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Expanded Study on Patterns of Myometrial Lesions in Hysterectomy Specimens: A Retrospective Study of 520 Specimens

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ABSTRACT

Introduction: Hysterectomy is the second most frequently performed major surgical procedure on women worldwide, peri and post-menopausal. In India, it accounts for only 6% of the major surgeries.

Aims and objectives: To study the profile of different myometrial lesions in the 520 hysterectomy specimens received in the Department of Pathology, GMC Jammu, for histopathological studies.

Material and methods: The study was retrospective in nature. The study material comprised 520 hysterectomy specimens for a period of one year. They were labelled correctly, numbered with complete clinical details and then subjected to gross and detailed histopathological examination.

Results: In the present study, the mean age of the cases was 46.9 years. 49.62% undergoing hysterectomy was in the age group of 41-50 years. The most common clinical indication for hysterectomy was menorrhagia in 42.75% of cases, followed by uterovaginal prolapse in 26.6%, fibroid uterus in 20.24% of cases and other less common indications. Myometrium was grossly unremarkable in most subjects, i.e. 55.77 %. The most common lesion in the myometrium was a fibroid, *i.e.,* 41.73% of cases. On microscopic examination, in most cases, *i.e.*, 263 (49.77%), myometrium was within normal limits histologically. Leiomyomata were found to be commonest, i.e., 180(34.2%) followed by adenomyosis 36 (6.92%) and leiomyoma with adenomyosis 32 (6.08%) cases. Post-partum changes were seen in the myometrium in 6 (1.14%) cases.

Conclusion: Histopathological examination is the gold standard for giving the final diagnosis, planning further management and ensuring the best post-operative management of the patient.

Keywords: Fibroid, Hysterectomy, Myometrium

INTRODUCTION

The majority of specimens in the histopathology department were gynaecological cases. The uterus is one of the most important female reproductive organs, and it is under the influence of hormones (1). Hysterectomy is the second most frequently performed major surgical procedure on women worldwide, especially peri and post-menopausal, second only to caesarean section. According to the literature, per year, about 100,000 hysterectomies are performed in the UK alone and about 60,000 in the USA (2). In India, it accounts for only 6% of the major surgeries. A study in Northern and Western India put the incidence at 7% among married women and 7-8% in rural and 5% in urban women, respectively. According to various studies, the lifetime risk of hysterectomies ranges from 20%-35% (3). The myometrium is the middle layer of the uterine wall located between the endometrium and the serosa, consisting mainly of uterine smooth muscle cells, with actin and myosin being the predominant proteins.

The common complaints in reproductive and postmenopausal age groups are menorrhagia, per vaginal bleeding, abdominal mass or vaginal discharge, for which these patients seek medical advice and treatment. In case of conservative therapy failure, general surgeons or gynaecologists are consulted for a hysterectomy, especially if her family is complete (4). However, the final diagnosis is by histopathology, and every specimen should be subjected to the same. The most frequent indications of hysterectomy are uterine leiomyoma (or fibroid), abnormal uterine bleeding, pelvic suppurative defects and endometriosis. The other indications are malignancies and endometrial hyperplasia, adenomyosis, cervical dysplasia, infections, post-partum bleeding and abnormal placental site (5).

Histopathological analysis of hysterectomy specimens is mandatory for diagnostic purposes and to assess the pattern of lesions common in the uterus and adnexa. The prevalence of uterine pathology varies from place to place. More data is needed, so this study is planned. This study is being conducted in our hospital's postgraduate Department of Pathology and is designed to analyse the detailed histopathological evaluation of all myometrial lesions in hysterectomy specimens. Histopathological examination of surgical specimens carries ethical, legal, diagnostic and therapeutic significance.

MATERIALS & METHODS

The study was retrospective in nature. The study material comprised 520 hysterectomy specimens received in the Department of Pathology, Government Medical College, Jammu, for one year. The clinical information of the patients who underwent hysterectomy during this period was obtained from the histopathological requisition forms, and any deficient relevant information was procured from the clinical case sheets and the concerned clinician. The appropriate investigations were obtained from the clinical case sheets and recorded. The hysterectomy specimens received by the Department of Pathology were labelled correctly, numbered, and subjected to gross and detailed histopathological examination. The specimens were opened using a probe and cutting scissors through both lateral walls, from the cervix to the uterine cornua. Additional cuts were made through any large mass in the wall. The specimens were then fixed in 10% neutral buffered formalin overnight. After fixation, a detailed gross examination of the hysterectomy specimens was carried out. The gross serial sections were fixed in 10% neutral buffered formalin, dehydrated with ascending grades of alcohol, cleared in xylene and embedded in paraffin. 5-micrometre thick paraffin sections were cut on a rotary microtome, dewaxed and stained routinely with Haematoxylin and Eosin stain.

RESULT

In this study, the maximum number of patients undergoing hysterectomy was in the age group of 41-50 years *i.e.* 49.62%, 248 cases, followed next by the age group of 31-40 *i.e.*, 25% cases, 76 cases, *i.e.*, 14.62% in 51-60 years. <30 and >60yrs were 14 cases (2.69%) and 42 cases (8.8%), respectively. The mean age for hysterectomy was 50 years in this study. The youngest patient was 21 years old, and the oldest was 76 years old. In most patients, clinical indication for hysterectomy was menorrhagia in 225 cases, *i.e.* 42.75%, followed by uterovaginal prolapse in 140 cases, *i.e.*, 26.6% and fibroid uterus in 96 patients, *i.e.*, 18.2%. Ovarian cysts were present in 14 patients (2.66%) each. Other less common indications for hysterectomy were adnexal mass 10 cases (1.9%), post-menopausal bleeding 9 (1.17%), polyps 7 (1.3%), endometriosis 6 (1.14%) and endometrial hyperplasia 5 (0.95%). The adherent placenta formed an indication of hysterectomy in 6 (1.14%) cases. Very rare indications were formed by adenomyosis-3 cases, dermoid cyst -2 cases, carcinoma uterus-2 cases, carcinoma cervix and pyometra in one patient each.

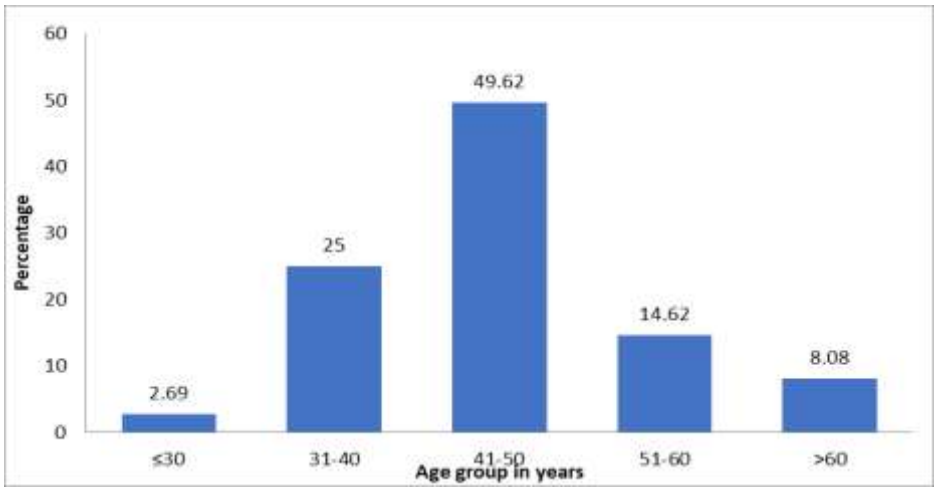

Figure 1. BAR DIAGRAM SHOWING AGE DISTRIBUTION OF PATIENTS

GROSS EXAMINATION OF HYSTERECTOMY SPECIMENS

The average size of the uterus received was 10.5X 5.5 X 3.5cm, and the weight ranged from 120 grams to 970 grams. The uterus was distorted in 27 specimens and well preserved in the rest. In most cases, *i.e.*, 290 (55.77 %), myometrium was grossly unremarkable. Single and multiple fibroids, with a white whorled appearance, were observed in 218 (41.73%) cases on the cut section. Most of the fibroids were located intramurally. Other locations were submucosal and subserosa. Myometrium was thickened in 12 (2.38%) cases. The fibroid uterus was grossly seen in 218 patients, thickened myometrium in 10 patients, and grossly unremarkable in 21 cases. Out of 218 leiomyomas, 107 were intramural. Sixty intramural fibroids were single, and 47 were multiple. Fifty-five submucosal fibroids were identified, 40 were single, and 15 were multiple. All ten subserosal fibroids were single. Both intramural and submucosal location of fibroids was seen in 26 cases, and 16 fibroids were located intramural, submucosal and subserosa.

Table 1: Frequency Distribution of Lesions of the Myometrium

S. No.	Gross examination	Number of cases	Percentage (%)
1.	Thickened	12	2.38
3.	Fibroids	218	41.92
4.	Unremarkable	290	55.77
	Total	520	100

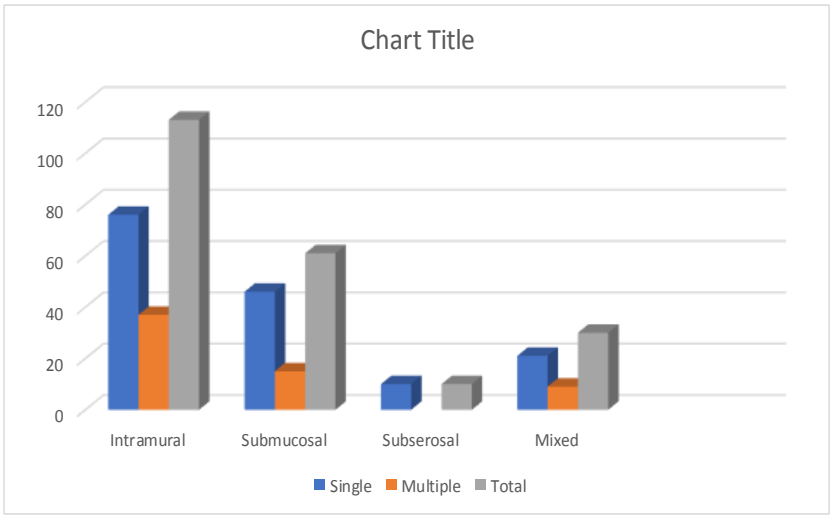

Figure 2: BAR DIAGRAM SHOWING LOCATION OF FIBROID

Table 2. Distribution of various myometrial lesions on HPE

S. No.	Histopathological diagnosis	No. of cases	Percentage (%)
1.	Invaded by endometrioid tumour	3	0.57
2.	Post-partum changes	6	1.14
3.	Leiomyoma with Adenomyosis	32	6.08
4.	Adenomyosis	36	6.92
5.	Leiomyomata	180	34.2
6.	Normal histology	263	49.97
	TOTAL	520	100

The present study revealed that most cases, *i.e.* 263 (49.77%), were within normal limits histologically. Leiomyomata were found to be the commonest diagnosis on histopathology in the myometrium, *i.e*. 180 (34.2%) cases, followed by adenomyosis, *i.e.* 36 (6.92%) cases and leiomyoma with adenomyosis in 32 (6.08%) cases. Post-partum changes were seen in the myometrium in 6 (1.14%) cases; histopathologically, they were diagnosed as placenta accreta. Myometrium was invaded by endometrial carcinoma in 3 patients.

DETAILED HISTOPATHOLOGY OF MYOMETRIAL LESIONS

Leiomyoma: Leiomyomas were observed in 180 (34.2%) cases. Clinical indication for hysterectomy in these cases was menorrhagia in 90 cases, fibroid in 84 patients and 6 cases, and leiomyoma was an incidental finding. In 32 instances, leiomyoma with adenomyosis was observed, 5 cases had a clinical diagnosis of fibroid uterus, two patients presented with menorrhagia and 2 points were given with dysmenorrhoea.

Grossly, leiomyomas were single to multiple spherical masses ranging in size from 0.3 to 20cm. These were present in submucosal, intramural and subserosal locations. On the cut section, grossly, they showed a white whorled appearance. On microscopy, leiomyomata comprised anastomosing fascicles of fusiform smooth muscle cells with indistinct borders and abundant eosinophilic cytoplasm, separated by variable amounts of fibrous connective tissue. A well-circumscribed fibrous capsule surrounded them. Nuclei of smooth muscle cells were elongated with blunt ends and finely dispersed chromatin and indistinct nucleoli. Mitosis was infrequent. Secondary changes were seen, including hyaline change, hyaline change with calcification and myxoid change in 38% of cases. Cases of leiomyomatous polyp were observed as leiomyoma on histopathology. A rare case of cellular leiomyoma with increased cellularity was also observed in the myometrium on histopathology.

Adenomyosis: Adenomyosis was identified alone in 36 cases (6.92 %), and 32 (6.08%) cases coexisted with leiomyoma. The most common clinical presentation was menorrhagia in 19 cases, dysmenorrhoea in 8 cases and fibroids in 7 cases. Three cases were clinically labelled as adenomyosis. Other cases were found incidentally.

Grossly myometrium was unremarkable in 28 cases and was hypertrophied with foci of haemorrhage in 8 patients. On microscopic examination, foci of endometrial glands and stroma were present within the myometrium, and the focus exceeded one low-power field from the lower border of the endometrium.

The fibroid uterus was clinically diagnosed in 106 cases, and 97 (91.5%) patients were confirmed by histopathology 3. Adenomyosis, each was confirmed by histopathology in 100% of cases.

Endometrioid carcinoma: 3 cases of well-differentiated endometrioid carcinoma were identified as histopathologically invading the myometrium in the patients who had clinically presented with complaints of pain lower abdomen/mass abdomen. On gross examination, a papillary growth was identified at the upper pole of the uterus. Microscopically, all the 3 cases were well differentiated, exhibiting papillary architecture. Papillae revealed a fibrovascular core lined by stratified tumour epithelial cells showing pleomorphism with vesicular nuclei and prominent nucleoli.

DISCUSSION

Hysterectomy is the second most frequently performed major surgical procedure on all women worldwide, second only to caesarean. Although many medical and conservative surgical treatment options are available, hysterectomy remains the most commonly performed major gynaecological procedure, and it is a successful operation in terms of symptomatic relief and patient satisfaction and provides definite cure to many diseases involving the uterus as well as adnexa (6).

The prevalence of uterine and adnexal pathologies varies from nation to nation and from region to region within the country. Few studies have described the pathologic findings in hysterectomy specimens and histopathological diagnosis. This study was conducted to study the histopathological spectrum of lesions in hysterectomy specimens and to find agreement between clinical indication and diagnosis on histopathology for different sets of lesions.

Menorrhagia was the most common clinical indication in the studies by (7), (8), whereas (9) reported fibroid to be the most typical indication for hysterectomy.

Leiomyoma: Leiomyomas are the most common benign uterine neoplasms in women of reproductive age, accounting for 5-20%. They are usually asymptomatic; however, depending on their size, location and hormonal effects, they will show clinical manifestations, most commonly menorrhagia (10).

In the present study, it was evident that leiomyoma was the most common myometrial lesion. (6), (11) and (12) also reported the similar incidence of leiomyoma. Leiomyoma was the most common myometrial lesion in the studies mentioned above. A lower incidence was observed in the studies conducted by (5), and a higher incidence was observed by (13) and (14), which could be due to variations in the sample size of studies.

In the present study, in 32 cases, *i.e.*,6.04% leiomyoma was associated with adenomyosis.

Adenomyosis: Adenomyosis is a benign invasion of the endometrium into the myometrium. Adenomyosis is a benign gynaecological disease that predominantly affects women in late reproductive age. The prevalence ranges from 5 to 70%; this high variability is due to factors such as the diagnostic criteria and the researcher's skill (**15**). The incidence of adenomyosis rises with rising parity which supports the theory of implantation of the basal endometrium deep in the myometrium.

In the present study, the incidence of adenomyosis was observed as 6.92%, comparable with investigations conducted by (16).

Table 3. Comparison of myometrial lesions in various studies

Study	Leiomyoma (%)	Adenomyosis (%)	Leiomyosarcoma (%)
Perveen Siama., et al 2014, (6)	36	42	-
Pervez SN.,2014, (17)	27.7	18.7	-
Verma Rashmi 2016, (13)	40	13	-
Sucheta KL et al.,2016, (11)	31	20	-
Dhuliya Varsha et al. 2016, (12)	36.67	25.33	-
Shreedhar v et al. 2016, (18)	18	2.5	-
Raza AK et al 2017, (19)	29.7	25.7	
Present Study	34.2	6.92	

CONCLUSION

Histopathological study of myometrial lesions includes adenomyosis and a variety of leiomyomas classified based on site, size and microscopic variants. Hence, it is stressed that it should be routine to subject every hysterectomy specimen to gross and microscopic examination to give the final diagnosis, plan further management and ensure the best post-operative management of the patient.

Declaration by Authors

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