

Histopathological spectrum of hysterectomy specimens and its correlation with clinical diagnosis at a tertiary care centre in Greater Noida.

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Abstract

Background: Hysterectomy is the most common gynaecological procedure performed. Abdominal hysterectomy remains the most common approach though recently there has been preference towards laparoscopic hysterectomy. It is still considered as the treatment of choice for benign lesion such as leiomyoma, adenomyosis, extensive pelvic infection or adhesions, dysfunctional uterine bleeding and obstetric complications. Objectives were to correlate the indications of abdominal hysterectomy to histopathological findings thus, determining histologically confirmed preoperative clinical diagnosis.

Methods: This study was conducted at the Department of Pathology, Central Laboratory, Greater Noida at Noida international Institute of Medical Sciences, NIIMS from January 2022 to December 2023. This is a descriptive analysis of the patients who had undergone abdominal hysterectomy during the study period.

This was a retrospective study and included 162 hysterectomy specimens received over 2 year periods. Patient data was retrieved from the medical records and histopathology requisition form which included age, clinical findings, histopathological diagnosis, indication of hysterectomy and type of hysterectomy done. Histopathological findings from the cervix, endometrium,

myometrium, ovaries and fallopian tubes of each and every hysterectomy specimen were noted.

All types of hysterectomy specimens received over a period of two years were examined, and the tissues were processed and stained with Hematoxyline & eosin stain. Histopathological examination was performed, and various lesions in the hysterectomy specimens were examined. The study included all forms of hysterectomy, including abdominal, vaginal, laparoscopic, and total abdominal hysterectomy.

Results: 162 patients undergoing abdominal hysterectomy were studied. Data were recorded on structured proforma, including demographic characteristics, clinical features and indications of the procedure. In our study, the patients were divided into six groups and most of the patients fell into 30-40 year age group. It was observed that the most common clinical diagnosis was abnormal uterine bleeding 62 (38.3%). Other clinical diagnosis was utero-vaginal prolapse in 44 cases (27.2%), fibroid in 32 cases (19.75%), adenomyosis in 15 cases (9.25%). The commonest surgical approach in the present study was abdominal hysterectomy (64.9%) followed by vaginal hysterectomy (31.5%). In our study, most common finding was chronic cervicitis with and without squamous metaplasia (70.4%), the endometrium was proliferative phase endometrium (32.09%) and leiomyoma was shown to be more frequent than adenomyosis.

Conclusions: Hysterectomy is currently the most widely performed major operation in gynaecology and histopathology is mandatory for ensuring diagnosis and management. Although histological studies and clinical diagnoses are closely correlated, several lesions, including chronic cervicitis, adenomyosis and premalignant or malignant lesion were sometimes discovered incidentally. Therefore, every hysterectomy

specimen must undergo a thorough histopathological investigation, even if it appears superficially normal, to confirm the diagnosis and improve postoperative care.

Keywords: Endometrium, myometrium, hysterectomy, adenomyosis, leiomyoma, malignancy.

Introduction

The female genital tract includes the uterine corpus and cervix, the uterine corpus consists of endometrium and myometrium.^[1] The uterus is vital organ of female reproductive system which is subjected to many benign and malignant pathologies.^[2] The endometrium and myometrium which form the uterus, are constantly under hormonal influence, inhabited by fetuses and denuded its endometrial mucosa monthly.^[3] The lesions of endometrium, uterine corpus and cervix are the most common causes of patient visits to gynaecologists.^[4,5] Despite a variety of treatment including medical and conservative surgical procedures, hysterectomy remains the most preferred method to manage gynaecological disorders.^[6] The first partial hysterectomy was performed in Manchester, England, in 1843 by Charles Clay, and in 1929, the first total abdominal hysterectomy was performed^[7]. Numerous conditions such as prolapse of the uterus, pelvic inflammatory disease(PID), abnormal uterine bleeding, pelvic pain, fibroids, adenomyosis, endometriosis, gynecological malignancies, and obstetric problems have been reported. Histology is the only source of the final diagnosis so every hysterectomy sample must be examined histopathologically^[8]. The aim of the study was to identify the various clinical indications, to evaluate all hysterectomy specimens and to study the pattern of pathological changes of different lesions occurring in uterus and cervix associated with different age groups.

Materials and Methods

The present study is the retrospective study included all the patients who underwent hysterectomy for various causes in Noida international institute of medical college, greater Noida, Uttar Pradesh, India over a period of two year, from January 2022 to December 2023. The study was planned in the department of pathology. Approval was obtained from the ethical committee of the institution.

Inclusion criteria

The study included all forms of hysterectomy, including abdominal, vaginal, laparoscopic, and total abdominal hysterectomy, with or without unilateral or bilateral salpingectomy or salpingo-oophorectomy.

Exclusion criteria

Following cases were excluded from study:

- Patients with confirm diagnosis of malignancy
- Small biopsies, myomectomy tissues, dilatation and curettage tissue samples were excluded from the study

The diagnosis was extracted from the pathology reports and the histological slides were reviewed, whenever there was uncertainty about the final diagnosis. In cases of more than one pathologic diagnosis, both diagnoses were counted by including them separately in their assigned category. In addition, the total number of hysterectomy specimens with more than one pathology and the commonest pathologic combinations were calculated. Patient’s age, clinical presentation and clinical indication, as well as the type of hysterectomy were reviewed.

Results

During the two years study period, total 162 hysterectomy specimens were sent for histopathological examination in the department of pathology. Out of these 80 (49.4%) were total abdominal hysterectomy specimen, 51 (31.5%) were of vaginal hysterectomy specimens. 28(17.3%)

cases bilateral or unilateral salpingo-oophorectomy done [Table 1]. Out of 51 cases of VH , 16 cases also underwent pelvic floor repair.

Table 1: Distribution of cases on basis of type of hysterectomy [n=162].

Types of Hysterectomy	No. of patients(N)	Percentages (%)
Total abdominal hysterectomy (TAH)	80	49.4%
TAH with bilateral salpingo-oophrectomy(TAH+BSO)	25	15.5%
Vaginal hysterectomy(VH)	51	31.5%
TAH with unilateral salpingo-ophrectomy	3	1.8%
Total abdominal hysterectomy with fallopian tube	2	1.2%
Total abdominal hysterectomy with one ovary	1	0.6%

Majority of patients were between 30-40 years, 85 (52.5%) followed by 51 (31.5%) cases between 41-50 years of age, 18 (11.1%) cases were between 51-60 years. Between 61-70 years 5 (3.08%) case and 71-80 years 3(1.81%) were found (Figure 1).

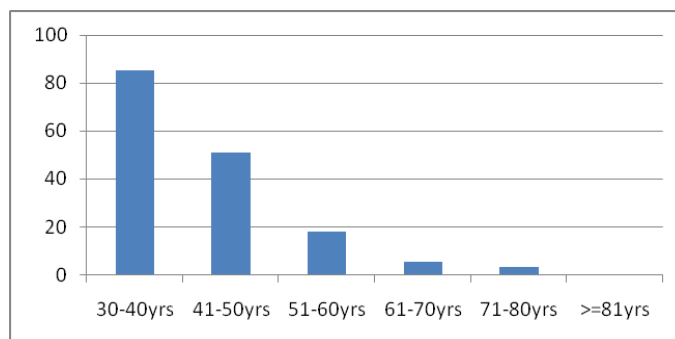


Figure 1: Distribution of cases according to age group

The common indications for hysterectomy were abnormal uterine bleeding in 38.3% cases, followed by prolapse in 27.2%, fibroid in 19.75%, adenomyosis in 9.25% and Endometrial hyperplasia in 2.46% cases respectively. Rest 3% cases were comprised of endometrial and cervical polyp, precancerous cervical lesions and dermoid cyst[Table 2].

Table 2: Clinical indications for hysterectomy [n=162]

Clinical Indications	Number of Patients (n)	Percentages (%)
Utero-vaginal Prolapse	44	27.2%
Abnormal uterine bleeding(AUB)	62	38.3%
Fibroid	32	19.75%
Precancerous lesion of cervix	2	1.23%
Adenomyosis	15	9.25%
Endometrial hyperplasia	4	2.46%
Endometrial and cervical polyp	2	1.2%
Dermoid cyst	1	0.6%

As shown in Figure 2, chronic cervicitis with squamous metaplasia was the most common cervical lesion, comprising 70 (43.20%) cases. Chronic cervicitis in 44 patients (27.2 %) and chronic cervicitis with hyperkeratosis were observed in 5 cases (3.08%). 19 (11.72%) cases were papillary endocervicitis and 15 (9.25%) cases were showing dysplasia. 9 out of 162 cases were of cervical polyp, endometriosis, precancerous and cancerous lesion of cervix.

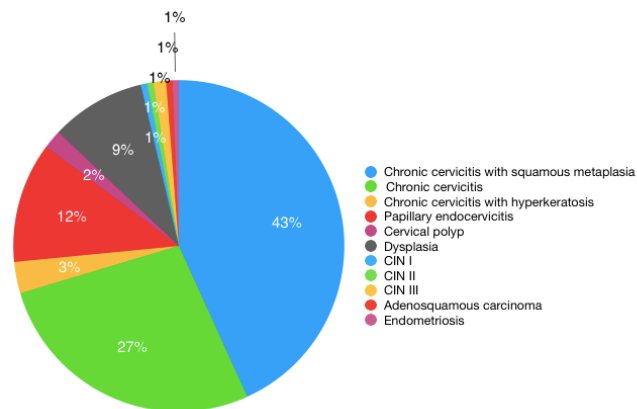


Figure 2: Spectrum of histopathological lesions in Cervix
 Table 3 shows the distribution of histological findings of the endometrium. The most common finding was the endometrium of the proliferative phase in 52 (32.09%) cases followed by disordered proliferative endometrium in 41(25.30%)cases . The atrophic endometrium was seen 28 (17.28%)patients which was more frequently associated with uterovaginal prolapse . Secretory phase endometrium was observed in 27 cases (16.7%). In 5(3.08%) cases, the endometrium showed a polyp. In six (3.70%) cases, simple endometrial hyperplasia was observed, and in 3 (1.85%), atypia-related endometrial hyperplasia was noted. Out of 162 cases Chronic endometritis was additional findings associated with 36cases of our study.

Table 3: Distribution of histological findings of endometrium (n=162)

Histopathological diagnosis	No of patients	Percentage (%)
Proliferative Phase endometrium	52	32.09%
Disordered proliferative endometrium	41	25.30%
Secretory phase endometrium	27	16.7%
Atrophic endometrium	28	17.28%

Endometrial hyperplasia without atypia	6	3.70%
Endometrial hyperplasia with atypia	3	1.85%
Endometrial polyp	5	3.08%

The commonest clinical diagnosis present in our study was fibroid (leiomyoma) in 15 (42.8%) cases followed by dysfunctional uterine bleeding/abnormal uterine bleeding/adenomyosis in 13 (37.1%) cases followed by polyps which is seen in 5 (8.5%) patients, pelvic inflammatory disease as chronic cervicitis was the clinical diagnosis given in 23 (65.7%).

Myometrium was found to be normal in the majority of the specimens. Histopathological lesion in the form of leiomyoma was in 40(24.69%) specimens, adenomyosis was diagnosed in 32(19.7%) whereas leiomyoma associated with adenomyosis was diagnosed in 18 cases (11.11%) .adenomyoma was diagnosed in 3 (1.8%) cases (Table 4).

Table 4: Histopathological findings in myometrium [n=162]

Histopathological diagnosis	No of patients	Percentage (%)
Leiomyoma	40	24.69%
Adenomyosis	32	19.7%
Both adenomyosis and leiomyoma	18	11.11%
Adenomyoma	3	1.8%
Unremarkable	69	42.5%

Medial calcific sclerosis of blood vessels, dystrophic calcification, decidualistion and myxoid changes were additional associated findings reported in 10 cases of myometrium.

Of the 29 cases which had removal of ovaries and fallopian tubes, either unilateral or bilateral, cystic

follicle was the commonest finding observed in ovary followed by hemorrhagic corpus luteum, follicular cyst and endometriosis. Among the benign tumours, simple serous cystadenoma was the most common followed by benign dermoid cyst (Figure 3). Paratubal cyst and walthard cell rest were observed in five and three specimens of fallopian tube respectively.

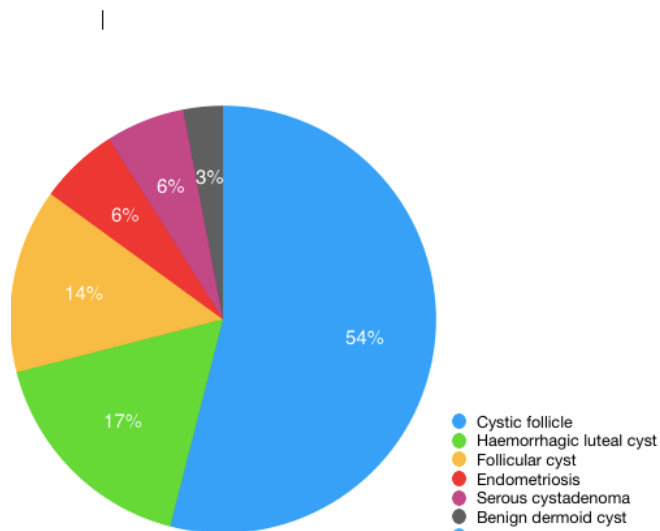


Figure 3: Histopathological analysis of ovarian lesions.

Figures 4: Show histological images of various cervical, endometrial, myometrium and ovarian lesions as depicted below.

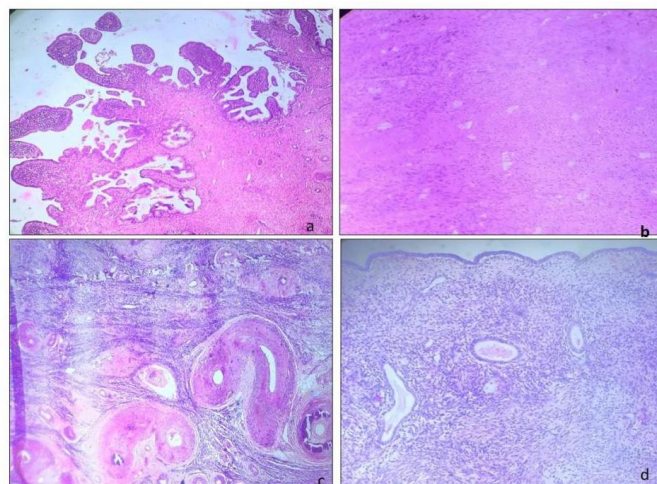


Figure 4 a-d: a- Papillary endocervicitis [H&E, 20X]; b- Leiomyoma [H&E, 20X]; c- Medial calcific sclerosis of uterine vessels [H&E, 20X], Atrophic endometrium [H&E, 20X].

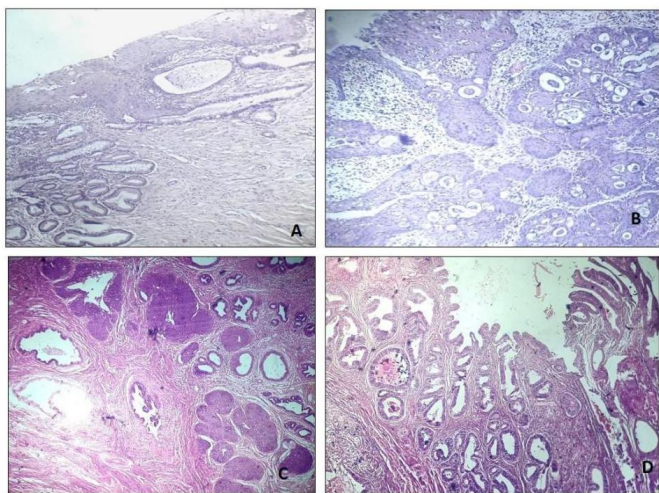


Fig 5 a - d: a- CIN-III [H&E, 20X]; b-d: Areas of squamous carcinoma [b-c] along with adenocarcinoma components [d] in case of Adenosquamous carcinoma case.

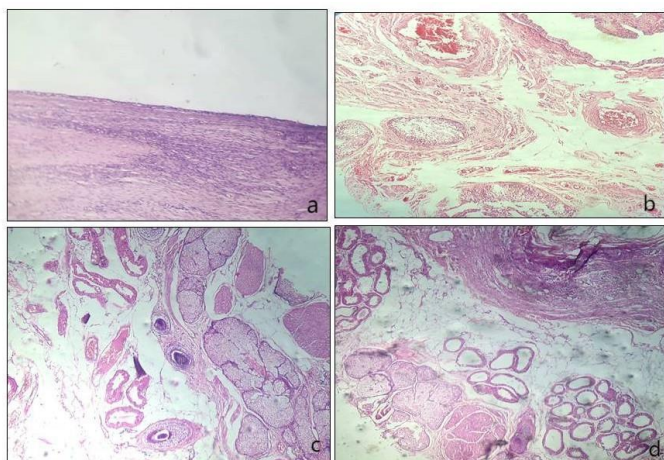


Fig 6 a-d: a- Serous cystadenoma with single lined cuboidal epithelium [H&E, 20X]; b-d: Ovarian teratoma showing different areas of squamous differentiation, hair follicle, sebaceous glands & ducts [H&E, 20X]

Discussion

Hysterectomy is the most prevalent gynecological operation worldwide. It is an effective procedure to mitigate symptoms and provide patient gratification and offers a permanent solution for many disorders affecting the uterus and adnexa^[9].

Indications for abdominal hysterectomy vary from benign to malignant diseases. For purpose of clarity, we

chose only one dominate pre-operative diagnosis as indication for hysterectomy for each case. Gambone and associates have pointed out that the process of using only a single designated indication and reviewing only two documents in the record i.e., the surgeon's pre-operative notes and the pathology report, greatly simplified the quality assurance process in order to monitor the justification for hysterectomy.^[10]

A total of 162 patients ranging from 30-80 years were included in this study. The present study findings were discussed and compared with previously published relevant studies. The commonest surgical approach in the present study was abdominal hysterectomy (64.9%) followed by vaginal hysterectomy (31.5%) which is in concordance with study done by Mishra A et al.^[11] In a study done by Ajmera et al^[12] abdominal approach was preferred in 54.4% cases and vaginal route in 38.9% cases followed by laparoscopic removal.

The patients were divided into six groups and most of the patients fell into 30-40 year age group. This age group is a decade earlier for hysterectomy indications as done by most of the other studies^[13-15]

The commonest clinical indication for hysterectomy was abnormal uterine bleeding/dysfunctional uterine bleeding in 38.3% cases which is also seen in the study of Mishra et al and sultana SN et al^[16] as 38.3% and 30% cases respectively. In the study of Mishra et al. cases of fibroid was 22% which is similar to our findings (27.2%).

DUB is a blanket diagnosis, and inadequate work-up, either due to financial constraints or the pressure of the patient to get the surgery done earlier, leads to such scenario. Various previous studies found that the actual diagnosis confirmed by histopathological examination was missed pre operatively in the majority of cases operated with the preoperative indication of DUB.^[17-19]

This result emphasizes the fact the pre-operative

diagnosis of DUB should be made only after comprehensive and necessary investigations are done.

Chronic cervicitis with and without squamous metaplasia all together constitute 70.4% was the most common uterine lesion in our study. It was not an indication for hysterectomy, but was an incidental finding in large number of cases. Chronic cervicitis was also a commonest histopathological finding in the study done by Agarwal S et al.^[20]

9.25% of cases in our study reported dysplasia which is also seen in the study of Verma D et al.^[21] All the patients who were diagnosed as premalignant lesion of cervix, presented with complaints of abnormal uterine bleeding. On pap smear cytology they were reported either as low-grade or high-grade squamous intraepithelial lesion. But one case of adenosquamous carcinoma was reported in our study, which was operated for utero-vaginal prolapse. On histopathological examination that turned out as malignancy.

Dysplasia and cervical intraepithelial neoplasia both are premalignant conditions that can eventually lead to the development of carcinoma. If not detected early, these lesions can orchestrate the pathogenesis that underlies the development of carcinoma cervix. It is therefore necessary to evaluate the histopathology of hysterectomy specimen carefully. Doing so can aid the early detection of carcinoma in high-risk patients, thus preventing the risk of progression to advanced disease.

The most common finding in the endometrium was proliferative phase endometrium (32.09%) followed by disordered proliferative endometrium (25.30%) and atrophic endometrium (17.28%) which is in concordance with the study of wankhade et al and Agarwal S et al.^[22,20]

In our study, leiomyoma was shown to be more frequent than adenomyosis, which has also been observed in

studies by Neelgund et al.^[23] and Khurshid et al.^[24]. Three case of adenomyoma (1.8%) were also studied. Jandial R et al.^[25] reported two cases of adenomyoma in their study.

The most frequent ovarian lesion observed was a cystic follicle, which is consistent with other previous studies by Nausheen et al.^[26] and Pandey et al.^[27]. Two cases of benign serous cystadenoma and one mature cystic teratoma were also reported in our study. In the current study, a histopathological evaluation of the fallopian tubes revealed three cases of paratubal cyst and walthard cell. Of the 29 cases which had removal of ovaries and fallopian tubes, either unilateral or bilateral, cystic follicle was the commonest finding observed in ovary followed by hemorrhagic corpus luteum, follicular cyst and endometriosis. Among the benign tumours, simple serous cystadenoma was the most common followed by benign dermoid cyst (Figure 3). Paratubal cyst and walthard cell rest were observed in five and three specimens of fallopian tube respectively. Walthard cell rest are benign nests of transitional epithelium found mostly in perifallopian tube tissue but also seen in the mesovarium, mesosalpinx and ovarian hilus. They are also called as transitional/urothelial cell metaplasia^[28]

Conclusion

Hysterectomy is the most commonly performed surgery in gynaecological practice as it provides definitive cure and accurate diagnosis. Abnormal uterine bleeding and post-menopausal bleeding are most common indications for hysterectomy. The clinical indications to perform this major surgery should always be justified as it has its own psychological, emotional, medical, hormonal effects on a female life. Clinicopathological correlation in all cases of hysterectomy has been proved to be important in improving the clinical outcome and post-operative management.

This study signifies the fact that the histopathological analysis of the hysterectomy specimens should be a mandatory procedure. Majority of the cases were histopathologically consistent with clinical diagnosis, but since many cases were inconsistent and large number of incidental findings especially precancerous lesion, were found, histopathological examination and its correlative study with preoperative clinical diagnosis is very important. This leads to appropriate management in the postoperative period. Justification of the hysterectomy is also proved when the histopathological diagnosis corresponds with the preoperative diagnosis.

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