



## ORIGINAL ARTICLE

# Patterns of Lesions in Hysterectomy Specimens: A Prospective Study

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## Abstract

Hysterectomy is the most commonly performed gynaecological surgery throughout the world. Few studies have been performed describing the pathologic findings in hysterectomy specimens and examining the relationship between the preoperative clinical indication and pathologic diagnosis. This study was undertaken to identify the most common pathologies in hysterectomy specimens and to correlate the findings with the clinical indications. Six hundred and ninety eight cases studied over a period of one year formed the subject of the present study. Surgical specimens were formalin fixed and tissue was adequately processed from them. The sections were stained routinely with hematoxylin and eosin stain. Menorrhagia, fibroid uterus and uterovaginal prolapse were the most common clinical indications for hysterectomy. The most common pathologies identified were atrophic endometrium in endometrium, leiomyoma in myometrium, chronic cervicitis in cervix, ovarian cysts in ovaries and salpingitis in fallopian tubes. The pathologic examination confirmed the clinical diagnosis in majority of the cases.

## Key Words

Hysterectomy, Histopathology, Salpingo-Oophorectomy

## Introduction

Uterus, a vital reproductive organ is subjected to many benign and malignant diseases. Many treatment options are available including medical and conservative surgical but hysterectomy still remains the most common gynaecological procedure performed worldwide (1). It is the definitive cure for many of its indications which include dysfunctional uterine bleeding, fibroids, utero-vaginal prolapse, endometriosis and adenomyosis, pelvic inflammatory disease, pelvic pain, gynaecological cancers and obstetric complications (2). Histopathological examination of hysterectomy specimens carries diagnostic and therapeutic significance. Prevalence of uterine and adnexal pathologies varies from nation to nation and from region to region within the nation. Hence, this study was conducted with a view to get insight into the patterns of lesions in hysterectomy specimens in our institution.

## Material and Methods

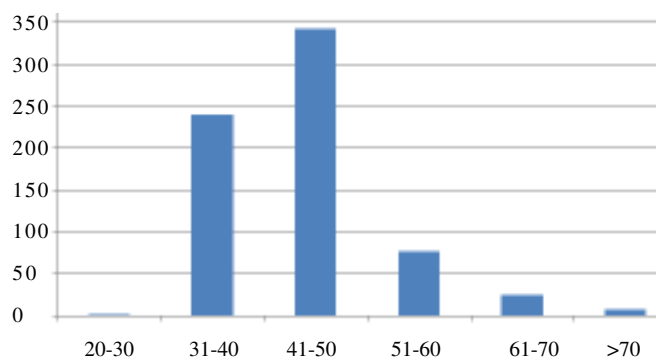
This is a prospective study conducted in the Department of Pathology, Government Medical College,

Jammu. The study material comprised of hysterectomies received in our department for a period of one year. The clinical information and the relevant investigations of the patients who underwent hysterectomy during this period were obtained from the histopathological requisition forms and clinical case sheets. The hysterectomy specimens received by the Department of Pathology were properly labeled, numbered and fixed in 10% buffered formalin. After a detailed gross examination of the specimens, multiple bits were taken from representative sites, processed and paraffin blocks were made. The blocks were section and stained routinely with hematoxylin and eosin. Special stains were used wherever required. A detailed microscopic examination of the stained slides was carried out and lesions were categorized as

- (a) Lesions of the uterine corpus which included the lesions of the endometrium and the myometrium
- (b) Lesions of the cervix
- (c) Lesions of the ovary
- (d) Lesions of the fallopian tube

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**Fig 1. Age Distribution for Hysterectomies**

Subsequently, the histopathological diagnoses were correlated with clinical diagnoses.

### Results

A total of 698 cases were studied. The hysterectomies were distributed over a wide age range of 20 to more than 70 years. Of these 330 cases (47.27%) were encountered in the age group of 41 - 50 years which is the most common age group (*Fig 1*). The most common type of hysterectomy was total abdominal hysterectomy with bilateral salpingo-oophorectomy comprising of 469 cases (67.19%) followed by vaginal hysterectomy comprising of 201 cases (28.79%). Least number of cases i.e. 28 (4.01%) were of total abdominal hysterectomy with unilateral salpingo-oophorectomy. Of these 17 cases included right sided salpingo-oophorectomy whereas 11 cases included left sided salpingo-oophorectomy (*Fig 2*).

Indications for hysterectomies varied from menstrual abnormalities to suspected pelvic malignancy. The various indications for hysterectomy are depicted in *Table 1*. Majority of the patients presented with menorrhagia (35.43%) followed by fibroid uterus (29.53%) and uterovaginal prolapse (23.75%). Forty seven patients presented with more than one symptom. The endometrium was histologically unremarkable in most of the cases (83.09%). Atrophic endometrium was the most common endometrial pathology seen in 5.44% cases followed by endometrial hyperplasia (simple and complex) (*Table 2*). Malignant tumors comprised only 0.72% of cases. The myometrium was also histologically normal in majority of the cases (47.13%). The most common pathology encountered was leiomyoma (30.80%) followed by adenomyosis (13.89%) (*Table 3*). Fifty six (8.02%) cases showed both leiomyoma and adenomyosis. Only one case of malignant tumor i.e. leiomyosarcoma was observed. Maximum number of cases showed chronic cervicitis as the main cervical pathology (89.39%). Other less frequent cervical pathologies encountered were endocervical polyps, cervical intraepithelial neoplasia and malignant tumors of

**Table 1. Clinical Indications of Hysterectomy**

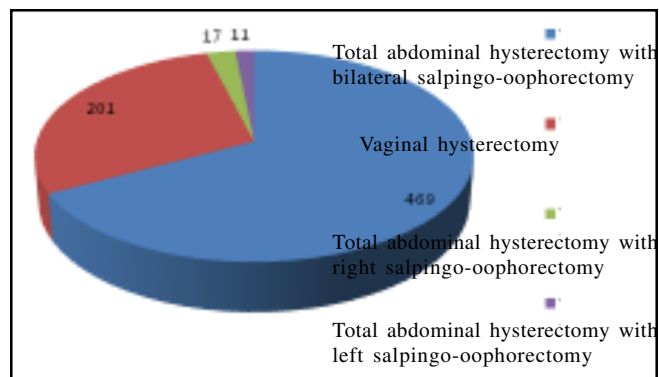
INDICATION	No. OF CASES (n = 745)	(%)
Menorrhagia	264	35.43
Fibroid uterus	220	29.53
Uterovaginal prolapsed	177	23.75
Ovarian cyst	24	3.22
Pelvic inflammatory disease	13	1.74
Chronic cervicitis	13	1.74
Endometrial hyperplasia	6	0.80
Mass abdomen	5	0.67
Postmenopausal bleeding	4	0.53
Carcinoma cervix	4	0.53
Carcinoma endometrium	3	0.40
Malignant ovarian tumor	3	0.40
Uterine polyps	3	0.40
Dermoid cyst	3	0.40
Adenomyosis	1	0.13
Serous cystadenoma	1	0.13
Pyometra	1	0.13

cervix (*Table 4*). The ovaries and fallopian tubes were histologically unremarkable in most of the cases. The most common ovarian lesion seen was ovarian cyst and the most common fallopian tube lesion observed was salpingitis (*Table 5 & 6*). Preoperative clinical diagnosis was available in 471 cases. The final pathological diagnosis confirmed the clinical diagnosis in majority of the cases, ranging from 66.6% to 100% (*Table 7*).

### Discussion

Hysterectomy is the most commonly performed major gynaecological surgery throughout the world. It is a successful operation in terms of symptom relief and patient satisfaction and provides definitive cure to many diseases involving uterus as well as adnexae (3). Limited data is available in our community regarding histopathological analysis of hysterectomy specimens and relationship between the preoperative clinical indications and pathological diagnoses. This study was conducted to analyze the patterns of lesions in hysterectomy specimens in our institution, correlate the findings with the clinical indications and to compare our findings with those of other workers. The commonest estimated age range of hysterectomy in our study is 41-50 years which is similar to that reported in other studies (4,5,6). The commonest surgical approach in the present study is abdominal hysterectomy (71.20%) followed by vaginal hysterectomy (28.79%). Majority of the cases (67.19%) included bilateral salpingo-oophorectomy along with hysterectomy. In a study by MacKanzie *et al* (7), abdominal approach was preferred in 79% cases and vaginal route in 17% cases. 50% of their cases included bilateral salpingo-oophorectomy. The most common clinical indication in

Fig 2. Distribution of Types of Hysterectomies



our study is menorrhagia followed by fibroid uterus. Many studies have reported menorrhagia as the most common clinical indication for hysterectomy (6,8,9,10) whereas others have reported fibroid to be the commonest indication (3,4,11). The commonest endometrial pathology observed in our study is atrophic endometrium. This is close to the observation made by Kleeckaow *et al.* (12) who reported the incidence of this lesion as 3.8%. Mehboob and Ahmad (13), however, reported a higher incidence of atrophic endometrium i.e. 26.53% in their study. Endometrial hyperplasia constituted the second most common endometrial pathology in our study. A great difference of opinion prevails in the literature regarding the incidence of endometrial hyperplasia which may in part be due to different conceptions of what constitutes endometrial hyperplasia. The percentage incidence of endometrial hyperplasia in our study is similar to that reported by Bukhari and Sadiq (14) and close to that reported in other studies (5,15).

In India carcinoma and other malignancies of the body of uterus are not as frequently encountered as other gynaecological malignancies (16). We observed only 4 cases of malignant tumors of endometrium which comprised of 2 cases of endometrioid carcinoma, one case of adenocarcinoma and one case of endometrial stromal sarcoma. Other studies (3,14,17) have reported a slightly higher incidence of malignant endometrial tumors which could possibly be because of smaller sample size in their studies as compared to ours. Uterine leiomyomata are the most common tumors found in women of reproductive age group (18). The likelihood that leiomyomata will cause symptoms is undoubtedly related to their number, size and location, although it seems equally plausible that myomata may frequently represent an incidental, rather than causal finding (19). Leiomyoma is the most common myometrial lesion in our study and the same is true for other studies (8,11,20). Salmon *et al*

Table 2. Histopathological Diagnosis of Endometrial Lesions

HISTOPATHOLOGICAL DIAGNOSIS	NO. OF CASES (n = 698)	(%)
Atrophic endometrium	38	5.44
Simple cystic hyperplasia	23	3.29
Complex hyperplasia	8	1.14
Endometrial polyp	17	2.43
Endometritis	11	1.57
Disordered proliferative phase	8	1.14
Pseudodecidual change	6	0.85
Inactive endometrium	3	0.42
Papillary adenocarcinoma	2	0.28
Adenosquamous carcinoma	1	0.14
Endometrial stromal sarcoma	1	0.14
Normal histology	580	83.09

(21) reported a lower incidence of leiomyoma i.e. 3.59% in their study which included macroscopically normal hysterectomy specimens only, thereby diminishing the chances of finding a leiomyoma microscopically. Adenomyosis is the second most common myometrial pathology in our study. Adenomyosis is rarely diagnosed preoperatively and is still largely under diagnosed as it has no specific symptoms of its own (22). It is usually diagnosed after hysterectomy by histopathological examination (23). In the present study, only one case had a preoperative clinical diagnosis of adenomyosis; other cases either presented with menorrhagia or were incidental findings. Many cases (8.02%) in this study revealed the presence of both leiomyoma and adenomyosis. Other studies have also reported this association (5,6,14,24). Leiomyosarcoma is the most common sarcoma of the uterus, the relative frequency to leiomyomas being as low as 0.13% (25). Only one case of leiomyosarcoma was seen in our study. The incidence of leiomyosarcoma in the present study is close to that reported by Bukhari and Sadiq (14). Chronic cervicitis is an extremely common condition in adult females, at least at the microscopic level. It is the commonest cervical pathology in our study, detected in 89.39% cases, which is comparable to that reported by Talukder (24). Only four cases of malignant tumors of cervix were observed in the present study. This incidence is close to that reported by Treloar *et al* (26). Cysts of variable morphology are the most common ovarian lesions in our study. Similar results were reported in other studies (6,8,27). The

**Table 3. Histomorphology of Myometrial Lesions**

Histopathological Diagnosis	No. of Cases n=698	%
Leiomyoma	215	30.80
Adenomyosis	97	13.89
Leiomyoma & Adenomyosis	56	8.02
Leiomyosarcoma	1	0.14
Normal Histology	329	47.13

incidence of ovarian tumors in the present study is close to that reported by Talukder (24).

Fallopian tubes are complex structures that represent more than conduits from ovary to endometrial cavity. With the exception of a few relatively rare tubal neoplasms which might be life threatening, the significance of pathogenic changes in fallopian tubes is related to the possible effect on fertility (28). In the present study, majority of the cases revealed no pathological lesion in the fallopian tubes. The only significant lesions were 3 cases of salpingitis, 2 cases of hydrosalpinx, 1 case of

**Table 4. Histopathological Diagnosis of Cervical Lesions**

Histopathological Diagnosis	No. of Cases (n = 698)	(%)
Chronic cervicitis	590	84.52
Chronic cervicitis with squamous metaplasia of endocervix	21	3
Chronic cervicitis with dysplasia of ectocervix	7	1
Papillary endocervicitis	6	0.85
Endocervical polyp	6	0.85
Cervical intraepithelial neoplasia	1	0.14
Squamous cell carcinoma	2	0.28
Adenocarcinoma	1	0.14
Adenosquamous carcinoma	1	0.14
Normal histology	63	9.02

**Table 5. Histopathological Diagnosis of Ovarian Lesions**

Histopathological diagnosis	Right ovary		Left ovary	
	No. of cases	Percentage (%)	No. of cases	Percentage (%)
Follicular cyst	70	14.40	63	13.12
Corpus luteal cyst	42	8.64	37	7.70
Serous cyst	13	2.67	11	2.29
Mucinous cyst	1	0.20	1	0.20
Inclusion cyst	2	0.41	-	-
Endometriosis	1	0.20	2	0.41
Non specific oophoritis	-	-	1	0.20
Xanthogranulomatous oophoritis	1	0.20	-	-
Serous cystadenoma	5	1.02	5	1.04
Mucinous cystadenoma	7	1.44	4	0.83
Benign mature teratoma	2	0.41	1	0.20
Fibroma	1	0.20	1	0.20
Fibrothecoma	1	0.20	-	-
Juvenile granulosa cell tumor	1	0.20	-	-
Endometrioid carcinoma	1	0.20	1	0.20
Normal histology	338	69.54	353	73.54
<b>Total</b>	<b>486</b>	<b>100</b>	<b>480</b>	<b>100</b>

**Table. 6 Histopathological Diagnosis of Fallopian Tube Lesions**

Histopathological diagnosis	Right Fallopian Tube		Left Fallopian Tube	
	No. of cases	Percentage (%)	no. of cases	Percentage (%)
Hydrosalpinx	1	0.20	1	0.20
Salpingitis	2	0.41	1	0.20
Endometriosis	1	0.20	—	—
Inclusion cysts	—	—	1	0.20
Normal histology	482	99.17	477	99.37
<b>Total</b>	<b>486</b>	<b>100</b>	<b>480</b>	<b>100</b>

**Table 7. Correlation of Clinical Diagnosis with Histopathological Diagnosis (pre-operative Clinical Diagnosis was available in 471 cases)**

Preoperative Diagnosis	Confirmed By Histopathology	
	No. of Cases	(%)
Fibroid (n = 220)	200	90.9
Pelvic inflammatory disease (n = 13)	12	92.3
Ovarian cyst (n = 24)	19	79.16
Endometrial hyperplasia (n = 6)	4	66.6
Chronic cervicitis (n = 13)	11	84.6
Uterovaginal prolapse (n = 177)	177	100
Uterine polyps (n = 3)	2	66.6
Adenomyosis (n = 1)	1	100
Dermoid cyst (n = 3)	3	100
Serous cystadenoma (n = 1)	1	100
Malignant ovarian tumor (n = 3)	2	66.6
Carcinoma cervix (n = 4)	3	75
Carcinoma endometrium (n = 3)	2	66.6

endometriosis and 1 case of inclusion cyst. Bagwan et al. in their study also found majority of the fallopian tubes to be histologically unremarkable (28). Major pathological lesions reported by them comprised of salpingitis (10.19%), hydrosalpinx (7.86%), ectopic pregnancy (11.79%) and paratubal cysts (4.90%). Other lesser common lesions reported in their study included pyosalpinx, hematosalpinx, salpingitis isthmica nodosa, endometriosis, walthard cell nests, torsion and malignant tumors. The wider range and higher percentage of pathological lesions reported in their study could possibly be because they had included salpingectomy as well as salpingo-oophorectomy in addition to hysterectomy specimens in their study which increased the chances of finding significant lesions. In our study most of the preoperative clinical diagnoses were confirmed on histopathological examination, the percentage of confirmation ranging from 66.6% to 100%. Almost similar findings have been reported by Jaleel *et al* (3).

### Conclusion

The present study provides a fair insight into the histological patterns of lesions in hysterectomy specimens

in our institution. A wide range of lesions is encountered when hysterectomy specimens are subjected to histopathological examination. Though the histopathological analysis correlates well with the clinical diagnoses, quite a few lesions are also encountered as pure incidental findings. Hence, it is mandatory that every hysterectomy specimen, even if it grossly appears to be normal, should be subjected to detailed histopathological examination so as to ensure a better postoperative management.

### References

1. Wu JM, Wechter ME, Geller EJ. Hysterectomy rates in the United States 2003. *Obstet Gynaecol* 2007; 110 (5): 1091-95
2. Nausheen F, Iqbal J, Bhatti FA, Khan AT, Sheikh S. Hysterectomy. The patient's perspective. *Annal Gynecol* 2004; 10: 339-41
3. Jaleel R, Khan A, Soomro N. Clinicopathological study of abdominal hysterectomies. *Pak J Med Sci* 2009; 25 (4): 630-34
4. Adelusola KA, Ogunniyi SO. Hysterectomies in Nigerians: Histopathological Analysis of Cases Seen in Ile Ife. *Niger Postgrad Med J* 2001; 8 (1): 37-40
5. Sarfraz T, Tariq H. Histopathological findings in menorrhagia - a study of 100 hysterectomy specimens. *Pak J Pathol* 2005; 16 (3): 83-85
6. Perveen S, Tayyab S. A clinicopathological review of elective abdominal hysterectomy. *J Surg Pak* 2008; 13 (1): 26-29
7. MacKenzie IZ, Naish C, Rees M, Manek S. 1170 consecutive hysterectomies: indications and pathology. *J Br Menopause Soc* 2004; 10 (3): 108-12
8. Jamal S, Baqai S. A clinicohistopathological analysis of 260 Hysterectomies. *Pak J Pathol* 2001; 12 (2): 11-14
9. Gupta G, Kotasthane DS, Kotasthane VD. Hysterectomy: A clinic-pathological correlation of 500 cases. *Internet J Gynaecol Obstetrics* 2010; 14 (1): 1-6.

10. Sobande AA, Eskander M, Archibong EI, Damole IO. Elective hysterectomy: a clinicopathological review from Abha Catchment Area of Saudi Arabia. *West Afr J Med* 2005; 24 (1): 31-35
11. Shergill SK, Shergill HK, Gupta M, Kaur S. Clinicopathological study of hysterectomies. *J Indian Med Assoc* 2002; 100 (4): 238-39
12. Kleebkaow P, Maneetab S, Woraluk S, Seejorn K, Thinkamrop J, Komwilaisak R. Preoperative and postoperative agreement of histopathological findings in cases of endometrial hyperplasia. *Asian Pacific J Cancer Prev* 2008; 9: 89-91
13. Mehboob R, Ahmad N. Unexpected pathology at vaginal hysterectomy for genital prolapse. *Pak J Med Res* 2002; 41 (4): 142-44
14. Bukhari U, Sadiq S. Analysis of the underlying pathological lesions in hysterectomy specimens. *Pak J Pathol* 2007; 18 (4): 110-12
15. Gazozai S, Bugti QA, Siddiq A, Ehsan N. Excessive uterine haemorrhage - a histopathological study. *Gomal J Med Sci* 2004; 2 (1): 13-15
16. Cherian A, Surin C, Jacob S, Prabhakar BR. Primary malignancies of the corpus uteri - retrospective five year analysis. *Indian J Pathol Microbiol* 1995; 38: 63-72
17. Muezzinoglu B, Doger E, Yildiz DK. The pathologic spectrum of prolapsus uteri: histopathologic evaluation of hysterectomy specimens. *J Gynecol Surg* 2005; 21 (3): 133-35
18. Parker WH. Etiology, symptomatology and diagnosis of uterine myomas. *J Reproductive Med* 2007; 87: 725-36
19. Reiter RC, Wagner PL, Gambone JC. Routine hysterectomy for large asymptomatic uterine leiomyomata: a reappraisal. *Obstet Gynecol* 1992; 79 (4): 481-84.
20. Abdullah LS. Hysterectomy: A Clinicopathologic correlation. *Bahrain Medical Bulletin* 2006; 28 (2): 1-6.
21. Salmon HA, Smith JHF, Balsitis M. Is microscopic assessment of macroscopically normal hysterectomy specimens necessary? *J Clin Pathol* 2002; 55 (1): 67-68
22. Weiss G, Maseelall P, Schott LL, Brockwell SE, Schocken M, Johnston JM. Adenomyosis a variant, not a disease? Evidence from hysterectomised menopausal women in the study of Women's Health Across the Nation (SWAN). *Fertil Steril* 2009 ; 91 (1): 201-6
23. Shrestha A, Shrestha R, Sedhai LB, Pandit U. Adenomyosis at hysterectomy: prevalence, patient characteristics, clinical profile and histopathological findings. *Kathmandu Univ Med J* 2012; 37 (1): 53-56
24. Talukder SI, Haque MA, Huq MH, Alam MO, Roushan A, Noor Z, Nahar K. Histopathological analysis of hysterectomy specimens. *Mymensingh Med J* 2007; 16 (1): 81-84
25. Robboy SJ, Bentley RC, Butnor K, Anderson MC. Pathology and pathophysiology of uterine smooth muscle tumors. *Environ Health Perspect* 2000; 108 (Suppl 5): 779-84
26. Treloar SA, Do KA, O'Connor VM, O'Connor DT, Yeo MA, Martin NG. Predictors of hysterectomy: an Australian study. *Am J Obstet Gynecol* 1999; 180: 945-54
27. Jha R, Pant AD, Jha A, Adhikari RC, Sayami G. Histopathological analysis of hysterectomy specimens. *J Nepal Med Assoc* 2006; 45 (163): 283-90
28. Bagwan IN, Harke AB, Malpani MR, Deshmukh SD. Histopathological Study of Spectrum of Lesions Encountered in the Fallopian Tube. *Obstet Gynecol* 2004; 54 (4): 379-82.