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Research Article

Clinical Presentation, Risk Factors, Histopathological Features, and Quality-of-Life Impact of Uterine Fibroids in Women Attending Tertiary Care Hospitals

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ABSTRACT

Background: The most common benign tumor of the female reproductive tract is uterine fibroids, which is a leading cause of gynecological morbidity, especially among women of reproductive age. They are linked to menstrual problems, pelvic problems, infertility, and severe quality-of-life impairment.

Objective: To assess the clinical appearance, risk determinants, histopathological changes, and quality-of-life effects of uterine fibroids in women who visit a tertiary care hospital.

Methods: The study was a cross-sectional observational study that was locally based in Gynecology Unit-IV, Bolan Medical Complex, between June 2024 and June 2025. A total of 100 women aged 20–50 years with clinically suspected and ultrasonographically confirmed uterine fibroids were included through consecutive sampling. Data regarding demographic characteristics, reproductive profile, risk factors, clinical presentation, ultrasonographic findings, histopathological features, and quality-of-life impact were collected and analyzed using SPSS version 26.0.

Results: The mean age of participants was 37.9 ± 6.8 years, and the majority of women were aged 31–40 years (48%). The majority of the patients were married (85%) and multiparous (58%). Participants had a positive family history in 29%, and were overweight and obese in 72%. The most common presenting complaint was menorrhagia (70%), followed by pelvic pain (55%), abdominal heaviness (52%), fatigue (50%), and dysmenorrhea (47%). Ultrasonography showed that intramural fibroids (46%) were the most frequent subtype, and multiple fibroids (60%) were more common than solitary lesions. Histopathological examination in 72 surgically managed cases confirmed benign leiomyoma in all patients, with typical leiomyoma (38.9%) and leiomyoma with hyalinization (30.5%) being the most common findings. The quality-of-life assessment revealed moderate impairment in forty-five percent and severe impairment in twenty-eight percent of women.

Conclusion: A significant clinical and psychosocial burden is related to uterine fibroids. Individualized management and early diagnosis should be used to ensure better patient outcomes and quality of life.

Keywords: Uterine fibroids, leiomyoma, menorrhagia, histopathology, quality of life, pelvic pain, infertility

INTRODUCTION

The benign tumor of the female reproductive system, which is most frequent, is uterine fibroids, also known as leiomyomas, which develop in the smooth muscles of the myometrium[1]. They affect a significant proportion of women during their reproductive years, with prevalence estimates ranging from 20% to 70% depending on age, ethnicity, and diagnostic modality. Fibroids are histologically harmless, but their clinical importance lies in the fact that they are very frequent and may lead to significant gynecological morbidity[2].

Uterine fibroid pathogenesis is complex and multi-factorial and includes the role of hormonal, genetic, and environmental factors[3]. The role of estrogen and progesterone in the pathogenesis of fibroids cannot be overlooked since they induce cell growth and deposition of extracellular matrix. Additionally, predisposing factors also include genetic predisposition, menarcheal history, obesity, nulliparity, and metabolic derangements. Emerging evidence is also available on the contribution of inflammatory mediators, growth factors, and disturbed signaling pathways to the pathogenesis and pathophysiology of fibroids[4].

The clinical presentations of uterine fibroids are extremely wide; some of them may be completely asymptomatic, and others may represent severe disease[5]. The most common are heavy menstrual bleeding (menorrhagia), dysmenorrhea, pelvic pain, abdominal distension, and pressure symptoms (urinary frequency and constipation). Fibroids may also hurt fertility and pregnancy outcomes, which can cause infertility, frequent pregnancy loss, and obstetric complications. The symptoms are usually acute, as per the size, quantity, and location of the fibroids, particularly where these fibroids deform the uterine cavity[6].

From a pathological perspective, uterine fibroids are characterized by well-circumscribed bundles of smooth muscle cells arranged in a whorled pattern[7]. Although benign by nature, fibroids may undergo a broad spectrum of secondary degenerative alterations, such as hyaline degeneration, calcification, cystic alterations, and red degeneration, especially in larger lesions or during pregnancy. In order to eliminate the common but less common serious situations, such as leiomyosarcoma, histopathological examination is required in surgically treated patients to exclude the diagnosis[8].

Also, on top of the physical symptoms, uterine fibroids impose a massive burden on the quality of life of the affected women[9]. The excessive bleeding may result in chronic anemia, weariness, and inability to work, but chronic pain and pain in the abdomen may limit daily activities. Moreover, the threat of infertility, body image, sex life, and frequent medical interventions may be one of the factors that lead to emotional disturbance, anxiety, and social isolation. In the majority of the emerging healthcare settings, burdens of the disease are also caused by late diagnosis and access to specialized care[10].

Although uterine fibroids are common, the relative scarcity of combined research that simultaneously considers clinical presentation, risk factors, histopathology, and patient-reported quality-of-life outcomes has been found even in tertiary care hospitals. Such a comprehensive assessment is required to improve the level of early diagnosis, individual approach to treatment, and physical-psychosocial factors of the illness[11].

Therefore, the present study was designed to evaluate the clinical presentation, risk factors, histopathological characteristics, and quality-of-life impact of uterine fibroids among women attending tertiary care hospitals, to provide a holistic understanding of the disease burden and inform better clinical care[12].

MATERIALS AND METHODS

This cross-sectional observation study is based at a hospital, which is located in Gynecology Unit-IV, Bolan Medical Complex, during one year between June 2024 and June 2025. The clinical presentation, risk factors, histopathological appearance, and quality-of-life effects of uterine fibroids were to be studied in women receiving tertiary care at a gynecology unit.

The study involved 100 women diagnosed with uterine fibroids. The sample was selected based on the availability of the patients at the time of the study and the practicability of the in-depth clinical, radiological, histopathological, and quality-of-life evaluation within the chosen environment. The non-probability consecutive sampling was employed to enroll patients.

Women aged between 20 and 50 years who visited the outpatient department, inpatient wards, and emergency gynecology services, and whose presence in the clinic had been clinically suspected and ultrasonographically diagnosed to have uterine fibroids, were included in the study. Cases that were newly diagnosed and those that were known before but were referred to undergo further management were included. The study excluded pregnant patients, patients with adenomyosis and no fibroids, suspected or known gynecological malignancy, ovarian tumors, severe systemic disease, and incomplete clinical records. Moreover, women who did not want to take part or failed to make informed consent were not enrolled.

All the eligible patients were informed of the aim of the study, and informed written consent was taken after the consent of the appropriate institutional ethical review authority was obtained. The data collection was conducted using a structured proforma that was specially developed to be used in the study. Data concerning age, marital status, parity, body mass index, menstrual history, age at menarche, infertility history, contraceptive use, family history of uterine fibroids, previous gynecological procedures, and related comorbidities were taken. Clinical assessment was performed in detail to record present complaints, including heavy menstrual bleeding, dysmenorrhea, pain in the pelvic area, pain in the lower abdomen, abdominal distension, frequency of urination, constipation, dyspareunia, infertility, and frequent pregnancy loss.

General physical examination, abdominal examination, and pelvic examination were done for all patients where necessary. Pelvic ultrasonography confirmed that the patient has uterine fibroids, and the results were documented in terms of the number, size, location, and type of fibroids. Imaging revealed that fibroids were intramural, submucosal, subserosal, cervical, or mixed. Excised specimens were submitted to the pathology department of the hospital in patients who received surgical intervention in terms of myomectomy or hysterectomy. Review of

histopathology reports was done to verify the presence of leiomyoma and the presence of secondary changes, including hyalinization, calcification, cystic degeneration, red degeneration, and other microscopic changes.
A structured quality-of-life assessment was also conducted to determine the effects of uterine fibroids on everyday living, which was done by interviewing the patients. This was evaluated about the impact of symptoms on physical exercise, emotional status, social life, menstrual inconvenience, sexual life, sleep, and routine household or occupational functioning. The quality-of-life impact was classified as mild, moderate, or severe according to the severity of the symptom burden and how it affects the quality of life.

All the data obtained were recorded and analyzed with SPSS version 26.0. Quantitative variables such as age and body mass index were presented as mean ± standard deviation, whereas qualitative variables such as symptoms, risk factors, fibroid type, and histopathological findings were expressed as frequency and percentage. Associations between categorical variables were assessed using the Chi-square test or Fisher's exact test where necessary. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The study involved one hundred women with uterine fibroids. The results are reported as per the demographic profile, risk factors, clinical presentation, fibroid features, histopathological characteristics, and quality of life.

Risk Factor Profile and Demographic.
The mean age of the participants was 37.9 ± 6.8 years, with the majority of women (48%) belonging to the 31–40 years age group. The majority of the participants were married (85%) and multiparous (58%). A high proportion of women were either overweight or obese (72%), indicating a possible metabolic association with fibroid development. The positive family history of uterine fibroids was found in 29% of patients, and 26% stated that they were infertile. The findings indicate that uterine fibroids were most prevalent among women in the reproductive age group, particularly between 31 and 40 years. The body mass index was found to be greater in most patients, which indicated the existence of a relationship between obesity and the presence of fibroids. Moreover, infertility and positive family history demonstrate the reproductive and genetic consequences of the disease (Table 1).

Table 1: Demographic and Risk Factor Characteristics of Study Participants (n = 100)

Variable	Frequency (n)	Percentage (%)
Age Group (years)		
20–30	22	22.0
31–40	48	48.0
41–50	30	30.0
Marital Status		
Married	85	85.0
Unmarried	15	15.0
Parity		
Nulliparous	20	20.0
Primiparous	22	22.0
Multiparous	58	58.0
Body Mass Index		
<25 kg/m²	28	28.0
25–29.9 kg/m²	37	37.0
≥30 kg/m²	35	35.0
Family History of Fibroids	29	29.0
Infertility History	26	26.0
Comorbidities		
Hypertension	18	18.0
Diabetes Mellitus	14	14.0
Thyroid Disorders	10	10.0

Clinical Presentation

The most common presenting complaint was menorrhagia (70%), followed by pelvic pain (55%), abdominal heaviness (52%), and dysmenorrhea (47%). Other symptoms included menstrual irregularities, urinary complaints, and reproductive issues such as infertility and recurrent pregnancy loss. These findings indicate that

uterine fibroids are a major cause of menstrual and pelvic health issues, and the most common symptom is heavy menstrual bleeding. The mass effect of fibroids was also manifested by a significant rate of women experiencing pain and pressure-related symptoms. Chronic blood loss was linked to fatigue, whereas infertility indicates the reproductive burden of the disease (Table 2).

Table 2: Clinical Presentation of Patients with Uterine Fibroids (n = 100)

Clinical Feature	Frequency (n)	Percentage (%)
Menorrhagia	70	70.0
Pelvic pain	55	55.0
Abdominal heaviness/distension	52	52.0
Dysmenorrhea	47	47.0
Irregular menstrual cycles	43	43.0
Urinary frequency	31	31.0
Constipation	19	19.0
Dyspareunia	24	24.0
Infertility	26	26.0
Recurrent miscarriage	12	12.0
Fatigue/weakness	50	50.0

Fibroid Characteristics and Histopathological Findings

The ultrasonographic results revealed that the most common type of fibroids was intramural (46%), and then subserosal and submucosal fibroids. Multiple fibroids were more frequently observed (60%) than solitary lesions. Histopathological analysis (performed in 72 surgically managed cases) confirmed benign leiomyoma in all specimens. Typical leiomyoma with hyalinization (30.5%), then the calcific and cystic changes, was the most common histological pattern. Such results prove that the most common pattern of intramural fibroids and multiple lesions is observed in tertiary care. All cases had classic benign histopathology, with more degenerative alterations in larger and long-standing fibroids (Table 3).

Table 3: Fibroid Characteristics and Histopathological Features

Variable	Frequency (n)	Percentage (%)
Fibroid Location		
Intramural	46	46.0
Submucosal	20	20.0
Subserosal	26	26.0
Others (cervical/pedunculated)	8	8.0
Number of Fibroids		
Solitary	40	40.0
Multiple	60	60.0
Histopathological Findings*		
Typical leiomyoma	28	38.9
Leiomyoma with hyalinization	22	30.5
Calcific degeneration	8	11.1
Cystic degeneration	7	9.7
Red degeneration	7	9.7

*Histopathology based on surgically managed cases (n = 72)

Quality-of-Life Impact

Quality-of-life assessment showed that uterine fibroids had a considerable impact on daily functioning. A majority of women reported moderate (45%) to severe (28%) impairment, while only 27% experienced mild impact. Women who reported severe impairment were those with menorrhagia, pelvic pain, and multiple fibroids. The most affected domains were physical limitations, emotional stress, and diminished social participation. The findings highlight that uterine fibroids are very detrimental to both physical and psychosocial health and require holistic management strategies (Table 4).

Table 4: Quality-of-Life Impact among Study Participants

QoL Impact Level	Frequency (n)	Percentage (%)
Mild	27	27.0
Moderate	45	45.0
Severe	28	28.0

It reveals that uterine fibroids are predominant in women of childbearing age, especially women with elevated body mass index and reproductive health issues. The most common clinical manifestation comprises heavy menstrual bleeding and pelvic pain, with histopathology establishing benign leiomyoma and common degenerative alterations. Importantly, the condition has a massive adverse impact on the quality of life, which indicates the significance of early diagnosis and patient-focused management.

DISCUSSION

The present study provides a comprehensive overview of the clinical presentation, associated risk factors, histopathological characteristics, and quality-of-life burden of uterine fibroids among women attending a tertiary care Gynecology unit[1]. The findings indicate that uterine fibroids are not benign uterine tumors, but rather a clinically meaningful condition that induces a severe effect on menstrual well-being, pelvic well-being, reproductive well-being, and the quality of life[2].

The age group of 31-40 years was the most prevalent age group of women in the current study, and this is correlated to the well-established fact that uterine fibroids are most frequently diagnosed during the active reproductive years[3]. Such an age-specific distribution is probably indicative of hormonal reliance of fibroids, more specifically, their sensitivity to estrogen and progesterone that facilitate the proliferation of smooth muscles and deposition of extracellular matrix. Clinical significance of this age range of cases is that it falls in the age range where most women are concerned with fertility, regular menstrual cycles, work productivity, and family issues[4].

One of the interesting findings in this research was the large number of females who were overweight or obese, implying that overweight or obesity could be a contributory factor to the growth or development of fibroids[5]. Various biological pathways have been identified to play a role in the pathogenesis of fibroids due to obesity, such as augmented peripheral aromatization of androgens to estrogens, disrupted insulin signalling, sustained low-grade inflammation, and adipokine activity. On the same note, a positive family history occurred in a significant percentage of the patients, and this is evidence that genetic predisposition is a significant factor in the predisposition to fibroids. These results support the idea of the role of endocrine and inherited factors in the development of uterine fibroids, instead of being mere accidental structural defects[6,7].

Clinically, menorrhagia was the commonest presenting problem, then pelvic pain, abdominal heaviness, and dysmenorrhea. The symptom profile is indicative of the classic clinical presentation of uterine fibroids, particularly when the lesions expand the uterus or modify the endometrial cavity. Heavy menstrual bleeding is one of the most recalcitrant manifestations since it may result in chronic iron deficiency, fatigue, weakness, poor concentration, and a poor quality of life. Fatigue and weakness were also prevalent in the current study, which also confirmed the high functional effect of excessive or prolonged menstrual blood loss[8-10].

This also revealed the reproductive outcome of uterine fibroids since infertility and frequent miscarriage were noted among a significant number of patients[11]. The given finding is especially applicable since fibroids, particularly submucosal and large intramural lesions, can compromise the fertility of patients by deforming the uterine cavity, disrupting the implantation process, influencing the transportation of sperms or embryos, and modulating endometrial receptivity. These reproductive issues frequently form one of the greatest causes of gynecological consultation in a tertiary care environment, and can have a potent impact on treatment decision-making, especially in women who are undergoing fertility preservation procedures[12].

This study showed that intramural fibroids were the most frequent subtype of ultrasonographic image, followed by subserosal lesions and submucosal lesions[13]. This trend is consistent with the previously established distribution of uterine fibroids, where intramural lesions develop in the myometrial wall and are typically linked to both bleeding abnormalities and pressure symptoms. Moreover, the number of fibroids compared to solitary lesions was higher, which indicates that a large proportion of patients in tertiary care facilities have relatively advanced or multifocal disease. This can be an indication of late diagnosis, a long period of tolerating the symptoms, or a low level of access to a previous gynecological assessment[14].

The histopathological analysis of all lesions that were surgically treated proved their benign nature, with the most common diagnosis being typical leiomyoma[15]. Nevertheless, a significant percentage of cases also exhibited secondary degenerative alterations, especially hyalinization, which were succeeded by calcific, cystic, and red degeneration. The changes tend to be more common in older or larger fibroids and are believed to be caused by decreased vascularization and tissue remodelling. The lack of malignant pathology in the current series is encouraging, although it also reveals the usefulness of histopathological examination to the surgically treated patient to confirm the diagnosis and

preclude rare but clinically significant differential diagnoses[16].

Among the greatest contributions of the current study is the evaluation of the quality-of-life burden of uterine fibroids[17]. The findings revealed that most of the women had moderate to severe impairment, especially concerning physical functioning, emotional well-being, social participation, menstrual inconvenience, and routine daily activities. This result is very important since the weight of uterine fibroids can be underestimated when considering the size of tumors or imaging results. As a matter of fact, the patient's lived experience of bleeding, pain, weakness, reproductive anxiety, and social discomfort can be a clinically significant issue on its own, independent of the structural disease[18].

The psychosocial implications of the quality-of-life impairment found in this study are also of significance. Women with a history of chronic menorrhagia and pelvic symptoms can become embarrassed, lack confidence, be irritable, and anxious about fertility, sexuality, or even surgery. Gynecological symptoms are underreported or normalized in most low-resource or socially conservative environments, resulting in delayed treatment and causing continued distress. Thus, uterine fibroids treatment must not be limited to anatomical diagnosis but include the patient-centered approach that considers the severity of symptoms, the reproductive intentions, the emotional distress, and the social functioning[19,20].

This study has a strength and a limitation in the tertiary care setting. It permitted the sampling of women with clinically significant disease and provided resolution of imaging and histopathology. Nevertheless, tertiary hospitals are usually exposed to more symptomatic or more complicated cases, which means that they may not represent the burden of small or asymptomatic fibroids in the general population. Moreover, the study is cross-sectional, which does not allow making any temporal or causal conclusions about the relationships between risk factors and the development of fibroids. Histopathological data also only applied to those cases that were surgically handled, and this might have biased the more serious disease[1-5].

Despite these limitations, the present study offers clinically valuable insight into the multidimensional burden of uterine fibroids in women attending tertiary care hospitals. The results underscore the importance of early detection, the awareness of the risk factors, thorough clinical assessment, and the development of a treatment plan, especially in women with heavy bleeding, infertility, or severe functional impairment. Better knowledge of clinicians and patients can contribute to the reduction of delays in the diagnosis and better gynecological and psychosocial outcomes[5,20].

CONCLUSION

Uterine fibroids are a relatively frequent and clinically relevant gynecological pathology that has a significant impact on women of the reproductive and perimenopausal age group. The current paper revealed that the condition usually manifests as menorrhagia, pelvic pain, abdominal heaviness, dysmenorrhea, and reproductive dysfunction, and the risk factors have been identified as increasing age, obesity, infertility, and positive family history. Intramural and multiple fibroids were observed to be the most common, and their histopathological examination mainly showed benign leiomyoma with degenerative alterations, especially the hyalinization. Significantly, it was revealed that uterine fibroids were significantly negative, influencing the quality of life, physical functioning, emotional health, social interaction, and daily productivity. These conclusions underscore the fact that uterine fibroids must not be treated merely as a structural uterine pathology, but rather as a disorder with serious reproductive, functional, and psychosocial implications. Early detection, prompt clinical assessment, and personalized management plans are required to lessen the burden of the disease and enhance the outcomes of the affected women. Higher levels of concern with regard to the management of symptoms, as well as restoration of quality of life, must be regarded as a primary objective in the treatment of uterine fibroid patients.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

SG: Histopathological evaluation, interpretation.
RN: Literature review, data entry, initial draft.
SS: Data collection, clinical assessment, manuscript drafting.
ZB: Conceptualization, study design, supervision, final approval.
FJ: Study design, patient recruitment, critical review.
RK: Data analysis, statistical interpretation.
All authors approved the final manuscript.

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