ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

`International Journal of Ayurveda and Pharma Research

Case Study

AYURVEDIC MANAGEMENT OF SPINAL EPIDURAL LIPOMATOSIS

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Article info

Article History:
Received: 14-06-2025
Accepted: 12-07-2025
Published: 15-08-2025

KEYWORDS:
Spinal Epidural Lipomatosis, *Vyadhi ghataka, Srotovaigunya, Avarana Vata, Pakwashaya gata vata, Gridrasi,* Modified Oswestry LBP Disability Index, Swiss Spinal Stenosis scoring, Visual Analog Scale.

ABSTRACT

Spinal Epidural Lipomatosis (SEL) is a rare cause of Lumbar pain and Spinal canal stenosis due to an excessive amount of epidural fat in the Spinal canal. Conservative treatments generally aimed to decrease the thickness of adipose tissue in the epidural space, but the majority of patients tend to undergo surgical decompression to relieve neurological symptoms. The present study was aimed at treating a 23-year-old male patient admitted to the Government Ayurveda college, Thiruvananthapuram, who was diagnosed as Lumbar spinal canal stenosis due to Spinal Epidural Lipomatosis through MRI screening. While considering the etiopathogenesis of this disease, it cannot be correlated to a specific *Vyadhi* as per Ayurvedic classics. However, a line of treatment can be adopted by considering the *Vyadhi ghatakas,* such as *Srotovaigunya, Avarana Vata,* as well as diseases like *Gridrasi* and *Pakwashaya gata vata. Pachana, Deepana, Snehana, Swedana,* and *Sodhana* were the treatment protocols adopted in this case. Here, these treatment protocols were found effective in treating Spinal epidural lipomatosis. Along with a review MRI screening, Modified Oswestry LBP Disability index (ODI), Swiss Spinal Stenosis scoring (SSS), and Visual Analogue Scale (VAS) were also used for assessment. Before treatment, ODI was 40% and reduced to 24% after treatment, and after a follow-up 2 months, it was reduced to 15%. SSS before treatment was 28 and reduced to 18 after treatment, and on follow-up reduced to 9. VAS score at the time admission was 10/10 and subsequently reduced to 4/10; on follow-up, it was 2/10.

INTRODUCTION

Spinal epidural lipomatosis is defined by an excessive amount of epidural fat in the spinal canal, usually in the lumbosacral tract: a well-known cause of lumbar pain and spinal stenosis with a possible wide range of neurological symptoms.[1]

SEL can be asymptomatic in mild and moderate presentation and usually becomes symptomatic in moderate and severe cases.[1] Patients with symptomatic SEL can present with radiculopathy, myelopathy, claudication, cauda equina syndrome (CES) or paraplegia. These symptoms are likely caused by compression from excess adipose tissue in the epidural space, and the exact presentation depends on the location and degree of compression[2].

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https://doi.org/10.47070/ijapr.v13i7.3792

This condition has a distinct pathology from spinal stenosis associated with degeneration of the intervertebral discs, ligaments, and facet joints[3]. SEL can be classified into five main categories according to pathogenesis: Exogenous steroid use, Endogenous steroid hormonal disease, Obesity, Surgery-induced, and Idiopathic[2].

Exogenous steroid use is generally accepted as the most common cause of SEL, and it is regarded as the most significant risk factor for developing SEL[2].

Overproduction of Endogenous steroid is thought to play a similar role as the administration of exogenous steroid in the pathogenesis of SEL; it is thought that excess steroid hormone can lead to the enlargement of adipose tissue in the epidural space, causing nerve compression[2].

Among Non-Exogenous steroid-related disease, Obesity is thought to be the most common cause of SEL. High body mass index (BMI) and Obesity are thought to cause a chronic inflammatory condition, which may contribute to the overgrowth of adipose tissue in spinal canal. Obese SEL patients also showed

approximately 2.6-fold higher levels of inflammatory cytokines such as Tumour necrosis factor-α and interleukin-1β[2].

Spine surgery has been shown to increase adipose tissue accumulation in the epidural space. SEL may develop as a result of idiopathic disease. The definition of idiopathic is controversial. Some authors define idiopathic to suggest unknown origins, while others have used it to indicate disease caused by obesity. However, most authors refer to idiopathic as SEL in non-obese patients with unknown cause of origin[4].

The non-invasive diagnosis of SEL can be made with Magnetic Resonance Imaging (MRI) or Computed Tomography (CT) only[1].

Several treatment modalities exist for SEL and are dictated by the underlying cause of the disorder. These include weight reduction, cessation of steroid medications, treatment of underlying endocrine abnormalities, and surgical decompression. Conservative treatments generally aimed to decrease the thickness of adipose tissue in the epidural space, but the majority of patients tend to undergo surgical decompression to relieve neurological symptoms. Surgical decompression provides a statistically significant reduction in symptoms, but postoperative mortality is high, influenced primarily by the patient's preoperative comorbidities[2].

From an Ayurvedic perspective, after considering the etiopathogenesis, the condition can be taken as *Srotovaigunya* and *Srotodushti*, with clinical features resembling those of *Pakwashaya gata Vata, Avarana Vata,* and *Gridrasi.*

Srotovaigunya and *Srotodushti* are the key stages in disease pathogenesis. The area in *Srotas* (the body channels) susceptible to pathological changes is at the site of *Srotovaigunya.* It could be functional or structural. Due to specific *Nidana sevana* (etiological factor), *Srotas* get vitiated due to *Dosha dushya sammurchana* and *Srotodushti* happens in the form of *Atipravruthi, Sanga, Granthi* or *Vimargagamana*[5]. Here *Sroto dushti* takes the shape of *Sanga.* Hence the initial phases of *Chikitsa* should focus on correction of *Srotodushti*.

Ayurveda classics state that *Soola* (pain) *is* inherently linked with *Vata* vitiation, in this case, vitiation of *Apana* and *Vyana Vayu* was primarily observed. Thus, adopting treatments to pacify *Vata* is crucial. Specific treatment directives for *Pakwashaya gata Vata, Avarana Vata,* and *Gridrasi* should also be utilized. However, if there is coexisting *Ama* or *Kapha Dosha,* the first line of treatment should involve *Langhana* techniques such as *Pachana, Deepana,* and *Rookshana.*

For *Samavata vyadhis, Rooksha Swedana* is appropriate, while *Snigdha Swedana* is used for *Nirama vatavyadhis.* After proper *Snehana* and *Swedana* therapies, *Koshta gata doshas* are removed using *Mridu virechana* or *Anulomana,* as it has an important role in the management of disorders associated with *Pakwashaya gata vata kopa. Vasti* also has crucial role in the management of *Vatavyadhi*. In this case, the treatment modalities adopted were *Ama pachana, Agni deepana, Srotosodhana* and *Vatanulomana*.

Patient Information

23-year-old Male patient presented with complaints of Low back pain radiating to bilateral lower limb through posterior side of thighs up to calves and bilateral hip pain visited in OPD of Kayachikitsa, Government Ayurveda College, Thiruvananthapuram on 20/11/2023. He stated that bilateral hip pain had been present since 4 1/2 years and low back pain radiating to bilateral lower limb since 3 years. History revealed that after a work place accident in 2020 where he fell from a one-story building landed upon a wooden plank hitting his left groin and started experiencing severe low back pain associated with significant swelling and sensation of tearing of left leg from hip while walking, associated with electric shock like sensation in the left groin. He consulted an orthopaedician and MRI taken revealed bony oedema/contusion and was on bed rest for about 4 months. During which he gained body weight from 45 kg to 55 kg. Then he resumed work as driver but prolonged sitting while driving aggravated his pain. Exacerbation of pain led to discontinuation of driving job and started working in a resort as manager and during that period there was subsequent weight gain of about 69 kg within a year. Gradually he started experiencing low back pain radiating to left lower limb associated with morning stiffness which lasted for less than 30 minutes, however stiffness prolonged for hours in cold climates. He again consulted an orthopaedician and MRI taken revealed fat deposition in the spinal canal and advised surgery. As he was not willing, weight reduction was advised. After initial loss of about 5 kg, the pain reduced. But prolonged sitting, walking, standing and strenuous work, climbing stairs as a part of his job aggravated his pain. So he consulted Kayachikitsa OPD and got admitted. There was no associated weakness, bowel and bladder incontinence, sensory disturbances and No h/o oral steroid medications.

History of Past Illness

- H/o Congenital radioulnar synostosis.
- H/o Allergic Rhinitis since childhood.
- H/o Hyperuricemia- 1 year back.

Drug History

- Mometasone Aqueous nasal spray 50 mcg- (occasional use since 1 year)
- Azelastine HCL and Fluticasone propionate nasal spray (occasional use since1 year)

Family History

Nothing relevant

Personal History

Diet: Irregular time of intake of food for 4 years

Daily intake of meat/fish, Fermented rice gruel, fried snacks after meals.

Intake of heavy foods like Parotta, Biryani etc., often Late-night dinner and heavy foods.

- Bowel- Regular,1-2 times per day
- Appetite-Reduced, heartburn, bloating
- Micturition- Within normal limit, No incontinence
- Sleep-Sound, 5-6 hours
- Allergy- Dust and cold
- Addictions

  Alcohol- Occasionally since the age of 18

  H/O Intake of 1L of beer daily for a period of 1 year (1 year before). Stopped for 1 year

  Tea- 10-12 / day

Educational Status

- Diploma in engineering

Occupational History

- He worked as a Lift Technician for 6 months
- Worked in a welding workshop, also worked as a driver, later worked as a manager at a Resort

Psychosocial History

Lives with parents and a younger sister.

He was under considerable stress due to financial struggles, family conflicts and his illness added to the stress levels and emotional burden.

Socioeconomic History

Lower middle class

General Examination

- On general examination at the time of visit, vitals of the patient were normal. BMI was 26 kg/m^2- overweight.

Locomotor System Examination				
Joint	**Inspection**	**Palpation**	**Rom**	**Special test**
LS Spine	Mild swelling over lumbosacral region	L4-L5 Grade-1 tenderness	On flexion there is pain over the back of the leg. On Extension, mild pain over the low back On Lateral bending to the left- pain over the left hip	SLR at Right was positive at 60 degrees Bragard's test, FNST were also positive
Sacroiliac joint	Mild swelling	Grade-2 tenderness		Pump handle test, Gaenslen's test were positive,
Hip joint	No swelling	Grade-1 tenderness over right and Grade 2 tenderness over left hip	No pain on flexion. On extension, pain over the Sacroiliac region, Abduction and External rotation were also painful	FABER test Positive

Ayurvedic Clinical Assessment

Dasavidha Pareeksha	
Dooshyam	*Dhatu-Rasa, Raktam, Medas, Asthi, Majja* *Upadhatu- Snayu*
Desham	*Bhoomi-sadharanam* *Deham-Katee & adhakayam*
Balam	*Rogi-Madhyama* *Rogam-Madhyama*
Kalam	*Kshanadi-hemantha* *Vyadhi avastha-puranam*
Analam	*Madhyama*
Prakriti	*Pitta kapham*
Vaya	*Youvana*

Satwam	*Madhyama*
Sathmya	*Madhura rasa*
Aharam	*Jaranasakthi-Madhyama* *Abhyaavaaharana sakthi- Madhyama*

Samprapti Ghataka	
Dosha	*Vata pradhana tridosha*
Dhatu	*Rasam, Rakta, Medas, Asthi, Majja*
Upadhatu	*Snayu*
Agni	*Vishamagni*
Srotas	*Rasa, Raktam, Medas, Asthi*
Srothodushti	*Sangam*
Rogamargam	*Madhyama*
Udbhavasthanam	*Pakwashaya*
Vyaktasthanam	*Kati pradesam, Adhakaya*

Treatment protocol

Internal medicines	**External therapy**
1. *Gandharvahasthadi Kashaya* along with 1 pinch *Saindava* 90ml bd 6am, 6pm b/f 2. *Vaiswanara choorna*- 5 gm bd with luke warm water 1/2 an hour b/f 3. *Rasnerandadi kashaya*-90 ml bd b/f 4. *Shaddharana tablet*- 1-1-1 a/f 5. *Vyoshadi guggulu tablet 2-0-2* 6. *Guggulutiktakam ghrita* 25 ml bd before food for 7 days 7. *Anulomana* with *Gandharva eranda tailam* 40 ml in hot water 8. *Gandharvahasthadi Kashaya* along with 1 *pinch Saindava* 90ml bd 6am, 6pm b/f 9. *Dhanwantharam gulika* 1bd a/f	1. *Rooksha sweda* with *Kolakulathadi choorna* - 7 days 2. *Lepana*- with *Nagaradi lepa choornam* in *Dhanyamla* over low back region 3. *Sankara sweda* with *Kolakulathadi choorna* and *Dhanyamla* 7 Days 4. *Vaitarana vasthi* with *Sahacharadi tailam mezhupakam* 5. *Udwarthana* with *Triphala choorna* 6. *Abhyanga* and *Ushma sweda* with *chinchadi taila* 3 days 7. *Choorna Pinda Sweda* with *Kolakulathadi choorna* and *Murivenna Thalam- Rasnadi choorna* and *Ksheera bala tailam* – 7 Days 8. *Lekhana vasthi* with *Triphala kashayam, Yavanyadi kalka, Yava kshara, Sahacharadi tailam mezhupakam* 9. *Ksheera vasthi- Kashaya-Panchatikatam Kashaya Ghritam- Guggulutiktakam ghritam Tailam-Sahacharadi tailam* 10. *Shashtika Pinda Sweda*- with *Panchamla tailam* and *Thalam* with *nimbamruthadi eranda tailam* and *rasnadi churnam*

Advice on Discharge

1. *Dhanwantharam Kashaya* 90 ml bd b/f
2. *Sinduvara Eranda* capsule 1-0-1 with *Kashayam*
3. *Murivenna* - External Application.

RESULT AND DISCUSSION

Spinal epidural lipomatosis (SEL) is a relatively rare but well-known condition characterized by the overgrowth of epidural adipose tissue within the spinal canal[1]. Patients with symptomatic SEL can present with radiculopathy, myelopathy, claudication, cauda equina syndrome (CES), or paraplegia[2]. After considering the etiological factors and pathogenesis it can be taken as *Srotovaigunya* and *Srotodushti* and clinical features have similarities with *Pakwashaya gata Vata* and *Gridrasi.* Here, *Sroto dushti* takes the shape of *Sanga.* Mainly *Apana* and *Vyana Vayu* were vitiated due to *Srotovaigunya.* As there was associated *Kapha dushti* and *Ama* which was initially presented as *Agni mandyam, Anaha, Saruja sopha* in *Trika*, *Langana* in the form of *Deepana*, *Pachana* was adopted, and *Rooksha Sweda kriyas* were started and internally *Gandharvahasthadi kashayam* and *Vaiswanara choorna* were given. For *Soola nivarana* and *Pakwashayastha sama dosha nirharana, Vaitarana vasthi* was selected.

As the patient is overweight and high BMI is one of the reasons for SEL, for *Kapha medo vilayana, Udwartana* was done. Internally, *Vyoshadi guggulu* tablet was given which is *Kapha medohara* and *Amahara*. After attaining *Nirama avastha,* for *Dosha mridukarana* and for bringing *Doshas* from *Sakha* to *Koshta, Snigdha swedas* were administered, and for *Lekhana* of *Dosha* and *Sroto sodhana, Lekhana vasthi* was done*. Srotosodhana* and *Vata anulomana* is important in this case. So, for internal *Snehana, Guggulutiktakam ghrita* was given, which is *Srotosodhana* and *Lekhana.* Then for *Vata Anulomana Gandharva eranda taila* was given. *Vasti* also has a crucial role in the management of *Vata vyadhi.* So *Ksheera vasthi* was administered. And lastly as *Vatapitta samana, Shashtika pinda sweda* was performed*.*

After discharge, *Dhanwanthara Kashaya* and *Sinduvara eranda tailam* capsule was given to maintain *Dhatu poshana* and as *Vata anulomana* respectively.

Modified Oswestry LBP Disability index (ODI) and Swiss spinal stenosis scoring (SSS) was used for assessment. Before treatment, ODI was 40% and reduced to 24% after treatment, and after a follow up of 2 months, was reduced to 15%. SSS before treatment was 28 and reduced to 18 after treatment, and on follow up, reduced to 9. VAS score at the time of admission was 10/10 and reduced to 4/10 and on follow-up, 1/10. A review MRI was also taken, which doesn't show any evidence of epidural fat proliferation and changes in the Spinal canal AP diameters before and after treatment, as shown in the table below.

Spinal canal AP diameter	**L1**	**L2**	**L3**	**L4**	**L5**
Before treatment	10.4mm	10.2mm	9.2mm	9.3mm	7.6mm
After treatment	13.5mm	11.7mm	13mm	11.8mm	12.8mm

CONCLUSION

The mentioned treatment protocol showed significant results in the management of Spinal epidural lipomatosis.

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Cite this article as:
Cashmi Jeswind, Asha Karunakaran K, Suneeshmon M S. Ayurvedic Management of Spinal Epidural Lipomatosis. International Journal of Ayurveda and Pharma Research. 2025;13(7):23-27.
https://doi.org/10.47070/ijapr.v13i7.3792
Source of support: Nil, Conflict of interest: None Declared

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