

ORIGINAL ARTICLE

Evaluating the Efficacy of Mulaka Kshar in the Management of Uterine Fibroids: A Clinical Study

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ABSTRACT

Uterine fibroids are common benign tumours composed of smooth muscle and fibrous tissue. While 75% are asymptomatic, others present with abnormal uterine bleeding (30%), dysmenorrhea, dyspareunia, infertility, recurrent miscarriages, pelvic pain, and pressure symptoms. Conventional treatments, including hormonal therapy, myomectomy, and hysterectomy, have limitations such as side effects and fertility risks. In India, fibroids account for 24.29% of hysterectomies, with an estimated 60,000 hysterectomies and 40,000 myomectomies performed annually. In ayurveda, fibroids correlate with Garbhashaya-gata mamsaja arbuda, characterized as a slow-growing, firm, non-suppurating tumour. Traditional management includes shodhana therapies (vamana, virechana, snehana) and para-surgical interventions like kshara karma, agnikarma, and raktamokshana. Mulaka kshar, derived from *Raphanus sativus*, is cited in *sushruta samhita* for treating gulma (abdominal lumps) and related disorders. A clinical study at Parul ayurved hospital was conducted on 30 patients with uterine fibroids, administering Mulaka kshar orally. Results showed significant symptomatic relief in menorrhagia (73%), dysmenorrhea (76%), backache (83%), and lower abdominal pain (68%). Ultrasound findings revealed a 20% reduction in vertical fibroid diameter and a 16% reduction in horizontal diameter. This study highlights oral Mulaka kshar as an effective, non-invasive therapy for uterine fibroids, significantly reducing fibroid size and symptoms. By addressing the root cause through dosha balance and tissue metabolism enhancement, it serves as a promising ayurvedic alternative to conventional treatments.

**KEYWORDS:** Uterine fibroid, Mulaka kshar, Mamsaja arbuda, Benign uterine tumours.

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INTRODUCTION

Uterine fibroids are the most frequently occurring benign tumours of the uterus and solid tumours in females, Made up of smooth muscle and fibrous connective tissue. They are also known as leiomyomas or fibromyomas. By age 30, about 20% of women develop fibroids, with 50% remaining asymptomatic. Symptomatic fibroids are seen in 3% of hospital outpatients. Uterine fibroids are frequently seen in nulliparous women or those with infertility, peaking between ages 35 and 45. African-American women and those with higher body fat manifesting more frequent incidence. Uterine fibroids are oestrogen-dependent, with elevated oestrogen and progesterone receptor concentrations in myomas. They are uncommon before menarche, show tendency to enlarge during pregnancy, and typically decrease in size after menopause or with hypoestrogenic treatments like GnRH agonists. Based on location, fibroids are classified as interstitial/intramural (75%), subserous (10%), submucous (5%), and cervical [1].

While 75% of fibroids are asymptomatic, possible symptoms include abnormal uterine bleeding (30%), dysmenorrhea, dyspareunia, impaired fertility, frequent miscarriages, pressure symptoms (on the bladder, ureters, or rectum), pelvic pain, and abdominal enlargement. Modern treatment options for uterine fibroids include hormonal therapies, myomectomy, and hysterectomy. Gn-rh agonists can shrink fibroids and reduce bleeding but it can cause menopause-like side effects such as hot flashes, sweating,

headaches. they are typically used short-term before surgery but don't help all women. Hormonal IUDs may cause acne, mood swings, and in rare cases, uterine damage. Birth control pills can reduce bleeding but may lead to water retention, headaches, and an increased risk of blood clots, especially in older women and smokers. overall, hormonal therapies have limited effectiveness, significant side effects, and uncertain benefits for fibroid treatment. surgical intervention have also more or less side effect, studies have shown that myomectomy can sometimes lead to infertility due to postoperative adhesions, scar formation, and endometrial damage. while it aims to preserve the uterus, complications like uterine rupture or adhesions may still affect future pregnancies. in cases where fibroids are extensive or deeply embedded, hysterectomy may be the only option, which permanently ends fertility. Notably, 24.29% of total hysterectomies are conducted because of uterine fibroids alone. A study conducted in India revealed that 60,000 hysterectomies and 40000 myomectomy are performed annually due to uterine fibroid alone. So it become necessity to find effective yet safe option for managing uterine fibroid [2-4].

In Ayurvedic texts, uterine fibroids can be correlated with *Garbhashaya-gata Mamsaja Arbuda* (tumors of the uterus). According to Acharya Sushruta, *Mamsaja Arbuda* arises due to the vitiation of *Mamsa Dhatu*, often provoked by factors including trauma or injury from blunt objects like fists, logs, or sticks, and increased consumption of meat, resulting in abnormal tissue growth. *Mamsaja Arbuda* presents with symptoms, including a smooth texture, skin-colored appearance similar to the surrounding tissue, and a stony-hard consistency. The swelling is usually painless or leads to very mild discomfort, remains fixed and immovable, and does not suppurate. The tumor gradually increases in size over time and does not burst or ulcerate spontaneously, differentiate it from other swellings like abscesses. The treatment of *Mamsaja Arbuda* as described by Sushruta includes both conservative and surgical approaches. Initially, *Shodhana* therapies such as *Vamana*, *Virechana*, and *Snehana* are recommended to expel accumulated toxins and prepare the body for further treatment. If the tumor does not respond to these measures, *Chedana Karma*, *Lekhana Karma* and *Visravana Karma* are advised. When surgery is not feasible, para-surgical methods like *Kshara Karma*, *Agnikarma*, and *Raktamokshana* are employed [5, 6].

All the *kshara* act as *chedana*, *bhedana*, and *lekhana dravya*. *Ksharas* are the best useful as the substitutes of surgical instruments because they can be used freely on the patients who are shastra *bheeru* i.e. Those who are afraid of operative procedures. *Mulaka Kshara* has been explained in Sushrut Samhita Uttara Tantra in the context of "*Gulma Pratishedh Adhyay Mulaka* (Raphenus sativus Linn), commonly known as Radish, is a medicinal plant from the *Cruciferae* family, frequently used in Ayurved for its therapeutic properties. It is characterized by *Katu Rasa*, *Ushna Virya*, *Katu Vipāka*, and *Laghu Guna*, making it effective as a *Tridosahara*. *Mulaka* demonstrates actions such as *Rochana*, *Dipana*, *Pācana*, *Vātānulomana*, *Bhedana*, *Mutrala*, and *Asmari Bhedana*. It is therapeutically used in diseases like *Vrana* (wounds), *Gulma* (abdominal lumps), *Arśa* (hemorrhoids), and *Udāvarta* [7].

Radish (*Raphanus sativus*) contains active phytoconstituents such as glucosinolates (glucoraphanin), carotenoids (beta-carotene, lutein, zeaxanthin, violaxanthin), phenolic compounds (4-ethyl-2-methoxyphenol), flavonoids (quercetin, catechin, myricetin), ascorbic acid (vitamin c), and fatty acids (palmitic acid, methyl palmitate, oleic acid, linoleic acid, linolenic acid).

## DATA SOURCE

The data used for this study was derived from a clinical trial at Parul Ayurved Hospital, as part of a postgraduate thesis. The trial included 30 patients USG diagnosed with uterine fibroids and aimed to evaluate the efficacy of *Mulaka Kshar* in managing the condition. Patient data, including demographic information, clinical symptoms, fibroid characteristics, and treatment outcomes, were obtained from the thesis. This data provided a comprehensive overview of the efficacy of *Mulaka Kshar* in managing uterine fibroids.

## MATERIAL AND METHODS

**STUDY DESIGN** -Single arm interventional study

### PATIENT SELECTION

- 30 Patients (sample size calculated using Cochran's formula with  $p = 10\%$ ,  $z = 1.645$ , and  $e = 10\%$ ) diagnosed with uterine fibroids were selected from the OPD and IPD of Parul Ayurved Hospital.
- Inclusion and exclusion criteria were assessed using the hospital's pathological laboratory and ultrasonography.

**Table 1-Patient included in study**

Category	Parameter	Observation
Demographic data	Age	20–55 years
	Body mass index (BMI)	Normal to overweight
Vital parameters	Pulse rate	Within normal limits
	Blood pressure	Normal
	Respiratory rate	Normal
	Body temperature	Afebrile
Menstrual history	Menstrual pattern	Menorrhagia / Dysmenorrhea / Normal
	Cycle regularity	Regular / Irregular
Obstetric history	Parity status	Nulliparous / Primiparous / Multiparous
Contraceptive history	Method used	Hormonal / Non-hormonal / None
Associated symptoms	Presenting complaints	Pelvic pain, backache, abdominal heaviness, pressure symptoms
Systemic examination	Cardiovascular system	Normal
	Respiratory system	Clear bilateral air entry
Abdominal examination	Abdomen	Soft; uterine enlargement in some cases
Laboratory investigations	Haemoglobin (Hb %)	≥ 7 g%
	Complete blood count	Within normal limits
	Blood sugar (F/R)	Normal
	Renal function tests	Normal
	Urine routine & microscopy	Normal
Pregnancy status	Urine pregnancy test	Negative
Ultrasonography (USG)	Diagnosis	Uterine fibroid confirmed
	Number of fibroids	Single / Multiple
	Type of fibroid	Submucous / Intramural / Subserous
	Maximum fibroid size	≤ 5 cm
Associated medical illness	Systemic disease	Absent

**EXCLUSION CRITERIA**

- Pregnant women with fibroids or those with hemoglobin (Hb) < 7 gm%.
- Ovarian or malignant tumors.
- Patients with uncontrolled hypertension, tuberculosis, diabetes mellites, or other systemic diseases.
- Broad ligament fibroid
- Pedunculated fibroid

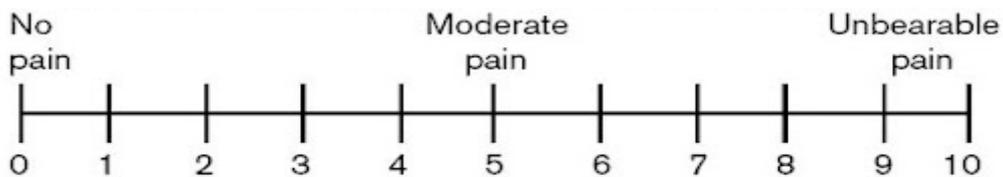
**INTERVENTION (POSOLOGY)**

- Dose - Cap. 250 mg twice daily
- Dosage form - Capsule
- Route of Administration - Oral
- Time of Administration Twice a day after meal
- *Anupana* - Luke warm water
- Duration of therapy - 3 Months

**ASSESSMENT CRITERIA**

**SUBJECTIVE PARAMETERS:**

1. Menstrual abnormalities (dysmenorrhea, menorrhagia)
2. Backache
3. Pain in lower abdomen (assessed using the Visual Analog Scale [VAS])



**Figure 1 VAS SCALE**

**OBJECTIVE PARAMETERS:**

- Size of fibroids assessed using ultrasound (USG)

**DURATION OF TREATMENT**

- Three months.

**FOLLOW UP**

➤ One month after finishing the course of study.

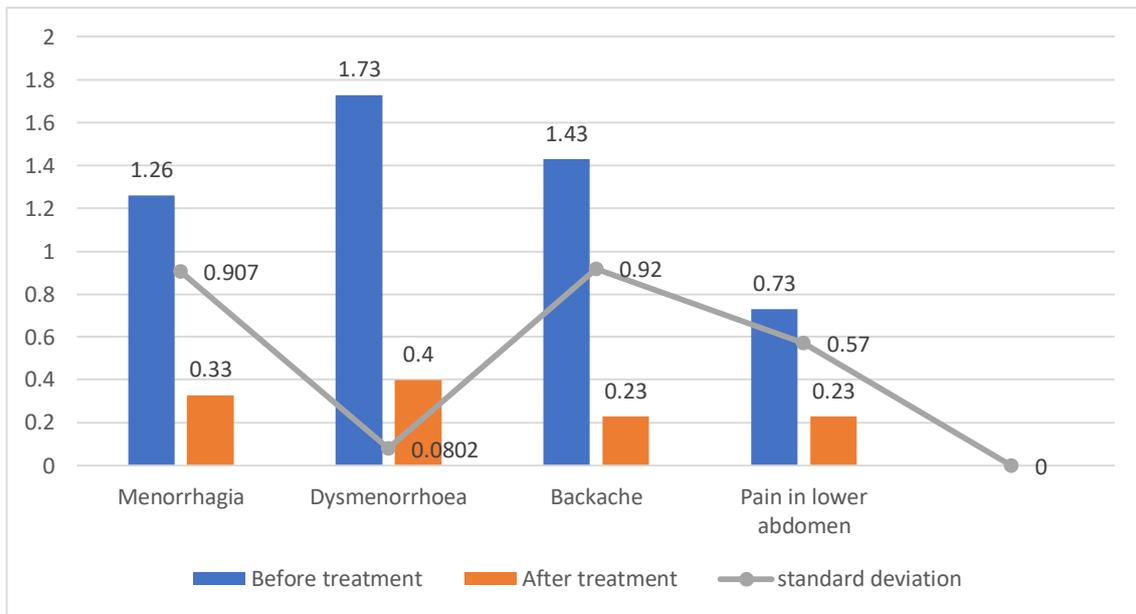
**STATISTICAL ANALYSIS**

Paired t-test were applied for statistical analysis for data.

**Ethical Approval:** This study approved by IEC approval committee (PIA/IECHR/SHALYA/01).

**RESULTS**

**Effect on Subjective Parameters**



**Figure 2-EFFECT ON SUBJECTIVE PARAMETERS**

Parameter	Mean BT	Mean AT	Mean Diff	% of Relief	S.D.	S.E.	T	P
Menorrhagia	1.26	0.33	0.93	73	0.907	0.16	5.63	< 0.001
Dysmenorrhoea	1.73	0.4	1.33	76	0.0802	0.14	9.013	< 0.001
Backache	1.43	0.23	1.2	83	0.92	0.16	7.107	< 0.001
Pain in lower abdomen	0.73	0.23	0.5	68	0.57	0.104	4.78	< 0.001

**Table 2-EFFECT ON SUBJECTIVE PARAMETERS**

(BT- Before treatment, AT- After treatment Diff.- Difference, S.D.- Standard deviation  
S.E - Standard Error, p value -probability value T - Paired t test value)

**Menorrhagia:** The mean score of menorrhagia before treatment was 1.26, which decreased to 0.33 after treatment, showing a 73% relief. This change showed statistically significant result(p<0.001).

**Dysmenorrhoea:** Before treatment, the mean score of dysmenorrhoea was 1.73, which reduced to 0.40 after treatment, reflecting a 76% relief. This change showed statistically significant result(p<0.001).

**Backache:** The mean score of backache before treatment was 1.43, which reduced to 0.23 after treatment, showing an 83% relief. This change showed statistically significant result(p<0.001).

**Pain in Lower Abdomen:** Before treatment, the mean score for pain in the lower abdomen was 0.73, which decreased to 0.23 after treatment, showing a 68% relief. This change showed statistically significant result(p<0.001)

**Effect on Objective Parameter (Size of Fibroid)**

**Vertical Diameter:** Before treatment, the mean score of the vertical diameter was 3.05, which reduced to 2.406 after treatment, showing a relief of 20%. This change showed statistically significant result(p<0.001).

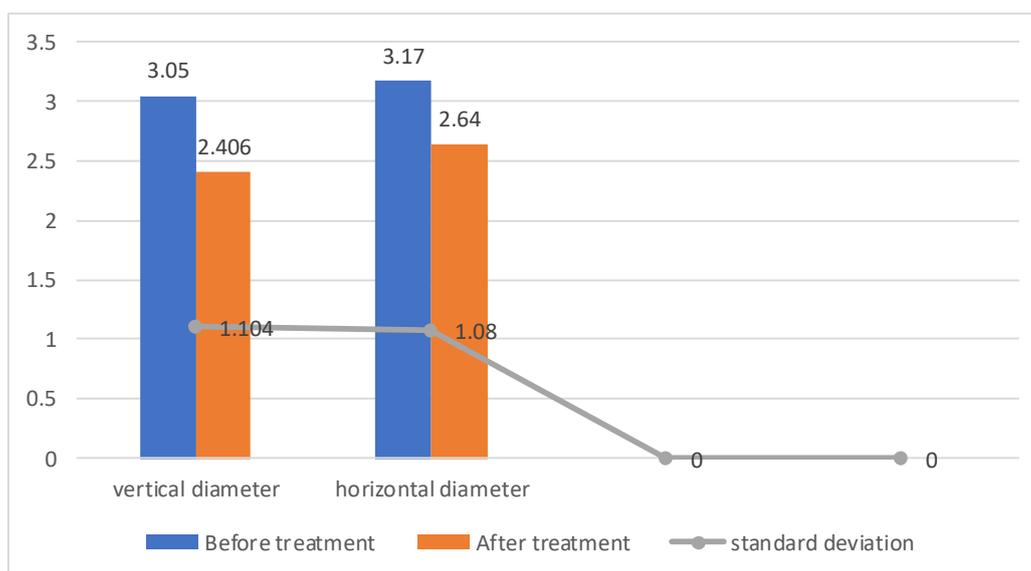
**Horizontal Diameter:** Before treatment, the mean score of the horizontal diameter was 3.17, which reduced to 2.64 after treatment, showing a relief of 16%. This change showed statistically significant result(p<0.001).

**Overall result:**

On USG finding, 20% and 16% relief were found on uterine fibroid size between 3.05-2.406 cm. and 3.17-2.64 cm. respectively in vertical and horizontal diameter.

With success of the treatment, Menorrhagia, Dysmenorrhea, Backache and Pain in lower abdomen were found relief of 73%, 76%, 83% and 68% respectively.

Size of fibroids, 21% and 17% relief were found on uterine fibroid size between 3.46-3.53 cm and 2.43-2.53 cm respectively in vertical and horizontal diameter.



**Figure 3-EFFECT ON OBJECTIVE PARAMETER**

Diameter	Mean BT	Mean AT	Mean Diff	% of Relief	S.D.	S.E.	T	P
Vertical	3.05	2.406	0.64	20	1.104	0.201	3.19	0.003
Horizontal	3.17	2.64	0.53	16	1.08	0.19	2.68	0.01

**Table 3-Effect on objective parameter**

## DISCUSSION

Uterine fibroids, although benign in nature, are known to cause significant morbidity in women of reproductive age due to symptoms such as menorrhagia, dysmenorrhea, pelvic pain, and infertility. Various clinical observations and previous research works have consistently highlighted the limitations of conventional management, including hormonal therapy and surgical interventions, which are often associated with adverse effects, recurrence, or permanent loss of fertility. These challenges have encouraged exploration of alternative, conservative, and fertility-preserving treatment modalities.

In Ayurvedic literature and clinical practice, uterine fibroids are correlated with Garbhashaya-gata Mamsaja Arbuda, a condition characterized by slow-growing, firm, non-suppurative masses arising due to Kapha dominance and Mamsa Dhatu vitiation. Earlier Ayurvedic studies have emphasized that such growths respond poorly to simple shamana therapy and require drugs or procedures possessing Lekhana, Bhedana, and Chedana properties. Kshara formulations have been repeatedly highlighted in prior clinical studies as effective substitutes for surgical intervention in deep-seated and hard swellings [8, 9].

Previous clinical studies evaluating Mulaka Kshara in conditions involving abnormal tissue proliferation, such as Arbuda and Ashmari, have demonstrated its ability to reduce mass size and relieve associated symptoms. These studies reported significant symptomatic improvement along with objective reduction in lesion dimensions, supporting the strong Lekhana and Tikshna properties of Mulaka Kshara. The present study shows findings consistent with these earlier observations, where notable reduction in fibroid size was observed along with statistically significant relief in menorrhagia, dysmenorrhea, backache, and lower abdominal pain.

Comparative observations from earlier research also suggest that non-invasive Ayurvedic interventions provide better patient compliance and fewer adverse effects when compared to long-term hormonal therapy. The symptomatic relief observed in the present study is comparable to outcomes reported in earlier Ayurvedic clinical trials, particularly in terms of reduction in menstrual abnormalities and pelvic discomfort. Additionally, the gradual but significant reduction in fibroid dimensions aligns with previous

findings that Kshara therapy acts slowly yet effectively on dense and deep-rooted pathological tissues [10, 11].

From a pharmacological perspective, earlier experimental and clinical studies have demonstrated that Mulaka possesses anti-proliferative, anti-inflammatory, and tissue-modulating properties. These actions support the Ayurvedic explanation of Kapha-shamana, Agni-deepana, and Srotoshodhana, which collectively help in arresting abnormal tissue growth and preventing further progression of the disease. The present clinical outcomes reinforce these mechanisms, as both symptomatic and structural improvements were observed within a relatively short treatment duration.

Overall, when correlated with previously conducted Ayurvedic clinical studies, the findings of the present study further substantiate the therapeutic role of Mulaka Kshara in the management of uterine fibroids. The consistency of results across different studies strengthens the evidence that Mulaka Kshara is an effective, safe, and fertility-preserving alternative for women seeking non-surgical management of uterine fibroids [12, 13].

#### **Probable Mode of Action**

*Mulaka Kshara* acts on uterine fibroids (*Mamsarbuda* in *Garbhashaya*) through its *Katu Rasa*, *Ushna Virya*, and *Katu Vipaka*, which pacify *Kapha* and regulate *Vata*, the primary *doshas* involved in fibroid formation. Its *Lekhana* (scraping) and *Bhedana* (piercing) properties help break down and reduce the size of fibroids by dissolving excess and hardened tissue. Additionally, its *Vātānulomana* action restores normal *Vata* functioning, correcting abnormal cell proliferation, while *Dīpana* enhances *Dhatvagni* (tissue metabolism) and *Pācana* promotes *Ama* digestion, preventing further tissue accumulation and relieving *Srotorodha* (channel obstruction) [10, 11].

The phytoconstituents in radish, such as glucosinolates, carotenoids, phenolic compounds, flavonoids, ascorbic acid, and fatty acids, collectively contribute to the therapeutic potential of *Mulaka Kshara* in managing uterine fibroids. Glucosinolates and flavonoids exhibit anti-proliferative and anti-estrogenic effects, inhibiting fibroid growth by modulating cell signalling pathways and reducing oestrogen activity. Carotenoids and phenolic compounds provide antioxidant and anti-inflammatory effects, alleviating oxidative stress and inflammation associated with fibroids. Ascorbic acid supports tissue repair and immune function, while fatty acids maintain cell membrane integrity and reduce inflammation [12-14].

#### **CONCLUSION**

The study demonstrates that *Mulaka Kshar* offers significant therapeutic benefits in the management of uterine fibroids, reducing both fibroid size and symptoms like menorrhagia, dysmenorrhea, and pain. This non-invasive treatment aligns with Ayurvedic principles, addressing the root causes of fibroid development by balancing *doshas* and improving tissue metabolism. *Mulaka Kshar* provides a valuable alternative to surgical and hormonal treatments for women seeking natural, holistic approaches for managing uterine fibroids.

#### **BIAS AND LIMITATION**

- The study was conducted on 30 patients, limiting its broader applicability. A larger sample size is required to minimize selection bias.
- The 3-month study duration may not fully capture long-term effects, posing a limitation in assessing sustained outcomes.
- The lack of a comparative group limits the ability to evaluate the effectiveness of *Mulaka kshar* against standard modern treatments for uterine fibroids.

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