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Original Research Article

A study of clinical profile and risk factors associated with uterine fibroids at a tertiary care centre

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ABSTRACT

Background: Uterine fibroids are the commonest benign pelvic tumours in women and a leading indication for hysterectomy. This study aimed to describe the clinical profile, risk factors, ultrasonographic characteristics, management and complications of uterine fibroids at a tertiary care centre.
Methods: This descriptive observational study included 150 women aged over 18 years admitted with uterine or cervical fibroids to the Department of Obstetrics and Gynaecology of a government medical college in Maharashtra over 18 months. Sociodemographic data, risk factors, symptoms, examination findings, haemoglobin, ultrasonographic fibroid mapping, treatment and complications were recorded on a structured proforma and analysed descriptively.
Results: Mean age was 37.9±7.2 years and 57.3% of women were aged 31–40 years. Most were rural (80%), multiparous (96%) and had a body mass index below 25 kg/m² (81.3%). Menarche at or before 12 years was reported by 75.3% and a positive family history by 50.7%. Dysmenorrhoea (86.7%), heavy menstrual bleeding (73.3%) and abdominal pain (64%) were the commonest symptoms and 40% were anaemic. Fibroids were mostly single (64%), intramural (56.7%) and located on the anterior wall (56.7%). Hysterectomy was performed in 96% of women (abdominal 48%, laparoscopic 42%, non-descent vaginal 6%). Intraoperative haemorrhage (15.3%) was the commonest surgical complication and degeneration was seen in 6.7%.
Conclusions: Symptomatic fibroids presented mainly in multiparous women in their fourth decade with bleeding, pain and anaemia and most were managed by hysterectomy. Earlier detection and timely correction of anaemia may widen the scope for uterus-preserving treatment.

Keywords: Anaemia, Heavy menstrual bleeding, Hysterectomy, Leiomyoma, Risk factors, Uterine fibroid

INTRODUCTION

Uterine fibroids (leiomyomas) are the most common benign tumours of the female reproductive tract and the most frequent pelvic tumours in women of reproductive age.[1] Ultrasound-based studies have shown that their cumulative incidence rises steeply with age, exceeding 70–80% by the age of 50 years.[2] Fibroids arise from the smooth muscle cells of the myometrium and their growth depends on oestrogen and progesterone, which explains why they are rare before menarche and regress after menopause.[3,4] Recognised risk factors include increasing age, early menarche, nulliparity, obesity, hypertension and a positive family history, whereas higher parity and use of oral contraceptives have been associated with a reduced risk.[5] According to their relation to the uterine wall, fibroids are classified as submucosal, intramural and subserosal; cervical and other extrauterine sites are uncommon.[6] Many fibroids remain asymptomatic and when symptoms occur they depend on the number, size and location of the tumours.[7] Heavy menstrual bleeding, intermenstrual bleeding, dysmenorrhoea, pelvic pain, an

abdominal mass and pressure effects on the bladder or bowel are the usual presenting features.[8] Fibroids impose a substantial burden on quality of life, work and health-care resources.[9] In low- and middle-income settings, chronic heavy bleeding caused by fibroids is an important contributor to iron-deficiency anaemia, which can be severe at presentation.[10] At our institute fibroids account for about 8% of gynaecological admissions and nearly half of all hysterectomies. Because the clinical profile and risk-factor pattern may differ in a largely rural Indian population, this study was undertaken to describe the clinical presentation and risk factors of uterine fibroids and, secondarily, their ultrasonographic characteristics, definitive management and associated complications.

METHODS

Study design and setting

This descriptive observational study was conducted in the Department of Obstetrics and Gynaecology, Vilasrao Deshmukh Government Medical College, Latur, Maharashtra, India, sa tertiary care teaching hospital affiliated to the Maharashtra University of Health Sciences, Nashik, over a period of 18 months.

Participants

Women admitted to the gynaecology ward with uterine or cervical fibroids confirmed by clinical examination and imaging were enrolled by convenience sampling. Women aged over 18 years were included. Women with abnormal uterine bleeding due to causes other than fibroids, pregnant women with fibroids and women aged less than 18 years were excluded.

Sample size

Taking the prevalence of fibroid uterus as 20%, with a 95% confidence level and an absolute error of 5%, the minimum sample size calculated using the formula $n=Z^2pq/L^2$ was 139. A total of 150 eligible women were enrolled.

Data collection

After written informed consent, data were recorded on a pre-structured proforma. Information was collected on age, residence, socioeconomic status, education, age at menarche, menstrual pattern, parity, menopausal status, presenting symptoms, medical and family history, body mass index (BMI), diet and use of oral contraceptives or hormone therapy.

A general, systemic, abdominal and pelvic (per speculum and bimanual) examination was performed. Investigations included complete blood count, coagulation profile, blood sugar, renal and liver function tests, thyroid profile, urine examination and viral markers. Anaemia was graded by haemoglobin as mild (10–10.9 g/dl), moderate (8–9.9 g/dl) or severe (<8 g/dl).

Imaging

Transabdominal and transvaginal ultrasonography was performed in all women to confirm the diagnosis and to map the number, type and location of fibroids. Computed tomography, magnetic resonance imaging or hysteroscopy was performed where indicated.

Treatment and follow-up

Medical and supportive treatment (non-steroidal anti-inflammatory drugs, antifibrinolytics, hormonal therapy and correction of anaemia) and the type of surgery were recorded. Complications related to the natural course of the fibroid and intraoperative and postoperative complications were documented until discharge and at follow-up.

Statistical analysis

Data were entered in Microsoft Excel and analysed descriptively. Categorical variables are presented as frequencies and percentages and continuous variables as mean±standard deviation (SD) and range.

Ethical considerations

The study was approved by the Institutional Ethics Committee before commencement; written informed consent was obtained from all participants and confidentiality was maintained throughout.

RESULTS

A total of 150 women with uterine fibroids were studied. Their mean age was 37.87±7.21 years (range 21–59 years). The majority were aged 31–40 years (57.33%), followed by 41–50 years (31.33%) and 15 women (10%) were postmenopausal. Most women were from rural areas (80%), belonged to the middle socioeconomic class (88%) and had education up to primary level (73.33%) (Table 1).

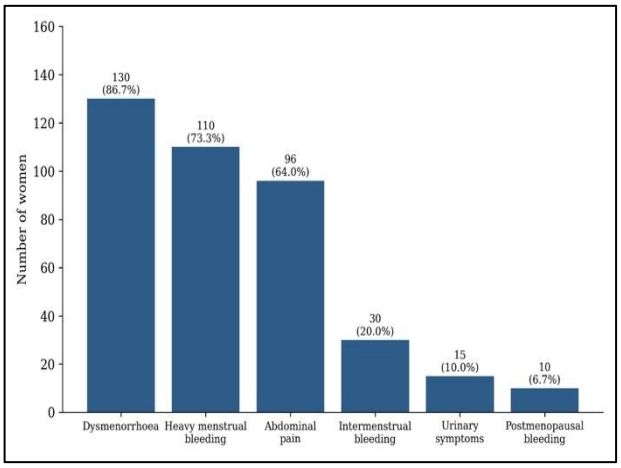


Figure 1: Distribution of presenting symptoms among women with uterine fibroids (n=150).

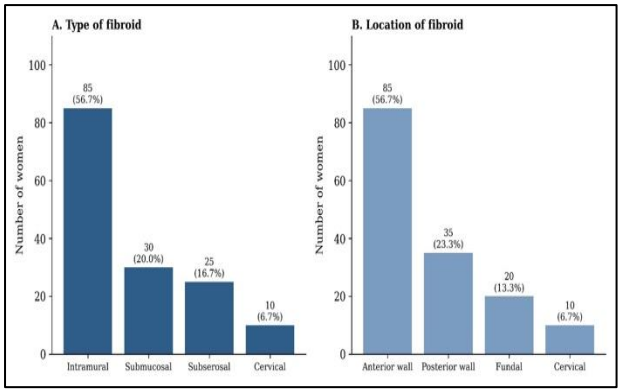


Figure 2 (A and B): Ultrasonographic characteristics of uterine fibroids (n=150). Type of fibroid. Location of fibroid. Values are number (percentage).

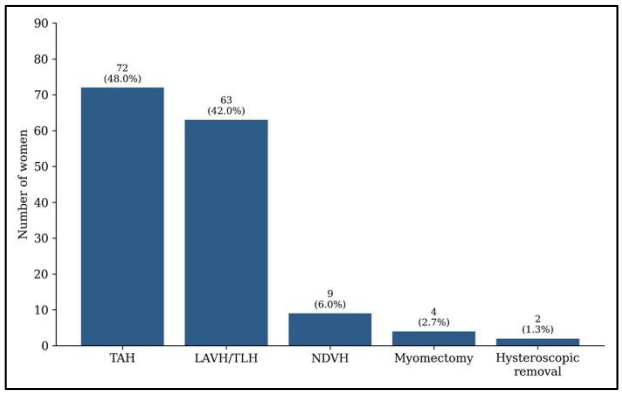


Figure 3: Surgical management of women with uterine fibroids (n=150).

Nearly all women were multiparous (96%); 50.67% had a parity greater than three and 41.33% a parity of three, while only 4% were nulliparous. Most women had a BMI below 25 kg/m² (81.33%). Menarche occurred at or before 12 years of age in 113 women (75.33%), most commonly at 12 years (40%). A positive family history of fibroids was reported by 76 women (50.67%) and only 3 (2%) had used oral contraceptives or hormone therapy. Comorbidities were present in 51 women (34%), most commonly hypertension (20%) and diabetes mellitus (10%) (Table 1). Dysmenorrhoea (86.67%) and heavy menstrual bleeding (73.33%) were the leading symptoms, followed by abdominal pain (64%), intermenstrual bleeding (20%), urinary symptoms (10%) and postmenopausal bleeding (6.67%) (Table 2, Figure 1). None of the women had constipation, hydroureter or hydronephrosis. On abdominal examination the uterus was not palpable in two-thirds of women (66.67%) and a uterus of 12–14 weeks' size was the commonest palpable finding (16%). Anaemia was present in 60 women (40%) and it was severe (<8 g/dl) in 21 (14%) (Table 2).

On ultrasonography, a single fibroid was seen in 64% and multiple fibroids in 36% of women. Intramural fibroids were the commonest type (56.67%), followed by submucosal (20%), subserosal (16.67%) and cervical (6.67%) fibroids. The anterior wall was the most frequent location (56.67%) (Table 3, Figure 2). Pelvic inflammatory disease (14.67%) and adenomyosis (6.67%) were the commonest associated gynaecological conditions. The predominant presenting symptom varied with the type of fibroid. Heavy menstrual bleeding predominated in intramural fibroids (64.71%); abdominal pain (66.67%) and intermenstrual bleeding (33.33%) were characteristic of submucosal fibroids; and half of the cervical fibroids presented with pressure symptoms (Table 4).

Non-steroidal anti-inflammatory drugs (85.33%) and antifibrinolytics (27.33%) were the commonest supportive treatments and 21.33% of women needed correction of anaemia before surgery. Definitive surgical treatment was given to all women and hysterectomy accounted for 96% of procedures: total abdominal hysterectomy (48%), laparoscopic-assisted vaginal or total laparoscopic hysterectomy (42%) and non-descent vaginal hysterectomy (6%).

Uterus-preserving surgery (myomectomy or hysteroscopic removal) was performed in only 6 women (4%) (Table 5, Figure 3). Intraoperative haemorrhage was the commonest surgical complication (15.33%) and one woman (0.67%) developed a broad ligament haematoma; there were no ureteric, bladder or bowel injuries. Degenerative change was the only complication related to the natural course of the fibroid (6.67%) (Table 5).

Table 1: Sociodemographic characteristics and risk factor profile of the study participants (n=150).

Variables	Category	Number (N)	(%)
Age (in years)	21–30	14	9.33
	31–40	86	57.33
	41–50	47	31.33
	>50	3	2.00
	Mean±SD	37.87±7.21	
Residence	Rural	120	80.00
	Urban	30	20.00
Socioeconomic status	Upper	8	5.33
	Middle	132	88.00
	Lower	10	6.67

Variables	Category	Number (N)	(%)
Education	Primary	110	73.33
	Secondary	25	16.67
	Higher	1	10.00
Parity	Nulliparous	6	4.00
	Para 1	3	2.00
	Para 2	3	2.00
	Para 3	62	41.33
	Para>3	76	50.67
BMI (kg/m²)	<25	122	81.33
	25–29.99	14	9.33
	30–34.99	14	9.33
Age at menarche (years)	10	8	5.33
	11	45	30.00
	12	60	40.00
	13	22	14.67
	14	12	8.00
	15	3	2.00
Family history of fibroids	Present	76	50.67
Diet	Vegetarian	80	53.33
	Mixed	70	46.67
OCP/hormone therapy use	Yes	3	2.00
Comorbidities[a]	Any	51	34.00
	Hypertension	30	20.00
	Diabetes mellitus	15	10.00
	Thyroid disorder	6	4.00

[a]Categories are not mutually exclusive.

Table 2: Clinical presentation, examination findings and haemoglobin status (n=150).

Parameters	Finding	Number (N)	(%)
Presenting symptoms[a]	Dysmenorrhoea	130	86.67
	Heavy menstrual bleeding	110	73.33
	Abdominal pain	96	64.00
	Intermenstrual bleeding	30	20.00
	Urinary symptoms	15	10.00
	Postmenopausal bleeding	10	6.67
Uterine size on abdominal examination	Not palpable (soft, non-tender)	100	66.67
	12–14 weeks	24	16.00
	14–16 weeks	14	9.33
	16–18 weeks	5	3.33
	18–20 weeks	3	2.00
	20–22 weeks	4	2.67
Per speculum examination	Healthy cervix	105	70.00
	Abnormal white discharge	22	14.67
	Cervical erosion	15	10.00
	Cervical polyp	8	5.33
Haemoglobin (g/dl)	≥ 11 (normal)	90	60.00
	10–10.9 (mild anaemia)	20	13.33
	8–9.9 (moderate anaemia)	19	12.67
	< 8 (severe anaemia)	21	14.00

[a]Symptoms are not mutually exclusive.

Table 3: Ultrasonographic fibroid mapping and associated gynaecological conditions (n=150).

Parameter	Category	Number (N)	(%)
Number of fibroids	Single	96	64.00
	Multiple	54	36.00
Type of fibroid	Intramural	85	56.67
	Submucosal	30	20.00
	Subserosal	25	16.67
	Cervical	10	6.67
Location	Anterior wall	85	56.67
	Posterior wall	35	23.33
	Fundal	20	13.33
	Cervical	10	6.67
Associated conditions[a]	Pelvic inflammatory disease	22	14.67
	Adenomyosis	10	6.67
	Cervical polyp	8	5.33
	Vaginitis	5	3.33
	Endometriosis / endometrial hyperplasia / infertility	0	0.00

[a]Conditions are not mutually exclusive.

Table 4: Predominant presenting symptom according to the type of fibroid (n=150).

Type of fibroid	Predominant symptom	Number (N)	(%)
Intramural (n=85)	Heavy menstrual bleeding	55	64.71
	Abdominal pain	20	23.53
	Dysmenorrhoea	10	11.76
Submucosal (n=30)	Abdominal pain	20	66.67
	Intermenstrual bleeding	10	33.33
Subserosal (n=25)	Abdominal pain	13	52.00
	Heavy menstrual bleeding	12	48.00
Cervical (n=10)	Pressure symptoms	5	50.00
	Abdominal pain	5	50.00

Percentages are calculated within each type of fibroid; each woman is counted once under her predominant symptom.

Table 5: Management and complications (n=150).

Parameter	Category	Number (N)	(%)
Medical / supportive treatment[a]	NSAIDs	128	85.33
	Antifibrinolytics	41	27.33
	Correction of anaemia	32	21.33
	Vasopressin	7	4.67
	GnRH analogue	3	2.00
	OCP/progesterone	2	1.33
Surgical management	Total abdominal hysterectomy	72	48.00
	LAVH/TLH	63	42.00
	Non-descent vaginal hysterectomy	9	6.00
	Myomectomy	4	2.67
	Hysteroscopic removal	2	1.33
Complications of fibroid	Degeneration	10	6.67
	Torsion, inversion, pseudo-Meigs syndrome, sarcomatous change	0	0.00
Surgical complications	Intraoperative haemorrhage	23	15.33
	Broad ligament haematoma	1	0.67
	Ureteric, bladder or bowel injury	0	0.00

[a]Treatments are not mutually exclusive.

DISCUSSION

This study describes the clinical and risk-factor profile of women admitted with uterine fibroids at a tertiary care centre serving a predominantly rural population. Most women were in their fourth decade, which is consistent with the rising cumulative incidence of fibroids through the late reproductive years.[1,2] Only a few women were older than 50 years, reflecting the regression of fibroids after menopause.[4] Similar clinical profiles have been reported from hospital-based studies of rural Indian women.[11] Almost all women in this study were multiparous and more than 90% had a parity of three or more. This contrasts with the well-established inverse association between parity and fibroid risk, which is thought to result from remodelling of the uterus and clearance of small lesions after each pregnancy.[12] The finding is best explained by the high background fertility of the rural population served by our hospital and by the fact that this was a series of symptomatic women without a control group, so it cannot be interpreted as evidence that parity increases risk.

Similarly, most women had a BMI below 25 kg/m², although obesity is a recognised risk factor for fibroids.[13] The use of standard rather than Asian BMI cut-offs, the nutritional profile of a rural population and the absence of a comparison group may explain this observation. Three-quarters of women reported menarche at or before 12 years and early menarche has been associated with a larger number of fibroids.[14] Half of the women reported a positive family history, supporting the familial aggregation of fibroids described in earlier studies.[15,16] The use of oral contraceptives was very low (2%); oral contraceptive use has been linked to a reduced risk of fibroids.[17] Hypertension was present in one-fifth of the women, in keeping with prospective evidence that hypertension is associated with an increased risk of fibroids.[18]

Dysmenorrhoea, heavy menstrual bleeding and abdominal pain were the dominant symptoms. Heavy menstrual bleeding is the cardinal symptom of fibroids, particularly those that distort the endometrial cavity and fibroids are independently associated with dysmenorrhoea and pelvic pain.[19,20] The pattern of symptoms by fibroid type in this study, with bleeding predominating in intramural and submucosal fibroids and pressure symptoms in cervical fibroids, supports the view that the location of the fibroid largely determines the clinical presentation.[6,7] Anaemia was present in 40% of women and was severe in 14%, indicating that many women tolerate heavy bleeding for long periods before seeking care.[10]

Ultrasonography, the first-line imaging modality for fibroid mapping, showed that most fibroids were single, intramural and located on the anterior uterine wall.[21] Hysterectomy was the definitive treatment in 96% of women and uterus-preserving surgery was uncommon. This reflects the profile of the women, most of whom were older, multiparous and had completed their families, as well as late presentation with large or symptomatic fibroids. Current approaches favour individualised management and, where feasible, uterus-sparing medical and surgical options.[22,23] Pre-operative correction of anaemia, with gonadotropin-releasing hormone analogues in selected cases, improves haemoglobin and reduces operative blood loss.[24] It is encouraging that 42% of hysterectomies were performed laparoscopically, since minimally invasive routes are preferred whenever they are technically feasible.[25] Intraoperative haemorrhage (15.33%) was the commonest complication and no visceral injuries occurred; bleeding is the principal operative risk in fibroid surgery, particularly with large or multiple fibroids.[26] Degeneration was the only complication related to the natural course of the fibroid and no sarcomatous change was recorded.

This study has some limitations. It was a single-centre, hospital-based descriptive study with convenience sampling and no control group, so associations between risk factors and fibroids could not be quantified. Information on family history, diet and age at menarche relied on recall and long-term outcomes and recurrence were not assessed. Multicentric case-control studies with longer follow-up are needed to confirm these observations.

CONCLUSION

Symptomatic uterine fibroids in this population presented mainly in multiparous women aged 31–50 years from rural areas, most of whom had a normal BMI, early menarche and, in half of the cases, a positive family history. Dysmenorrhoea, heavy menstrual bleeding and abdominal pain were the commonest symptoms and 40% of women were anaemic. Most fibroids were single and intramural and hysterectomy was the mainstay of treatment, with intraoperative haemorrhage as the commonest complication. Awareness of symptoms, earlier diagnosis and timely correction of anaemia may allow more women to benefit from conservative and uterus-preserving treatment.

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