



## Approach and Management Strategies for Radicular Low Back Pain in Ayurveda: The Classical and Emerging Methods

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**Abstract:** Radicular low back pain management in Ayurveda includes oral ayurveda formulations for local applications and systemic *panchakarma* procedures. Several practitioners of Ayurveda are also practicing marma therapy. The lacunae in today's knowledge are that very less clinical trial evidence can guide ayurveda practitioners in managing this complaint. Due to a lack of documented evidence and research, these therapies and techniques are not used in mainstream management protocols in large public settings. It makes these therapies inaccessible to the general public. This study aims to review the management methods for radicular low back pain or sciatica from published resources and to discuss its approach. For this review study, previous published research and articles on ayurveda and low back pain, sciatica, *Gridhras*, *Katishoola*, *Katigraha*, and *Marma* therapy have been searched from standard databases (PubMed and Science Direct) and relevant books. After a thorough search, 12 papers on standard databases were reviewed for this study and incorporated to build up the concept of radicular low back pain management through ayurveda. The study concluded that Ayurveda provides a holistic approach and encompasses various pharmacological and non-pharmacological methods to manage pain and associated disability. Marma therapy can become long-term, cost-effective methods to tackle this growing problem. Thus, public settings must be equipped rigorously with ayurveda therapy units for radicular low back pain. Larger scale randomized controlled interventional trials and research needs to be done to evaluate the effect and limitations of ayurveda therapies (ancient and emerging) for radicular low back pain and develop standard management protocols.

**Keywords:** Low Back Pain, Sciatica, *Gridhras*, *Katishoola*, *Katigraha*, *Marma* therapy

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## I. INTRODUCTION

Radicular low back pain, or sciatica, is one of the most prevalent complaints in the present world. According to the definition of radicular pain, it is "pain perceived to originate in a limb or the trunk and is brought on by ectopic activation of nociceptive afferent fibers in a spinal nerve or its roots or other neuropathic mechanisms".<sup>1</sup> This shooting and varying degree of pain is sometimes named as sciatic neuralgia.<sup>2</sup> This pain occurs in the area supplied by the sciatic nerve. The lifetime incidence of radicular low back pain (LBP) or sciatic is 13% to 40%<sup>3</sup> and the annual incidence ranges from 1% to 5%.<sup>4</sup> In the Indian scenario, according to research, the frequency of LBP in the Indian population ranges from 6.2% (in the general population) to 92% (among construction workers).<sup>5</sup> Various complex mechanisms are involved, which results to this type of pain. Still, radicular low back pain is most frequently caused by irritation of a specific nerve, which can happen anywhere along the nerve and is most frequently brought on by compressive stress.<sup>6</sup> Previously, it was known to affect the older age group, but recent days, the younger age group people are also coming frequently in the OPD with this complaint.<sup>7</sup> The sedentary lifestyle and lack of physical activity in today's era is causing the spinal musculature to get weak, and therefore, frequent lumbar disc herniations results, causing nerve root compressions. The symptoms vary from mild to severe radiating low back pain with or without tingling/numbness and heaviness of lower limbs. Generally, the symptoms increases on walking, standing, and bending, but sometimes the pain is so severe that none of the postural changes cause relief in pain. The pain affects the quality of life and productivity of the individuals. The cost of the current management system for this complaint is also expensive, with mostly unsatisfactory results, as the pain tends to occur now

and then in most individuals. In ayurveda, various terminologies have been used in the context of low back pain, like *Katishoola*, *Katigraha*, *Trikshoola*, etc. However, the classical radicular low back pain or sciatica has been compared to *Ghridhrasi*. In Ayurveda, the concept of dosha, or the *tridoshas*, according is basis for every disease classification. In all three doshas (*vata*, *pitta*, and *kapha*), *Gridhrasi* is predominantly involved in the *vata* dosha. So, it has been categorised under *vataj nanatmaja vyadhi*. It is of two types: *vataj* and *vata-kaphaj*. Since long time classical ayurveda therapies have been practiced to manage this pain. These therapies include oral ayurveda formulations, local massage (*Abhyanga*), and systemic panchakarma procedures. recently, *marma* therapy is also being practiced by several practitioners of ayurveda and showed promising results. The lacunae in today's knowledge are that are very little clinical trial evidences that can guide ayurveda practitioners in managing this complaint. Due to lacking documented evidence and research, these therapies and techniques are not used in mainstream management protocols in large public settings. It makes these therapies inaccessible to the general public. Our aim and objective is to review the management therapies in Ayurveda for radicular low back pain or sciatica (*Gridhrasi*) in published research and review the existing and new emerging fields of ayurveda therapeutics relevant to this therapy.

## 2. MATERIALS & METHODS

Previous published research and articles on ayurveda and LBP, sciatica, *gridhrasi*, *katishoola*, *katigraha*, and *marma* therapy have been searched from standard databases (PubMed and Science Direct) and books. The relevant ones are reviewed and incorporated to build up the radicular LBP management concept through ayurveda.

## 3. OBSERVATION AND RESULTS



Fig 1- Flowchart of research

The above figure 1 shows the overall research done in the current study. In PubMed advanced search, a total of 29 search results were checked from the year 2012 till 13th January 2023 using the keywords LBP and ayurveda, sciatica and ayurveda, Gridhrasi and Ayurveda, Katishoola and Ayurveda, and Katigraha and Ayurveda whose search results were 10,12,5,1 and 1 respectively. Including the relevant ones and eliminating the

duplicate and irrelevant ones, 8 published papers were selected to review. An additional search on *Marma* therapy was done, and 29 search results were obtained from 2004 till 13 January 2023. Out of these, two papers were selected for review. Likewise, two additional research papers were selected from Science Direct using the same keywords. So, a total of 12 papers were reviewed for this study.

Table 1. Showing selected paper for review of treatment of radicular low back conditions in Ayurveda

Authors	Type of study	Conclusion
Damayanthie Fernando KP et. al <sup>8</sup>	open-label single-arm clinical trial	Good results of <i>Erand muladi yapana basti</i> in managing <i>Katigraha</i>
Kumar S et	Open-label parallel group trial	Better results of ayurveda massage and external therapy than standard thermal therapy in chronic low back pain patients

Singh AK et al. <sup>10</sup>	Open-label randomized active control trial	Superior effects of <i>Snehan</i> and <i>Yoga</i> ( <i>bhujang asana</i> and <i>salabha asana</i> ) over <i>yogasana</i> alone
Sathavane GV et. al <sup>11</sup>	open-label single-arm clinical trial	Significant therapeutic effects of <i>vatari guggulu</i> over <i>vata-kaphaja Gridhrasi</i>
Vaneet Kumar J et. al <sup>12</sup>	Open-label randomized parallel-group trial	Better results of <i>Agnikarma</i> than <i>Siravedhana</i> in management of <i>Gridhrasi</i>
Deshpande SV et. al <sup>13</sup>	Case report	Oiling ( <i>Snehana</i> ), hot fomentation ( <i>Swedana</i> ), and medicated enema ( <i>Basti</i> ), along with standard Ayurveda medications, had beneficial effects in improving acute severe low back pain due to L4, L5 posterior disc bulge.
Hariprasad K et. al <sup>14</sup>	Clinical trial (three groups)	The combined effect of <i>Trayodashanga guggulu</i> + <i>Mustadiyapana yoga basti</i> was more effective in improving clinical symptoms of <i>Gridhrasi</i> than used alone.
Kumar T et al. <sup>15</sup>	Open-label double-arm trial	Patients who were treated by upnah considering the phases of <i>samaj</i> and <i>Niramaj Katigraha</i> were more relieved of pain and disability than patients who were treated without considering the phases.
Mishra V et al. <sup>16</sup>	Open-label clinical trial	Beneficial effects of protocol-based pain management by various para-surgical procedures (cupping, <i>Jalauka-karma</i> , <i>Agnikarma</i> , and <i>Siravedhana</i> )
Somasundaran A et. al <sup>17</sup>	Case study	<i>Snehapana</i> with <i>Indukanta Ghrita</i> , followed by <i>Virechana</i> with <i>Gandharvahastadi</i> , <i>Astavarga Kashaya</i> , and <i>Yogaraja Guggulu</i> internally had an improving effect on low back pain and disability due to intervertebral disc prolapse.
Fox M et al. <sup>18</sup>	Pilot randomized controlled trial	non- Improvement in the secondary measure follow-up score differences of the Motricity Index and the trunk control test in stroke patients subjected to add-on <i>Marma</i> therapy over standard care.
Gautam AS et al. <sup>19</sup>	Case report	Showed the normalizing effect of <i>Talahridaya Marma</i> therapy in subjects with raised Blood Pressure

Table I shows the selected papers and their prominent findings. Most of the studies found were open-label trials. The studies showed that many ayurvedic therapies and formulations effectively manage LBP. The sample size of the studies was smaller, and the randomization is needed or not mentioned, which showed the weakness of the studies. However, the studies indicated a positive view toward performing more research in that direction.

#### 4. DISCUSSION

Ayurveda, the ancient science of life, has a deep understanding and approach to managing LBP and sciatica. *Katishoola*, *Katigraha*, *Gridhrasi*, *Trikvedna*, and *Trikshoola* are the terms mentioned in the ayurveda texts to refer to low back pain and related conditions. *Gridhrasi* has been compared, especially to radiating low back pain and sciatica. The doshic involvement in *Gridhrasi* is predominantly *vata*. Along with *vata*, sometimes in restricted conditions, the involvement of *Kapha* is also present.<sup>20</sup> Planning the management of radiating LBP in ayurveda indeed requires approaching it with basic classical concepts of etiopathogenesis (*Samprapti*).

#### ➤ Approach towards Radicular Low Back Pain (Sciatica or *Gridhrasi*)- (Table 2)

Table 2. Showing <i>Samprapti ghataks</i> (pathogenesis elements in Ayurveda) for <i>Gridhrasi</i> (Sciatica)	
<i>Dosha</i>	<i>Vata</i> / <i>vata-kapha</i>
<i>Dushya</i>	<i>asthi</i> , <i>snayus</i>
<i>Adhithana(udbhav)</i>	<i>Kati</i> , <i>pristha</i>
<i>Vyaktsthana</i>	<i>kati</i> , <i>prista</i> , <i>uru</i> , <i>jangha</i> , <i>paada</i>
<i>Ashaya</i>	<i>pakvashaya</i>
<i>Vyadhi prakara</i>	<i>chirakari</i> & <i>ashukari</i>
<i>Srotas</i>	<i>asthivaha</i> , <i>mansavaha</i>
<i>Srotodusti</i>	<i>sanga</i> , <i>vimarggamana</i> , <i>siragranthi</i>

Table 2 shows the pathogenesis elements of *gridhrasi* as per ayurveda. Ayurveda describes a disease in terms of its *dosha*, *dushya*, *ashaya*, etc. The above need to be considered for planning treatment procedure in ayurveda.<sup>21,22,23</sup>

#### 4.1. *Dosha*

In *Gridhrasi* or *sciatica*, the patient majorly complains of pain, which is shooting-type and sometimes intolerable; thus, the predominant dosha is the vitiated *vata*. Due to pain, the patient

complains of difficulty in movement and restriction, which is due to vitiated *kapha*.

#### 4.2. *Dushya*

This condition occurs primarily due to degeneration of intervertebral discs. In later degenerative conditions of the lumbar spine, osteophytes are formed in the vertebrae (bony part or *Asthi*) margins. Due to these degenerative conditions, the exiting nerve roots, or the *snayu* is compressed. Thus, the involved *dushya* are the *asthi* and *snayu*.

#### 4.3. *Adhisthana(udbhav)*

The origin of this pathology occurs in the lumbosacral area, so the disease-producing region is the *Kati* and *Pristha*.

#### 4.4. *Vyaktasthana*

The symptoms are felt mostly along the path of the emerging nerve root, from the lower back region to the feet. Thus, the symptomatic areas are *Kati* (lumbosacral area), *Pristha* (back), *Uru* (thigh), *Jangha* (leg), and *Paada* (feet).

#### 4.5. *Ashaya*

*Pakvashaya* has been called the seat of *Vata dosha* in ayurveda. *Vata* gets vitiated in *pakvashaya* and then spreads to other parts to produce symptoms. The Lumbar region corresponds to the lower digestive tract, and this area is responsible for absorptive functions. Any functional defects can cause improper absorption of nutrients needed for maintaining the integrity of structural elements of the body resulting in a gradual weakening of the associated body parts. Here, it manifests as degeneration in spinal elements, especially in vertebrae. Sometimes, they are referred also to pain of pancreatic origin or pain associated with gall bladder pathologies to the lumbar area.

#### 4.6. *Vyadhi prakar* (type of *vyadhi* or disease)

As these sciatica symptoms in elders are mostly insidious in origin after prominent degenerative changes have caused intervertebral disc herniations and nerve root compressions, most of them have chronic, progressive pain. In the young population, this complaint occurs after any traumatic incident causing sudden intervertebral disc protrusion or herniation after a jerk. Thus, *Gridhrasi* is *Chirkari* (chronic and insidious) and *Ashukari* (acute and sudden onset).

#### 4.7. *Srotas*

The degenerative changes in the spine occur in the bony and cartilaginous parts of the lumbosacral area, causing disruption in normal anatomy and the herniation of intervertebral discs into the spinal canal. This spinal or vertebral canal serves as a channel for the spinal cord and nerves, which exits the canal through the intervertebral foramen. After emerging, the nerve runs between the fibromuscular structures to the lower limbs. Thus, the *srotas* (channels) involved in *Gridhrasi* are both *Asthivaha* and *Mansavaha*.

#### 4.8. *Srotodusti*

The vitiated *vata* form *pakvashaya* affects the structures of the lumbosacral area by *Sanga srotodusti*, causing them to become weak over time (*Kshaya*). The affected intervertebral discs get herniated and protrude into the spinal canal, which resembles *Vimarggamana srotodusti*. Sometimes, certain tumors in spinal canals or nearby structures also cause sciatica symptoms by compressing the nerve. In ayurveda, *sira*, *dhamini*, and *snyu* are interchangeably used for each other. Thus, this tumor, or tumor-like lesions along the nerve, or *Sanyu*, can also be compared to *Siragranthi Srotodusti*.

### 5. MANAGEMENT

The first and foremost step in the management strategy of any disease in ayurveda is the *Nidana Parivarjanam* or the

elimination of causative factors. Grossly, we can divide the management plan of *Gridhrasi* or radicular low back pain (sciatica) into *Dravyabhoot* (pharmacological methods) and *Adravyabhoot chikitsa* (non-pharmacological methods).

#### 5.1. *Dravyabhoot* (Ayurveda pharmacological methods)

Ayurveda classifies the *Dravyabhoot* treatment methods into two types- *Shodhana* and *Shamana*. *Shodhana* involves eliminating the vitiated doshas by certain purificatory procedures called *Panchkarma*. The *shodhana* procedures also involve the pre-*shodhana* measures called *swedana* and *snehana*. Post-*Shodhana*, the *shamana* therapies are used where oral medications or regimes are planned for the rest of the duration of the therapy. In practice, the current well-known ayurveda management methods for *gridhrasi*, or radicular LBP, are *Swedana*, *Snehana*, *Basti*, *Agnikarma*, *Siravedhana*, and *Shamana* formulations.

#### 5.2. *Snehana* (Medicated oiling)

*Snehana* is a *purvakarma* (preceding procedure) to *panchakarma* in ayurveda. *Snehana*, by its *singdha* quality, pacifies vitiated *vata*. *Snehana* can be done internally by administration of *sneha dravyas* or preparations or externally in the form of *abyanga* or *katibasti*. In *charaka samhita*, *snehapan* has been described in which *ghrita* or other *sneha dravyas* are administered orally. Other 24 types of preparations are mentioned, used internally. *Abhyanga* is the procedure in which medicated oils are used externally for the massage of a particular area. Likewise, *Katibasti* is also a modification of the external *snehana* process in which oils are filled and retained over the lumbosacral area for a certain duration. These oils are warmed to get additional benefits from *usna* (warm) quality.<sup>24</sup>

#### 5.3. *Swedana* (Medicated hot fomentation)

*Swedana* is also a *Purvakarma* (preceding procedure) to *panchakarma*, where the goal is to apply *usna* quality to the target area (lumbosacral area in sciatica and LBP). *Usna* quality pacifies vitiated *vata* by countering the *sheeta* quality of *vata*. *Swedana* can be done all over the body (*sarwangswedana*) or only on the affected part (*ekangswedana*). Grossly, two types of *swedana* are classified in ayurveda: *Saagnisweda* and *niragnisweda*. In both types, various methods were described that can be selected as therapeutic measures to check for pain. *Upnah* is one of them in which hot *vatahara* (*vata* pacifying drugs) are tied to the affected part in the form of a bundle wrapped in a cloth. Together, *snehana* and *swedana* give excellent results in countering pain of musculoskeletal origin.<sup>25,26</sup>

#### 5.4. *Basti* (Medicated Enema)

It is one of the main *panchakarma* procedures and is said to be the best therapy for *vata* disorders. In this treatment, selected *vatahara* (*vata* pacifier *dravyas* or drugs) are used as an enema. This medicated enema works in two ways: by purifying the *pakvashaya* area and by absorbing *vata* pacifying drugs through rectal mucosa. Thus, *Basti* as a whole treats the main residing area of *vata*. For example, *Erandmuladi yapana basti* and *Mustadi yapana basti* have shown good results in studies for low back pain.<sup>27</sup>

### 5.5. Agnikarma (Therapeutic cautery)

It is a para-surgical procedure where direct or indirect cautery is done on the lumbosacral area after marking some pain points. Repeated Agnikarma procedures by *usna* and *ashu guna* have shown quick and better pain management results and improved quality of life.<sup>28</sup>

### 5.6. Raktamokshana or Siravedhana (Therapeutic bloodletting)

It is also a para-surgical procedure where therapeutic bloodletting relieves pain. It is helpful in inflammatory conditions or where inflammation is also associated with compression of the sciatic nerve. *Susruta* has instructed puncturing the vein 4 *angulas* above and below the knee joint for *gridhrasi* (sciatica). Classical ayurveda *Jaluka-karma* (leech therapy) and other methods like cupping are also used for blood-letting in sciatic and low back pain.<sup>29</sup>

### 5.7. Shamana Chikitsa (Treatment with oral formulations)

For *Shaman chikitsa* in radicular LBP or *gridhrasi*, various formulations that are to be taken orally are used. They can be from *ekal dravyas* (single herb) to *rasaushadhis* (Herbo-mineral-metallic preparations). *Ekal dravyas* include *rasna*, *nirgundi*, *vacha*, *ashwagandha*, etc., and combination formulations include *yograja guggulu*, *trayodashang guggulu*, *rasnasaptak kwath*, *brihat vata chinta mani rasa*, *ekangveer rasa* etc. many *ghrits*, like *indukant ghrita*, *panchitikta ghrita*, etc, are also used.

### 5.8. Adravyabhoot (Non-pharmacological methods)

#### 5.8.1. Yogasanas

Postural exercises in yoga science, like *Bhujaga asana*, *Salabha asana*, *pristasana*, *setubandhasana*, etc., improve pain by providing strength to the musculature of that area. These asanas create a back extension posture with good long-term improvement effects.<sup>30</sup>

#### 5.8.2. Marma Chikitsa

It is the most recent emerging method. *Marmas* are the points in Ayurveda that are known for their vitality.<sup>31</sup> These 107 *Marma* points in Ayurveda are instructed to be protected in any surgical or para-surgical procedure. *Marma* therapy is gaining popularity, and these vital *marma* points are used for

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therapeutic purposes by controlled pressure application.<sup>32</sup> Out of 107 *marma* points, 7 pair (14 points) are described on the back, in which 3 pairs (*nitamba*, *kukundara*, and *katikataruna*) are related to the lower back or lumbosacral region. These points carry great importance in preventive aspects, but for therapeutic aspects in sciatica, a *marma* point in the lower limbs called *Gulpha* has been used for manipulation.<sup>33</sup> This point is in the bilateral ankle joint and is posterior-inferior to the medial malleolus. In this therapy, controlled pressure is applied in a pulsatile way by breathing. This point has been said to relieve pain and other radicular symptoms.

## 6. CONCLUSION

Radicular LBP, or sciatica (*Gridhrasi*), is a prominent discomfort aetiology and is becoming more widespread. Contemporary painkillers are just a temporary solution to the complaints, and patients very frequently grumble about the re-emergence of pain. Surgical options are costly and inaccessible to the large, poor population, and long-term use of painkillers like NSAIDS can cause other adverse effects. So, there is a need for the establishment of alternative medical procedure to treat this problem. Ayurveda provides a holistic approach and encompasses various pharmacological and non-pharmacological methods to manage pain and associated disability. *Marma* therapy can become a long-term, cost-effective method to tackle this growing problem. Thus, public settings must be equipped rigorously with Ayurveda therapy units for radicular low back pain.

## 7. SCOPE OF THE STUDY

Large-scale randomized controlled interventional trials, and research should be done to evaluate the effect and limitations of Ayurveda therapies (ancient and emerging) for radicular low back pain and develop standard management protocols.

## 8. AUTHORS CONTRIBUTION STATEMENT

Piyush Verma framed the concept and idea, Piyush Verma and Shiwangi Kanaujia wrote the manuscript, Piyush Verma and Dr. Sakshi Surve collected the data, and Ashutosh Kumar Pathak guided the preparation of the manuscript and revised the manuscript.

## 9. CONFLICT OF INTEREST

Conflict of interest declared none.

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