



Original Research Article

To study degenerative changes and variants of leiomyoma in hysterectomy specimens

Sonali Saraf¹, Rucha Kanhe^{1,*}

¹Dept. of Pathology, Lokmanya Tilak Municipal General Hospital And Medical College, Mumbai, Maharashtra, India



ARTICLE INFO

Article history:

Received 27-08-2019

Accepted 20-11-2019

Available online 25-05-2020

Keywords:

Adnexa

Leiomyoma

Adenomyosis

Dysfunctional uterine bleeding

ABSTRACT

Objectives: To know the incidence of leiomyoma in hysterectomy specimens and study the degenerative changes of leiomyoma and its variants.

Materials and Methods: A prospective study of 1000 hysterectomy specimens was done. All the chief complaints, gross features and microscopic findings were recorded.

Results: The most common benign lesion found was leiomyoma in 55.4% cases followed by adenomyosis in 32.5% cases. Majority of leiomyoma cases (99.2%) were usual leiomyoma. 2 variants of leiomyoma, 1 case of cellular leiomyoma and other case of mitotically active leiomyoma were found.

Conclusion: Leiomyoma was the most common pathology found in hysterectomy specimens in our study which is also true for other countries. Adenomyosis identified on histopathological examination was seen to be an important lesion in cases presenting with DUB. Hence, cases presenting with DUB should be thoroughly evaluated to rule out any underlying pathology.

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1. Introduction

Hysterectomy involves surgical removal of whole or the part of uterus with or without removal of its adnexal structures. It is one of the most commonly performed gynaecological procedures in the world. As all the surgical procedures carries their own advantages and risk, hysterectomy even though being a successful procedure has its own disadvantages. Sterility in women who are premenopausal is the main disadvantage of this procedure.¹

The first performed hysterectomy dates back to November 1843 in Manchester, by Charles Clay. Total abdominal hysterectomy (TAH) which involves removal of entire uterus and cervix was first done in 1929 by Richardson, MD. Earlier hysterectomies had lot of dreadful complications and the patients usually died of hemorrhage, peritonitis, and exhaustion. The introduction of total abdominal hysterectomy by Richardson or Pfannesnsteil incision by Johanns Pfannesnstiel or finally the performance

of the first laparoscopic hysterectomy by Harry Reich in Kingston, Pennsylvania in 1988 were the instrumental historical improvements in this procedure.¹

Hysterectomy is generally sorted as a last resort for many of gynaecological conditions such as uterine leiomyoma, adenomyosis, dysfunctional uterine bleeding and malignancies of uterus and its adnexal structures.¹

The purpose of this study is to know the incidence of various lesions occurring in myometrium of hysterectomy specimens and to study leiomyoma and degenerative changes occurring in leiomyoma.¹

2. Aims & Objectives

1. To know the incidence of leiomyoma in hysterectomy specimens.
2. To study the degenerative changes of leiomyoma and its variants.

* Corresponding author.

E-mail address: kanherucha@yahoo.com (R. Kanhe).

3. Materials and Methods

The study was conducted in the department of pathology in a tertiary care hospital. It was a study of 18 months prospective type from March 2016 to September 2017. A total of 1000 cases were included in the study.

Chief complaints and clinical indications of patients undergoing hysterectomy were obtained from the histopathological requisition forms/ clinical records of the patients and were recorded in the standard proforma.

The hysterectomy specimens received from Obstetrics and Gynaecology department were assessed for gross features and were fixed in 10% buffered formalin. Subsequently the tissues were dehydrated with ascending grades of alcohol, cleared in xylene and embedded in paraffin. Thereafter, 3-5 microns thick paraffin sections were cut on a rotary microtome dewaxed and stained with Haematoxylin and Eosin.

The inclusion and exclusion criteria for specimens included in the study are as following:

3.1. Inclusion criteria

All specimens of hysterectomy irrespective of age.

3.2. Exclusion criteria

1. Laproscopically resected specimens.
2. Specimens where resection of only fallopian tubes/ovary/ myomas are carried out without removal of uterus.

3.3. Sampling method

Consecutive continuous sampling method.

4. Observations and Results

It was observed that 90.1% of leiomyoma cases presented as isolated lesion.

On gross, leiomyoma were well-circumscribed solid and white and on cut surface showed whorled appearance. Microscopically leiomyoma showed smooth muscle cells arranged in fascicular pattern. The cells were elongated and had bland cigar shaped nuclei with abundant eosinophilic cytoplasm.

Leiomyoma with adenomyosis accounted for 8.3% cases.

Grossly, adenomyosis showed trabeculations on cut surface. Microscopically, endometrial glands were seen deep within the myometrium. Multi parity or pregnant state is associated with higher chances of development of adenomyosis possibly because of the invasive nature of the trophoblast on the extension of the myometrial fibers.

Cervical leiomyoma accounted for 0.8% cases.

Leiomyoma with other benign lesion like serous cystadenoma, endometrial polyp was 0.4% each.

It was observed that 87.9% cases of leiomyoma did not show any noticeable change. Most common degenerative change encountered was hyaline degeneration and it was seen in 8.7% cases. Hyaline degeneration on gross appearance, showed a smooth whitish depressed zone alternating with bulging nodules of intact smooth appearance.

Cystic degeneration in 4 cases and myxoid in 2 cases were also noted.

In our study we found 4 cases of cystic degeneration were found. On gross, the tumor was firm and grey white in color with small cystic areas. Microscopically, the tumor is similar to usual leiomyoma with areas of cystic change.

One case of myxoid degeneration was seen. The tumor was composed of spindle cells with focal areas of myxomatous change.

Other degenerative changes like calcification and hemorrhage were seen in 0.4% cases each.

Majority of leiomyoma cases (99.2%) were usual leiomyoma. Only 2 variants of leiomyoma, 1 case of cellular leiomyoma and other case of mitotically active leiomyoma were found.

The gross appearance of cellular leiomyoma and mitotically active leiomyoma was similar to usual leiomyoma.

Cellular leiomyoma on microscopy showed high cellularity with increased smooth muscle proliferation. Large thick walled blood vessels seen. No atypia and no mitotic figures were noted.

Mitotically active leiomyoma microscopically shows smooth muscle cells arranged in fascicular pattern. 5 mitotic figures /10 HPF were noted. No necrosis or atypia was seen.

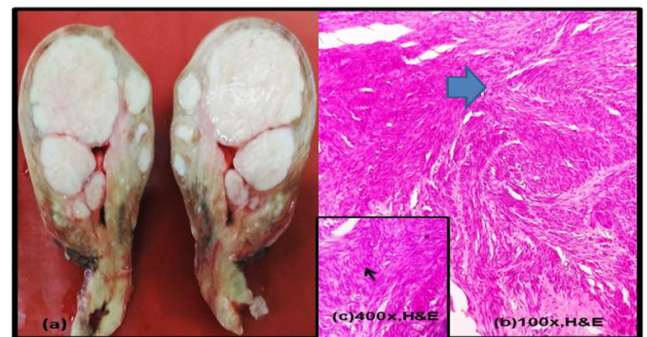


Fig. 1: Multiple Uterine fibroid (a): The cut surface of uterus shows multiple fibroids. Largest fibroid measuring 4x3 cm is intramural in location and smallest fibroid is subserosal in location measuring 2x1 cm. The fibroid are well circumscribed, grey white in color and has characteristic whorl appearance. (b): The low power view shows smooth muscle cells arranged in fascicular pattern separated by connective tissue stroma; (c): The tumor cells are elongated with cigar shaped nuclei and eosinophilic cytoplasm

Table 1: Age wise distribution of leiomyoma cases

Total leiomyoma cases (n=240)	Age Groups (In Years)						Total	Percentage
	20-30	31-40	41-50	51-60	61-70	71-80		
Isolated leiomyoma	13	70	101	20	09	03	216	90.1
Leiomyoma + adenomyosis	00	06	12	02	00	00	20	8.3
Cervical leiomyoma	00	01	01	00	00	00	02	0.8
Leiomyoma + serous cystadenoma	00	00	01	00	00	00	01	0.4
Leiomyoma + endometrial polyp	00	00	01	00	00	00	01	0.4
Total	13	77	116	22	09	03	240	100

Table 2: Age wise distribution based on degenerative changes in leiomyoma

Leiomyoma:degenerative changes (n=240)	Age Groups (In Years)						Total	Percentage
	20-30	31-40	41-50	51-60	61-70	71-80		
No degenerative change	09	71	99	22	07	03	211	87.9
Hyaline	03	04	13	00	01	00	21	8.7
Myxoid	00	00	02	00	00	00	02	0.8
Cystic	00	01	02	00	01	00	04	1.8
Calcification	00	01	00	00	00	00	01	0.4
Hemorrhage	00	01	00	00	00	00	01	0.4
Total	12(4.9%)	78 (32.7%)	116 (48.2%)	22 (9.2%)	09 (3.7%)	03 (1.3%)	240	100

Table 3: Distribution based on variants of leiomyoma:

Total leiomyoma cases (n=240)	Frequency	Percentage
Usual leiomyoma	238	99.2
Mitotically active leiomyoma	01	0.4
Cellular leiomyoma	01	0.4
Total	240	100

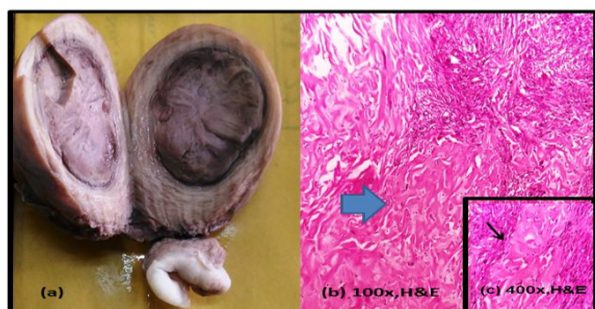


Fig. 2: Leiomyoma with hyaline change (a); On cut surface well circumscribed tumor with whorl appearance and smooth glistening surface suggestive of hyaline change; (b) & (c): Tumor cells arranged in whorl pattern and separated by pink eosinophilic hyaline material

5. Discussion

In present study degenerative changes showed hyaline degeneration being the commonest accounting 8.7% cases. Similar findings were seen in study by Prem et al² which showed that hyaline degeneration as commonest

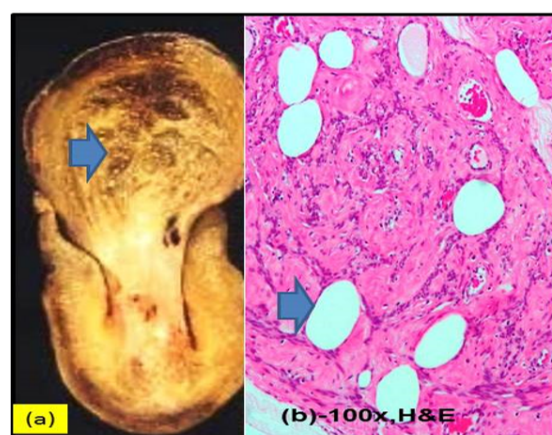


Fig. 3: Cystic change in leiomyoma (a): On cut surface one intramural fibroid identified measuring 3x2 cm, grey white in color with whorl appearance and areas of cystic changes; (b): Tumor composed of smooth muscle cells arranged in whorl pattern seen. The spindle cells are separated by large areas of cystic spaces

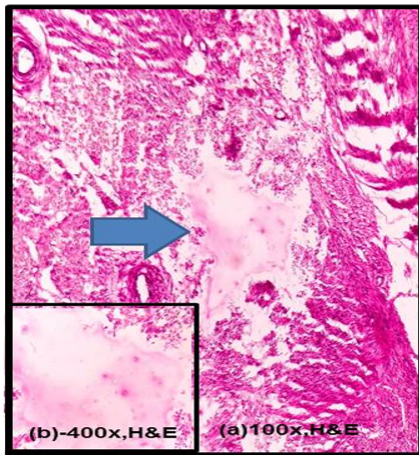


Fig. 4: Myxoid change in leiomyoma; (a) & (b): Shows whorl arrangement of uniform spindle cells and surrounded by pool of myxoid edematous stroma

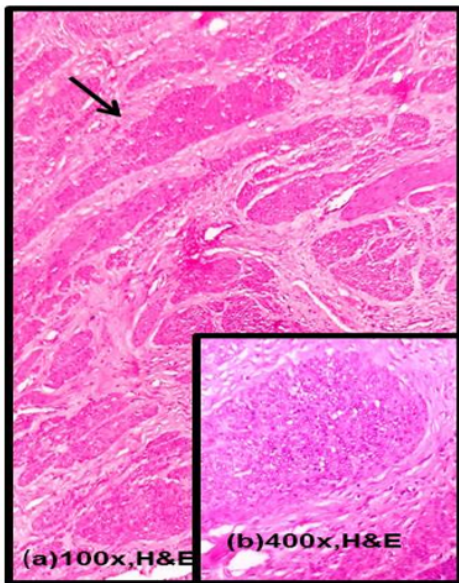


Fig. 5: Cellular leiomyoma; (a) & (b): The tumor is composed of spindle cells with increased cellularity and very scant intervening stroma. The cells are arranged in sheets with hyperchromatic nuclei and scant amount of eosinophilic cytoplasm

degenerative change in 5% cases.

In our study we found 99.2% leiomyoma of usual type. Two variants of leiomyoma. One was cellular leiomyoma and other was mitotically active leiomyoma accounting for 0.4% each.

Kokila K et al³ did a retrospective study over a period of one year and studied 1879 hysterectomy specimens and 664 specimens were found to have fibroid. Usual leiomyoma were found in 88.6% cases and other variants like mitotically active leiomyoma, symplastic leiomyoma, and cellular leiomyoma, neurilemmoma like variant,

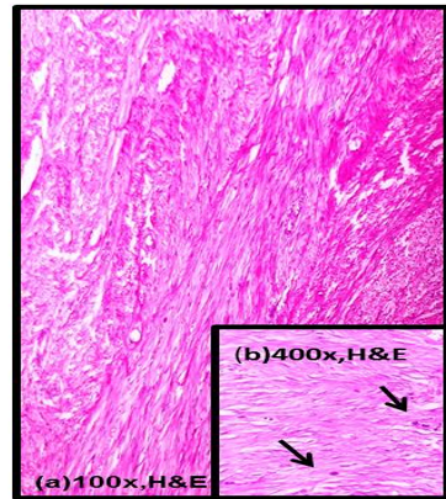


Fig. 6: Mitotically active leiomyoma; (a): The tumor is composed of uniform spindle cells with elongated nuclei and eosinophilic cytoplasm. No tumor necrosis seen; (b): On high power uniform spindle cells seen. 5 mitotic figures per 10 high power field were seen

fatty degeneration, hyaline degeneration, calcification and hydropic degeneration constituted 11.4%. Out of that mitotically active leiomyoma and cellular leiomyoma accounted for 0.43% each. These findings were similar to our study.

In present study adenomyosis was second commonest lesion found and seen in 32.5% cases. Other studies like Jha et al⁴ and Ranabhat et al⁵ Parveen et al⁶ also found adenomyosis as second commonest lesion in 17.2%, 28% and 24% respectively.

In majority of cases it presents with menorrhagia and diagnosed as incidental finding.

In this study the most common co-existing lesion with leiomyoma was adenomyosis found in 8.3% cases. A study done by Karthikeyan et al⁷ among rural population in India also showed that most common co-existing lesion with leiomyoma was adenomyosis in 8.8% cases. The reason for this coexistence might be the same set of risk factor and pathogenic mechanism operating for both the lesions.^{8,9}

Other co-existing lesion found with leiomyoma was serous cystadenoma and endometrial polyp but they had very low incidence of 0.4% each.

6. Conclusion

Leiomyoma was the most common pathology found in hysterectomy specimens in our study which is also true for other countries.

Adenomyosis identified on histopathological examination was seen to be an important lesion in cases presenting with DUB. Hence, cases presenting with DUB should be

Table 4: Comparison of degenerative changes and variants of leiomyoma in various studies

Study	Degenerative changes and variants of leiomyoma					
	Hyaline	Cystic	Myxoid	Calcification	Hemorrhage	Variants
Prem et al ² (2017) (n=376)	5.08	-	0.18	-	-	-
Kokila K et al ³ (2017) (n=1879)	8.24	-	2.3	-	-	0.86
Present study (n=1000)	8.7	1.8	0.8	0.4	0.4	0.8

Table 5: Comparison of myometrial lesion in various studies

Study	Leiomyoma (%)	Adenomyosis (%)
Jha et al (2006) ⁴	24	17.2
Ranabhat et al (2010) ⁵	30.30	28
Rather et al (2013) ⁹	24	13.3
Perveen and tayyab(2008) ⁶	68.5	33.3
Karhikeyan et al (2015) ⁷	41	15
Gazozai et al (2004) ¹⁰	67	17
Purandere and Jhalam (1993) ¹¹	36.45	58.33
Bukhari and Sadeeq (2007) ¹²	43.34	36.24
Jaleel et al (2009) ¹³	45.18	19.27
Jamal and Baqai(2001) ¹⁴	35.7	30
Present study	55.4	32.5

thoroughly evaluated to rule out any underlying pathology.

Histopathological examination helps in identifying rare and unusual malignancies, thus it is important for confirming diagnosis and safeguarding the line of treatment in malignant disease. Moreover, it helps in identifying those lesions which occurs more frequently as well as pure incidental findings in hysterectomy specimens.

Thus, it is mandatory to examine all hysterectomy specimens and their detail histopathological examination even of those specimens which grossly appears normal for better management of the patients post-operatively.

7. Source of Funding

None.

8. Conflict of Interest

None.

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Author biography

Sonali Saraf Assistant Professor

Rucha Kanhe Senior Resident

Cite this article: Saraf S, Kanhe R. To study degenerative changes and variants of leiomyoma in hysterectomy specimens. *Indian J Pathol Oncol* 2020;7(2):248-252.