly found in laparoscopic study of infertile women. In our study, pelvic adhesion of different degrees was found intraoperatively in majority (52.5%) of cases. This finding is higher than many prior similar studies. An Indian study reported adhesions prevalence of 10% in diagnostic laparoscopy.⁸ In another report, the prevalence of peritubal/peri ovarian adhesions were 6.3% and 22.2% in patients with primary and secondary infertility, respectively.²⁶

Myoma was previously reported in 1–2.4% of infertile women with no obvious cause.²⁷ In our study, myoma of variable size was identified in 5.9% of cases. Our finding is comparable to reports from studies done in India and Pakistan in which fibroids were seen in 7% and 6% cases, respectively.^{8,26}

Endometriosis is a common underlying cause of chronic pelvic pain.¹⁷ And, laparoscopy is a uniquely useful approach in the accurate diagnosis and surgical treatment of endometriosis.¹⁰ In women of reproductive age, the prevalence of endometriosis is estimated to be 2–10%.^{18,19} The reported prevalence of endometriosis is much higher in infertile women and has been estimated to be 30%.²⁸ The prevalence of grossly visible endometriosis in the present study was 3.4%. This prevalence is within the reported range for women of reproductive age. However, it is much less than prior reports from infertile women, which is as high as 50%.²⁷ A 48.1% prevalence of endometriosis was also reported by a Nigerian study in cases with diagnostic laparoscopy.²⁹ There is no obvious explanation for the lower prevalence in the present study. One possible explanation to partially explain this is the high adhesion rate in our study which could bury endometriotic lesions making it non-visible by laparoscopy.

In the present study, the prevalence of procedure-related intraoperative complications was 2.5%. This finding is lower than the reports from many prior similar studies. Meta-analysis of 27 published randomized control trials involving 1,809 cases treated by operative laparoscopy revealed a complication rate of 8.9%.³⁰ In an Indian study of 3,724 laparoscopic procedures, complications occurred in 5.8% of all procedures.³¹ The lower prevalence of complications in our study is possibly due to the less complex cases and procedures included in the study.

CONCLUSION

The most common indication for laparoscopy in our study was infertility related to tubal problems. The prevalence of grossly visible endometriosis in the present study was 3.4% which is much lower than that found in prior reports in infertile women. In the present study, the prevalence of procedure-related intraoperative

complications was low (2.5%) probably due to the less complex cases and procedures performed.

Clinical Significance

There are very limited researches in Africa which provide a review of gynecologic laparoscopic procedures. This study provides important background clinical information in the field in African set up.

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