

Original Article

FREQUENCY OF UTERINE LEIOMYOMAS IN FEMALES PRESENTING WITH ABNORMAL UTERINE BLEEDING

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ABSTRACT

Background: Abnormal uterine bleeding (AUB), is defined as irregularities in the menstrual cycle with a change in recurrence, period, or quantity of bleeding. It is one of the most frequent gynaecological problems and around 10-30% of women in the reproductive age bracket are suffering from it. It accounts for about 1/3rd of all the walk-in gynaecological visits. The study aimed to determine the frequency of uterine leiomyoma in females with abnormal uterine bleeding in a tertiary care hospital.

Material and Methods: This cross sectional study was conducted in obstetrics and gynaecology department, Shalimar Hospital, Lahore from 1st October 2018 to 30th March 2019. A total of 130 females presenting with atypical uterine bleeding were taken in the study. Ultrasonography was done to determine the uterine fibroids. A Consultant Radiologist did ultrasound. Data was collected regarding uterine leiomyoma and was noted.

Results: The age bracket in the present study ranged from 18 to 40 years with mean age of 33.930±3.13 years, a mean weight of 77.738±7.11 Kg and a mean duration of complaining 4.453±0.96 months. Married females were 90% and unmarried 10%. Uterine leiomyoma was seen in 19.2% patients. 68% of uterine leiomyomas were of small size and 32% of large size. 48% of uterine leiomyoma were single and 52% were multiple.

Conclusion: In our Pakistani populace, the prevalence of uterine leiomyoma is approximately the same as reported in multiple studies for white females and increases with age and weight.

Key Words: Pregnancy, Menstrual Cycle, Leiomyoma

doi: <https://doi.org/10.51127/JAMDCV4I2OA02>

How to cite this:

Babar R, Nisar A, Salman S, Rehman S, Rehman D, Arshad R. Frequency of uterine leiomyomas in females presenting with abnormal uterine bleeding. JAMDC. 2022;4(2): 59-66
doi: <https://doi.org/10.51127/JAMDCV4I2OA02>

INTRODUCTION

Abnormal uterine bleeding (AUB) is a comprehensive term that explains distortions in the menstrual cycle involving frequency, invariability, time period and quantity of flow other than pregnancy.

Abnormal uterine bleeding (AUB), is described as a change in frequency, duration, or amount of bleeding. It is a common gynaecological problem in outpatient. It affects 10-30% of reproductive-aged females and accounts for about 1/3rd of all outpatient gynaecological visits.¹

The irregular bleeding frequency can be frustrating and have adverse effects on a female's life. Abnormal uterine bleeding can cause mental, social, medical, and sexual issues in females; thus, sufficient and proper management is required.²

PALM-COEIN is a handy abbreviation coined by the International Federation of Obstetrics and Gynecology (FIGO) to categorize the causes of bizarre uterine bleeding. The initial part, PALM, defines anatomical issues for example polyps,

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adenomyosis, leiomyomas and malignancy or hyperplasia. The second part, COEI, defines non-structural issues such as coagulopathies, ovulatory disorders, endometrial abnormalities and iatrogenic reasons. The N denotes "not otherwise classified."

Fibroids (leiomyoma) is the most commonly occurring tumor of females. In one study by the time a female reaches the age of 50, almost 70% of white females and upto 80% of African women will have at least one uterine fibroid in their life.³ Worldwide, a lot of females are hesitant to show abnormal uterine bleeding (AUB) to their physicians, therefore it is vital to encourage to have an open discussion on bleeding problems. Medical professionals should inquire from females about their previous menstrual period, regularity, fertilization problems, contraception tools and general sexual health. If abnormal uterine bleeding is recognized at very initial period, then further history, physical examination, tests can be done.⁴ Furthermore, proper awareness can be given and treatment plans can be devised. Females aged 45, or females below the age of 45 but at high risk for malignancy need endometrial sampling for assessment of AUB. Treatment relies on cause, inclination towards bearing a child and pre-existing medical issues.⁵

Fibroids are most commonly asymptomatic in most women while some females present with anaemia. In some females fibroids are linked with infertility, miscarriages, premature labour and failure of progression of labour. Fibroids can also cause aches, pains and pressure symptoms and sometimes urinary problems. In some conditions, fibroids of huge size may put undue pressure on the renal tract and pelvic vessels causing renal dysfunction and venous thromboembolism, respectively.^{6,7} Fibroids were present in 64% of females with abnormal uterine bleeding compared to 28% without the disease.

In contrast, other studies failed to show any relation between fibroids and a worse bleeding pattern.⁸ Most observational studies on this matter repeatedly yields conflicting

results, but an interesting study showed the relationship of fibroids and endometrial function. This study has suggested a possible mechanism of the defective decidualization and haemostasis in the endometrium of females with fibroids and increased bleeding.⁹ In a study by Qureshi FU, et al has showed that about 25% in females with AUB had one or more fibroids.¹⁰ An identical study done by Ibrar F et al has showed the frequency of leiomyomas of about 7.4% in females with AUB.¹¹

There is lack of data on this subject in our local population and insufficient research data is available. Only two studies have been done, and their findings cannot be generalized due to variability in results.¹² Therefore we have planned to evaluate the frequency of uterine leiomyomas in females who present with abnormal uterine bleeding in our local population. My study's results will help identify the actual morbidity of uterine fibroids in females with AUB in our local population.

The objective of the study was to find out the frequency of uterine leiomyomas in females who present with abnormal uterine bleeding in our local population at tertiary care hospital.

Operational Definitions:

Abnormal uterine bleeding is defined as bleeding with >80ml/cycle, excluding regular cyclic/menstrual patterns of bleeding. Blood was measured by using the difference of weight between soaked pads and dry pads, standardizing one millilitre blood to one gram.

Uterine leiomyomas were defined as when pelvic ultrasound reveals hypo echoic mass, and calcification as echogenic foci with shadowing cystic areas of necrosis. These were categorized as: - Number of leiomyomas: It was defined in terms of...

Single leiomyomas were defined as when ultrasound reveals one uterine leiomyoma (per operational definition).

Multiple leiomyomas were defined as when ultrasound reveals ≥ 2 uterine leiomyomas

(per operational definition).

Large leiomyomas were defined as when uterine leiomyoma sizes 6-10cm on ultrasound.

Small leiomyomas were defined as when uterine leiomyoma size 3-5cm on ultrasound.

MATERIAL AND METHODS

It is a cross sectional study conducted at Obstetrics and Gynecology Department, Shalimar Hospital, Lahore.

The study started on 1st October 2018 and finished on 30th March 2019.

Total sample size was 130 patients and calculation was done at 95% confidence level with 3.5% margin of error and expected frequency of uterine leiomyomas was 25%. Non probability consecutive sampling technique was used.

Females age 18-40 years presenting with abnormal uterine bleeding for three months or greater duration both married/unmarried were included in the study.

The patients with history of uterine surgeries on medical record, history of endometriosis on medical record and history of ovarian mass on medical record were excluded from the study.

DATA COLLECTION PROCEDURE

A total 130 patients from outpatients Gynaecology department of Shalimar Hospital, Lahore were included in the study as per inclusion criteria. Prior approval from ethical committee was taken. Consent was obtained from each patient and their confidentiality was ensured.

Data was collected for basic demographics (Age, marital status and complaint duration). An ultrasonography was done to determine the uterine fibroids. A consultant Radiologist did ultrasound. Data was collected regarding uterine leiomyomas and findings were noted on especially designed Performa by researcher herself.

DATA ANALYSIS

Data analysis was done with SPSS version 20. Frequency and percentage were

calculated for marital status, uterine leiomyomas size and number. Mean \pm SD was evaluated for quantitative variables such as age, weight and time duration of the bleeding. Effect modifiers like age, weight, marital status and duration of bleeding complaint was controlled by stratification. Post stratification chi square test was applied and $p \leq 0.05$ was taken as a significant value.

RESULTS

In this study patients were from 18 to 40 years age with mean age of 33.930 ± 3.13 years, mean weight 77.738 ± 7.11 Kg and mean duration of complain was 4.453 ± 0.96 months as shown in Table-I. As shown in Table II, married females were 90% and unmarried 10%. Uterine leiomyoma was seen in 19.2% patients as shown in Table II. Regarding size of Fibroid as shown in Table-IV, 68% uterine leiomyoma were of small size and 32% of large size. 48% uterine leiomyoma were single and 52% were multiple as shown in Table-V. Data analysis showing Stratification of Uterine leiomyoma concerning age, weight, marital status and complaint duration are shown in Table-VI, VII, VIII and IX respectively.

Table-1: Mean \pm SD of patients according to age, weight and duration of complaint n=130

Demographics	Mean \pm SD
Age (years)	33.930 \pm 3.13
Weight (Kg)	77.738 \pm 7.11
Duration of complain (months)	4.453 \pm 0.96

Table-2: Percentage and Frequency of patients according to marital status n=130

Marital Status	No of Patients	Percentage
Unmarried	13	10%
Married	117	90%
Total	130	100%

Table-3: Percentage and Frequency of patients according to Uterine leiomyoma n=130

Uterine leiomyoma	No of Patients	Percentage
Yes	25	19.2%
No	105	80.8%
Total	130	100%

Table-4: Percentage and Frequency of patients according to Size of Uterine leiomyoma n=25

Size of Uterine leiomyoma	No of Patients	Percentage
Small	17	68%
Large	8	32%
Total	25	100%

Table-5: Percentage and Frequency of patients according to Number of Uterine leiomyoma: n=25

Number of Uterine leiomyoma	No of Patients	Percentage
Single	12	48%
Multiple	13	52%
Total	25	100%

Table-6: Stratification of Uterine leiomyoma concerning age.

Age (years)	Uterine leiomyoma		p-value
	Yes	No	
18-30	6(23.1%)	20(76.9%)	0.578
31-40	19(18.3%)	85(81.7%)	
Total	25(19.2%)	105(80.8%)	

Table-7: Stratification of Uterine leiomyoma concerning weight of Patient.

Weight (Kg)	Uterine leiomyoma		p-value
	Yes	No	
≤70	1(7.1%)	13(92.9%)	0.224
>70	24(20.7%)	92(79.3%)	
Total	25(19.2%)	105(80.8%)	

Table-8: Stratification of Uterine leiomyoma concerning marital status.

Marital status	Uterine leiomyoma		p-value
	Yes	No	
Unmarried	0(0%)	13(100%)	0.064
Married	25(21.4%)	92(78.6%)	
Total	25(19.2%)	105(80.8%)	

Table-9: Stratification of Uterine leiomyoma concerning duration of complain.

Duration of complain (months)	Uterine leiomyoma		p-value
	Yes	No	
3-5	20(16.9%)	98(83.1%)	0.038
>5	5(41.7%)	7(58.3%)	
Total	25(19.2%)	105(80.8%)	

DISCUSSION

The actual incidence of uterine leiomyomas (UL) in the common populace is unknown. There are various methods to find out the exact occurrence of uterine leiomyomas (UL) in the general population such as targeted surveys, microscopic examination of surgical specimens obtained after hysterectomy, post-mortem of females who passed away unaware of any gynecological pathologies in them or any record of Pelvic ultrasonography, each method giving different results. Hence, the actual number of UL in general public is unknown.¹³ Ultrasound imaging of female pelvic organs was introduced by Kratochwil et al in 1972.¹⁴ In 1980, Muram et al devised a standard for uterine leiomyoma diagnosis with TVS defining it as a spherical mass being echogenically distinguished from the adjoining myometrium.¹⁵ Ever since, TVS is considered the major, non-invasive, economically friendly and a global test for assessment of uterine pathologies, with extremely precise performance.¹⁶ Ultrasound has a major drawback: it depends on the operator's expertise and the device's accuracy. To increase the precision in making uterine leiomyoma diagnosis, saline contrast-sonohysterography and 3-D ultrasonograms have been recommended, but both have conflicting outcomes sometimes. For routine detection of uterine leiomyomas 2-D pelvic ultrasonography remains the best method.^{17,18} Endometrial sampling is advised in females younger than 45, facing unrestricted estrogen exposure, for example obese females and/or those diagnosed with polycystic ovarian syndrome (PCOS). This can also be done for the females who have had a failed treatment previously, or are suffering from unresolved bleeding.¹⁹

Some physicians advocate that Transvaginal ultrasound should be the first and foremost assessment test for AUB. In contrast, MRI should be done as a second test if the diagnosis is unsatisfactory or unclear. Delineation might affect patient treatment or a physician should suspect coexisting uterine myomas.

Magnetic resonance imaging is superior to ultrasound for myoma mapping and should be favored if a surgery is to be arranged. In this study, a 19.2% general prevalence of uterine leiomyomas was seen, with the greatest prevalence (20.7%) in females with weight >70 Kg, which supports the claim made with some other researches based on ultrasound diagnoses.²⁰ Many uterine leiomyomas were found in 52% of cases, less than that found in the surgical specimens and research by Cramer and Patel (84%).²¹ In comparison to their findings, in this study only 32% patients had a uterine leiomyoma larger than 20 mm.²² In a study by Qureshi FU, et al has showed the frequency of leiomyomas by 25% in females with abnormal uterine bleeding.²³ The research done by Ibrar F, et al has showed the frequency of leiomyomas by 7.4% in females with abnormal uterine bleeding.²⁴ The vast knowledge we have to date regarding the demographics and coexisting risk factors for developing uterine leiomyomas is largely extracted via results taken from the survey research done on large populations. There are certain menaces such as age, race, literacy factor, hormones, nutritional status, physical activity, oral contraceptives, labour, tobacco consumption and tissue injury that have been claimed to increase the risk factor for development of uterine leiomyomas, but there have been conflicting sequela. Results of the present study agree with these findings reported by multiple ultrasound-based studies as our multivariate statistical analysis results also don't show any significant correlation between any demographic or clinical numerical and UL, except age which showed significant correlation.²⁵

Abnormal uterine bleeding, especially menorrhagia is the commonest clinical

feature of uterine leiomyoma. Uterine fibroids are monoclonal noncancerous growths of the smooth muscles of uterus. They are composed of large quantities of extracellular matrix, mainly collagen, fibronectin, and glycoproteins. The exact mechanism of their pathogenesis is unclear, there is a lot of research and clinical data that suggests that hormones specially estrogens and progestogens boost this tumor's growth, as the fibroids often appear during child-bearing years and rarely reported before menarche and if present, they regress in size after menopause.²⁶ They are generally classified by their site among the uterus layers (subserosal, intramural, or submucosal) and can be present singly or in multiple numbers. The precise mechanism of leiomyoma-linked bleeding is unknown, but submucous fibroids, vascular impairments, and dysfunctional endometrial hemostasis have been reported as potential liabilities. Even tiny little uterine leiomyomas not causing any pressure on the endometrial cavity may change myometrial blood supply and ability to contract. A study programmed by Benecke et al showed that intramural uterine leiomyomas may poorly affect the chances of conception.¹⁵ In present study, menorrhagia had strong association with the abundance of uterine leiomyomas and not with the size of the largest fibroid, signifying that the symptoms are not the consequence of deformation of the myometrium and endometrial cavity. It was also found that the diversity of uterine leiomyomas was notably coupled to AUB (menorrhagia and metrorrhagia) as a presenting complaint. Management of the patient has to be customized according to the presenting complaint. Generally, it should be prioritized to treat AUB medically first before coming up with the surgical options.²⁷

In acute AUB, hormonal therapies are given as a baseline treatment in the management as the first option. Intravenous (IV) conjugated estrogen, supported with oral contraceptive pills (OCPs), and oral progestins can also be included in the prescription as multiple options for treating acute AUB. Another

agent, named Tranexamic acid resists fibrin degradation and can be given as a supportive drug. The Uterine Balloon Tamponade (UBT) or a Foley bulb is a mechanical tool for treatment as it compresses the vasculature. Myomectomy is advised for the females who want to preserve their fertility. The biggest drawback of myomectomy is leiomyoma recurrence.²⁸ Within the following 5 years, more than one-third of these females who had myomectomy will need further surgery to manage uterine leiomyomas that may have newly formed. Laproscopic myolysis, uterine artery blockade by embolization, fibroid embolization and magnetic resonance-guided ultrasonograms are minimally invasive procedures for management of multiple Uterine fibroids. Still, these practices are rarely being performed currently. There is need of novel treatment strategies superior to surgical methods to tackle symptomatic uterine leiomyomas. lately, advancements in the scientific studies have probed new understanding on uterine leiomyomas biology.²⁹ We postulate that, in patients with more than one uterine fibroids and menstrual anomalies, every uterine fibroid can give rise to varying growth factors or numerous biological mediators that may collectively impose a negative effect on the myometrial and endometrial environment.²² For patients with HMB as the major symptom of AUB, the levonorgestrel-releasing IUD has been reported to work wonders compared to other medical management approaches as it elevates the female's quality of life. Systemic progestogens and GnRH agonists can result in amenorrhea in up to 50% and 90% of females. In contrast to this positive effect, injectable progestogens have the adverse effect of causing Break through bleeding, and GnRH agonists can only be used for a 6-month course owing to their role in maintaining a low estrogen state.^{29, 30} A new category of medication called selective progesterone receptor modulators (SPRMs) has shown promising results for treatment of symptomatic fibroids. These restrict proliferation, down-regulate the

growth factors and have an apoptotic potential that may reduce the growth mass and alleviate the symptoms.^{17,20} Randomized clinical trials have established that the SPRM ulipristal can be an effective treatment modality as it decreases the episodes of menstrual bleed, retains normal levels of hemoglobin, and decreases the size of UL and alleviate leiomyoma-related symptoms.^{18,19} GnRHa has been reported to decrease the size and mass of the UL when given before myomectomy or hysterectomy. Not only this but the patients also reported a lowered pelvic pain and improved hematocrit value. Also, the surgeons claim that giving GnRHa to the patient before the surgery has decreased table-time during surgery, and a wider fraction of hysterectomy patients had a small vaginal procedure rather than an abdominal surgery.^{24,25} The sole goal for managing symptomatic uterus-related pathology is to reduce symptoms, as expectant management is apt for most asymptomatic leiomyomas.²⁸ In future, it is anticipated that novel treatment modalities for the management of uterine leiomyomas-associated symptoms will be devised, due to rising awareness about the functional facets and regulatory characteristics of leiomyoma morphology and uterine homeostasis.

CONCLUSION

In Pakistani population, the incidence of uterine leiomyoma is directly associated with/increases with weight, per the results reported in literature for White females. In females reporting with abnormal uterine bleeding, suspicion of multiple fibroids should arise and they must be carefully examined to look for multiple leiomyomas during pelvic ultrasound testing. Additional investigation should be done to assess the morphology and association of symptomatics with multiple ULs versus single ULs, so that advanced and effective therapeutic strategies can be developed.

Disclaimer: None to declare.

Conflict of interest: None to declare

AUTHOR'S CONTRIBUTION

- RB: Data analysis and interpretation with clinical significance
- AN: Study design of research work and data collection
- SS: Literature survey about the research project
- SR: Data collection and acquisition of research work
- DJR: Drafting the article, data editing and reference collection
- RA: Data analysis with clinical significance and final approval of version

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