

## Histopathological study of Uterine Leiomyoma in Hysterectomy Specimens

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### How to cite this Article:

Histopathological study of Uterine Leiomyoma in Hysterectomy Specimens. Bhatta S. Bhandari S. Osti BP. *Ann. Clin. Chem. Lab. Med.* 2017;3(2); 16-20

DOI: <http://dx.doi.org/10.3126/acclm.v3i2.20739>

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### Abstract

#### BACKGROUND

Uterine leiomyoma is the most common benign neoplasm in women of reproductive age group. Hysterectomy is a mode of therapy in uterine Leiomyoma. The objective of this study was to evaluate the histopathological changes in hysterectomy specimens with uterine leiomyomas.

#### METHODS

This is a retrospective study of one hundred sixty eight patients who underwent hysterectomy for uterine leiomyoma.

#### RESULTS

Uterine leiomyoma was most common in the age group of 41-50 years (54.76%). Most common location of leiomyoma was intramural (51.2%). Degenerative changes were seen in 10.72% cases. Hyaline degeneration was the most common type of degeneration (7.14%). Proliferative endometrium was the most common endometrial pattern (63.1%) in uterine leiomyoma. Associated malignant lesions were observed in 1.8 % cases of uterine leiomyoma.

#### CONCLUSION

Uterine leiomyoma is associated with degenerative changes and coexistent benign and malignant pathologies. Histopathological examination of hysterectomy specimens should be done to confirm the diagnosis and rule out other pathologies, especially malignant lesions.

#### KEY WORDS

Degeneration, Hysterectomy, Uterine leiomyoma

**INTRODUCTION**

Uterus is the vital reproductive organ of female which is hormone responsive. Various benign and malignant tumors arise in uterus. Leiomyoma (fibroid) is the most common benign tumor of uterus affecting 5-20% women of reproductive age group. These tumors arise from smooth muscle cells of myometrium <sup>1</sup>.

Leiomyoma exhibit more estrogen receptors than normal myometrium. The hormone is needed for its growth and maintenance, as evidenced by molecular studies. Estrogenic stimulation also leads to endometrial proliferative phase or hyperplasia <sup>2,3</sup>. Majority of the patients are asymptomatic, however symptoms depend upon size and location of the tumor. Clinical manifestations of leiomyoma include menorrhagia, dysmenorrhea, lower abdominal pain, mass, infertility/subfertility and recurrent spontaneous abortion <sup>4</sup>.

These tumors are well circumscribed, firm, gray white bulging masses that can be easily separated from the surrounding normal myometrium. Cut section shows whorled appearance. Smooth muscle cells arranged in interlacing fascicles are seen in microscopic examination. Degenerative changes such as hyaline degeneration, myxoid degeneration, cystic degeneration, fatty degeneration and calcific degeneration are observed. Red degeneration is associated with pregnancy and oral contraceptive use <sup>5,6</sup>. This study was conducted to study the gross and microscopic changes in leiomyoma and to analyze the pathologies associated with leiomyoma in hysterectomy specimens.

**METHODS**

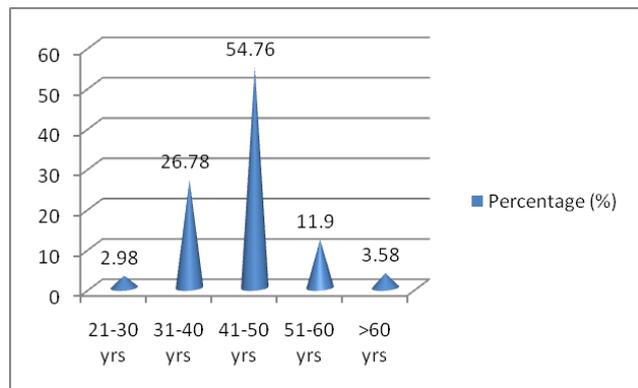
This is a retrospective study conducted in the departments of pathology and Obstetrics and Gynecology from Jan 2012-Jan 2018 at KIST Medical College. One hundred and sixty eight patients diagnosed as leiomyoma on histopathological examination of hysterectomy specimens were included in the study. The data were collected from computer database.

The hysterectomy specimens were fixed in 10% formalin. The gross specimens were examined for the location, number, changes in

leiomyoma and associated pathologies. Representative sections were taken which were processed in automated tissue processor and embedded in paraffin wax. The sections were cut at 4-6μ with microtome, stained with Hematoxylin and Eosin stain, examined under light microscope and the results were obtained.

**RESULTS**

A total of one hundred sixty eight cases of leiomyoma were studied. Age of the patients ranged from 28-73 years. Majority of the patients were in the age group of 41-50 years (54.76%) .



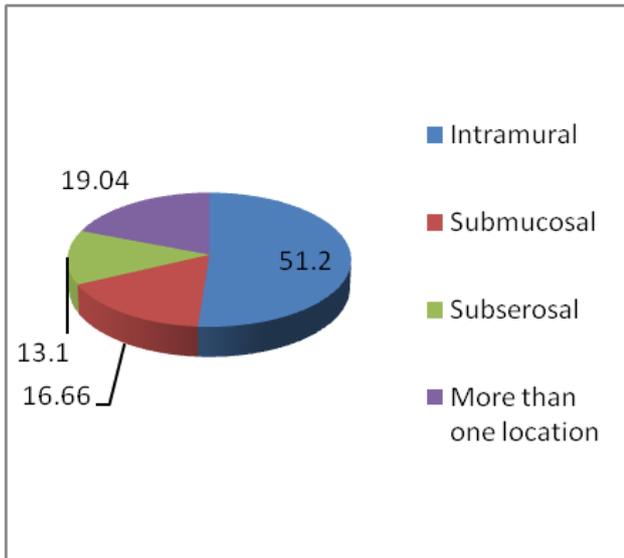
**Fig. 1 Distribution of patients with leiomyoma in various age groups**

Total abdominal hysterectomy with bilateral salpingo-oophrectomy was the most common type of surgery done (66.07%) Table 1.

**Table 1: Type of hysterectomy**

Type of hysterectomy	Number	Percentage (%)
Total abdominal hysterectomy with bilateral salpingo-oophrectomy	111	66.07
Total abdominal hysterectomy with unilateral salpingo-oophrectomy	35	20.83
Total abdominal hysterectomy	14	8.33
Vaginal hysterectomy	6	3.57
Radical hysterectomy	2	1.2
<b>Total</b>	<b>168</b>	<b>100</b>

Most of the hysterectomy specimens showed single leiomyoma (80.95%). Multiple leiomyomata were observed in remaining 19.05% of hysterectomy specimens, the number of which varied from 2-8. Grossly the leiomyomas were well circumscribed, firm, gray white and showed whorled appearance on cut section. Intramural leiomyoma was observed in 51.2% patients, accounting for the most common location in the uterus ( Fig 2 and 3).



**Fig.2 Location of leiomyoma in uterus**

**Figure 3. Hysterectomy specimen with intramural leiomyoma (A); Intramural and subserosal leiomyomata (B).**

Hyaline degeneration occurred most frequently (7.14%) followed by calcific degeneration (1.78%). Other degenerations noted were myxoid degeneration (1.2%), Hydropic degeneration (0.6%). Degeneration was not seen in majority of the leiomyoma (89.28%). Among the variants of leiomyoma a

single case of lipoleiomyoma was observed (0.59%).

Regarding histopathological pattern of endometrium, the most common pattern was proliferative endometrium (63.1%) Table 2.

**Table 2: Histopathological pattern of endometrium in uterine leiomyoma**

Endometrial pattern	Number	Percentage (%)
Proliferative endometrium	106	63.1
Secretory endometrium	44	26.2
Atrophic endometrium	13	7.73
Simple hyperplasia without atypia	3	1.78
Disordered proliferative endometrium	2	1.19
<b>Total</b>	<b>168</b>	<b>100</b>

**Table 3: Uterine pathologies associated with leiomyoma**

Uterine Pathology	Number	Percentage (%)
Chronic cervicitis	98	58.33
Adenomyosis	33	19.64
Endometrial polyp	5	2.99
Chronic endometritis	4	2.38
Serous cystadenoma of ovary	3	1.78
Mature cystic teratoma of ovary	3	1.78
Serous cystadenocarcinoma of ovary	2	1.2
Cervical polyp	2	1.2
Carcinoma cervix	1	0.6
Endometriosis	1	0.6
No pathology	16	9.5
<b>Total</b>	<b>168</b>	<b>100</b>

Predominant uterine pathologies associated with leiomyoma were chronic cervicitis (58.33%) and adenomyosis (19.64%). Malignancy associated with leiomyoma was observed in 1.8% of cases (Table 3).

## DISCUSSION

Hysterectomy is the most common major gynecological surgery performed in the world for diseases like leiomyoma, adenomyosis, prolapse and dysfunctional uterine bleeding (DUB) <sup>7</sup>. In the present study the most common hysterectomy procedure was abdominal hysterectomy (95.31%) followed by vaginal hysterectomy (4.69%). Among the abdominal hysterectomy, Total abdominal hysterectomy with bilateral salpingo-oophorectomy was most commonly performed surgery (66.07%). This finding was similar to the study by Vijaya Gattu et al <sup>8</sup>. Leiomyoma is benign tumor of smooth muscle seen in women of reproductive age group <sup>1,2</sup>. In our study age of the patient ranged from 28-73 years. Maximum number of patients were in the age group of 41-50 years (54.76%). This is in concordance with other studies <sup>9,10</sup>.

Uterine leiomyomata are classified as intramural, submucosal or subserosal and single or multiple with different sizes. In the present study 80.95% of leiomyoma were single. Gowri M et al <sup>9</sup> found 71% single leiomyoma in hysterectomy specimens. In contrast multiple leiomyoma was common in a study by Begum S et al <sup>10</sup>. The most common location of leiomyoma was intramural (51.2%) in our study. It was also the most common location in studies by Gowri M et al <sup>9</sup> and Abraham J et al <sup>11</sup>. In their studies intramural leiomyoma was observed in 48% and 61.5% cases respectively. In the present study degeneration in uterine leiomyoma was observed in 10.72% cases. The most common degeneration was hyaline degeneration followed by calcific degeneration which was similar to other studies <sup>9,10</sup>. HA Nggada et al <sup>4</sup> observed degenerative changes in 21% of all uterine leiomyomata. The degenerative changes in leiomyomas occur due to inadequate blood supply which depends on the rapidity and degree of vascular insufficiency.

In addition, these secondary changes usually occur in old mature and large lesions which emphasize the importance of careful histopathological sampling <sup>9</sup>. Lipoleiomyoma is a rare variant of uterine leiomyoma showing histological features of mature adipocytes mixed with smooth muscle cells. The incidence of lipoleiomyoma ranges from 0.03 to 0.7% <sup>12,13</sup>. This is similar to the incidence in our study accounting for 1 case (0.59%).

In the present study proliferative endometrium was the most common endometrial pattern associated with leiomyoma seen in 63.1 % patients. This finding was in accordance with the study by Chethana M et al <sup>14</sup>. In our study proliferative endometrium, disordered proliferative endometrium and simple hyperplasia without atypia collectively accounted for 66.07 % of endometrial pattern. These endometrial pattern are possibly due to hyperestrogenic state. Atrophic endometrium was observed in 7.73% patients similar to other studies <sup>14</sup>. Atrophy results from involutional changes in the uterus in postmenopausal women and mechanical effects of leiomyoma on endometrium, especially seen in submucosal leiomyoma. Among the uterine pathologies associated with leiomyoma adenomyosis was observed in 19.64% patients, which is in agreement with other studies <sup>15,16</sup>. Cystic ovaries were found in 3.56 % patients. These findings also suggest hyperestrogenic state associated with development of leiomyoma.

Among the cervical lesion chronic cervicitis was the most common pathology ( 58.33 %) in our study. Taludker et al <sup>17</sup> also found chronic cervicitis as the most common cervical pathology in their study. Associated malignant lesions were observed in 1.8 % patients in our study which were present in the patient of age group of >40 years . The malignant lesions comprised serous cystadenocarcinoma of ovary ( 1.2 %) and carcinoma of cervix (0.6 %). Gowri M et al <sup>9</sup> observed granulosa cell tumor of ovary in 0.4% and mucinous and serous cystadenocarcinoma in 1.6% patients.

## CONCLUSION

Uterine leiomyoma is a benign tumor of reproductive age group. Intramural leiomyoma is the most common location. Various degenerative changes occur in leiomyoma among which hyaline degeneration is most common. Associated adenomyosis and cystic ovaries suggest hyperestrogenic state. Occasional cases are associated with malignancy. Hence histopathological diagnosis is essential to identify various changes in leiomyoma and diagnose other pathologies associated with leiomyoma.

## CONFLICT OF INTEREST

None declared

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