

## HISTOPATHOLOGICAL ANALYSIS OF HYSTERECTOMY SPECIMENS

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### ABSTRACT

This was a retrospective study carried out on all hysterectomy specimens sent to Department of Pathology of Tribhuvan University Teaching Hospital, Kathmandu, Nepal from 1st September 2005 to 28th February 2006, to study the histopathological findings of these specimens.

All informations used in the study were obtained from the records of Department of Pathology of the hospital.

Out of 221 hysterectomy specimens received during the study period, 139 (62.9%) were total abdominal and 82 (37.1%) were vaginal hysterectomy specimens. Mean age of the patient was 53.4 years for vaginal hysterectomy group where as it was 37.6 years for total abdominal hysterectomy with unilateral salpingo-oophorectomy and 46.3 years for total abdominal hysterectomy with bilateral salpingo-oophorectomy group. Uterine prolapse was commonest indication of hysterectomy overall (37.1%) and accounted for 98.8% of vaginal hysterectomies. Other common indications of hysterectomy were uterine fibroid (24.9%), ovarian tumor (14.9%) and dysfunctional uterine bleeding (7.7%). Leiomyoma was the most common pathology found in uterine corpus (27.1%). Chronic cervicitis in cervix, functional cysts in ovaries and paratubal cysts in fallopian tubes were most common histological findings. Ovarian neoplasms accounted for 18.3% of ovarian pathology. 38% specimens were unremarkable histopathologically.

In Tribhuvan University Teaching Hospital, abdominal hysterectomies are more common than vaginal hysterectomies. Most vaginal hysterectomies are done for uterine prolapse and patients are older than those undergoing abdominal hysterectomies. Most abdominal hysterectomies are performed for uterine leiomyomas. Hysterectomy specimens may be unremarkable histopathologically, most of which are vaginal hysterectomies done for uterine prolapse.

*Key Words: Histopathology, Hysterectomy.*

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## INTRODUCTION

Hysterectomy came into widespread use in the early 20th century. Advances in anesthesia, aseptic technique and antisepsis during the 19th and early 20th centuries allowed the development of safe surgical treatments for benign and malignant gynecologic diseases. The rate of death due to abdominal hysterectomy decreased from 70 % in 1880 to 3 % in 1930. Currently, the mortality rate associated with hysterectomy is less than 0.1 percent.<sup>1</sup>

Hysterectomy is second only to cesarean section as the most frequently performed major operation in the United States.<sup>2</sup> The number of hysterectomies performed each year is more than 600,000 in the United States. The cost of hysterectomies is \$5-6 billion per year. Women aged 30 to 54 most frequently undergo hysterectomy as compared to other age groups and contribute 74% of all hysterectomies.<sup>3</sup>

This study was conducted with the aim to analyze the histopathological findings in hysterectomy specimens sent to Department of Pathology of Tribhuvan University Teaching Hospital (TUTH).

## MATERIALS AND METHODS

This was a retrospective study carried out in Department of Pathology, TUTH, Kathmandu, Nepal. All hysterectomy specimens sent to the Department of Pathology from 1<sup>st</sup> September 2005 to 28<sup>th</sup> February 2006 were included in the study. Duplicate histopathological reports of the specimens were obtained from the records of Department of Pathology and all required informations such as age, type of operation performed like vaginal hysterectomy (VH), total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAHBSO), total abdominal hysterectomy with unilateral salpingo-oophorectomy (TAHUSO) or total abdominal hysterectomy without salpingo-oophorectomy, clinical indications and histopathological findings in the endometrium, myometrium, cervix, right and left fallopian tubes and right and left ovaries were noted. The histopathological findings were given by pathologists where as all other information present in the report were sent from

Department of Gynaecology.

Apart from physiological changes in the endometrium (secretory, proliferative and atrophied endometrium), chronic cervicitis that was not severe, ovaries with cystic follicle, follicular cysts, luteal cysts and inclusion cysts that did not form the indication of hysterectomy and paratubal cysts that were asymptomatic and just a chance finding were not considered pathological. Thus specimens with only one or more of those findings were considered “unremarkable” histologically.

The data was analyzed using software program SPSS 10.0 for windows

## RESULTS

During the study period, a total 221 hysterectomy specimens were sent to the Department of Pathology, TUTH for histopathological examination. Out of these, 139(62.9%) were total abdominal hysterectomies (TAH) and 82(37.1%) were vaginal hysterectomies (VH). 124 TAH were accompanied by bilateral salpingo-oophorectomies (TAHBSO), 13 were accompanied by unilateral salpingo-oophorectomies (TAHUSO) and in 2 TAHs both ovaries were preserved.

Patients undergoing VH, TAHBSO and TAHUSO were in age range of 34 to 91 years (mean 53.4 years), 23 to 82 years (mean 46.3 years) and 30 to 47 years (mean 37.6 years) respectively. There were two patients whose both ovaries were preserved. One was 28 years old and indication for hysterectomy was post partum hemorrhage while another patient was 38 years old and hysterectomy was done for leiomyoma uterus.

Overall most common clinical indication for hysterectomy was uterine prolapse (81 cases), accounting 98.8% of vaginal hysterectomies and 37.1% of all hysterectomies. Other common indications were fibroid (24.9%), ovarian tumor (14.9%) and dysfunctional uterine bleeding (DUB) (7.7%). Tubo-ovarian disease (non neoplastic as well as neoplastic) were clinical indication of hysterectomy in 45 cases (20.4%). (Table I)

Table I: Distribution of hysterectomies according to clinical indication and type of operation performed

Clinical Indication	Type of Operation			Total No. (%)
	Vaginal Hysterectomy N (%)	Total Abdominal Hysterectomy		
		With unilateral salpingo-oophorectomy N (%)	With bilateral salpingo-oophorectomy N (%)	
Uterine vaginal Prolapse	81			81
Fibroid uterus		6	48	55
Ovarian tumor		2	31	33
Dysfunctional uterine bleeding		2	13	17
Adenomyosis		1	6	7
Tubo-ovarian mass			5	5
Cervical intraepithelial neoplasm			3	3
Pelvic inflammatory disease		1	2	3
Endometriosis			2	2
Cervical polyp			2	2
Twisted hydrosal			2	2
Postmenopausal bleeding	1		1	2
Endometrial carcinoma			1	1
Foreign body in uterus			1	1
Gestational trophoblastic disease			1	1
Fimbrial cyst			1	1
Pelvic pain		1		1
Paraovarian cyst			1	1
Endometrial polyp			1	1
Postpartum haemorrhage				1
Ruptured tubal pregnancy			1	1
Total	82 (37.1%)	13 (5.9%)	124 (56.1%)	2 (0.9%)
				221 (100%)

## HISTOPATHOLOGICAL FINDINGS

### Endometrium

Histopathologically, 58 hysterectomy specimens (26.2%) showed atrophied endometrium (43 from VH group and 15 from TAH group) and 11 (5%) showed hyperplasia (10 simple, 1 complex). Tumor was present in 4 (1.8%) specimens out of which 1 was noninvasive complete hydatidiform mole, 2 were endometrial carcinomas and 1 was endometrial sarcoma. (Table II)

### Myometrium

Ninety Nine specimens had myometrial pathology. Most common histopathological abnormality in myometrium was leiomyoma followed by adenomyosis. Isolated leiomyoma was seen in myometrium of 53 (24%) hysterectomies and adenomyosis in 38 (17.2%) where in 7 myo-

metriums, both were present together. Most myometrial pathology were seen in abdominal hysterectomy group (85/99=85.9%) as compared to vaginal hysterectomy group (14/99=14.1%). (Table III)

### Cervix

Cervix from 213 (96.4%) specimens showed chronic cervicitis out of which severe chronic cervicitis was seen in one only. Cervical intraepithelial neoplasia (CIN) I, CIN III and microinvasive squamous cell carcinoma were seen in one specimen each (Table IV) and were just chance findings in hysterectomies done with clinical indication of ovarian tumor and fibroid uterus respectively. One hysterectomy was performed with indication of CIN II and two with indication of CIN III. However in these three specimens, dysplasia was not seen histologically. (Table I & IV)

Table II: Histopathological findings in the endometrium in hysterectomy specimens obtained by different type of operations

HISTOPATHOLOGICAL FINDINGS OF ENDOMETRIUM	VEH	TAHBSO	TAHBSO	TAH	TOTAL N(%)
Secondary endometrium					
- Early	10	3	40		
- Mid	8	3	5		70 (31.7%)
- Late	0	0	1		
Proliferative endometrium					
- Early	5	2	20		
- Mid	3	0	4	1	68 (30.8%)
- Late	10	3	20		
Atrophy	43	1	14		58 (26.2%)
Simple hyperplasia without atypia	1		9		10 (4.5%)
Endometrial polyp	1	1	3		5 (2.3%)
Endometritis			3		3 (1.4%)
Endometrial adenocarcinoma	1		1		2 (0.9%)
Haemorrhagic			1	1	2 (0.9%)
Non-invasive complete Hydatidiform Mole			1		1 (0.5%)
Endometrial sarcoma			1		1 (0.5%)
Complex hyperplasia without atypia			1		1 (0.5%)
TOTAL	82	13	124	2	221 (100%)

Table III: Histopathological findings in myometrium

Histopathology of Myometrium	Frequency	Percentage
Normal	122	55.2
Adenomyosis	38	17.2
Leiomyoma	53	24.0
Leiomyoma as well as adenomyosis	7	3.2
Endometrial Sarcoma	1	0.5
Total	221	100.0

Table IV: Histopathology of cervix

Histopathology of Cervix	Frequency	Percent
Chronic Cervicitis	212	95.9
Cervical Polyp (Non leiomyomatous)	3	1.4
Cervical leiomyoma	2	0.9
Serous Chronic Cervicitis	1	0.5
Microinvasive squamous cell carcinoma	1	0.5
CINI	1	0.5
CINI	1	0.5
Total	221	100.0

#### Tubes and Ovaries

Bilateral tubes and ovaries were removed in 124 and unilateral in 13 patients. Thus, a total of 261 tubes and ovaries were removed (128 right and 133 left). Most common finding in ovaries were functional cysts. Benign tumors

were seen in 27 (13.34%) and malignant tumors in 13 (5%) ovaries. Serous cystadenoma was the most common benign tumor (12/261) seen where as serous cystadenocarcinoma accounted for most of the malignant tumors (10/261) (Table V). In one TAHBSO specimen, along with bilateral

Table V: Histopathological findings in removed right and left ovaries

Findings	Right Ovary	Left Ovary	Total	Percentage
Normal	34	37	113	43.3
Cystic follicle	34	33	67	25.7
Serous cystadenoma	4	8	12	4.4
Follicular cyst	5	4	9	3.4
Inclusion cyst	4	5	9	3.4
Luteal cyst	4	3	9	3.4
Serous cystadenocarcinoma	4	5	9	3.4
Maternal cystic teratoma	1	7	8	3.1
Hemorrhagic cyst	5	2	7	2.7
Mucinous cystadenoma	2	2	4	1.5
Endometriosis	1	2	3	1.1
Granulosa cell tumor	1	1	2	0.8
Krukenberg tumor	1	1	2	0.8
Mucinous cystadenocarcinoma	1	1	2	0.8
Inflammation with tubo-ovarian mass	1	1	2	0.8
Parovarian cyst	1	0	1	0.4
Serous cystadenocarcinoma + metastatic GIST	1	0	1	0.4
Fibrofibroma	0	1	1	0.4
Total	128	133	261	100

Table VI: Histopathological findings in removed right and left fallopian tubes

Findings	Right Tube	Left Tube	Total	Percentage
Normal	104	114	220	84.3
Paratubal cyst	9	7	16	6.1
Salpingitis	7	7	14	5.4
Metastasis	5	4	9	3.4
Endometriosis	1	1	2	0.8
Total	128	133	261	100

serous cystadenocarcinoma, metastatic gastrointestinal stromal tumor (GIST) was also seen in one ovary.

Paratubal cyst was found attached to 6.1% of fallopian tubes removed. 5.4% removed fallopian tubes were inflamed and metastasis was present in 3.4%. (Table VI)

#### Unremarkable Histopathology

38% hysterectomies (84/221) were unremarkable. 66 of these belonged to VH group out of which 65 were performed for uterovaginal prolapse. Four out of 17 hysterectomies (23.5%) done for DUB had no microscopic abnormality and this was the most common clinical indication in TAH group with unremarkable histopathological analysis.

#### DISCUSSION

Hysterectomy is second only to cesarean section as the most frequently performed major operation in the United States.<sup>2</sup> Data from the National Hospital Discharge Survey (NHDS) indicate that approximately 590,000 hysterectomies are performed annually. By the age of 60, over one third of U.S. women have undergone hysterectomy.<sup>4</sup> An estimated 3.5 million women aged 15 to 44 years in the United States underwent hysterectomy between 1970 and 1978.<sup>5</sup> Rates for hysterectomy in 1990 were 5.5 per 1000 women and increased slightly by 1997 to 5.6 per 1000 women in United States.<sup>6</sup>

Hysterectomy may be performed by a vaginal, an abdominal or a laparoscopic approach and may or may not include removal of the ovaries.

Before laparoscopically assisted vaginal hysterectomy (LAVH), 75% of hysterectomies performed were total

abdominal hysterectomies (TAH) and the rest were total vaginal hysterectomies (VH). Rate of TAH decreased to 39% while that of VH remained the same (29%) after the introduction of LAVH. In 1990, 73% of all hysterectomies were TAH which dropped to 63% in 1997 whereas the rate of LAVH, which was 0.3% in 1990, increased to 9.9%.<sup>6</sup>

In a study carried in Istanbul, there were 3 274 (82.7%) TAH, 424 (10.7%) VH, 28 (0.7%) subtotal hysterectomies and 230 (5.8%) radical hysterectomies.<sup>3</sup>

There were more hysterectomies done by abdominal approach (77.3%) in study by Gaym A<sup>7</sup> also with vaginal hysterectomy being done in only 22.7%.

Similar to the literatures, in this study also there was a preference for abdominal approach for hysterectomy (62.9%), rate of vaginal hysterectomy being 37.1%. LAVH is not done in TUTH.

Appropriate indications for hysterectomy include benign uterine disease and/or symptoms like dysfunctional uterine bleeding, uterine pain, uterine prolapse, uterine leiomyomas, septic abortions and obstetric catastrophes. Other indications include benign diseases of the tubes and ovaries in which the uterus is not primarily involved such as pelvic inflammatory disease, pelvic endometriosis and ectopic pregnancy. Other indications are neoplastic diseases. Miscellaneous indications for hysterectomy include cervical problems such as cervical stenosis with recurring pyometra and chronic pelvic pain. A partial list of inappropriate indications for hysterectomy includes prophylaxis against uterine cancer, contraception in a gynecologically normal patient, management of menopause, leucorrhea and chronic cervicitis, dysmenorrhea and premenstrual tension and mild urinary incontinence.<sup>8</sup>

Leiomyoma of uterus was commonest indication of hysterectomy in most studies. Leiomyoma uteri accounted for 38.49% of hysterectomies and were the commonest clinical indication, followed by gynecological cancers (21.6%) and uterine prolapse (11.9%) in study by Aksu F et al.<sup>3</sup> In study of Tan XJ et al<sup>9</sup> also common indications for hysterectomy included uterine leiomyomas (56.2%)

followed by adenomyosis (12.2%), benign ovarian tumor (9.2%) and genital prolapse (7.7%). The most common indications for TAH and LAVH were uterine leiomyomas and adenomyosis, whereas the most common indication for VH was genital prolapse.<sup>9</sup> Weaver F et al after study of 1722 hysterectomies concluded that most frequent indications for vaginal hysterectomy were prolapse (26%), for abdominal hysterectomy were leiomyomas (37%), and for LAVH again were leiomyomas (31%).<sup>10</sup> In study of 969 hysterectomies by Gaym A the three major indications for hysterectomy were found to be leiomyomas (41.1%), uterovaginal prolapse (23%) and ovarian tumors (19.5%).<sup>7</sup> Our study included only 221 specimens but major indications of hysterectomy in our study were also similar though percentage varied. Although uterine leiomyomas was the most common indication in TAH group (30.7%), overall uterine prolapse was the most common indication for hysterectomy (37.1%). Other common indications were ovarian neoplasia and dysfunctional uterine bleeding.

Women undergoing VH are older as compared to women undergoing TAH. Chryssikopoulos A et al observed that about 74.8% of the patients subjected to abdominal hysterectomy were aged 36 to 55, and 70.6% of the women subjected to vaginal hysterectomy (VH) were aged 56 to 75.<sup>11</sup> Mean age in years was 42.1 for TAH, 44.3 for vaginal and 40.3 for LAVH in another study.<sup>10</sup> Similar to other studies, we also found that mean age was higher for VH as compared to abdominal hysterectomies.

Leiomyoma was the commonest lesion of uterine corpus (27.1%) in our study followed by adenomyosis (20.4%). This was similar to findings of study of Jamal S and Baqai S,<sup>12</sup> who concluded leiomyomas to be the commonest lesion of uterine corpus (35.7%) followed by adenomyosis (30%). In their study also, chronic cervicitis in cervix (41.53%) and functional cysts in ovaries (66.12%) were most common histological finding. In our study also, chronic cervicitis in cervix (96.3%) and functional cysts in ovaries (32.6%) were most common histological finding. In TUTH, cervical biopsy is not reported as "normal" as some inflammatory cells are always found. This could be the reason of high rate of chronic cervicitis in our study.

Many times histopathological examination of hysterectomy specimens don't reveal any pathology. Pathological examination of the hysterectomy specimens were normal in 5.1% in TAH group and 42.1 in TVH group in study of Aksu F et al.<sup>3</sup> The uterus was histologically normal in 20% of abdominal hysterectomies, the rate rising to 70% for vaginal hysterectomies in study by MacKenzie IZ et al.<sup>13</sup> In the systematic review of the literature Meikel et al stated that 36% of hysterectomy specimens had no pathological findings.<sup>14</sup> Histopathological examination of 38% (84/221) hysterectomies was unremarkable in our study. Most of these unremarkable specimens were vaginal hysterectomies. Out of 82 VH, 66 (80.5%) were unremarkable. Where as this rate was 12.9% (18/139) for abdominal hysterectomies. 23.5% of hysterectomies done with clinical indication of DUB (4/17) were unremarkable. This rate was 3.6% (2/55) for uterine fibroid.

HA salmon et al after review of 854 hysterectomy specimens over two year period found that 139 were normal macroscopically and only one of the 139 cases harbored a microscopic abnormality that necessitated specific clinical follow up. In their view microscopic assessment of macroscopically normal hysterectomy specimens were unnecessary. Those 139 specimens if not examined microscopically, would have saved approximately 278 blocks each year.<sup>15</sup> However some authors strongly encourage a microscopic evaluation of all the normal looking hysterectomy specimens, as the occasional presence of malignant tumors can only be accurately diagnosed by microscopic examination.<sup>16,17</sup>

Complications of hysterectomy were not studied in our study. However literatures show that hysterectomy is a relatively "safe" procedure. Mortality rate associated with hysterectomy is less than 0.1%.<sup>1</sup> Postoperative rates of complications are considerably lower with vaginal than with abdominal hysterectomy. Postoperative fever and infections account for the majority of complications.<sup>3</sup> In a study carried out in France the rate of postoperative complications was 0.8-4.9%, 1.6-19.4%, and 5% for vaginal, abdominal and vaginal laparoscopic hysterectomies respectively.<sup>18</sup>

## CONCLUSION

In TUTH, abdominal hysterectomies are more common than vaginal hysterectomies. Patients undergoing vaginal hysterectomies are older than those undergoing abdominal hysterectomies. Most vaginal hysterectomies are done for uterine prolapse whereas most abdominal hysterectomies are performed for uterine leiomyomas. Hysterectomy specimens may be unremarkable histopathologically, most of which are vaginal hysterectomies done for uterine prolapse.

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## REFERENCES

1. Maresh MJ, Metcalfe MA, McPherson K, Overton C, Hall V, Hargreaves J, Bridgman S, Dobbins J, Casbard A. The VALUE national hysterectomy study: description of the patients and their surgery. *BJOG* 2002; 109: 302-312.
2. Schaffer JI, Word A. Hysterectomy-still a useful operation. *The New England Journal of Medicine*. 2002; 347 (17): 1360-1362.
3. Aksu F, Gezerand A, Oral E. Seventeen-year review of hysterectomy procedures in a university clinic in Istanbul (1985-2001) *Archives of Gynecology and Obstetrics*. 2004; (4): 217-22.
4. Carlson KJ, Nichols DH and Schiff I. Indications for Hysterectomy. *The New England Journal of Medicine*. 1993; 328 (12); 856-860.
5. Dicker RC, Scally MJ, Grenspan JR, Layde PM, Ory HW, Maze JM and Smith JC. Hysterectomy among women of reproductive age. Trends in the United States, 1970-1978 *JAMA* 1982; 248: 323-7.
6. Farquhar CM; Steiner CA. Hysterectomy rates in the United States 1990-1997. *Obstet Gynecol*. 2002; 99(2): 229-34.
7. Gaym A. Elective hysterectomy at Tikur Anbessa Teaching Hospital, Addis Ababa. *Ethiop Med J*. 2002 Jul; 40(3): 217-26.

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8. Thompson JD, Birch HW. Indications of hysterectomy. *Clin Obstet Gynecol*. 1981 Dec; 24(4): 1245-58.
  9. Tan XJ; Lang JH; Shen K; Liu ZF; Sun DW; Leng JH; Zhu L. Operative approaches, indications, and medical economics evaluation of 4180 cases of hysterectomy *Zhongguo Yi Xue Ke Xue Yuan Xue Bao*. 2003; 25(4): 406-9.
  10. Weaver F, Hynes D, Goldberg JM, Khuri S, J and Henderson W. Hysterectomy in Veterans Affairs Medical Centers. *Obstetrics & Gynecology* 2001; 97: 880-884.
  11. Chryssikopoulos A, Loghis C. Indications and results of total hysterectomy. *Int Surg*. 1986; 71(3): 188-94.
  12. Jamal S, Baqai S. A clinicohistopathological analysis of 260 Hysterectomies Pakistan. *J Pathol*. 2001; 12(2): 11-4.
  13. MacKenzie IZ; Naish C; Rees M; Manek S. 1170 consecutive hysterectomies: indications and pathology. *J Br Menopause Soc*. 2004; 10(3): 108-12.
  14. Meikle SF, Nurgent EN, Orleans M. Complication and recovery from LAVH compared with TAH and TVH. 1997; *Obstet Gynecol* 89: 304-311.
  15. Salmon HA, Smith JHF and Balsitis M. Is microscopic assessment of macroscopically normal hysterectomy specimens necessary? *Journal of Clinical Pathology* 2002; 55: 67-68.
  16. Müezzinoğlu B, Doger E, Yıldız DK. The Pathologic Spectrum of Prolapsus Uteri: Histopathologic Evaluation of Hysterectomy Specimens. *Journal of Gynecologic Surgery*. 2005; 21(3): 133-135.
  17. Mehboob R, Ahmad N. Unexpected pathology at vaginal hysterectomy for genital prolapse. *Pakistan J. Med. Res*. 2002; 41(4).
  18. Debodinance P. Hysterectomy for benign lesions in the north of France: epidemiology and postoperative events. *J Gynecol Obstet Biol Reprod (Paris)*. 2001 Apr; 30(2): 151-9.

