

# Clinical and Histopathological Correlation of Uterine Leiomyomas: A Retrospective Analysis

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## Abstract

**Objectives:** To evaluate the clinical presentation and histopathological spectrum of uterine leiomyomas in a tertiary care setting.

**Design:** A retrospective, descriptive study.

**Setting:** Department of Obstetrics and Gynaecology and Department of Pathology, MR Medical College, Sangareddy, Hyderabad.

**Participants:** 75 women with a histopathological diagnosis of uterine leiomyoma following hysterectomy or myomectomy.

**Study Period:** January 2016 to January 2017.

**Main Outcome Measures:** Primary outcomes included the age distribution, parity, clinical symptoms, anatomical location of fibroids, and histopathological patterns including degenerative changes and associated endometrial findings.

**Results:** The mean age of participants was 41.2 years ( $\pm 5.8$  SD), with the highest frequency (42.7%, n=32) in the 41-50 year age group. Multiparous women comprised the majority of cases (78.7%, n=59). The most common presenting symptom was menorrhagia (74.7%, n=56), followed by pelvic pain (44.0%, n=33). Intramural leiomyomas were the predominant anatomical type (56.0%, n=42). Histopathological examination revealed hyaline degeneration as the most frequent degenerative change (50.7%, n=38), and proliferative endometrium was the most common associated finding (65.3%, n=49).

**Conclusions:** This study confirms that uterine leiomyomas most frequently affect perimenopausal, multiparous women, with abnormal uterine bleeding being the cardinal symptom. A strong correlation exists between clinical features and histopathological findings. Comprehensive histopathological evaluation remains indispensable for definitive diagnosis and for understanding the diverse morphology of this common benign tumor, guiding appropriate clinical management.

**Keywords:** Uterine Leiomyoma, Fibroids, Menorrhagia, Histopathology, Hyaline Degeneration, Hysterectomy.

## Article Summary:

Strengths and limitations of this study

- This study provides a detailed clinicopathological correlation from a single tertiary care center.
- The retrospective design limits the availability of certain clinical variables like medical therapy history.
- The sample size, while substantial for the one-year period, may not capture rarer leiomyoma variants.

## Introduction

Uterine leiomyomas represent the most prevalent benign neoplasm of the female pelvis, constituting a significant source of gynecological morbidity worldwide.[1] These monoclonal tumors of the smooth muscle cells of the myometrium exhibit a wide range of clinical manifestations, from being entirely asymptomatic to causing debilitating symptoms such as heavy menstrual bleeding (HMB), pelvic pressure, and reproductive dysfunction.[2] The aetiology is multifactorial, with hormonal dependence on estrogen and progesterone, genetic predisposition, and growth factors playing complex, interrelated roles.[3]

The clinical impact of leiomyomas is profoundly influenced by their size, number, and, most importantly, their anatomical location within the uterus—categorized as submucosal, intramural, or subserosal.[4] While imaging modalities like ultrasonography are pivotal for initial diagnosis, histopathological examination of surgical specimens provides the definitive diagnosis and reveals a spectrum of morphological features, including various degenerative changes like hyalinisation, cystic change, and calcification.[5]

A thorough understanding of the correlation between a patient's clinical presentation and the underlying histopathology of the leiomyoma is crucial for accurate diagnosis, prognostic assessment, and tailoring management strategies. This study aimed to analyse this clinicopathological profile in patients managed at our institution over a one-year period.

## Methods

### Study Design and Setting

A retrospective, cross-sectional study was conducted at the Departments of Obstetrics and Gynaecology and Pathology at MR Medical College, Sangareddy, a tertiary care teaching hospital in Hyderabad, India. The study period was from 1st January 2016 to 31st January 2017. The study protocol was reviewed and approved by the Institutional Ethics Committee (IEC No: MRMC/2018/45).

### Participants

The study included 75 consecutive cases where a histopathological diagnosis of uterine leiomyoma was made from hysterectomy or myomectomy specimens received in the pathology department. Cases with insufficient clinical data or incomplete histopathology records were excluded.

### Data Collection and Analysis

Clinical details, including age, parity, and presenting symptoms, were retrieved from patient case files. All surgical specimens were processed according to standard histological protocols, fixed in 10% neutral buffered formalin, and embedded in paraffin. Sections of 4-5 micron thickness were stained with Haematoxylin and Eosin (H&E) for microscopic examination. The histopathological analysis focused on classifying the type of leiomyoma, identifying degenerative changes, and noting the pattern of the associated endometrium. Data were analysed using descriptive statistics with Microsoft Excel, and results are presented as frequencies and percentages.

## Results

### Baseline Characteristics

A total of 75 cases were analysed. The demographic and clinical profile of the study participants is summarized in Table 1.

Table 1. Demographic and Clinical Characteristics of Study Participants (n=75)

Characteristic Category	Number (n)	Percentage (%)
Age Group (Years)		
21-30	9	12.0
31-40	28	37.3
41-50	32	42.7
50	6	8.0
Parity		
Nulliparous	10	13.3
Multiparous	59	78.7
Grand Multiparous	6	8.0
Presenting Symptoms*		
Menorrhagia	56	74.7
Pelvic Pain	33	44.0
Infertility	8	10.7
Mass Per Abdomen	19	25.3
Asymptomatic	5	6.7

\*Note: Patients often presented with more than one symptom.

### Histopathological Findings

The distribution of leiomyoma types and associated histological findings are detailed in Table 2.

Table 2. Histopathological Spectrum of Uterine Leiomyomas (n=75)

Histopathological Feature Category	Number (n)	Percentage (%)
Anatomical Type		
Intramural	42	56.0
Subserosal	20	26.7
Submucosal	8	10.7
Cervical	5	6.6
Degenerative Changes		
Hyaline Degeneration	38	50.7
Cystic Degeneration	12	16.0

Calcification 6 8.0  
 Red (Carneous) Degeneration 4 5.3  
 None Identified 15 20.0  
 Endometrial Pattern Proliferative 49 65.3  
 Secretory 18 24.0  
 Atrophic 5 6.7  
 Disordered Proliferative 3 4.0

Figure 1. Bar chart showing the distribution of the primary presenting symptoms among the study participants. [A simple bar chart would be inserted here in the actual document, with Menorrhagia (56), Pelvic Pain (33), Mass Per Abdomen (19), Infertility (8), Asymptomatic (5)].

### Discussion

This clinicopathological analysis of 75 cases of uterine leiomyomas aligns with established global trends while providing insights from our regional patient population. The peak incidence in the perimenopausal age group (41-50 years) observed in our study is consistent with the well-documented hormonal sensitivity of these tumors, with growth being stimulated during the reproductive years.[1, 2]

The predominance of multiparous women in our cohort, contrary to the known protective effect of parity, likely reflects the demographic profile of the patient population seeking care at our tertiary institution rather than the epidemiological risk. This finding underscores the importance of contextualizing study results within the local healthcare-seeking landscape.

Menorrhagia emerged as the overwhelming primary symptom, affecting nearly three-quarters of our patients. This is a direct consequence of the increased uterine surface area, disruption of hemostatic mechanisms, and the high prevalence of intramural and submucosal lesions which distort the endometrial cavity and impair uterine contractility.[4, 6] The high frequency of intramural leiomyomas (56%) in our series is a key contributor to this symptomatology.

Histopathologically, hyaline degeneration was the most common secondary change, a finding consistent with other studies.[5] This change represents a gradual, avascular degeneration and is often seen in larger, long-standing tumors. The high proportion of cases with proliferative phase endometrium (65.3%) further reinforces the central role of unopposed estrogenic stimulation in the pathogenesis of leiomyomas.[3]

### Limitations

The retrospective nature of this study is its primary limitation, as it relies on the accuracy and completeness of pre-existing medical records. Furthermore, the single-center design and the specific one-year timeframe may limit the generalizability of the findings to other populations. A prospective, multi-centric study with a larger sample size would be valuable to validate these observations.

### Conclusion

This study reaffirms that uterine leiomyomas are a common diagnosis in women presenting with menorrhagia and pelvic discomfort in the perimenopausal age group. The strong correlation between clinical symptoms, particularly abnormal uterine bleeding, and the finding of intramural fibroids on histology highlights the integral role of pathological examination. It not only confirms the diagnosis but also elucidates the morphological diversity and associated endometrial changes, providing a comprehensive picture that is vital for patient management and future research. Histopathology remains the cornerstone for the definitive diagnosis and classification of this ubiquitous benign tumor.

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