

Histomorphologic Study of Uterine and Cervical Lesion in Hysterectomy Specimen in the Department of Pathology and JA Groups of Hospitals, A Prospective Study

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Abstract: ***Background:** The female reproductive system is vulnerable to a wide range of benign and malignant disorders. Despite the availability of conservative therapies, hysterectomy remains one of the most commonly performed gynecological surgeries worldwide. Histopathological evaluation of hysterectomy specimens plays a crucial role in identifying underlying lesions, including occult malignancies. **Aim:** To analyze the histomorphological spectrum of uterine and cervical lesions in hysterectomy specimens and correlate them with age and clinical presentation. **Materials and Methods:** This prospective study was conducted in the Department of Pathology, JA Group of Hospitals, Gajra Raja Medical College, Gwalior, from May 2023 to October 2024. A total of 380 hysterectomy specimens fulfilling the inclusion criteria were examined. Following fixation, gross examination, tissue sampling, processing, and H&E staining, histopathological evaluation of uterine and cervical components was performed. Data were analyzed using IBM SPSS Statistics v20 and Jamovi v2.3.28. **Results:** The highest frequency of hysterectomy was observed in the 41–50-year age group (46.3%). Total hysterectomy with bilateral adnexal removal was the most common procedure (60%). In the endometrium, proliferative phase was the predominant pattern (44.7%), whereas premalignant and malignant lesions including hyperplasia with atypia (5.3%), EIN (1.1%), and endometrial carcinoma (2.9%) were also identified. In the myometrium, leiomyoma (26.6%) and adenomyosis (17.6%) were the most prevalent findings. Cervical evaluation revealed chronic non-specific cervicitis as the most common lesion (78.2%); however, CIN/CIS and invasive cervical carcinoma were detected in 6.3% of cases. **Conclusion:** Histopathological examination of hysterectomy specimens is imperative for detecting clinically significant premalignant and malignant lesions, particularly in perimenopausal women, and is fundamental to optimal diagnostic and therapeutic decision-making.*

Keywords: Hysterectomy, Histomorphology, Uterine, Cervical lesions, Cervical intraepithelial neoplasia (CIN)

1. Introduction

The female genital system, comprising the uterus, cervix, ovaries, and fallopian tubes, is susceptible to various benign and malignant diseases at any age due to hormonal influences, contributing significantly to female mortality and morbidity. Although medicinal and conservative approaches are available, hysterectomy remains an effective therapeutic option for many conditions [1]. Globally, hysterectomy is the second most common major surgical procedure performed on females, following cesarean sections [2]. It involves the removal of the uterus through either a vaginal or abdominal approach [3], a practice that began in the early 1900s. The commonest indications for hysterectomy include endometriosis, adenomyosis, uterine fibroids, prolapse, and dysfunctional or abnormal uterine bleeding [4]. The GLOBOCAN 2022 report states that cervical cancer is the fourth most common cancer among women worldwide, with 662,301 new cases reported. Based on 127,526 newly reported cases, cervical cancer is identified as the second leading cancer among women in India [5]. There was little change in incidence between 2020 and 2022, as seen by the 123,907 cases reported in India according to the GLOBOCAN 2020 projections [6]. Yet, these figures demonstrate the large and ongoing prevalence of cervical cancer in the nation, highlighting the need for continued efforts in treatment, early identification, and prevention. The 348,709 cervical cancer-related deaths that have been documented globally also include 79,906 deaths from India [5]. A gynecologist performs a hysterectomy, which is the

surgical removal of the uterus. In Manchester, England, Charles Clay conducted the first subtotal hysterectomy in 1843, then in 1929, he performed the first complete abdominal hysterectomy.[7] Despite the availability of alternative treatment options for several gynecological conditions, hysterectomy continues to be one of the most common gynecological surgeries performed globally. The structure of the uterus, which includes the endometrium and myometrium, experiences dynamic changes across different stages of a woman's life.

These changes include pathological changes like hyperplasia and benign and malignant neoplastic lesions, as well as physiological changes like the menstrual cycle and pregnancy-related changes. Worldwide, hysterectomy is the second most common major surgical treatment performed on women, behind caesarean sections. [8] There aren't any national data available for India. Nonetheless, research has been done in Haryana.[9] and Ahmedabad.[10] to evaluate hysterectomies' prevalence and indications in India. The majority of the specimens in any hospital's histopathology department are from hysterectomy procedures. Surgical removal of the uterus may be performed unilaterally (U/L) or bilaterally (B/L) with U/L or B/L salpingo-oophorectomy, either preserving or excising the cervix in the case of a supracervical hysterectomy [8]. Abnormal uterine bleeding (AUB) of any source, which is defined as bleeding from the uterine corpus that is abnormal in regularity, volume, frequency, or duration that occurs outside of pregnancy, is the most common reason for a hysterectomy.[11] The objective of this study was to analyze the histological results of uterine

and cervical specimens from hysterectomies submitted to the pathology department for histopathological examination. The study aimed to investigate the patterns of lesions in the hysterectomy specimens, identify the various clinical indications for the procedure, and assess the relationship between histopathological findings and age groups.

Aims & Objectives: To study Histomorphology of uterine and cervical lesion in hysterectomy specimen.

Primary objective:

- 1) To see different histopathological lesions in uterus and cervix in hysterectomy specimens.
- 2) To study its correlation with respect to age and clinical presentation.
- 3) To study malignant lesion of cervix and uterus prevalent in our region.

2. Material & Methodology

The study entitled “to Histomorphologic study of Uterine and Cervical Lesion in Hysterectomy Specimen” A Prospective Study” was carried out as below:

Place of study: The study was designed in the Department of Pathology, It was carried out in the Department of Pathology and JA Groups of Hospitals, Gajra Raja Medical College, Gwalior Madhya Pradesh. **Period of study:** The present study was carried out May 2023 to Oct 2024 a period of 18 months.

Sample size: By reference document analysis, titled: From the study of “Sujatha R.et all (2019)1 Histomorphological analysis of uterine and cervical lesions in hysterectomy specimens at a tertiary care hospital”. The commonest lesion encountered was Chronic non-specific cervicitis in 86(55.40%) cases. The formula for calculating sample size: At 5% level of significance and 5% absolute error sample size calculated using the formula: $n = Z^2\alpha/2PQ d^2$, $Z_{\alpha/2} = 1.96$ (at 5% level of significance) calculated sample size was 380.

Inclusion criteria: All hysterectomy specimen submitted in histopathology section of pathology department, G.R. Medical College for histopathological examination related to Uterine and Cervix lesions.

Exclusion criteria: Hysterectomy specimen with indications for pathologies related to fallopian tubes (tubal ectopic and tubal cancer) and ovaries (ovarian cancer) were omitted from the study.

Study Procedure: The specimens for this study will be selected from hysterectomy cases received in the Department of Pathology, Histopathology Section, G.R. Medical College, Gwalior, referred from the Department of Obstetrics and Gynaecology. The received hysterectomy specimens underwent immediate fixation in 10% neutral buffered formalin. After 24 hours of fixation, the specimens were thoroughly examined grossly and then multiple representative bits are taken, processed and embedded in paraffin. Histological sections, 3-5 microns thick, were cut, slide-mounted, and stained with standard H & E stain for microscopic evaluation. Histomorphological observations of the uterus and cervix lesions were recorded and then analyzed in relation to the patients' age and clinical diagnosis.

Ethical Consideration: Ethical clearance for the study was obtained from the Institutional Ethical Committee of Gajra Raja Medical College, Gwalior (M.P.) before starting the study.

Informed Consent: The study did not require informed consent because it utilized archived hysterectomy specimens referred from the Department of Obstetrics and Gynaecology, which were already available in the Department of Pathology.

Data Analysis: The completed questionnaire was sorted and entered into Microsoft 2019 excel package, IBM SPSS Statistic version 20 and Jamovi version 2.3.28 for analysis.

3. Result

The highest number of hysterectomy cases was observed in the 41–50year age group (176 cases, 46.3%), followed by the 31–40year group (112 cases, 29.5%), The mean patient age was 45.8 years (SD ± 8.92). The most common type was total hysterectomy with bilateral adnexal removal, accounting for 60% of the cases (n=228). Partial hysterectomies with unilateral adnexal removal constituted 24.7% (n=94), while those without adnexal removal made up 15.3% (n=58) of the specimens.

Table 1: Distribution of Uterine and Cervical Specimen on basis of different parameter

Parameter	Category / Finding	No. of Cases	Percentage (%)
Age Distribution	21–30 years	12	3.2
	31–40 years	112	29.5
	41–50 years	176	46.3
	51–60 years	55	14.5
	>60 years	25	6.6
Type of Hysterectomy	Partial (Uterus + Cervix; without adnexa)	58	15.3
	Partial (Uterus + Cervix + one-sided adnexa)	94	24.7
	Total (Uterus + Cervix + bilateral adnexa)	228	60
Endometrial Histopathology	Proliferative phase	170	44.7
	Secretory phase	65	17.1
	Senile endometrium	83	21.8
	Hyperplasia without atypia	27	7.1
	Hyperplasia with atypia	20	5.3
	EIN (Endometrial intraepithelial neoplasia)	4	1.1
	Endometrial carcinoma	11	2.9
Myometrial Histopathology	No pathology	172	45.3

	Leiomyoma	101	26.6
	Adenomyosis	67	17.6
	Leiomyoma + Adenomyosis	19	5.0
	Myometrial hyperplasia	12	3.2
	Myometrial invasion by endometrial carcinoma	6	1.6
	Monckeberg calcification	3	0.8
Cervical Histopathology	Chronic non-specific cervicitis (CNC)	297	78.2
	Nabothian cyst	34	8.9
	Granulomatous cervicitis	14	3.7
	Squamous metaplasia with CNC	11	2.9
	Cervical dysplasia / CIN	6	1.6
	Carcinoma cervix in situ	7	1.8
	Carcinoma cervix	11	2.9

The histopathological evaluation of myometrial lesions specimens showed that 172 cases (45.3%) had no detectable pathology. Among the pathological findings, leiomyoma was the most common lesion, identified in 101 cases (26.6%), followed by adenomyosis in 67 cases (17.6%). A combination of leiomyoma with adenomyosis was seen in 19 cases (5.0%). Less frequently observed findings included myometrial hyperplasia in 12 cases (3.2%), myometrial invasion by endometrial carcinoma in 6 cases (1.6%), and Monckeberg calcification in 3 cases (0.8%). Cervical lesions showed that chronic non-specific cervicitis (CNC) was the most common finding, seen in 297 cases (78.2%). Nabothian cysts were noted in 34 cases (8.9%), followed by granulomatous cervicitis in 14 cases (3.7%). Ca Cervix 11(2.9%) and squamous metaplasia with CNC 11(2.9%), while cervical dysplasia/CIN 6 (1.6%) and carcinoma cervix in situ(CIS) were identified in 7 cases (1.8%).

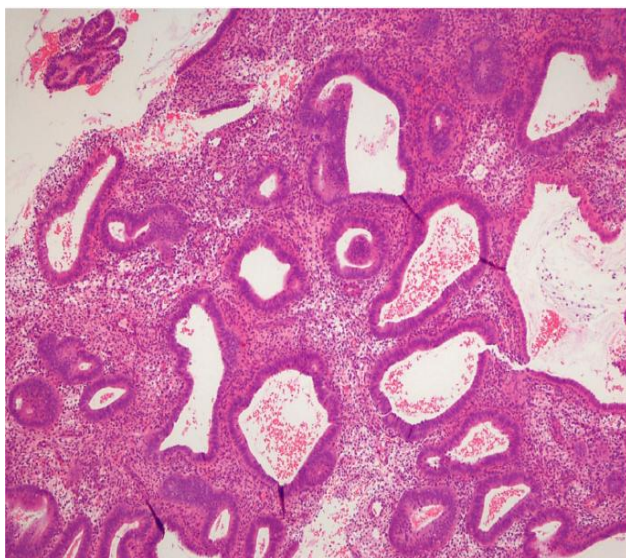


Figure 1: Showing endometrial hyperplasia without atypia

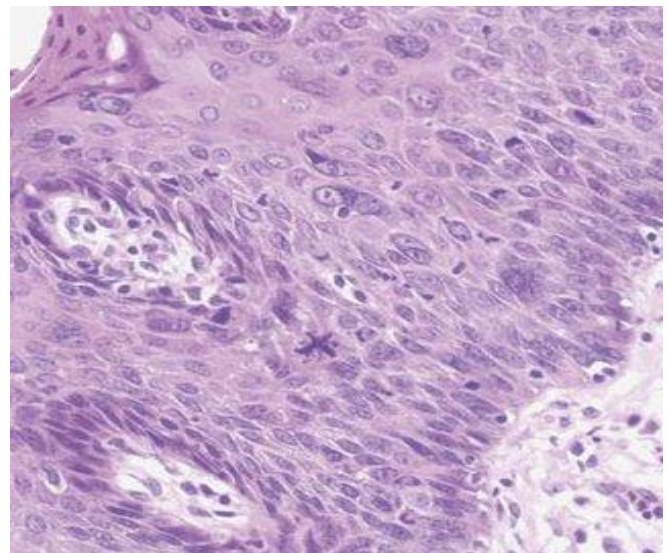


Figure 2: Carcinoma cervix in situ (CIS)

4. Discussion

In the present histomorphological study of 380 hysterectomy specimens, observation and analysis were performed and the results were compared with studies from India and abroad. The highest number of cases was found in the 41–50-year age group (46.3%), followed by 31–40 years (29.5%). Fewer cases were noted among 51–60 years (14.5%) and >60 years (6.6%), while the lowest incidence occurred in 21–30 years (3.2%). The mean patient age was 45.8 ± 8.92 years. Similar age distribution was reported by Sujatha R et al. (2019) and Kolar A et al. (2019), whereas Khalid H et al. (2022) noted peak incidence in the 51–60-year group.

Total hysterectomy with bilateral adnexal removal was the most common surgical procedure in our study (60%), followed by partial hysterectomy with unilateral adnexal removal (24.7%) and without adnexa (15.3%). Comparable trends were seen in studies by Kishore M et al. (2024), Kharat Varsha et al. (2023) and Dolon M.F. et al. (2021), showing abdominal hysterectomy as the most frequent approach.

Regarding endometrial pathology, proliferative phase was the predominant finding (44.7%), followed by senile endometrium (21.8%) and secretory phase (17.1%). Hyperplasia without atypia (7.1%), hyperplasia with atypia (5.3%), EIN (1.1%) and endometrial carcinoma (2.9%) were also noted. These results correlate with studies by Kishore M et al. (2024), Kharat Varsha et al. (2023) and Sujatha R et al.

(2019), all of which also showed proliferative endometrium as the most common pattern.

Myometrial lesions were dominated by leiomyoma (26.6%) and adenomyosis (17.6%), consistent with findings by Kolor A et al. (2019) and Sujatha R et al. (2019). Cervical pathology revealed chronic nonspecific cervicitis as the most frequent lesion (78.2%), followed by Nabothian cysts (8.9%) and granulomatous cervicitis (3.7%), correlating well with studies by Shrivastava K et al. (2024) and Harshal A. Patil et al. (2015). Although most cervical lesions were benign, a small proportion showed premalignant and malignant changes, emphasizing the importance of histopathological evaluation.

5. Conclusion

This prospective histopathological study of 380 hysterectomy specimens conducted at the Department of Pathology, JA Group of Hospitals, Gajra Raja Medical College, Gwalior, demonstrates that hysterectomy is most frequently performed in the perimenopausal age group, particularly among women aged 41–50 years. Total hysterectomy was the predominant surgical procedure, reflecting a preference for comprehensive management in this age group.

Endometrial evaluation showed that although physiological patterns such as the proliferative phase were common, a considerable proportion of cases exhibited premalignant and malignant lesions, including hyperplasia and endometrial carcinoma, emphasizing the importance of routine histopathological examination. Myometrial analysis revealed leiomyoma and adenomyosis as the most frequent benign pathologies, while the detection of myometrial invasion by endometrial carcinoma, though uncommon, highlights the need for meticulous microscopic assessment. Cervical study showed chronic non-specific cervicitis as the most common lesion; however, premalignant and malignant changes including CIN, CIS, and invasive carcinoma were also identified in a notable subset, reinforcing the role of histopathology in early cancer detection.

6. Recommendations

- 1) Routine histopathological examination of all hysterectomy specimens is essential.
- 2) Perimenopausal women (41–50 years) should undergo regular gynecological screening.
- 3) Early evaluation of abnormal uterine bleeding is crucial for timely detection of endometrial lesions.
- 4) Promote Pap smear, HPV testing, and HPV vaccination for cervical cancer prevention.
- 5) Strengthen coordinated management between gynecologists, pathologists, and oncologists for optimal patient care.

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Conflicts of interest: the authors no conflict of interest.

References

- [1] Rather GR, Gupta Y, Bardhwaj S. Patterns of lesions in hysterectomy specimens: a prospective study. *JK science*. 2013;15(2):63.
- [2] Krentel H, Wilde RLD. Laparoscopic supracervical hysterectomy with in-bag morcellation in very large uterus. *Case reports in medicine*. 2017;2017.
- [3] Donnez O, Jadoul P, Squifflet J, et al. A series of 3190 laparoscopic hysterectomies for benign disease from 1990 to 2006: evaluation of complications compared with vaginal and abdominal procedures. *BJOG*. 2009 Mar; 116 (4): 492-500. doi: 10. 1111/j. 1471- 0528. 2008. 01966. x. Epub 2008 Nov 11. Cunningham, F. G., Leveno, K. J., Bloom, S. L., Dashe, J. S., Hoffman, B. L., Casey, B. M., & Spong, C. Y. (2018). *Williams Obstetrics* (25th ed.). McGraw-Hill.
- [4] Sreedhar VV, Jyothi C, Sailaja V, Paul MC, Sireesha O, Vani T, et al. Histopathological Spectrum of Lesions of Hysterectomy Specimens—A Study of 200 Cases. *Saudi J Pathol & Microbiol*. 2016;1(2):54-9.
- [5] Ferlay J, Ervik M, Lam F, Laversanne M, Colombet M, Mery L, et al. Global cancer observatory: cancer today. Lyon, France: International Agency for Research on Cancer; 2024. Available from: <https://gco.iarc.who.int/today>. Accessed 6 Jun 2024.
- [6] Sung H, Ferlay J, Seigel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and 80 mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2021;71:209–49. <https://doi.org/10.3322/caac.21660>
- [7] John, A., Rock, M. D., Jhon, D., & Thompson, M.D. (2003). . 1st edition Lipincott Ravenplace.
- [8] Pandey D, Sehgal K, Saxena A, et al. An audit of indications, complications and justification of hysterectomies at a teaching hospital in India. *International Journal of Reproductive Medicine*. Article ID 279273, 2014;pgs.6. <http://dx.doi.org/10.1155/2014/279273>.
- [9] Singh A, Arora AK. Why hysterectomy rate are lower in India. *Indian Journal of Community Medicine* 2008;33(3):196-197.
- [10] Desai S, Sinha T, Mahal A. Prevalence of hysterectomy among rural and urban women with and without health insurance in Gujarat, India. *Reproductive Health Matters* 2011;19(37):42-51.
- [11] Mehla S, Singh M, Chutani N. Clinicopathological correlation of adenomyosis and leiomyoma in hysterectomy specimens as the cause of abnormal uterine bleeding: a retrospective study. *Sch J App Med Sci* 2014;2(6G):3320-3323.
- [12] Sujatha R et.al (2019). Histomorphological analysis of uterine and cervical lesions in hysterectomy specimens at a tertiary care hospital, DOI: 10.18231/2581-3706.2019.0014
- [13] Khalid H. et.al (2022). Pattern of Uterine and Cervical Lesions Marked on Histopathological Examination of Hysterectomy Specimens, DOI: <https://doi.org/10.53350/pjmhs221610997>.
- [14] Kolor A et.al (2019). Clinicopathological Analysis of Hysterectomy Specimens. Print ISSN: 2456-9887, Online ISSN: 2456-1487

- [15] Dolon M.F. et al. (2021). Histopathological Report of Hysterectomy Specimens in a Tertiary Care 10.36349/easms. 2021.v04i03.003
- [16] Kharat Varsha et.al (2023). Hospital, Research Article DOI: Histopathological Spectrum of Lesions of Hysterectomy Specimens in Tertiary Care Hospital: Two Year Retrospective Study, doi: 10.59218/makrjms.2023.12.385.390
- [17] Shrivastava K et al. (2024). Histopathological spectrum of uterine lesions in hysterectomy specimens of patients with abnormal uterine bleeding. PISSN 2349-3240 | eISSN 2349-3259
- [18] Harshal A. Patil et al. (2015) Histopathological Findings in Uterus and Cervix of Hysterectomy Specimens. DOI: 10.15306/mvpjms/2015/v2i1/58635.