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# Histopathological Analysis of Hysterectomy Specimens at a Tertiary Level Hospital of Nepal

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## ABSTRACT

### Background

Hysterectomy is among the most frequently performed surgical procedures in tertiary care hospitals in Nepal. A variety of pathological conditions affecting cervix, endometrium, and myometrium often present with symptoms such as pelvic pain, abnormal bleeding, and infertility. The objective of this study is to determine the prevalence of uterine diseases leading to hysterectomy among patients at Bharatpur Hospital thereby providing valuable insights for accurate diagnosis and informed clinical management.

### Methods

A cross-sectional study was conducted including 171 uterine specimens from patients who underwent hysterectomy between 1<sup>st</sup> April 2023 to 31<sup>st</sup> March 2024 at Bharatpur hospital, Chitwan, Nepal. Specimens were processed using standard histopathological techniques, including grossing, fixation in 10% formalin, section cutting with microtome and Hematoxylin & Eosin staining. Data was entered and analyzed using Microsoft Excel and Stata/BE version 18.0.

### Results

Among the total 171 uterine specimens, the mean $\pm$ SD of age was  $48 \pm 7.8$  years. The minimum age was 30 years while maximum age was 74 years. Among them 148 (86.5%) underwent transabdominal hysterectomy, while 23 (13.5%) underwent vaginal hysterectomy. Chronic cervicitis was the most common cervical finding observed in 114 females (66.7%). Proliferative endometrium was the predominant endometrial finding observed in 97 females (56.7%). Leiomyoma was most frequently observed myometrial finding evident in 101 females (59.1%).

### Conclusions

Chronic cervicitis, either in isolation or accompanied by other changes, was the most common histopathological finding in this study. These results underscore the importance of routine histopathological examination of hysterectomy specimens to ensure accurate diagnosis and appropriate management of underlying uterine conditions.

**Keywords:** chronic cervicitis; hysterectomy; leiomyoma; proliferative endometrium; uterine lesions.

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## INTRODUCTION

Hysterectomy is one of the most frequently performed surgical procedures in the tertiary level hospitals of Nepal.<sup>1</sup> Common pathological conditions leading to hysterectomy include cervical lesions such as cervical cancer and dysplasia, endometrial disorders including endometrial cancer and hyperplasia, and myometrial conditions like uterine fibroids and adenomyosis.<sup>2-4</sup> These pathologies typically present symptoms such as abnormal bleeding, pelvic pain, and infertility, often requiring surgical intervention for diagnosis and treatment.<sup>5-7</sup> A routine histopathological analysis of hysterectomy specimens is crucial in diagnosing the pathological conditions originating from the cervix, myometrium and endometrium of the uterus.<sup>8,9</sup> The objective of this study is to determine the incidence of uterine diseases leading to hysterectomy among patients at Bharatpur Hospital. Additionally, the study aims to enhance the diagnostic accuracy of hysterectomy specimens, thereby improving the management of underlying uterine conditions. Furthermore, the study provides an evidence-based information to the policymakers to strengthen histopathological services at tertiary-level hospitals in Nepal.

## METHODS

A descriptive cross-sectional study was conducted in the department of Pathology, Bharatpur Hospital, Chitwan, Bharatpur, Nepal from 1<sup>st</sup> April 2023 to 31<sup>st</sup> March 2024. Ethical clearance was taken from the Institutional Review Committee (IRC) Bharatpur Hospital (Ref. No.080/81-034). A total of 171 hysterectomy specimens during the study period were included. Specimens from patients who underwent hysterectomy at Bharatpur Hospital with complete clinical records and confirmed histopathological diagnosis were included in the study. Specimens with incomplete patient information and inconclusive histopathological diagnosis were excluded. All hysterectomy specimens included in the study were handled and processed following the standard operating procedures (SOPs) of the department of pathology. The hysterectomy specimens were fixed in 10% neutral buffered formalin using a tissue-

to-fixative ratio of 1:10. After 24 hours of fixation, pathologists conducted a thorough gross examination to assess the size of the uterus, the thickness of its walls, and the presence of any visible lesions. Tissue samples were carefully collected from different parts of the uterus, including the endometrium and myometrium, with sections taken from the fundus, body, and lower segments. To ensure thorough examination of the cervix, at least two samples were taken from both the inner (endocervical) and outer (ectocervical) areas of each lip. Moreover, additional sections were collected from grossly visible or suspected pathological lesions. Tissue samples were processed in an automated tissue processor and carefully embedded in paraffin with proper orientation and labeling. Rotatory microtome was used to generate thin serial sections measuring approximately 4  $\mu$ m and stained with Hematoxylin and Eosin (H & E) by trained histotechnician to prepare them for microscopic examination. Special histochemical stains were used when initial microscopic findings indicated the need for further evaluation. Stained slides were reviewed by pathologists and provided a histopathological diagnosis. All reports were documented and securely archived in the departmental database. Reports were retrieved from the departmental histopathological database with approval from the Institutional Review Committee at Bharatpur Hospital. Patient details and histopathological findings were recorded in a predesigned proforma and entered into Microsoft Excel for preliminary data processing. Descriptive data analysis was then conducted using Stata/BE version 18.0.

## RESULTS

A total of 171 histopathological reports from females who underwent hysterectomy at Bharatpur Hospital during the study period were included. The mean  $\pm$  SD age of the participants was 48  $\pm$  7.8 years, with ages ranging from 30 to 74 years (Figure 1). Among the participants, 86.5% underwent transabdominal hysterectomy, while 13.5% underwent vaginal hysterectomy. Of those who underwent transabdominal hysterectomy, 85% had bilateral

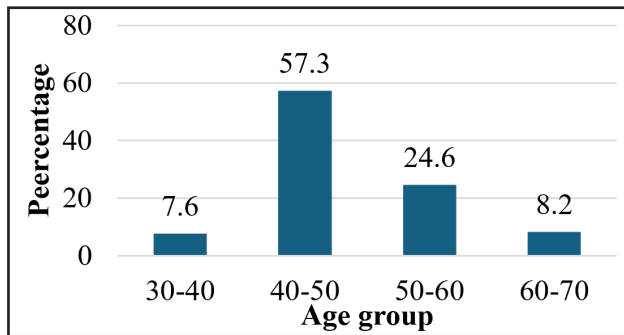


Figure 1. Age distribution of patients.

salpingo-oophorectomy, 8% underwent right-sided salpingo-oophorectomy, 4% had hysterectomy alone, and 3% underwent left-sided oophorectomy. TAH and BSO was observed most commonly among the females aged 40-50 years and VH was observed most commonly among the females aged more than 60 years. Chronic cervicitis was the most common histopathological finding observed in 66.7% cases. Chronic cervicitis was most commonly observed in females aged 40-50 years. Moreover, chronic cervicitis with squamous metaplasia was observed in 17.5% of cases, followed by chronic papillary endocervicitis in 9.9%, and chronic cervicitis with nabothian cysts in 2.9%. High-grade squamous intraepithelial lesion (HSIL) and low-grade squamous intraepithelial lesion (LSIL) were each identified in 1.2% of cases, while benign endocervical polyps were found in 0.6% of cases. Table 1 presents the distribution of cervical lesions identified among the hysterectomy specimens.

Diagnosis	Frequency (%)
Chronic cervicitis	114 (66.7%)
Chronic cervicitis with squamous metaplasia	30 (17.5%)
Chronic papillary endocervicitis	17 (9.9%)
Chronic cervicitis with Nabothian cyst	5 (2.9%)
High grade squamous intraepithelial lesion	2 (1.2%)
Low grade squamous intraepithelial lesion	2 (1.2%)
Benign endocervical polyp	1 (0.6%)

Table 2 presents the distribution of endometrial lesions identified in the hysterectomy specimens. The most common histopathological finding was proliferative endometrium, observed in 56.7% of cases. This was

followed by secretory endometrium in 20.5%, atrophic endometrium in 12.3%, and disordered proliferative endometrium in 7% of specimens. Endometrial hyperplasia without atypia was identified in 2.3% of cases. Additionally, benign endometrial polyp associated with atrophic endometrium and benign endometrial polyp associated with proliferative endometrium were each noted in 0.6% of cases.

**Table 2. Endometrial findings among hysterectomy specimens.**

Diagnosis	Frequency (%)
Proliferative endometrium	97 (56.7%)
Secretory endometrium	35 (20.5%)
Atrophic endometrium	21 (12.3%)
Disordered proliferative endometrium	12 (7.0%)
Endometrial hyperplasia without atypia	4 (2.3%)
Benign endometrial polyp with atrophic endometrium	1 (0.6%)
Benign endometrial polyp with proliferative endometrium	1 (0.6%)

Table 3 presents the distribution of myometrial lesions identified in the hysterectomy specimens. Leiomyoma was the most frequently observed histopathological finding among 59.1% cases. Unremarkable myometrium was noted in 21% of cases, while adenomyosis was identified in 11.7%. Both adenomyosis and leiomyoma coexisted in 8.2% of the specimens.

**Table 3. Myometrial findings among hysterectomy specimens.**

Diagnosis	Frequency (%)
Leiomyoma	101 (59.1%)
Unremarkable	36 (21.0%)
Adenomyosis	20 (11.7%)
Adenomyosis and leiomyoma	14 (8.2%)

## DISCUSSION

The highest prevalence of hysterectomy was observed among women aged 40–50 years. This finding is consistent with the study by Baral et al., which reported that approximately 43% of patients belonged to the 41–50 years age group.<sup>10</sup> The most common surgical approach for hysterectomy in our cohort was transabdominal, aligning with the findings of Baral et al. and SS et al., who also identified the transabdominal route as the predominant method.<sup>10,11</sup>

Among the cervical pathologies identified in this study, chronic cervicitis was the most prevalent finding. It was observed both as an isolated lesion and in association with other benign conditions such as squamous metaplasia and nabothian cysts. This observation is consistent with previous studies conducted by Baral et al., SS et al., and Patel et al., which also reported chronic cervicitis as the most common cervical pathology.<sup>10–12</sup> Similarly, Jandial et al., documented chronic cervicitis in approximately 47% of cases, while Agarwal et al. reported its presence in nearly two-thirds of their study population.<sup>13,14</sup> These findings collectively highlight the high burden of chronic inflammatory changes in the cervix among women undergoing hysterectomy and underscore the clinical relevance of thorough histopathological evaluation. In this study, proliferative endometrium, often associated with conditions such as fibroids and adenomyosis, was the most common histopathological finding. This finding is consistent with the study by Wankhade et al., which reported proliferative endometrium in more than one-third of cases.<sup>15</sup> In contrast, Agarwal et al. found non-secretory endometrium to be the most prevalent, with proliferative endometrium observed in only 5.7% of cases.<sup>14</sup> These differences highlight variations in endometrial findings across different populations and underline the importance of considering associated uterine conditions in the interpretation of histopathological results. In this study, leiomyoma was the most frequently observed myometrial pathology, either as an isolated finding or

in combination with adenomyosis. This is consistent with the results of studies by Wankhade et al., Patel et al., and Baral et al., which similarly reported a high prevalence of leiomyoma, often coexisting with adenomyosis.<sup>10,12,15</sup> These findings underscore the common association between leiomyoma and adenomyosis in women undergoing hysterectomy, emphasizing their clinical relevance in surgical decision-making.

### Limitations

This study was conducted in a single centered with limited sample size with short duration, due to which the findings of this study may not be generalizable to other areas of Nepal.

### CONCLUSIONS

Chronic cervicitis was the most frequently observed cervical lesion, indicating that majority of females are suffering from chronic inflammatory conditions. Additionally, predominance of proliferative endometrium reflected underlying hormonal influences, and leiomyoma was the leading myometrial pathology often necessitating surgical intervention. These findings highlight the value of routine histopathological examination in guiding clinical decision-making and informing the management of uterine pathology in women undergoing hysterectomy operations.

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