Original Article

Prevalence and Characteristics of Gynecological Pathologies Identified During Diagnostic Laparoscopy: A Cross-Sectional Study in A Diverse Patient Population

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ABSTRACT

Objective: Therefore, this cross-sectional study sought to ascertain the prevalence and characteristics of gynecological pathologies discovered during diagnostic laparoscopy in a diverse patient population.

Study Design: Cross Sectional Study

Place and Duration of Study: This study was conducted at the Ali Medical Center Islamabad from September 2021 to April 2023.

Materials and Methods: Eighty four patients undergoing diagnostic laparoscopy in Ali Medical Center, Islamabad, comprised the study population. Demographic characteristics and locations, diameters, and degrees of severity of the gynecological pathologies discovered during the procedure were recorded. Surgical interventions for each disease were also recorded.

Results: Endometriosis (30.95%), ovarian cysts (15.47%), uterine fibroids (11.90%), adenomyosis (14.28%), pelvic adhesions (10.71%), ovarian tumors (7.14%), and other miscellaneous pathologies (9.52%) were the most prevalent gynecological pathologies found in the study. Prevalence rates were substantially influenced by demographic factors including education, socioeconomic status, and geographic location. Excision, cystectomy, myomectomy, hysterectomy, adhesiolysis, oophorectomy, and other variable surgical procedures were performed based on the specific pathology.

Conclusion: The study contributed to evidence-based decision-making in gynecology and offered important insights for enhancing the quality of treatment in the management of gynecological pathologies.

Key Words: Fibroids; Gynecology; Laparoscopy; Malignant tumors; Metastasis; Ovarian cysts; Surgical interventions.

INTRODUCTION

Gynecological diseases include several female reproductive system problems[1]. These problems affect a woman's health, fertility, and quality of life. Healthcare practitioners and researchers must understand the frequency and features of gynecological disorders to improve diagnostic and treatment procedures, patient outcomes, and resource allocation.[2-3]

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Gynecological diseases might be benign or cancerous.[4-5] Gynecological diseases include endometriosis, uterine fibroids, ovarian cysts, pelvic inflammatory disease (PID), cervical dysplasia, and cervical, ovarian, and uterine malignancy. Symptoms include pelvic discomfort, atypical menstruation, infertility, urinary and bowel problems, and hormonal abnormalities. Age, race, geography, and lifestyle affect gynecological pathologies.[6,7] Endometriosis, one of the most common gynecological disorders, affects 10% of reproductive-age women.[8] Uterine fibroids affect up to 70% of women by age 50. Cervical cancer is more common than other gynecological cancers in certain areas.[9-10] Medical technology and diagnostics have improved gynecological pathology detection and categorization. Ultrasound, hysteroscopy, colposcopy, and laparoscopy have improved diagnosis and classification. These advances have also enabled less invasive therapy and tailored medicine, improving patient outcomes.[11] Diagnostic laparoscopy, a less invasive surgical method, is essential for diagnosing and treating gynecological disorders. Laparoscopy

allows direct vision of the pelvic organs[12] via a tiny abdominal incision. This approach detects and characterizes gynecological problems that other techniques may miss. Diagnostic laparoscopy finds gynecological diseases often. These diseases may cause significant morbidity and affect women's reproductive health, quality of life, and fertility[13].

Endometriosis—the presence of endometrial tissue outside the uterus—affects 10% of reproductive-aged women.[14] By revealing endometrial abnormalities, laparoscopy aids diagnosis and staging. Laparoscopy often finds ovarian cysts, fluid-filled sacs on the ovaries. Some cysts need surgery, while others clear spontaneously, therefore their diagnosis is crucial to choosing the best treatment.[15] Pelvic adhesions, scar tissue between pelvic organs, may result from surgery, infections, or endometriosis. Laparoscopy may identify and repair adhesions, relieving persistent pelvic discomfort, infertility, and colon or bladder problems[16]. Women of reproductive age often acquire benign uterine fibroids. Laparoscopy helps plan and decide on fibroids' size, location, and amount. Laparoscopy may detect PID, a female reproductive organ infection. It visualizes inflamed fallopian tubes, ovaries, and uterus, directing antibiotic medication and avoiding infertility and prolonged pelvic pain.[17-18]

The frequency and features of gynecological diseases discovered during diagnostic laparoscopy: a cross-sectional investigation in a heterogeneous patient population study is informative. However, the research gaps addressed were restricted to a particular patient group, limiting generalizability. Future research might include patients of various ages, ethnicities, socioeconomic statuses, and locations to overcome this issue.[19,20] Doing so helps understand the frequency and features of gynecological disorders among populations. The study's cross-sectional approach showed gynecological diseases' frequency and features at a given period. However, longterm studies might benefit patients. These investigations would illuminate gynecological pathology genesis, recurrence, and long-term repercussions.[21] To identify the research population's diagnostic laparoscopy-identified gynecological pathologies: This study seeks to quantify laparoscopically detected gynecological diseases. This research revealed the frequency of these diseases in the examined patient group and gave a full knowledge of their nature and extent, allowing their diagnosis and treatment.

MATERIALS AND METHODS

From September 2021 to April 2023, 84 patients in Ali Medical Center Islamabad had diagnostic laparoscopy for gynecological issues.

People with gynecological concerns were chosen by Pakistani tertiary and hospital institutes. The use of diagnostic laparoscopy in women of reproductive age (18-50) was investigated. Patients of all ages, ethnicities, socioeconomic backgrounds, and geographical locations were sought. Women were excluded due to laparoscopic contraindications such as significant cardiovascular problems or existing infections, missing medical records, or inadequate eligibility information. Data is gathered. Age, length of illness, education, socioeconomic status, and location were all recorded. Gynecological procedures are included in the questionnaire. Gynecological diseases discovered laparoscopically. Pathologies dictated surgical, pharmacological, and conservative therapies in this study.

Supine laparoscopy was used for diagnostic purposes. Anesthesia is administered before to the incision of the umbilicus. A trocar was used to insert a long, thin, illuminated, camera-equipped laparoscope. Laparoscopy revealed the surgeon's pelvic organs. Examining the uterus, fallopian tubes, ovaries, and surrounding tissues laparoscopically. Unusual appearance, location, and characteristics. Organs were seldom manipulated by diagnostic equipment. Biopsies were performed. Examples are provided. Sutures were placed after the diagnosis.

Data was used. Analyze demographics and clinical frequencies, as well as percentages, averages, and standard deviations. Laparoscopy revealed gynecological issues unique to each individual. Demographics predicted gynecological difficulties at p0.05.

The study was authorized by institutional and ethical bodies. Everyone agreed. Patient privacy was safeguarded. The scope of our research was limited by hospital laparoscopic expertise and records.

RESULTS

Laparoscopy at Ali Medical Center in Islamabad, Pakistan is performed based on age, education, socioeconomic status, geography, and disease duration. shows gynecological anomalies. Population p-values suggest gynecological concerns. 18–50-year-olds participated. 26–36-year-olds outnumbered 37–50-year-olds (p0.05). 15.47% were 18–25. Illiteracy outweighed education (72.61% vs. 27.38%) (p0.05). (p0.05), (52.38%), (28.57%), and (19.04%) (Table 1). Endometriosis prevailed (p0.05). 13 (15.47%) had ovarian cysts. Ten (11.90%) had uterine fibroids. The researchers had several uterine fibroids. 12 (14.28%) had adenomyosis. 9 (10.71%) had pelvic adhesions. Pelvic adhesions caused the most gynecological issues (p0.05). 7.14% had ovarian tumors. 8 pathologies (9.52%). Islamabad laparoscopy showed gynecological problems (Table 2).Endometriosis impacted ovaries and uterus. 1.5–5-cm endometriosis. Endometriosis severity varies. Ovarian nodules ruled. 3–10-cm lesions. Solitary, bilateral, cyst-spreading, and metastatic ovarian cysts were classified. Ovarian cyst severity and

spread potential aided detection and therapy. 2–50 cm uterine fibroids. The uterus had 90-100%, 50-90%, and 0-49% leiomyomas. 0.25 cm adenomyosis hurt the uterus. Adenomyosis, mild to severe. Pelvic vascularized adhesions were absent. 16–50cm ovarian lesions. Single, both, tumor spread, and metastasis affected ovarian tumor severity. (Table 3). Laparoscopy, ultrasonography, and clinical examination are extremely sensitive, specific, and positive predictive. Gynecological laparoscopy detects 85%. Laparoscopy found 85% positives. Laparoscopy identifies 90% of gynecological issues. Laparoscopy eradicated 90% of non-gynecological diseases. Laparoscopy's specificity reduces false positives. Laparoscopy worked 80%. Laparoscopic success rate. 75% ultrasound. Ultrasonography and laparoscopy confirmed 75% true positives. Laparoscopy surpassed ultrasonography for non-invasive diagnosis. 80%-specific ultrasound. Ultrasound predicted 75%. 60%-sensitive doctor's physical. 65% specificity. Clinical evaluation showed 65% negative cases but may have false positives. Clinical evaluation was 65% accurate. Accurate clinical examination results. Laparoscopy performed best (Figure 1).Gynecological diseases. 26 endometriosis patients underwent excision. Endometriotic lesion removal alleviated symptoms. Ovarian cystectomy removed most of the 13. Ovarian tissue survived cystectomy. Myomectomy removed 10 uterine fibroids. Most adenomyosis patients underwent hysterectomy. Adenomyosis required hysterectomy. Adhesiolysis treated nine pelvic adhesions. Six ovarian malignancies needed oophorectomy. (Table 4).

Table No.1: Demographic characteristics of the patients with gynecological pathologies

Sr. No.	Demographic characteristics	No. of patients (n=84)	Frequency (%)	p-value
1	Age (years) 18-25 26-36 37-50	 13 40 31	 15.47 47.61 36.90	 0.00001*
2	Education Educated Uneducated	 61 23	 72.61 27.38	 0.00001*
3	Socioeconomic status High Middle Low	 59 21 4	 70.23 25.0 4.76	 0.00001*
4	Geographical location Urban Rural	 53 31	 63.09 36.90	 0.00001*
5	Duration of illness (months) <6 6-12 >12	 24 44 16	 28.57 52.38 19.04	 0.00001*

*indicated that the value is significant at p<0.05

Table No.2: Prevalence of gynecological pathologies detected during diagnostic laparoscopy

Sr.No.	Gynecological pathology	No. of cases (n=84)	Prevalence (%)	p-value
1	Endometriosis	26	30.95	
2	Ovarian cysts	13	15.47	
3	Uterine fibroids	10	11.90	
4	Adenomyosis	12	14.28	0.00001*
5	Pelvic adhesions	09	10.71	
6	Ovarian tumors	06	7.14	
7	Others	08	9.52	

*indicated that the value is significant at p<0.05

Table No.3: Characteristics of gynecological pathologies identified during diagnostic laparoscopy

Sr.No.	Gynecological pathology	Location	Size (cm)	Severity (stages)
1	Endometriosis	Ovaries Uterus	1.5-5	1. Minimal 2. Mild 3. Moderate 4. Severe
2	Ovarian cysts	Ovaries	3-10	1. Single ovary

				2. Affected both ovaries 3. Spread 4. Metastasized
3	Uterine fibroids	Uterus	2-50	1. Leiomyomas (90-100%) 2. Leiomyomas (50-90%) 3. Leiomyomas (0-49%)
4	Adenomyosis	Uterus	0.25 or more	1. Minimal 2. Mild 3. Moderate 4. Severe
5	Pelvic adhesions	Pelvic cavity	Few to dense	1. No adhesions 2. Few adhesions 3. Severe 4. Dense vascularized
6	Ovarian tumors	Ovaries	16-50	1. Single ovary 2. Affected both ovaries 3. Spread 4. Metastasized

*indicated that the value is significant at p<0.05

Table No.4: Surgical interventions for gynecological pathologies identified during diagnostic laparoscopy

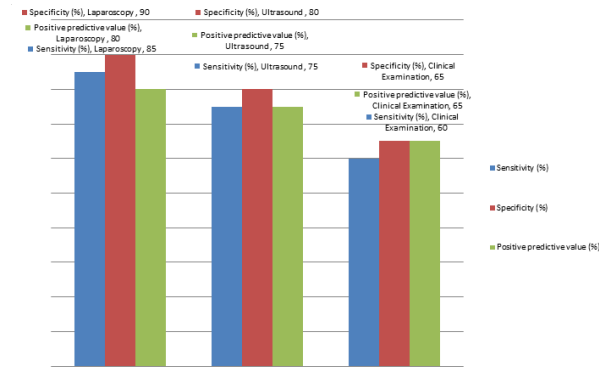| Sr. No.	Gynecological pathology	No. of cases (n=84)	Surgical intervention
1	Endometriosis	26	Excision
2	Ovarian cysts	13	Cystectomy
3	Uterine fibroids	10	Myomectomy
4	Adenomyosis	12	Hysterectomy
5	Pelvic adhesions	09	Adhesiolysis
6	Ovarian tumors	06	Oophorectomy
7	Others	08	Variable

Figure No.1: Diagnostic accuracy of laparoscopy compared to other modalities

DISCUSSION

Diagnostic laparoscopy showed widespread gynecological disorders. This study examined gynecological diseases, patient demographics, and surgery. Diagnostic laparoscopy revealed various gynecological disorders. Endometriosis, ovarian cysts, uterine fibroids, adenomyosis, pelvic adhesions, ovarian tumors, and others predominated. Fibroids, endometriosis, and ovarian cysts are common. Without fibroids, heavy menstrual blood, pelvic pressure, and discomfort might develop. Endometriosis produces cyclic pelvic discomfort. Diagnostics generally find ovarian nodules. Transvaginal ultrasound is excellent for structural gynecological disorders.[22]

The study examined gynecological pathology surgeries. Preferences, pathology, symptoms, and fertility preservation dictated the intervention. Endometriosis excision, cystectomy, myomectomy, and hysterectomy were most common. These results confirmed established illness therapies and underlined the necessity for personalized patient care.[23]

This study illuminated diagnostic laparoscopy-discovered gynecological disorders. The study population had endometriosis, ovarian cysts, uterine fibroids, adenomyosis, pelvic adhesions, and ovarian malignancies. The study emphasised demographic-based patient care.[4,24].

Another study verified laparoscopic treatment of 22 consecutive acute abdominal gynecologic crises. Laparoscopically treating 22 acute abdominal gynecologic crises between March 1997 and October 1998. Preoperative transvaginal ultrasonography diagnosed all patients. Surgery duration, complications, and hospital stay comparing preoperative and laparoscopic diagnostic. Laparoscopic diagnosis differed in 31.8% of cases. Laparoscopic treatment helped 81.8% of patients. None died. These data show that laparoscopy is safe and effective for gynecological

emergencies.[13] Laparoscopic diagnosis is reliable and equivalent to laparotomy. Another study found laparoscopic cholecystectomy's rapid popularity unexpected in modern surgery. Most surgical specialities use therapeutic and diagnostic laparoscopy. However, minimally invasive surgery will continue to rule this decade. Laparoscopic equipment, optical devices, and video imaging will also improve laparoscopic surgery. Video-assisted laparoscopy replaces laparotomy for endometriosis diagnosis and treatment. Imaging may aid histologic diagnosis. Endometriosis testing is limited to blood markers, genetic tests, and endometrial tissues. This difficult condition, which typically needs interdisciplinary therapy, requires high suspicion to diagnose. Pre-operative assessment of suspected endometriosis patients, surgical procedures for safe and complete laparoscopic diagnosis, and postoperative care were explored.[15] Another research found that MRI maps myomas better than ultrasonography for surgical treatment planning. Transvaginal ultrasound and saline infusion hysterosonography outline the endometrial cavity, although hysteroscopy and laparoscopy are the gold standard[17].

CONCLUSION

This study offered significant insights into the prevalence and characteristics of gynecological pathologies identified during diagnostic laparoscopy. Endometriosis, ovarian cysts, uterine fibroids, adenomyosis, pelvic adhesions, ovarian tumors, and various other pathologies were identified as frequently encountered conditions in the study. The prevalence rates were influenced by demographic factors such as education, socioeconomic status, and geographic location. On the basis of pathology-specific characteristics and patient preferences, surgical interventions were tailored to each patient. In gynecological practice, the study emphasized the significance of personalized care and patient-centered approaches. To improve patient care, additional research is required to validate the findings in larger and more diverse populations, establish long-term treatment outcomes, and increase our understanding of these pathologies.

Author's Contribution:

Concept & Design of Study:	Naveed Ullah Khan
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REFERENCES

1. Ciebiera M, Esfandyari S, Siblini H, Prince L, Elkafas H, Wojtyła C, et al. Nutrition in Gynecological Diseases: Current Perspectives. Nutrients 2021;13(4):1178.
2. Lassi ZS, Dean SV, Mallick D, et al. Preconception care: delivery strategies and packages for care. Reprod Health 2014;11(Suppl 3):S7.
3. Firoz T, Binns AM, Fllipi V, Magee LA, Costa ML, Ceccati JG. Review article; A framework for healthcare interventions to address maternal morbidity. Gynecolo Obstetrics 2018;141(S1): 61-68.
4. Mishra K. Gynaecological malignancies from palliative care perspective. Ind J Palliat Care 2011; 17(Suppl):S45-51.
5. AlAshqar A, Reschke L, Kirschen GW, Borahay MA. Role of inflammation in benign gynecologic disorders: from pathogenesis to novel therapies†. Biol Reprod 2021;105(1):7-31.
6. Wei JJ, William J, Bulun S. Endometriosis and ovarian cancer: a review of clinical, pathologic, and molecular aspects. Int J Gynecol Pathol 2011; 30(6):553-68.
7. Brown SD, Ehrlich SF, Kubo A, Tsai AL, Hedderson MM, Quesenberry CP Jr, et al. Lifestyle behaviors and ethnic identity among diverse women at high risk for type 2 diabetes. Soc Sci Med 2016;160:87-93.
8. Kalaitzopoulos DR, Samartzis N, Kolovos GN, et al. Treatment of endometriosis: a review with comparison of 8 guidelines. BMC Women's Health 2021;21:397.
9. Wise LA, Laughlin-Tommaso SK. Epidemiology of Uterine Fibroids: From Menarche to Menopause. Clin Obstet Gynecol 2016;59(1):2-24.
10. Sefah N, Ndebele S, Prince L, Korasare E, Agbleke M, Nkansah A, et al. Uterine fibroids - Causes, impact, treatment, and lens to the African perspective. Front Pharmacol 2023;13:1045783.
11. Liberto JM, Chen SY, Shih IM, Wang TH, Wang TL, Pisanic TR 2nd. Current and Emerging Methods for Ovarian Cancer Screening and Diagnostics: A Comprehensive Review. Cancers (Basel) 2022;14(12):2885.
12. Alkatout I, Mechler U, Mettler L, Pape J, Maass N, Biebl M, et al. The Development of Laparoscopy-A Historical Overview. Front Surg 2021;8:799442.
13. Aulestia SN, Cantele H, Leyba JL, Navarrete M, Llopla SN. Laparoscopic diagnosis and treatment in gynecologic emergencies. JSLS 2003;7(3): 239-42.
14. Saunders PTK, Horne AW. Endometriosis: Etiology, pathobiology, and therapeutic prospects. Cell 2021;184(11):2807-2824.

15. Schipper E, Nezhat C. Video-assisted laparoscopy for the detection and diagnosis of endometriosis: safety, reliability, and invasiveness. Int J Womens Health 2012;4:383-93.

16. Abd El-Kader AI, Gonied AS, Lotfy Mohamed M, Lotfy Mohamed S. Impact of Endometriosis-Related Adhesions on Quality of Life among Infertile Women. Int J Fertil Steril 2019;13(1): 72-76.

17. Stoica RA, Bistriceanu I, Sima R, Iordache N. Laparoscopic myomectomy. J Med Life 2014; 7(4):522-4.

18. Donnez J, Dolmans MM. Uterine fibroid management: from the present to the future. Hum Reprod Update 2016;22(6):665-686.

19. Norori N, Hu Q, Aellen FM, Faraci FD, Tzovara A. Addressing bias in big data and AI for health care: A call for open science. Patterns (N Y) 2021;2(10):100347.

20. Critchley HOD, Babayev E, Bulun SE, Clark S, Garcia-Grau I, Gregersen PK, et al. Menstruation: science and society. Am J Obstet Gynecol 2020; 223(5):624-664.

21. Khawaja UB, Khawaja AA, Gowani SA, Shoukat S, Ejaz S, Ali FN, et al. Frequency of endometriosis among infertile women and association of clinical signs and symptoms with the laparoscopic staging of endometriosis. J Pak Med Assoc 2009;59(1):30-4.

22. Farkas AH, Abumusa H, Rossiter B. Structural Gynecological Disease: Fibroids, Endometriosis, Ovarian Cysts. Med Clin North Am 2023;107(2): 317-328.

23. Boyd CA, Riall TS. Unexpected gynecologic findings during abdominal surgery. Curr Probl Surg 2012;49(4):195-251.

24. Liakopoulou MK, Tsarna E, Eleftheriades A, Arapaki A, Toutoudaki K, Christopoulos P. Medical and Behavioral Aspects of Adolescent Endometriosis: A Review of the Literature. Children 2022;9(3):384.

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