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Original Article

A study on uterine fibroids effective treatment and associated risks factors in the tertiary care teaching hospital

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ABSTRACT

More than 75% of women have uterine fibroids (leiomyomas), which may have major morbid effects. By far, they are the main reason for a hysterectomy. Smooth muscle cells and fibroblasts make up the complicated cellular assemblage known as fibroids. They generally develop from somatic mutations, most often MED12, and are rich in the extracellular matrix. They provide chances to investigate fundamental mechanisms due to their lack of inhibition of growth and their capacity to display aspects of malignancy while remaining histologically and physiologically benign. The processes behind the genesis and evolution of leiomyomas remain a mystery. In the current research, 102 individuals were found, 12 of whom were removed for a variety of reasons, and 90 patients' data were analyzed. Age prevalence is evaluated in the topic, and risk factors, pharmaceutical therapy, surgical alternatives, and consequences are examined. According to this research, women between the ages of 31 and 40 are more likely to develop uterine fibroids, and age, obesity, and hormone imbalance are risk factors. Anti-fibrinolytic agents are a first-line therapy in the pharmacological management of menstrual bleeding. Hysterectomy is the recommended surgical procedure for the treatment of uterine fibroids. Our research found that excessive or prolonged bleeding and unfavourable pregnancy outcomes were the main symptoms. This research shows that uterine fibroids have a major influence on one's quality of life.

1. Introduction

Smooth muscle cells and fibroblasts from the myometrium make up uterine fibroids, also known as leiomyomata, which are benign tumours that develop within the uterus. Millions of women worldwide are affected by it and 75% of those who are of reproductive age are affected. Menorrhagia, or excessive menstrual flow, is caused by uterine fibroids in around 30% of individuals, and more than half of those patients have symptoms including heavy monthly bleeding, pelvic discomfort, or infertility[1]. depending on the location, size, and quantity of fibroids are intramural, yet they typically have no symptoms[2]. Subserosal fibroids, which are found on the outside of the uterus, may become quite large and give the impression that the body is bulky. Submucosal fibroids are known to cause excessive menstrual flow and to protrude into the uterine cavity. Some medical professionals think that submucosal fibroids may impair fertility because they might alter the local morphology of the uterine tissue and deform the uterus[3].

Fibroids may develop anywhere in the

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uterus and range in diameter from 1 cm to 30 cm. The most prevalent kind of fibroids, intramural ones, grow in the myometrium. Subserosal fibroids may grow to be quite large and form outside the uterine wall in the pelvis. Although they grow in the myometrium, submucosal fibroids are visible in the uterine cavity. Subserosal or submucosal fibroids may sometimes be connected by a short stalk of tissue, in which case they are referred to as pedunculated fibroids [4]. A detailed medical history, including menstrual cycles, and a physical examination are part of the first investigations. The primary diagnostic method for finding fibroids and separating them from polyps is pelvic ultrasonography. Contrast-enhanced magnetic resonance imaging (CEMRI), which is also very beneficial in identifying appropriateness for surgical or minimally invasive procedures, would be used in further exploration [5].

Older age, premenopausal status, lack of periodicity, a family history of uterine fibroids, hypertension, dietary additives, and regular use of soy milk is the most significant and commonly mentioned risk factors for uterine fibroids. On the other hand, parity, combination oral contraception, depot-form injectable medroxyprogesterone acetate, smoking in low-mass women, and other risk factors for uterine fibroids are protective. Obesity, vitamin D insufficiency, high vitamin E levels, altered reproductive tract microbiota, exposure to endocrine-disrupting chemicals (such as organophosphate esters and plasticizers), and different early-life unfavourable environmental exposures are additional significant risk factors. Uterine fibroids may develop as a result of personal and environmental risk factors, such as alcoholism and cigarette use. A greater likelihood of uterine fibroid production and growth is linked to more risk factors [6].

The majority of uterine fibroids' current therapy focuses on symptom management. Medication adherence, age, pregnancy, and some other co-morbidities such as endometriosis, endometrial polyps, adenomyosis, and endometrial hyperplasia that result in discomfort and abnormal uterine bleeding are all factors that affect treatment possibilities [7] For asymptomatic fibroids, the majority of evidence-based recommendations propose periodic assessments of the tumour growth rate [8].

Tranexamic acid, an antifibrinolytic drug, is frequently prescribed to prevent and manage blood loss. It has also been demonstrated to be beneficial in treating fibroid-related excessive menstrual bleeding. Tranexamic acid protects the fibrin matrix's integrity [9]. By causing endometrial shrinkage, intrauterine devices like the 52 mg LNG-IUD decrease menstrual haemorrhage in women with fibroids [10]. For women with fibroids less than 3 cm in size, NSAIDs are advised as an alternative to levonorgestrel-releasing intrauterine devices (LNG-IUD) [11]. Although there is minimal evidence, combined hormonal and oral progestins may be taken into consideration for the treatment of fibroid-associated HMB [12]. Progesterone action is tempered by selective progesterone receptor modulators (SPRM). Ulipristal acetate (UPA) suppresses progesterone's actions by binding to the intracellular progesterone receptor. As a consequence, it is successful in lowering overall fibroid and uterine volume but causes amenorrhea in the majority of women who take it [13]. Gonadotropin-releasing hormone (GnRH) agonists activate the pituitary and ovaries at first, and subsequently, they cause the GnRH receptors to downregulate and the estradiol to be completely suppressed, resulting in a hypoestrogenic condition. Through this technique, they promote symptoms of menopause and bone loss while inducing amenorrhea, drastically reducing UF, and uterine volume. GnRH agonists are often used as a short-course medication (2–6 months) prior to surgery to enhance the benefits of minimally invasive and conservative surgical methods due to these adverse effects [14]. Fibroid-associated HMB has been the major area of research and usage for the anti-progestin mifepristone. While its anti-glucocorticoid action may restrict its usage, like UPA, it lessens the size of fibroids, lessens heavy bleeding, and improves symptoms and quality of life associated with pelvic discomfort. Spotting, elevated liver enzyme levels, and endometrial hyperplasia have been documented as adverse effects [8]. The

oestrogen receptor ligands (SERM) raloxifene and tamoxifen are selective oestrogen receptor modulators (SERM). Investigations into their impact on fibroid growth and related symptoms have not shown any conclusive evidence that HMB is reduced [15].

If medication care is unsuccessful or if the fibroids are larger than 3 cm, surgical treatment for fibroids, which may include either a hysterectomy or myomectomy, has historically been the primary method. The surgical procedure to remove the fibroid while leaving the uterus intact is known as a myomectomy. Although it greatly reduces the symptoms of excessive bleeding, myometrial damage is a potential side effect. A myomectomy may be performed laparoscopically, hysteroscopically, transvaginally, or through a laparotomy, depending on the size and location of the fibroid [10].

There are non-surgical options for treating uterine fibroids. Under local anaesthesia, uterine artery embolization (UAE) temporarily seals up the arteries that supply the uterus with biocompatible particles. The uterus often heals following UAE, but the fibroids often don't. An ischemic infarction is caused by UAE. Some medical professionals are against using UAE in women who want to become pregnant. The decrease in blood supply to the ovaries worries some doctors. If there are large contacts between ovarian and uterine arteries, it has been suggested that a decline in blood flow would occur, which would reduce ovarian function [16, 17]. Other less invasive non-surgical procedures are available to remove fibroid tissue. The National Institute for Health and Care Excellence (NICE) states that there is sufficient evidence for the short-term effectiveness of magnetic resonance-guided high-intensity transcutaneous focused ultrasound (MRgHIFU), but further study is needed on both long-term effects and in women who desire to get pregnant[18].

2. Materials and methods

2.1. Study sites, design, and period

The study is a 6-month prospective observational study carried out in the gynaecology unit of a 300-bed multi-specialty teaching hospital. The study examined 90 prescriptions in total. The hospital's institutional ethics committee gave its approval to the study design, which took into account both inpatients and outpatients at the SVS hospital's gynaecology ward.

2.2. Source of data and materials

- ✓ Patient Consent Form.
- ✓ Patient Data Entry Form

2.3. Inclusion criteria

- ✓ Patients who are diagnosed with uterine fibroids.
- ✓ Patients who are willing to give their consent.

2.4. Exclusion criteria

- ✓ Women who have had menopause and associated co-morbid disorders.
- ✓ Patients suffering from HIV-related immune deficiency disorders
- ✓ Patients with concomitant illnesses.

2.5. Method of data collection

- ✓ Data collection form.
- ✓ Biomedical and radiological reports.

2.6. Study procedure

- ✓ This research is a prospective observational one in which qualified participants are included after giving their consent. Case report formats are used.
- ✓ Most of the information on this form is about the patient's demographics, biological and radiological findings, and prescriptions.
- ✓ The SVS Medical College and Hospital served as the study's site. From the date of admission to the date of discharge, all information related to the study will be gathered, and the data will be examined appropriately.

2.7. Does the study require any investigation to be conducted on patients?

✓ No.

2.8. Has ethical clearance been obtained from your institution in the case of the above?

The ethical committee clearance has been obtained from the Institutional Ethical Committee of SVS MEDICAL COLLEGE HOSPITAL before initiating the study.

3. Results

3.1. Distribution of patients according to age group

In our study, we included 90 women with a confirmed diagnosis of uterine fibroid. Out of 90 women, 48 (53.3%) were in the 31–40-year age group, followed by 26 (28.8%) in the 41–50-year age group, 10 (11.1%) in the age group over 50 years, and 6 (6.6%) in the 21–30-year age group (Table 1).

Table 1. Distribution of patients according to age group

Age	Total No of Patients	Percentage
<20	0	0.0
21-30	06	6.6
31-40	48	53.3
41-50	26	28.8
>50	10	11.1
Total	90	100

3.2 Distribution according to complaints/symptoms

Patients' complaints revealed a variety of symptoms, including abdominal lumps in 57.7% of cases, abnormal uterine bleeding in 38.8% of cases, menorrhagia in 25.5% of cases, weakness in 23.3% of cases, infertility in 21.1% of cases, pelvic pain in 16.6% of cases, dysmenorrhea in 10% of cases, urine retention in 7.7% of cases, and constipation in 6.6% of cases. (Table 2).

Table 2. Distribution according to complaints/symptoms

Complaints	No of patients	percentage
Abnormal uterine bleeding	35	38.8
Menorrhagia	23	25.5
Dysmenorrhoea	09	10.0
Abdominal lump	52	57.7
Pelvic pain	15	16.6
Urine retention	07	7.7
Constipation	06	6.6
Weakness	21	23.3
Infertility	19	21.1

3.3. Risk factors associated with uterine fibroids

We found that the main risk factor for uterine fibroids is age, which is followed by obesity, alcoholic patients, smoking, drinking alcohol while also smoking, and small pregnancies (Table 3).

Table 3. Risk factors associated with uterine fibroids

Risk factors	No. of patients	Percentage
Age	38	42.2
No. of pregnancy	06	6.6
Obesity	29	32.2
Past family history	00	0
Alcoholic	15	16.6
Smoking	12	13.3
Both (smoking and alcoholic)	09	10

3.4 Pharmacological treatment given to patients

In our study, we found that uterine fibroids are effectively treated with a combination of medications, including the antifibrinolytic drug tranexamic acid, the non-steroidal anti-inflammatory drug mefenamic acid, oral contraceptives like norethindrone acetate and ethinyl estradiol, an antiprogestational steroid like mifepristone, a progesterone agonist like ulipristal, and iron and folic acid supplements are also used. (Table 4)

Table 4. Pharmacological treatment given to patients

Drugs	No. of patients	Percentage
Mifepristone	10	11.1
Ulipristal	27	30.0
Tranexamic acid	48	53.3
Norethindrone acetate and ethinyl estradiol	30	33.3
Mefenamic acid	41	45.5
Iron and folic acid supplement	42	46.6

3.5 Nonsurgical and surgical procedures preferred by the patients

32 patients received uterine artery embolization, a nonsurgical treatment since it uses safe, minimally invasive procedures and produces outcomes that are comparable to those of surgery. Surgery to remove uterine fibroids may entail partial or complete organ removal or organ preservation. For the surgical removal of uterine fibroids, one of three methods (abdominal, laparoscopic, or vaginal) or a combination of the three is employed. Because they were over 40 years old and did not want to become pregnant, 16

patients underwent hysterectomy. In contrast, 9 patients underwent laparoscopic myomectomy because the size and location of their fibroids were not complicated, and 5 patients underwent hysteroscopic myomectomy because it was a minimally invasive procedure.

4. Discussion

A total of 90 instances of uterine fibroid were gathered from SVS Medical College and Hospital Mahbubnagar during the course of the study's six-month duration. Faerstein E. and his co-authors found that increasing age is a substantial risk factor for uterine fibroids, particularly among women in the premenopausal stage and those under 40 years of age. More participants were seen in the age category of 30 to 40 years, and comparable results were discovered in practice-based case-control research[19]. According to research by Ganesa Wegienka, several symptoms, including abnormal uterine bleeding (AUB), pelvic discomfort, and urinary symptoms, are often related to uterine fibroids. Compared to 28% of women without the condition, AUB has been found in 64% of women with fibroids [20]. The majority of the risk factors found to be the same in our study include older age, obesity, premenopausal status, non-participation, family history of uterine fibroids, hypertension, and frequent consumption of soybean milk. These risk factors are also shown in a retrospective cohort study conducted by another author [21].

Our data is supported by published research, which suggests that when advising women on possible approaches to fibroid-related problems, the effectiveness of pharmaceutical treatment of UF should always be taken into account. Many women would rather take long-term medications than undergo an invasive procedure. Progestogens, antiprogesterones, gonadotropin-releasing hormone analogues, GnRH antagonists, and selective estrogenic receptor modulators are some of the medications used in pharmacological therapy [22].

According to our research, surgical intervention is still a fantastic choice even when uterine fibroids may be treated surgically in various ways, according to certain authors. The desired route, which might be minimally invasive (endoscopic), open surgery, vaginal, or a mix of these modalities, distinguishes various procedures. The uterus may be preserved during surgery or removed by procedures including hysterectomy, laparoscopic myomectomy, and hysteroscopic myomectomy. Compared to open surgery, a minimally invasive method may provide important advantages [23]. For a small group of individuals with benign uterine fibroid tumours, alternative surgical and interventional techniques such as uterine artery embolization (UAE) or radiofrequency ablation may be recommended [24].

5. Conclusion

Individualized care is required for UF. When seeking medical attention for symptoms of uterine fibroids, a significant percentage of women between the ages of 30 and 40 are more likely to be diagnosed with fibroids. When women seeking treatment for UF-related concerns are counselled on the disease's features, we find that symptoms including heavy menstrual flow and abdominal lumps are more often reported than other symptoms. The patient's age and obesity are the two risk factors that are most often present, although family history is the least prevalent. Treatment has taken the patient's wish for future fertility into consideration. Fibroid volume hasn't always been used as a sign that surgery is necessary.

The medications are the first option because of their possible benefits, inexpensive price, and relative safety. The most effective drugs for pharmacological therapy to reduce tumour sizes and relieve symptoms include NSAIDS, antifibrinolytics, and GnRH-a, although side effects and a maximum period of safe usage restrict their use in clinical settings. To avoid surgical intervention, individuals with satisfactory responses may be given strategies incorporating long-term usage of GnRH-a with add-back treatment. For women with non-submucosal fibroids, LNG-IUS was a viable alternative for controlling bleeding. Ulipristal is used for pre-operative therapy of UF, and short-term usage of SPRMs is safe. Antiprogestogens and SPRMs have both shown efficacy as long-term medicinal

therapies for fibroids. However, uterine artery embolization was advised for patients with big and quickly expanding fibroid tumours, and surgical therapy such as hysterectomy, laparoscopic myomectomy, and hysteroscopic myomectomy was the only choice for complicated cases.

Abbreviation

CEMRI: contrast-enhanced magnetic resonance imaging
GnRH: Gonadotropin-releasing hormone
HMB: Heavy Menstrual Bleeding
LNG-IUD: Levonorgestrel-releasing Intrauterine devices
MED12: Mediator Complex Subunit 12
MRgHIFU: Magnetic resonance-guided high-intensity transcutaneous-focused ultrasound
NICE: National Institute for Health and Care Excellence
SERM: Selective estrogen receptor modulators
SPRM: Selective progesterone receptor modulators
UAE: Uterine artery embolization
UFs: Uterine Fibroids
UPA: Ulipristal acetate

Conflict of Interest

The authors hereby declare that they have no conflict of interest.

Author's contributions

All authors equally participated in designing experiment analysis and interpretation of data. All authors read and approved the final manuscript.

Consent for publications

All authors have read and approved the final manuscript for publication.

Availability of data and material

The authors have embedded all data in the manuscript.

Ethics approval and consent to participate

The authors did not use human or animals in the research.

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