



A Spectrum of Hysterectomy Findings in a Tertiary Care Hospital, Madikeri

Sumanashree Mallappa*, BN Gayathri, Arti Khatri, Aishwarya Ramanujam

Department of Pathology KOIMS, Madikeri, India.

Abstract

Background: Hysterectomy is the removal of the uterus and is the most common gynecological operation performed on females worldwide. Establishing a spectrum of hysterectomies helps both the surgeons and patients in making a well-informed decision.

Materials and Methods: This was a cross-sectional retrospective study. The records of hysterectomies performed for 18 months were collected from the Department of Pathology of Koims, Madikeri. All non-malignant gynecological hysterectomy cases were included, while malignant hysterectomy cases were excluded from the investigation. The data were analyzed by descriptive statistics using Microsoft Excel software and expressed in numbers and percentages.

Results: The mean age of the patients was - 46.5 ± 9.4 years of age. The most common approach and indication were the abdominal approach ($n=198$, 83.19%) and the fibroid uterus ($n=156$, 63.87%), respectively. The most common findings in the endometrium-proliferative endometrium ($n=105$, 44.12%), myometrium-leiomyoma ($n=152$, 63.86%), cervix-chronic cervicitis ($n=133$, 53.788%), and ovary 60 (34.8%) and fallopian tubes 142 (82.55%) were unremarkable in majority of the cases.

Conclusion: Spectrum establishes a database, helping us study the trends of hysterectomy. The study provides an honest insight into various lesions of the uterus and its adnexa and reiterates the importance of mandatory data analysis. Panhysterectomy in younger females of reproductive age needs a carefully weighed decision. Knowing the types of lesions in hysterectomy cases can help patients better decide about the surgery. Considering that our study was performed on 238 subjects, further studies are needed on a large number of patients with follow-ups for further insights.

Keywords: Hysterectomy, Spectrum, Leiomyoma

***Correspondence to**
Sumanashree Mallappa,
Department of Pathology
KOIMS, Madikeri, India.
Email: kusumadallisumana@gmail.com



Received: December 20, 2021, Accepted: February 20, 2022, ePublished: April 1, 2022

Introduction

The removal of the uterus is called hysterectomy. It is one of the common operations performed on females and has mental, physical, social, economic, and psychosexual impacts, along with intra-operative and post-operative complications (1, 2).

In the early twentieth century, hysterectomies were conducted for many conditions such as leiomyoma, dysfunctional uterine bleeding (DUB), chronic pelvic pain, endometriosis, adenomyosis, prolapse, and malignancies (3).

The indications, risks, and benefits should be weighted minutely before embarking on surgery.

As compared to a higher frequency of hysterectomy (10-20%) in other countries, India reports a lower rate (4-6%) in this regard (4). Further, according to previous research, it is expected that the frequency of hysterectomies for non-malignant indications decreases as there are promising upcoming alternative treatment

modalities in the future (5).

The histopathological analysis of hysterectomy specimens is mandatory for diagnostic purposes, post-operative treatment planning, and assessment of the pattern of lesions common in the uterus and adnexa in a population (6).

It should be mandatory to substantiate the clinical diagnosis, find missed pathologies, especially malignancies, and establish definitive causes in several cases of abnormal uterine bleeding (7). Additionally, analyzing the indications for hysterectomy with the pathologic/surgical findings can help recognize malpractice and lacunae in the knowledge or training of health care service providers or the non-availability of newer alternatives for hysterectomy (8).

Keeping all this in mind, we embarked on a study to establish a spectrum of histopathological findings in hysterectomies performed in our hospital.

Materials and Methods

This cross-sectional retrospective study was conducted at our hospital from January 2018 to June 2019.

Population

All hysterectomies were performed for non-malignant gynecological indications at our hospital from January 2018 to June 2019. The Institutional Ethical Committee clearance was obtained from related authorities.

Inclusion Criteria

All non-malignant gynecological hysterectomy cases were included in this study.

Exclusion Criteria

All malignant hysterectomy cases were excluded from investigations.

Data Collection

Case records were reviewed to collect patient characteristics, surgical indications, clinical histories, histopathological diagnosis, and complications if any.

Various indications were reviewed among all the cases. Histopathology reports were obtained from the Pathology Department of Koims, Madikeri. The corresponding patients' details, pre-operative diagnosis, and type of surgery were obtained from the histopathology request forms from the Medical Records of the Pathology Department. The histopathological findings of the endometrium, myometrium, cervix, ovaries, and fallopian tubes were collected from digitally stored sources from our E-Hospital software and the findings were tabulated accordingly. The data were analyzed using Microsoft Excel software and expressed in numbers and percentages.

Results

Two hundred thirty-eight hysterectomies were performed during 18 months in the District Hospital using abdominal and vaginal approaches. In the abdominal approach, several procedures were followed, including a panhysterectomy (the removal of the uterus with bilateral adnexal structures, total abdominal hysterectomy (TAH, which is the removal of the uterus with the cervix), and TAH with unilateral salpingo-oophorectomy.

The most common routes of hysterectomy were found

Table 1. Types of Hysterectomy

Type	Number of Cases	%
PAH	169	71
VH	40	16.8
TAH	26	10.92
TAH w ULSO	3	1.2
Total	238	100%

Note. PAH: Pan abdominal hysterectomy; VH: Vaginal hysterectomy; TAH: Total abdominal hysterectomy; ULSO: Unilateral salpingo-oophorectomy.

to be abdominal (n = 198, 83.19%) and panhysterectomy (n = 169, 71%), respectively. Table 1 provides related data.

The mean age of the patients was 46.5 ± 9.4 years of age, and the youngest and oldest patients were 27 and 79 years old, respectively.

Based on data (Table 2), the most common indication for hysterectomy was the fibroid uterus (n = 152, 63.87%), followed by uterovaginal prolapse (n = 48, 20.17%).

The most prevalent endometrial findings were proliferative endometrium (n = 105, 44.12%) and secretory endometrium (n = 70, 29.41%), respectively (Figure 1).

Myometrial findings revealed that the most common result was leiomyoma (n = 152, 63.86%), followed by unremarkable myometrium (n = 48, 20.17%). Out of the 152 cases, 146 of them showed only leiomyoma. Six patients represented adenomyosis in addition to leiomyoma (Figure 2).

The histopathological analysis of the cervix demonstrated chronic cervicitis (n = 133, 55.88%) as the most typical pathological finding in the cervix (Figure 3). Hysterectomy was never performed for cervical pathology alone.

Based on the analysis of the ovary, the ovary was within normal limits in 60 (34.8%) of cases, followed by the corpus luteum (n = 37, 21.5%). All the identified lesions were benign (Figure 4).

The analysis of the fallopian tubes indicated that 142 (82.55%) was within normal limits in most cases (Figure 5).

We delved deeper into the analysis of fibroids since this was the most common indication. It was found that out of the total 152 fibroid uteri, 115 (75.65%) of them possessed a single fibroid, implying that 37 (24.34%) of them had multiple fibroids (Table 3).

Based on the analysis of the size of the fibroids, it was found that most fibroids were in the range of 4.1-6 cm in diameter (n = 54, 47.37%; Table 4).

Discussion

The histopathological analysis of the hysterectomy specimens is mandatory for diagnostic purposes and assessment of the pattern of lesions common in the uterus and adnexa in a population (1). Hysterectomy gives the

Table 2. Indications for Hysterectomy

Indication	Number of Cases	%
Fibroid	152	63.87
UV prolapse	48	20.17
DUB	18	7.56
DUB w fibroid uterus	12	5.04
PID	5	2.10
UV prolapse and cystocoele	3	1.26
Total	238	

Note. UV: Uterovaginal; DUB: Dysfunctional uterine bleeding; PID: Pelvic inflammatory disease.

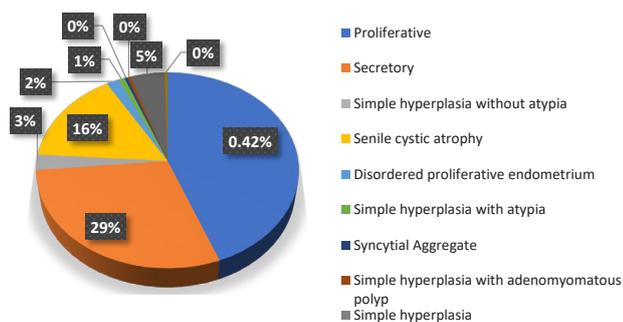


Figure 1. Histopathological Findings in the Endometrium

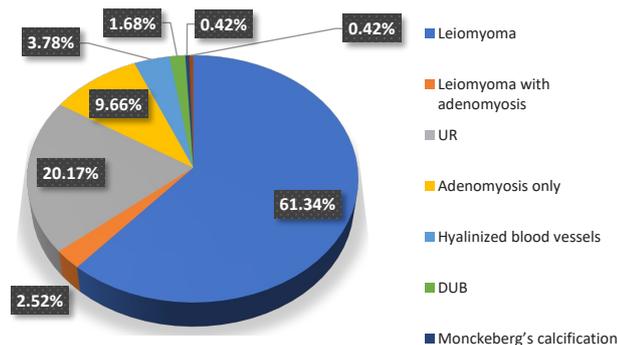


Figure 2. Histopathological Findings of the Myometrium. Note. UR: Unremarkable; DUB: Dysfunctional uterine bleeding.

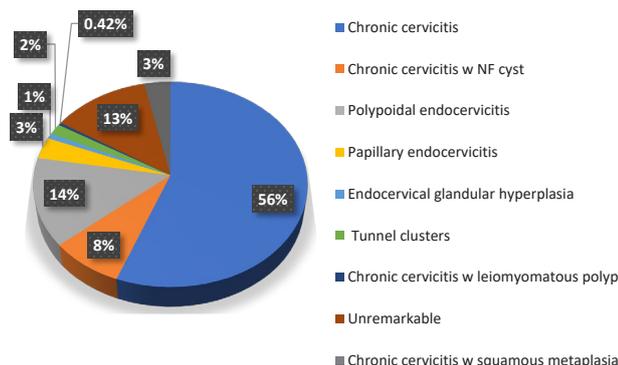


Figure 3. Histopathological Findings of the Cervix. Note. NF: Neurofibromatosis.

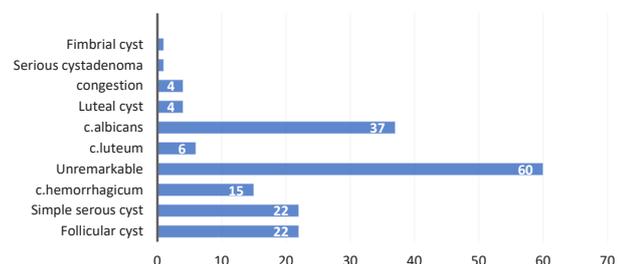


Figure 4. Histopathological Findings of the Ovary.

patient the maximum extent of symptomatic relief and satisfaction (5).

Although hysterectomy is a suitable procedure in justified cases, in many benign cases, advanced alternate management can save the woman from the trouble of going

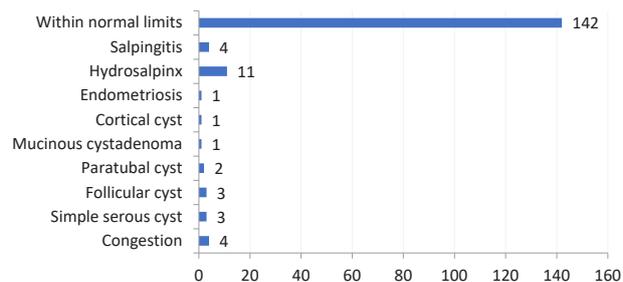


Figure 5. Histopathological Findings of the Fallopian Tube.

Table 3. Incidence of Fibroids

	Number of Cases	Percentage of Cases
Multiple Fibroids	37	24.34
Single fibroids	115	75.65
Total	152	100

Table 4. Size of Fibroid

Diameter (cm)	No.	%
<4	47	30.9
4.1-6	54	35.5
6.1-8	13	8.55
>8	37	24.34
Total	152	100

under the knife and many post-operative complications associated with the procedure (2).

The taboo against menstruation, poverty, illiteracy, socioeconomic factors, poorly developed medical infrastructure, and some degrees of possible malpractice by health care providers have added to the complexity of performing a hysterectomy (9).

In addition to serving as a database, establishing a spectrum will also help us study the trends of hysterectomy and compare them with those of other studies. It will pave the road for more informed decision-making by gynecologists worldwide.

A total of 238 hysterectomies were performed in our hospital for 18 months. The most common route of hysterectomy was abdominal one (n = 198, 83.19%); most of them were panhysterectomies (n = 169, 71%), which is in line with the results of other studies (1,5,10,11,12,13,14). Unlike our study, subtotal hysterectomy was the most common abdominal surgery in the study by Sreedhar et al (15).

There is an interplay between various factors, including duration of hospital stay, cost of surgery, and indication for surgery to decide the route of hysterectomy. Our center is a district hospital with moderate healthcare facilities, thus the laparoscopic procedure is unavailable. Vaginal hysterectomy was primarily used for cases of UV prolapse, while the abdominal route was most commonly applied for other indications (Table 1).

Age

The mean age for hysterectomy was 46.5 ± 9.4 years in the current study. In other studies by Verma et al (1), Tiwana et al (3), and Medhi et al (16), age was variable (40.46 , 45 ± 9.2 , and 50.86 ± 6.9 years, respectively). This variation in age primarily relies on the demographics of the area. The woman's educational status might also play a role in this regard; consulting with a doctor at earlier stages might imply that they are aware of the signs and symptoms of various uterine diseases.

Pre-operative Indications

The fibroid uterus ($n=152$, 63.87%) and UV prolapse ($n=48$, 20.17%) were the most common indications for hysterectomy, respectively (Table 2). Some other studies showed similar findings, reporting fibroid as the most prevalent indication for hysterectomies (3,8,10,17). However, Verma et al (1) and Nausheen et al (2) showed UV prolapse and DUB as the most common causes, respectively. In another study, Mishra et al (14) found that the most common indication for hysterectomy was abnormal uterine bleeding. This change in the most common indication depends on the age group of the predominant population in the study. The mean age of our study group suggests most patients lie in an age group that is prone to possess uterine fibroid.

Histopathological Findings in Endometrium

The most frequent endometrial finding was proliferative endometrium ($n=105$, 44.12%) (Figure 1). Unlike our study, Sreedhar et al concluded that endometrial polyp was the most common finding in the endometrium (15). Contrarily, results similar to those of the current study were obtained in studies by Usha et al, Rather et al, and Imam et al (5, 18, 19). In addition, Verma et al (1) also indicated proliferative endometrium as the most common finding.

Conversely, Chaudhari and Shekhar (12) and Gupta et al (13) found that disordered proliferative endometrium and physiological endometrium were the most common findings in the endometrium, respectively. Based on the result of Mishra et al (14), endometritis was the most frequent finding. These results might vary depending on the primary age group undergoing hysterectomy and the indication for hysterectomy in the hospital whose records were under investigation.

Histopathological Findings in Myometrium

The analysis of the myometrial findings revealed that the most common finding was leiomyoma ($n=152$, 63.86%) (Figure 2). Similar results were obtained in other studies (5, 12, 13, 15, 20), while Mishra et al (14) reported adenomyosis as the most common finding. Out of 152 cases, 6 cases demonstrated adenomyosis in addition to leiomyoma. Most uteri with unremarkable findings in the

myometrium were operated on for uterovaginal prolapse. The majority of cases operated for fibroids showed the same results on histopathological examinations, but few cases represented adenomyosis.

Adenomyosis was the most common incidental finding in hysterectomies for other indications such as fibroid uterus. This is in concordance with the results of other studies (3,16,18,20). Adenomyosis is rarely diagnosed preoperatively and is still largely underdiagnosed as it has no specific symptoms. It is usually diagnosed after hysterectomy by histopathological examinations (18).

Analysis of Cases With Leiomyoma With Respect to Number and Size

The likelihood that leiomyomata will cause symptoms is undoubtedly related to their number, size, and location. However, it seems equally plausible that leiomyomata may frequently represent an incidental rather than a causal finding (18).

The importance of leiomyoma lies as they cause pain, abnormal uterine bleeding, and a sensation of pressure. In addition, large tumors produce diffuse uterine enlargement or an irregular uterine contour, which may be associated with infertility (21).

The fibroid was further analyzed since it was the most common indication in our study. Two parameters-whether fibroids were single or multiple- and the size of the fibroid were analyzed, and it was found that out of the total 152 fibroid uteri, 115 (75.65%) of them possessed a single fibroid, while the remaining 37 (24.34%) cases included multiple fibroids (Table 3).

The analysis of the fibroid size demonstrated that most of the fibroids lay in the range of 4.1-6 cm in diameter ($n=54$, 47.37%), followed by the fibroids of less than 4 cm in diameter ($n=47$, 41.23%). In 38 cases, fibroids (25%) were greater than 8 cm in diameter. The least number of fibroids were in the 6.1-8 cm range ($n=13$, 8.5%), related data are presented in Table 4.

Histopathological Findings in the Cervix

It was found that chronic cervicitis ($n=133$, 55.88%) was the most common pathological finding in the cervix (Figure 3). Similar findings were reported by Sivapragasam et al (6) and Vani et al (22), and other studies (12-14). The majority of cases showed benign pathological results in the Cervix on histopathological examinations (6, 22).

Histopathological Findings in the Ovary

The ovary was within normal limits in 60 (34.8%) cases (Figure 4). This was similar to the ovarian findings in other studies (15, 16, 20). Benign cysts were prevalent in many other studies as well (1, 12, 14, 16, 23).

Histopathological Findings in the Fallopian Tube

Table 5. Studies Agreeing With the Current Study Findings

Parameters	Findings of the Present Study	Studies Agreeing With Our Findings
Most common route of hysterectomy	The route of hysterectomy was abdominal (83.19%)	(1, 6, 7, 12-14, 19)
Most common findings in the endometrium	Proliferative endometrium was most commonly found (20.1%)	(1, 6)
Most common findings in myometrium	Leiomyoma was the most prevalent myometrial finding (44.11%)	(3, 6, 7, 10, 12-14, 16, 20)
Most common findings in cervix	Chronic cervicitis was the most common cervical finding (55.88%)	(1, 6, 12-14, 16, 19, 20)
Findings in ovaries and tubes	Overall, 25.2% of the ovaries were within normal limits and 59.6% of the fallopian tubes were within normal limits	Chaudhari and Shekhar (12) and Mishra (14) et al showed ovarian cysts to be the most common findings in ovaries and fallopian tubes. According to Sivapragasam et al (6), the ovaries and fallopian tubes were unremarkable in 62% and 91% of specimens, respectively. In the study by Imam et al (19), the ovaries and fallopian tubes were unremarkable in 45.9% and 36.36% of specimens, respectively.

Fallopian tubes are complex structures that represent more than conduits from the ovary to the endometrial cavity (5). Based on the analysis of the fallopian tube, it was within normal limits in most cases (n=142, 82.55%), which conforms to the results of other studies (15, 16). Hydrosalpinx was observed in 11 patients (6.39%). Another significant pathology was congestion and salpingitis (n=4, 2.32%, Figure 5). The majority of the histopathology findings in fallopian tubes were of benign origin. Some other studies showed cysts as the most common finding (12, 13). Studies agreeing with our study have been summarised below (Table 5).

Advantages of the Study

1. Providing a fair insight into various histopathological findings in non-malignant hysterectomy cases and helping us study its trends
2. Emphasizing the importance of missed findings that are diagnosed on histopathological examinations
3. Making us aware that pan hysterectomy was the most common type of hysterectomy even in younger aged females of reproductive age. Therefore, the study calls for informed decision-making from the surgeons after thoroughly weighing the risks and benefits in each case.
4. Providing fair insight to the common public into the types of lesions in hysterectomy cases, thus they can also make an informed decision before undergoing hysterectomies.

Limitations of the Study

The study involved 238 patients and was retrospective; therefore, it needs further research involving a large number of cases and follow-ups.

Conclusion

Hysterectomy is a major gynecological procedure commonly performed for various benign and malignant indications. In this study, the most widespread route of hysterectomy and the most common pre-operative indication were the abdominal route and the fibroid uterus, respectively.

The most common findings in the endometrium, myometrium, and cervix were proliferative changes, leiomyoma, and chronic cervicitis. Furthermore, the ovary and fallopian tube were within normal limits.

Although the findings of the current study corroborate with those of various other previous studies, this study serves in establishing a database and provides a fair insight into the lesions of the uterus and its adnexal structures and helps us study its trends. It further emphasizes the importance of missed findings that are diagnosed on histopathological examinations. Adenomyosis was the most common incidental finding. Therefore, our study also attempts to shed light on the importance of establishing a spectrum of hysterectomies and why it should be a mandatory procedure in government and private hospitals.

Panhysterectomy in younger females of reproductive age can lead to various secondary complications and needs a precisely weighted decision. Knowing the types of lesions in hysterectomy cases can help the patients in making better decisions about the surgeries. However, given that our study involved 238 patients and was retrospective in nature, this issue requires further research involving a large number of cases and follow-ups.

Acknowledgement

We acknowledge all the staff of the Pathology Department of Koims, Madikeri for their support and help during the study.

Authors' Contribution

Authorship was decided on the extent of the contribution of individual authors towards the study and has no conflicts among the authors.

Conflict of Interest Disclosures

This study is an original research article and has no internal or external conflict of interests involved in any step.

Ethical Statement

Ethical clearance for the study was taken from the Institutional Ethics Committee of Koims Madikeri.

Funding/Support

The study was self-funded and involved no external individual or

organisation related funding, support, or grant at any step.

Informed Consent

This study was performed by retrospective data collection methodology, and informed consent was not applicable.

References

1. Verma D, Singh P, Kulshrestha R. Analysis of histopathological examination of the hysterectomy specimens in a north Indian teaching institute. *Int J Res Med Sci.* 2016;4(11):4753-8.
2. Nausheen F, Iqbal J, Bhatti FA, Khan AT, Sheikh S. Hysterectomy: the patients perspective. *Ann King Edw Med Univ.* 2004;10(4):339-41. doi: 10.21649/akemu.v10i4.1220.
3. Tiwana KK, Nibhoria S, Monga T, Phutela R. Histopathological audit of 373 nononcological hysterectomies in a teaching hospital. *Patholog Res Int.* 2014;2014:468715. doi: 10.1155/2014/468715.
4. Singh AG, Meravi J. Research article: review of clinicopathological spectrum of elective gynaecological hysterectomies at a tertiary care teaching hospital. *Int J Med Appl Sci.* 2015;4(2):1-7.
5. Usha K, Maheshwari J. Histopathological spectrum of lesions in hysterectomy specimens at a tertiary care hospital-one year study. *IOSR J Dent Med Sci.* 2017;16(10):34-8.
6. Sivapragasam V, Rengasamy CK, Patil AB. An audit of hysterectomies: indications, complications and clinico pathological analysis of hysterectomy specimens in a tertiary care center. *Int J Reprod Contracept Obstet Gynecol.* 2018;7(9):3689-94.
7. Gangadharan V, Prasanthi C. Hysterectomy-a clinicopathological correlation in a rural setting. *Indian J Basic Appl Med Res.* 2016;5(2):8-15.
8. Siwatch S, Kundu R, Mohan H, Huria A. Histopathologic audit of hysterectomy specimens in a tertiary care hospital. *Sri Lanka J Obstet Gynaecol.* 2013;34(4):155-8. doi: 10.4038/sljog.v34i4.5932.
9. Desai S, Shukla A, Nambiar D, Ved R. Patterns of hysterectomy in India: a national and state-level analysis of the Fourth National Family Health Survey (2015-2016). *BJOG.* 2019;126 Suppl 4:72-80. doi: 10.1111/1471-0528.15858.
10. Pandey D, Sehgal K, Saxena A, Hebbar S, Nambiar J, Bhat RG. 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.
11. Sait K, Alkhatabi M, Boker A, Alhashemi J. Hysterectomy for benign conditions in a university hospital in Saudi Arabia. *Ann Saudi Med.* 2008;28(4):282-6. doi: 10.5144/0256-4947.2008.282.
12. Chaudhari AS, Shekhar S. Histopathological spectrum of lesions of hysterectomy specimens: a descriptive study. *MedPulse Int J Pathol.* 2021;20(1):13-8. doi: 10.26611/1052013.
13. Gupta AK, Gupta I, Suri AK. Histopathological spectrum of hysterectomy specimens. *J Adv Med Med Res.* 2020;32(6):96-104.
14. Mishra A, Mishra P, Brig NK, Pandey T, Srivastava S, Dwivedi M. Histopathological spectrum of hysterectomy specimens and its correlation with clinical diagnosis at a tertiary care centre. *Trop J Pathol Microbiol* 2019;5(4):240-7. doi:10.17511/jopm.2019.i04.10.
15. Sreedhar VV, Jyothi C, Sailaja V, Paul MC, Sireesha O, Vani T, Kumar KM. Histopathological spectrum of lesions of hysterectomy specimens-a study of 200 cases. *Saudi J Pathol Microbiol.* 2016;1(2):54-9.
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. Vessey MP, Villard-Mackintosh L, McPherson K, Coulter A, Yeates D. The epidemiology of hysterectomy: findings in a large cohort study. *Br J Obstet Gynaecol.* 1992;99(5):402-7. doi: 10.1111/j.1471-0528.1992.tb13758.x.
18. Rather GR, Gupta Y, Bardhwaj S. Patterns of lesions in hysterectomy specimens: a prospective study. *JK Sci.* 2013;15(2):63.
19. Imam ZS, Chandra K, Monalisa, Kumar M, Sinha A, Singh A, et al. Histopathological spectrum of hysterectomy specimens--a retrospective analysis at IGIMS, Patna, Bihar. *J Evol Med Dent Sci.* 2018;7(30):3352-6. doi: 10.14260/jemds/2018/756.
20. Chavhan S, Pathrikar R, Dhoble S, Tiple N. Histopathological spectrum of uterine and cervical lesions in hysterectomy specimens. *J Med Sci Clin Res.* 2018;6(1):32699-701. doi: 10.18535/jmscr/v6i1.49.
21. Raza AM, Tazri SA, Ahmed M, Nahar S, Afroz D, Barua D. A study on uterine leiomyoma with clinicopathological spectrum *J Histopathol Cytopathol.* 2018;2(1):41-6.
22. Vani D, Pushpa HR, Srijana Rao SP, Bharathi M. Spectrum of histopathological findings in hysterectomy specimens-a retrospective-5 year study. *Placenta.* 2018;111:5-73.
23. MacKenzie IZ, Naish C, Rees M, Manek S. 1170 consecutive hysterectomies: indications and pathology. *J Br Menopause Soc.* 2004;10(3):108-12. doi: 10.1258/1362180043654593.