



## Original Research Article

# Histopathological audit of hysterectomies for analysis of indication and respective pathology at tertiary care teaching hospital

Amruta K Thomake<sup>1</sup>, Pragnya Patil<sup>1</sup>, Bhavini Harsiyani<sup>1</sup>, Suchita Deshmukh<sup>1\*</sup>, Ravindra Shinde<sup>1</sup>

<sup>1</sup>Dept. of Pathology, DY Patil Medical College, Kolhapur, Maharashtra, India



## ARTICLE INFO

## Article history:

Received 19-12-2023

Accepted 03-04-2024

Available online 21-12-2024

## Keywords:

Hysterectomy

Fibroid

Indications

Histopathological correlation

## ABSTRACT

**Background:** Even though many medical and conservative surgical treatment options are existing, hysterectomy still is the most commonly performed major gynecological procedure worldwide. Histological examination is mandatory for the uterine specimen after hysterectomy. The present study aims to audit indications and to rationalize the surgery by relating preoperative diagnosis with histopathology reports in tertiary care hospitals.

**Material and Methods:** Present study was retrospective study conducted on hysterectomy (uterus and cervix) specimens received in Pathology department. The gross and histological findings of respective cases were retrieved from the histopathological section and wherever necessary re-sectioning, processing and staining done for analysis. The preoperative indications were correlated with histopathological findings of the resected specimen.

**Results:** Among 150 cases of Hysterectomies studied most common age group was 5th decade seen in 50.67%. Most prevalent presenting symptoms was abnormal menstrual bleeding in 31.33% cases. In 45.34% cases indication of hysterectomy was fibroid which correlated histologically in most cases. On histopathological examination in 44% cases finding in endometrium was proliferative phase of endometrium. Atypical endometrial hyperplasia found in 4 cases, while single case of endometrial adenocarcinoma was reported. In 63.99% finding in cervix was chronic cervicitis. Cervical dysplasia seen only in 4 cases justifying earlier age of hysterectomies performed. Of total 150 cases, 128 were concordant with the histopathological diagnosis and 22 cases were non-concordant. P value was calculated and it shows high significance ( $P < 0.0001$ ) with association of clinical diagnosis with histopathological findings.

**Conclusion:** There was wide spectrum of histopathological findings in hysterectomy specimens which needs to be evaluated histopathological examination. Hysterectomy can be an option of treatment when other treatment options are not available and regular audit of hysterectomies should be conducted.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution 4.0 International License](#), which allows others to remix, and build upon the work. The licensor cannot revoke these freedoms as long as you follow the license terms.

For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

The uterus comprises the endometrium and the myometrium, stimulated throughout by hormones, denuded monthly of its endometrial mucosa, and once a while inhabited by fetuses. The lesions of the uterus and cervix account for most patient visits to gynecologists.<sup>1,2</sup>

Even though many medical and conservative surgical treatment options are existing, hysterectomy still is the most commonly performed major gynecological procedure worldwide.

The most common benign conditions in hysterectomy specimens are uterine fibroid and adenomyosis with the peak incidence in the 5th decade i.e 41-50 years. The other causes are abnormal heavy bleeding, chronic pelvic pain, uterine prolapse, pelvic inflammatory disease,

\* Corresponding author.

E-mail address: [drsuchita24@gmail.com](mailto:drsuchita24@gmail.com) (S. Deshmukh).

cervical intraepithelial neoplasia (CIN), prophylaxis against uterine cancer, and endometrial carcinoma. Most vaginal hysterectomies are done for uterine prolapse and patients are older than those undergoing abdominal hysterectomies.<sup>3</sup>

Histopathological examination is mandatory for the uterine specimen after hysterectomy. Correlation between clinical and histological patterns is important in the general management of the patients. The studies were done in India, Bangladesh, and Nigeria respectively showed a correlation between pre-operative clinical and histopathological diagnoses as 74, 77, and 95.6%.<sup>4,5</sup> The present study aims to audit indications and to rationalize the surgery by relating preoperative diagnosis with histopathology reports in tertiary care hospitals. This type of evaluation might be supportive in the endowment of quality reassurance and correctness of hysterectomy.

2. Materials and Methods

Present study was retrospective study of histopathological reports of the hysterectomy specimens with uterine and cervical indications received at The Department of Pathology, D Y Patil Medical College, Kolhapur, India. Study duration was between June 2019 to May 2021. Study approval was obtained from institutional ethical committee.

2.1. Inclusion criteria

All hysterectomy (uterus and cervix) specimens received in pathology department.

2.2. Exclusion criteria

Gravid Hysterectomy Autolysed specimen Post - chemotherapy / radiotherapy.

The clinical details of all the hysterectomy specimens with uterine and cervical indication including patient’s age, parity, presenting complaints, indications, and route were retrieved from the medical records department and entered into a specially designed performa for the study. The gross and histological findings of respective cases were retrieved from the histopathological section and were analyzed.

For the verification and confirmation of the histological findings wherever necessary, re-sectioning of the paraffin-embedded blocks was done using a microtome and slides stained with routine Hematoxylin and Eosin. Then detailed light microscopy study was done and histopathological findings in the uterus and cervix were noted. The preoperative indications were correlated with histopathological findings of the resected specimen.

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Frequency, percentage, means and standard deviations (SD) was calculated for the continuous variables, while ratios and proportions were calculated for the categorical variables. Difference of proportions between qualitative variables were tested using

chi- square test or Fisher exact test as applicable. P value less than 0.5 was considered as statistically significant.

3. Results

Among 150 cases of hysterectomy, we noted that peak incidence was at 5th decade of life i.e 41-50 years age group with 76 cases (50.67%). The most common route of hysterectomy was abdominal hysterectomy in 124 cases (82.67%).(Table 1)

Table 1: Distribution of study subjects according to age

Age group	Number	Percentage
31-40	36	24.00%
41-50	76	50.67%
51-60	20	13.33%
61-70	17	11.33%
71-80	1	0.67%

The most common clinical indication was fibroid uterus in 68 cases (45.33%) followed by abnormal uterine bleeding and uterine prolapse, seen in 38 cases (25.33%) and 26 cases (17.33%) respectively.(Table 2)

Table 2: Indications of hysterectomy

Preoperative diagnosis	Number	Percentage
Abnormal Uterine bleeding	38	25.33%
Adenomyosis	18	12.00%
Fibroid	68	45.33%
Uterine Prolapse	26	17.33%

Endometrial Adenocarcinoma was seen in 1 case, Atypical endometrial hyperplasia in 4 cases while Endometrial hyperplasia without atypia in 11 cases. The proliferative phase of endometrium was the commonest finding seen in 68 cases (45.33%).(Table 3)

Table 3: Histopathological findings

Histopathological report	Number	Percentage
Secretory endometrium	24	16%
Proliferative endometrium	68	45.33%
Chronic Endometritis	3	2.0%
Endometrial Polyp	3	2.0%
Atrophic endometrium/ Cystic atrophy	36	24%
Endometrial hyperplasia without atypia	11	7.33%
Atypical Endometrial hyperplasia	4	2.67%
Endometrial Adenocarcinoma	1	0.67%

Leiomyoma was the most common lesion noted in myometrium, in 78 cases (52%), followed by Adenomyosis in 34 cases (22.67%) and Adenomyosis and Leiomyoma together in 18 cases (12%).(Table 4)

**Table 4:** Histopathological findings in Myometrium

Histopathological report	Number	Percentage
Leiomyoma	78	52%
Adenomyosis	34	22.67%
Adenomyosis and Leiomyoma	18	12%
Adenocarcinoma	1	0.67%
Unremarkable	19	12.66%

In present study commonest finding in the cervix was chronic cervicitis with or without squamous metaplasia and keratinization of ectocervix is present in 96 cases (64%).(Table 5)

**Table 5:** Histopathological findings in Cervix

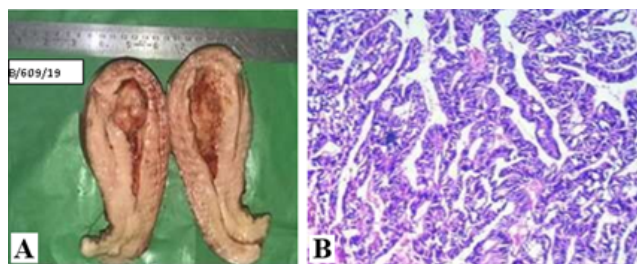
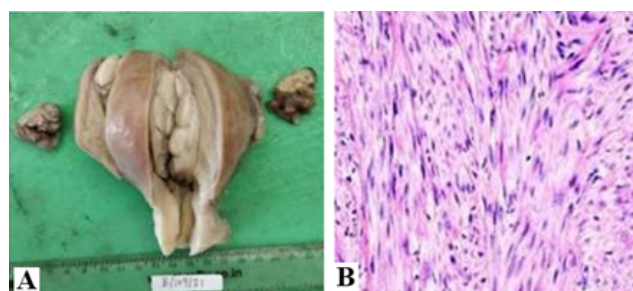
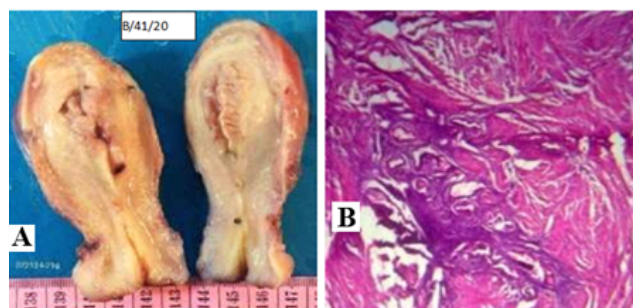
Histopathological report	Number	Percentage
Chronic cervicitis	96	64%
Papillary cervicitis	45	30%
Endocervical Polyp	4	2.67%
Cervical Dysplasia (LSIL/HSIL)	4	2.67%
Unremarkable	1	0.66%

In this study, total out of 150 cases, 68 cases of fibroid were clinically diagnosed, histologically 51 cases were diagnosed as leiomyoma, 9 cases as adenomyosis with leiomyoma and 7 cases with adenomyosis while none were unremarkable.

Uterine prolapse was clinically diagnosed in 26 cases. Out of which 22 cases showed features of atrophic endometrium, a finding consistent with uterine prolapse. Incidental findings of leiomyoma and adenomyosis was seen in 15 cases out of these.

Single case was histopathological diagnosed as endometrial carcinoma which presented clinically as mass in the abdomen.

Therefore, total of 150 cases, 128 were concordant with the histopathological diagnosis and 22 cases were non-concordant. P value was calculated and it shows high significance ( $P < 0.0001$ ) with association of clinical diagnosis with histopathological findings.(Table 6)

**Figure 1:** A: Endometrial carcinoma; B: endometrial carcinoma(10X)**Figure 2:** A: Submucosal leiomyoma; B: Leiomyoma (H&E 40X)**Figure 3:** A: Adenomyosis; B: Adenomyosis (H & E 10X)

#### 4. Discussion

Hysterectomy is still a majorly performed surgery in women all over the world. The patient often presents with menorrhagia, white discharge per vagina, mass per vagina, abdominal pain or in rare cases mass in abdomen. These patients are evaluated further with radiological or with Pap smear examination, cervical and endometrial biopsy and upon clinical diagnosis are posted for hysterectomy. The common clinical indications are fibroid, abnormal uterine bleeding, uterine prolapse, adenomyosis and carcinoma.

Previously used terms like menorrhagia, metrorrhagia, dysfunctional uterine bleeding, polymenorrhea, oligomenorrhea are not recommended. The PALM-COEIN system has standardized the nomenclature to describe the etiology and severity of abnormal uterine bleeding (AUB).<sup>6,7</sup>

Hysterectomy recommended in women with AUB only after all the relevant investigations have been done and conservative treatment options have failed or are refused by the patient.<sup>8,9</sup>

In Western countries, a decreasing trend is being reported for hysterectomy over time, in contrast to increasing trends observed in developing countries like India. Therefore, it is an alarming situation and efforts should be made to analyze and evaluate the clinical indications and pathologies in hysterectomies performed in women of reproductive age, by conducting timely audits that can help in the proper allocation of resources for primary health care and conservative management.<sup>10</sup>

**Table 6:** Correlation between clinical diagnosis and histopathological findings

Pathological findings	Clinical Indication			
	Fibroid	AUB	Adenomyosis	Uterine Prolapse
Leiomyoma	51	13	3	10
Adenomyosis & Leiomyoma	9	3	5	1
Adenomyosis	7	11	10	6
Unremarkable	-	6	-	2
Atrophic endometrium	10	1	-	22
Atypical Endometrial hyperplasia	-	2	-	-
Simple Endometrial Hyperplasia	-	1	-	-
Endometrial Adenocarcinoma	-	1	-	-
Endometrial Polyp	1	-	-	-
Concordant	60	31	15	22

In the present study age range of the patient were between 31 to 80 years with majority of patients in age group of 41-50 years (50.67%), which was similar to studies done by Pandey *et al.*,<sup>11</sup> study the age range was seen between 21-90 years, Kaur Tiwana *et al.*,<sup>12</sup> the age range was 22-85 years, Sivaprasagam *et al.*,<sup>13</sup> study the age range was 32-75 years. And the peak age prevalence in present study and all others study was in between 41- 50 years of age.

In the present study the most common route of hysterectomies performed were abdominal route constituting 82.67%. When compared with other studies as shown in table, Sivaprasagam *et al.*,<sup>13</sup> 98.54%, Sujatha *et al.*,<sup>[2]</sup> had 87.74% and Pandey *et al.*,<sup>11</sup> with 74.7% also showed similarity with this study.

On our study most common indication for hysterectomy was fibroid with 68 cases (45.34%) followed by abnormal uterine bleeding 38 cases (25.33%) and uterine prolapse 26 cases (17.34%) which was in concordance with study of Gupta *et al.*,<sup>14</sup> with indication of fibroid uterus as 164 cases (41%), abnormal uterine bleeding 142 cases (35.5%) and prolapse uterus 42 cases (10.5%). While indication of fibroid uterus was in concordance with Pandey *et al.*,<sup>11</sup> in 210 cases (39.9%) and Patil *et al.*,<sup>15</sup> in 56 cases (37.3%) it was discordant with study of Sivaprasagam *et al.*,<sup>13</sup> where most common indication was abnormal uterine bleeding (28%) followed by fibroid (21%).

In present study, proliferative and secretory endometrium were most common findings constituting 68 cases (45.33%) and 24 cases (16%) which is in concordance with other studies. Endometrial carcinoma was seen in 1 case (0.67%) which was similar to seen in Patil *et al.*,<sup>15</sup> with 2 cases (1.3%). Patient was diagnosed as postmenopausal bleeding in concordance with other studies. Atypical endometrial hyperplasia was seen in 4 cases (2.7%) which is concordant with Patil *et al.*,<sup>15</sup> 4 cases (2.7%), Medhi *et al.*,<sup>16</sup> 3 cases (2%) and Sujatha *et al.*,<sup>2</sup> with 3 cases (1.93%).

Among myometrial lesions, majority of lesions comprise of leiomyoma as in this study seen in 78 cases (52%) which is comparable with Sivaprasagam *et al.*,<sup>13</sup> with 101

cases (51%) and Sujatha *et al.*,<sup>2</sup> with 66 cases (42.58%). Second most common is adenomyosis in concordance with other studies. Adenomyosis is a lesion which is diagnosed on histopathological examination as incidental finding as it does not have any specific clinical presentation of its own. Our study has one case in which myometrium showed involvement by endometrioid adenocarcinoma which is similar to finding in Patil *et al.*,<sup>15</sup>

The most common cervical pathology in hysterectomy specimen is Chronic cervicitis as seen in present study with 96 cases (63.99%) which is consistent with Sujatha *et al.*,<sup>[2]</sup> Medhi *et al.*,<sup>16</sup> and Patil *et al.*,<sup>15</sup> Endocervical polyp was seen in 4 cases (2.67%) in this study which is in concordance with Sujatha *et al.*,<sup>2</sup> and Medhi *et al.*,<sup>16</sup> Our study had 4 cases (2.67%) of cervical dysplasia and 45 cases (30%) of papillary cervicitis which is discordant with other studies like Sujatha *et al.*,<sup>2</sup> and Patil *et al.*,<sup>11</sup> who has higher cases of cervical dysplasia and less cases of papillary cervicitis as compare to this study.

In the present study the correlation between clinical diagnosis and histological diagnosis was 85.33% which was comparable to study of Khan *et al.*,<sup>17</sup> and Sharma *et al.*,<sup>18</sup> The study of Sivaprasagam *et al.*,<sup>13</sup> had correlation of 98.47%. This analysis can be helpful for exploring less invasive options like myomectomy and further non-surgical options like uterine artery embolization and newly discovered medical treatment especially for women of reproductive age group who do not wish for surgery or want to retain the fertility. Hence has a role in reducing the number of hysterectomy.

## 5. Conclusion

It was established that most patients undergoing hysterectomy were present in 5th decade of life. The most common clinical indications for which hysterectomy was performed was fibroid, which in majority of cases correlated with its histological finding of leiomyoma.

There was wide spectrum of histopathological lesions in uterus and cervix in hysterectomy specimens along with incidental findings of adenomyosis and intraepithelial

neoplasia of cervix emphasizing the importance of histopathological examination in this specimen. This analysis can be helpful for exploring less invasive options and newly discovered medical treatment especially for women of reproductive age group reducing the number of hysterectomy. Therefore, hysterectomy should only be performed when other treatment options are not available. The regular audits of such a kind should be conducted for improvement of health care services.

## 6. Conflict of Interest

None to declare.

## 7. Source of Funding

None.

## References

1. Singh SK, Sharma SK, Siddhanta A. Major correlates and socioeconomic inequalities in hysterectomy among ever-married women in India. *Indian J Community Med.* 2020;45(1):12–7.
2. Sujatha R, Jaishree T, Manjunatha Y. Histomorphological analysis of uterine and cervical lesions in hysterectomy specimens at a tertiary care hospital. *IP J Diagn Pathol Oncol.* 2019;4(1):72–7.
3. Patel AS, Shah KJ. Histo pathological analysis of hysterectomy specimens in tertiary care center: two year study. *Trop J Path Micro.* 2018;4(1):34–9.
4. Vora MP, Raval A, Raval A, Patel F, Gonsai RN. A retrospective study of hysterectomy specimen at a tertiary care teaching hospital. *MedPulse Int J Pathol.* 2019;11(2):122–5.
5. Michael D, Mremi A, Swai P, Shayo BC, Mchome B. Gynecological hysterectomy in Northern Tanzania: a cross-sectional study on the outcomes and correlation between clinical and histological diagnoses. *BMC Womens Health.* 2020;20(1):122. doi:10.1186/s12905-020-00985-9.
6. Deneris A. PALM-COEIN Nomenclature for Abnormal Uterine Bleeding. *J Midwifery Womens Health.* 2016;61(3):376–9.
7. Marnach ML, Laughlin-Tommaso SK. Evaluation and Management of Abnormal Uterine Bleeding. *Mayo Clin Proc.* 2019;94(2):326–335.
8. Overview: Heavy menstrual bleeding: Assessment and management: Guidance [Internet]. NICE. [cited 2021 Oct 31]. Available from: <https://www.nice.org.uk/guidance/ng88>.
9. Bonafede MM, Miller JD, Laughlin-Tommaso SK, Lukes AS, Meyer NM, Lenhart GM, et al. Retrospective database analysis of clinical outcomes and costs for treatment of abnormal uterine bleeding among women enrolled in US Medicaid programs. *Clinicoecon Outcomes Res.* 2014;6:423–9. doi:10.2147/CEOR.S67888.
10. Shahid R, Abbas H, Mumtaz S, Perveen F, Bari M, Raja T, et al. Hysterectomy and Oophorectomy in Reproductive Age: A Cross-Sectional Study from a Tertiary Care Hospital. *Cureus.* 2020;12(5):e8344. doi:10.7759/cureus.8344.
11. Pandey D, Sehgal K, Saxena A, Hebbar S, Nambiar J, Bhat RG, et al. An audit of indications, complications, and justification of hysterectomies at a teaching hospital in India. *Int J Reprod Med.* 2014;2014:279273. doi:10.1155/2014/279273.
12. Tiwana KK, Nibhoria S, Monga T, Phutela R. Histopathological audit of 373 nononcological hysterectomies in a teaching hospital. *Patholog Res Int.* 2014;5:468715. doi:10.1155/2014/468715.
13. Sivapragasam V, Rengasamy C, Patil A. An audit of hysterectomies: indications, complications and clinico pathological analysis of hysterectomy specimens in a tertiary care center. *Int J Reprod.* 2018;7(9):3689–94.
14. Gupta AK, Gupta I, Suri AK. Histopathological Spectrum of Hysterectomy Specimens. *J Adv Med Med Res.* 2020;32(6):96–104.
15. Patil HA, Patil A, Mahajan V. Histopathological Findings in Uterus and Cervix of Hysterectomy Specimens. *MVP J Med Sci.* 2015;2(1):26–9.
16. Medhi P, Dowerah S, Borgohain D. A Histopathological Audit of Hysterectomy: Experience at A Tertiary Care Teaching Hospital. *Int J Contemp Med Res.* 2016;3(4):1226–8.
17. Khan R, Sultana H. How does histopathology correlate with clinical and operative findings in abdominal hysterectomy? *J Armed Forces Med Coll Bangladesh.* 1970;6(2):17–20.
18. Sharma C, Sharma M, Soni RR, Chander A, Verma B, S. Gynecological diseases in rural India: A critical appraisal of indications and route of surgery along with histopathology correlation of 922 women undergoing major gynecological surgery. *J Mid-life Health.* 2014;5:55–61.

## Author's biography

**Amruta K Thomake**, Assistant Professor

**Pragnya Patil**, Junior Resident

**Bhavini Harsiyani**, Junior Resident

**Suchita Deshmukh**, Associate Professor

**Ravindra Shinde**, Associate Professor

**Cite this article:** Thomake AK, Patil P, Harsiyani B, Deshmukh S, Shinde R. Histopathological audit of hysterectomies for analysis of indication and respective pathology at tertiary care teaching hospital. *Panacea J Med Sci* 2024;14(3):659–663.