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Clinicopathological Study of Uterine Leiomyomas – A Retrospective Study

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Leiomyomas are benign tumors of the uterus affecting women of the reproductive age group. They are the most common gynaecologic neoplasms in women. The aim of our study was to analyse and correlate the histopathological findings of leiomyomas in 203 hysterectomy specimens received in the department of Pathology at Saveetha Medical College and to further delineate the associated changes and variants that were observed in the leiomyoma specimens. In this study we found that the dominant age group was 31-50 years of age with multiple leiomyomas being more common than solitary ones. The most commonly observed location was intramural. Majority of the hysterectomy specimens showed a proliferative pattern of endometrium. Degenerative changes were observed in 26 cases with hyaline degeneration being the most common secondary change. There were multiple uterine pathologies associated with the uterine leiomyomas of which ovarian cortical cysts were the most frequently noted. The histopathological study of leiomyomas is important as it helps to further ascertain the diagnosis and ensure optimal patient management.

Keywords: Hysterectomy; histopathology; leiomyoma; uterus; fibroids; degeneration.

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1. INTRODUCTION

Leiomyomas are benign tumors of the uterus and are the most common gynaecologic neoplasms in women. They affect 5-20% of women in the reproductive age group (31- 50 years of age) [1] They arise from the smooth muscle cells of the uterus, with the most common location being intramural [2,3]. The tumors are hormone dependent and are sensitive to both estrogen and progesterone. Ovarian steroid hormones are thought to be responsible for the pathogenesis of leiomyomas [4]. A good number of leiomyomas also show degenerative changes which include cystic, hyaline, red or myxoid degeneration. The cut section of a leiomyoma typically shows a firm grey-white whorled appearance [5]. Surgery in the form of hysterectomy is the most common method of treatment for these benign neoplasms [6].

It is important to study the morphology of leiomyomas in order to facilitate a better understanding of these common neoplasms and the complications associated with them. Histopathological examination of leiomyomas is imperative to rule out the possibility of malignant change.

The aim of this study was to correlate the occurrence of leiomyomas with age and to analyze the clinicopathological spectrum of uterine leiomyomas with respect to their size, location, associated changes and variants.

2. METHODOLOGY

This retrospective study was done over a period of three years (2017-2019) and included 203 cases of uterine hysterectomy specimens that were clinically diagnosed as leiomyoma at Saveetha Medical College and Hospital. Those hysterectomy specimens with no features suggestive of leiomyoma were excluded from the study. Clinical data was obtained from the Department of Pathology, Saveetha Medical College and Hospital, and included age, number of fibroids, location, gross findings, microscopic features, secondary changes and associated pathologies.

3. RESULTS

A total of 203 hysterectomy specimens were reviewed. The study population included patients aged between 26 to 70 years of age with a mean age of 43 years. Our analysis showed that patients aged between 41 to 50 years of age had the highest incidence of leiomyomas (n=104, 51.23%). This was followed by age group of 31 to 40 years (n=63, 31.03%), 51 to 60 years (n=19, 9.36%), 21 to 30 years (n=11, 5.42%) and 61 to 70 years of age (n=6, 2.96%) (Fig/Table 1).

Multiple leiomyomas were slightly dominant (n=113, 55.67%) over the solitary lesions (n=90, 44.33%) (Fig/Table 2).

The most common location was found to be intramural consisting of 139 cases (68.47%) followed by mixed type (defined as leiomyoma occurring in more than one location; found in 41 cases) (20.20%).

This was followed by submucosal fibroids, with 15 cases (7.38%). Least number of fibroids were found in subserosa which accounted for 8 cases (3.95%) (Fig. 1) (Fig. 2) The size of the fibroids in our study ranged from 0.5cm in diameter to 18cm in diameter.

Table 1. Incidence of leiomyomas in various age groups

Age group (years)	Number of patients	Percentage of patients (%)
21-30	11	5.42
31-40	63	31.03
41-50	104	51.23
51-60	19	9.36
61-70	6	2.96

Table 2. Distribution of solitary and multiple leiomyomas

Number of leiomyomas	Number of cases	Percentage of cases (%)
One	90	44.33
Multiple	113	55.67
Total	203	100

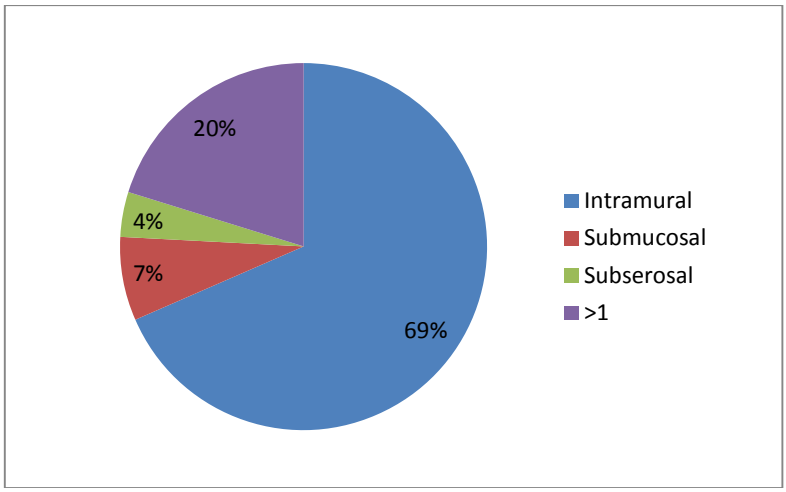

Fig. 1. Distribution of leiomyomas by their location

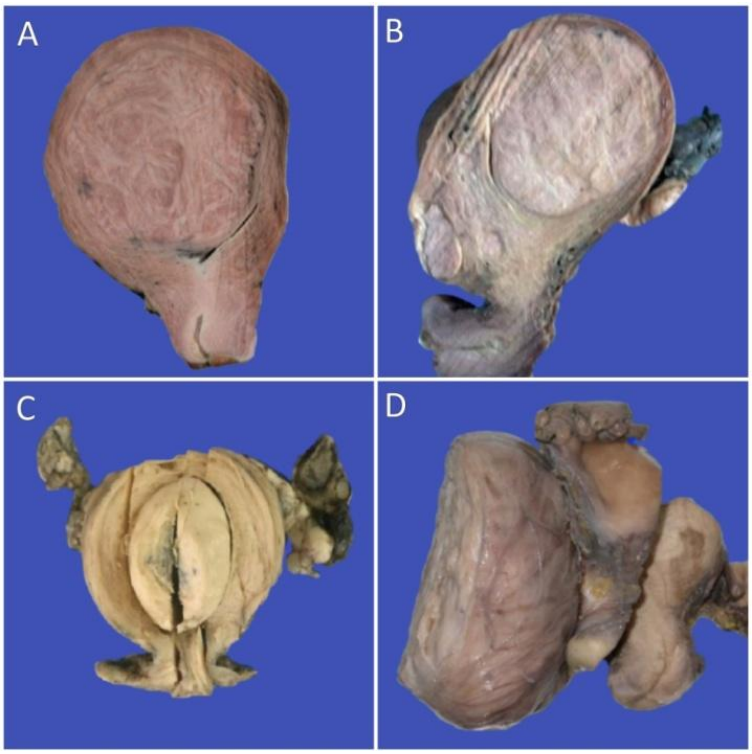

Fig. 2. Location of leiomyomas - A.Solitary,intramural leiomyoma. B.Multiple intramural leiomyomas. C.Sub-mucosal leiomyoma. D.Sub-serosal leiomyoma

Degenerative changes were seen in 26 cases.(12.80%) The most common degenerative change found was hyaline degeneration (69.23%) followed by cystic degeneration (23.07%). This was followed by red degeneration and more than one type of degeneration - each making up 3.85% (Fig. 3).

Hyaline degeneration was most frequently associated with intramural fibroids (61.11%). While red degeneration and >1 type of degeneration were only seen in intramural fibroids (100%), cystic degeneration was most frequently seen in fibroids having multiple locations (66.66%) (Table 3).

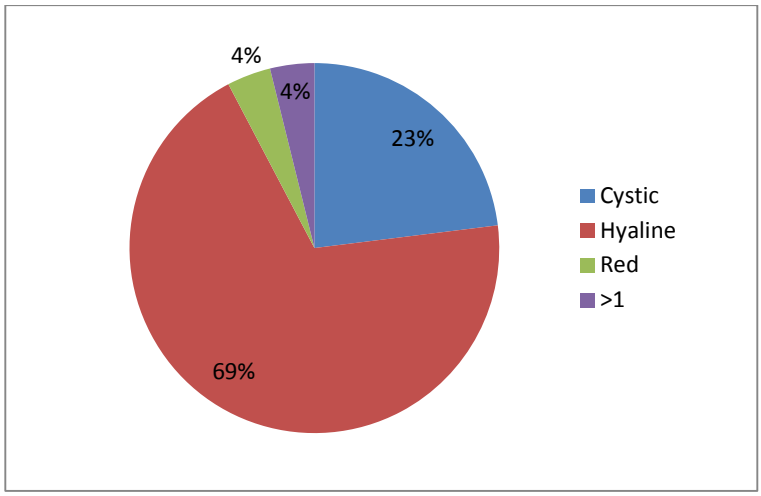

Fig. 3. Various degenerative changes seen in uterine leiomyomas

Table 3. Analysis of location of fibroid with respect to secondary changes

Location of fibroid	Hyaline degeneration	Red degeneration	Cystic degeneration	>1 type of degeneration
Intramural	11	1	2	1
Submucosal	2	-	-	-
Subserosal	-	-	-	-
Multiple/multifocal	5	-	4	-
Total (26)	18	1	6	1

Microscopically all the leiomyomas showed the classical pattern of fascicular arrangement of benign spindle cells with eosinophilic cytoplasm and elongated blunt edged nucleus.

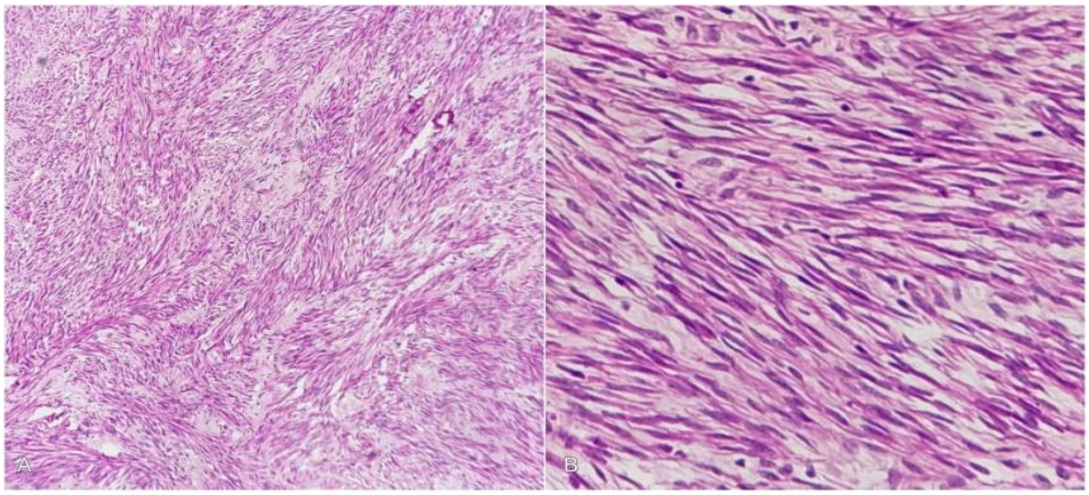

Fig. 4. Morphological appearance of leiomyoma – A. Spindle shaped cells arranged in fascicles and sheets H & E: 100 x. B. The individual cells show an elongated nuclei with blunt ends resembling a cigar bundle; with moderate amounts of eosinophilic cytoplasm H & E: 400 x

The following endometrial growth patterns were observed in the above cases (Table 4).

Table 4. Histopathological pattern of endometrium in uterine leiomyomas

Endometrial pattern	Number of cases	Percentage of cases (%)
Proliferative	115	56.7
Disordered proliferation	7	3.4
Secretory	50	24.6
Senile cystic atrophy	9	4.9
Atrophic	21	10.3
Typical hyperplasia	1	0.3

The following table shows the incidence of other histological findings along with leiomyomas (Table 5).

Table 5. Other histological findings associated with leiomyomas

Uterine pathology	Number	Percentage (%)
Paratubal cyst	14	6.89
Fimbrial cyst	4	1.97
Nabothian cyst	9	4.44
Ovarian cortical cyst	21	10.34
Ovarian mass	1	0.50
Hemorrhagic corpus luteum	7	3.44
Hypertrophied cervix	13	6.40
Hydrosalpinx	1	0.50
Endocervical polyp	1	0.50
Uterine polyp	4	1.97
No specific pathology	128	63.05

Table 6. Comparison with other studies for most common age group

Author	% of patients in age group 41-50 years
ManpreetKaur et al. [7]	61.54
Mega Lahori et al. [8]	46.84
Bhatta Sushama et al. [9]	54.76
Present study	51.23

4. DISCUSSION

Uterine leiomyomas are the most common benign uterine tumors [10]. They are the primary cause of hysterectomy in premenopausal women [11]. In the present study, we found that the incidence of fibroids was highest in the age range of 31 to 50 years, contributing to 82.26% of the cohort which belonged to the reproductive age group. This was found to be a relatively consistent finding across various studies as mentioned below (Table 6). In our study, the incidence of leiomyomas was lowest in the age group of 61 to 70 years of age, comprising of only 2.96% of the total cases.

Majority of the cases in this study presented with multiple leiomyomas. Of these, a single leiomyoma alone was observed in 90 cases (44.33%) while 113 cases (55.67%) presented with two or more (multiple) fibroids. However, in a study conducted by Priyadarshini et al., more cases of single leiomyomas were reported (59%) than cases of multiple leiomyomas (41%) [12].

Leiomyomas vary in size and location. In this study, majority of the specimens fell in the size range of 0.5 to 3.0cm in diameter. In terms of location, intramural fibroids dominated with 139 cases (68.47%) while subserosal fibroids were the least favoured with 8 cases (3.95%).Similar results were obtained in a study by Manpreet Kaur et al. [7]. Their study showed that the most common site of leiomyomas was intramural (62.9%), followed by submucosal (21.8%) and then subserosal (15.3%) [7].

Degenerative changes were observed in 26/203 uterine leiomyoma specimens [13]. (12.80%) Hyaline degeneration made up more than half of the cases (69.23%), followed by cystic

degeneration (23.07%) and red degeneration (3.85%) respectively. More than one type of degeneration was found in 3.85% of cases. Similar results were found in other studies which showed that hyaline degeneration was the most frequently occurring type of degeneration, accounting for 63% [9,12] However, another study by Maitri Raghavendra et al. [6] found myxoid type of degeneration to be the most common (3% of cases) followed by hyaline degeneration (2%) [6].

In terms of endometrial growth patterns, proliferative type of growth was the predominant one (56.65%) which was similar to the results obtained by Maitri et al. [6] (66.3%) [6], Manpreet et al. (46.15%) [7] and Geethamalak et al. [9] Secretory type was the second most commonly associated uterine endometrial pattern (24.6%) and the least common type was hyperplasia.

Amongst uterine pathologies associated with leiomyomas, ovarian cortical cysts were the most commonly encountered lesion (10.34%) and the least common were ovarian mass, endocervical polyp and hydrosalpinx; each accounting for 0.50%.

4. CONCLUSION

Uterine leiomyomas, also known as fibroids, are the most prevalent benign tumors, found in women in the reproductive age groups. Multiple leiomyomas were found to be more common than solitary lesions. Proliferative endometrial growth was the pattern most frequently observed with uterine leiomyomas. The incidence of leiomyomas was highest in the age group of 31-50 years of age, with a preponderance to intramural location. Degenerative changes were few, with hyaline degeneration being the most common. Multifocal leiomyomas outnumbered the solitary ones. It is important to study uterine leiomyomas as the detailed histopathological study of these tumors help to further ascertain the diagnosis and ensure optimal patient management.

CONSENT

It is not applicable.

ETHICAL APPROVAL

Ethical clearance was obtained from the institutional ethics committee.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Bhatta S, Bhandari S, Osti BP. Histopathological study of Uterine Leiomyoma in Hysterectomy Specimens. Annals of Clinical Chemistry and Laboratory Medicine. 2017;3(2):16-20.
2. Cesen-Cummings K, Copland JA, Barrett JC, Walker CL, Davis BJ. Pregnancy, parturition, and prostaglandins: Defining uterine leiomyomas. Environmental Health Perspectives. 2000 Oct 1:817-20.
3. Donnez J, Dolmans MM. Uterine fibroid management: from the present to the future. Human Reproduction Update. 2016 Nov 20;22(6):665-86.
4. Reis FM, Bloise E, Ortiga-Carvalho TM. Hormones and pathogenesis of uterine fibroids. Best Practice & Research Clinical Obstetrics & Gynaecology. 2016 Jul 1;34:13-24.
5. Croce S, Young RH, Oliva E. Uterine leiomyomas with bizarre nuclei: a Clinicopathologic study of 59 cases. The American Journal of Surgical Pathology. 2014 Oct 1;38(10):1330-9.
6. Kulkarni MR, Dutta I, Dutta DK. Clinicopathological Study of Uterine Leiomyomas: A Multicentric Study in Rural Population. The Journal of Obstetrics and Gynecology of India. 2016 Oct 1;66(1):412-6.
7. Kaur SJ, Gupta RK, Kaur M. Clinicopathological Study of Uterine Lesions in Hysterectomy Specimens.
8. Lahori M, Malhotra AS, Sakul KA, Goswami K. Clinicopathological spectrum of uterine leiomyomas in a state of Northern India: a hospital based study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016;5(7):2296.
9. Geethamala K, Murthy VS, Vani BR, Rao S. Uterine Leiomyomas: An ENIGMA. Journal of mid-Life Health. 7(1):22–27. Available:https://doi.org/10.4103/0976-7800.179170
10. Donnez J, Dolmans MM. Uterine fibroid management: from the present to the future. Human Reproduction Update. 2016;22(6):665-86.

11. Cramer SF, Patel A. The frequency of uterine leiomyomas. American Journal of Clinical Pathology. 1990 Oct 1;94(4): 435-8.
12. Priyadarshini P. Clinicopathological Study Of Uterine Leiomyomas in Hysterectomy Specimens; A Retrospective Study. International Journal of Advanced Research. 2018;6(2):571-576.
13. Persaud V, Arjoon PD. Uterine leiomyoma: incidence of degenerative change and a correlation of associated symptoms. Obstetrics & Gynecology. 1970;35(3): 432-6.

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