

## Case Report

# Clinical profile of a case of lumbar sacralisation- a naturopathy and physiotherapy management: case report

Vijayaraghavan N.<sup>1\*</sup>, Niveditha P.<sup>2</sup>, Mohana Priya<sup>2</sup>, Renya K. R.<sup>2</sup>

<sup>1</sup>Department of Physiotherapy and Emergency Medicine, JSS Medical College of Naturopathy and Yogic sciences, Coimbatore, Tamil Nadu, India

<sup>2</sup>Department of Naturopathy & Yoga, JSS Institute of Naturopathy and Yogic Sciences, Coimbatore, Tamil Nadu, India

**Received:** 01 February 2017

**Accepted:** 24 March 2017

### \*Correspondence:

Dr. Vijayaraghavan N,

E-mail: [raghavanbnys@gmail.com](mailto:raghavanbnys@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

Lumbar sacralisation is a congenital anomaly, in which the transverse process of the last lumbar vertebrae (L5) fuses to the sacrum on one side (or) both (or) to ilium (or) both. They occur during the period of growth, grow away from spinal column and rarely responsible for mechanical symptoms and varies postural defect. This paper reports a rare presentation of deeper radiological structures of spine with mechanical instability, postural defect, mild to moderate pain in back and radiating towards left leg. Patient was 23 years old female and misdiagnosed as mechanical back pain and disc prolapsed. We assessed her clinically and radiologically and diagnosis was established based on X-rays and MRI of Spine. She was treated with integrated approach [naturopathy& physiotherapy] and patients recover uneventfully.

**Keywords:** Sacralization, Naturopathy, Physiotherapy, Postural defect

## INTRODUCTION

In modern life backache is common complaint. Low back pain (LBP) is quite a common ailment affecting about 80% of the population in their life time.<sup>1</sup> One of the causes is sacralisation of lumbar vertebrae. Lumbosacral transitional vertebrae (LSTV) occur as result of congenital anomaly in the segmentation of the lumbosacral spine. Sacralization means overlapping of sacral elements by the incorporation of fifth lumbar vertebrae with sacrum may be unilateral or bilateral producing partial or complete sacralisation. Incomplete sacralisation shows a well-defined joint line between the process and sacrum. Bertolotti first observed the LSTV and stated that these are abnormal vertebrae may produce low back pain due to arthritic changes which occur at the site of articulation.<sup>2</sup>

We report a case of sacralisation of lumbar [L4-L5] with clinical symptoms of postural defect, mild to moderate pain associated with radiating towards the left leg. It was initially misdiagnosed as disc prolapsed. Mechanical postural defect during walking, sitting and pain in the back are treated with integrated modalities like hydrotherapy and physiotherapy. We assessed with SLR, Slump test and MRI of Spine which was confirm diagnosis.

## CASE REPORT

A 23-year-old female patient was referred to the hospital with chief complaints of postural varies and pain in the back, radiating towards the left leg for 1 years. She did not report any trauma or medical problem. Pain was radiating type and also associated with long sitting postural varies.

There was restricted in the range of movements of the spinal column, but she has pain with over 60 degree flexion of hip and legs. Previous radiographic X-rays shows sacralisation of lumbar vertebrae. She was treated

with conservative management for almost 3-6 months. She underwent treatment of conservative NSAID's for almost 3 months but didn't show any improvement.

**Table 1: Naturopathy treatment protocol for sacralization.**

Day	Naturopathy view	Day	Naturopathy view
1	-----	13	-----
2	CHB –10 Mins	14	Oil massage , IRR to lower back& legs
3	Oil massage , IRR to lower back & legs	15	-----
4	NUWM -10-15 Min	16	NSB-10Min
5	-----	17	-----
6	NSB – 10 mins	18	Oil massage , IRR to lower back& legs
7	Oil massage , IRR to lower back& legs	19	-----
8	NSB –10mins	20	-----
9	-----	21	Oil massage , IRR to lower back& legs
10	NUWM-20Min	22	-----
11	-----	23	-----
12	Underwater massage	24	-----

CHB-Cold Hip Bath, NSB-Neutral Spinal Bath, IRR-Infrared rays; NUWM-Neutral under Water Massage.

**Table 2: Physiotherapy treatment protocol for sacralization.**

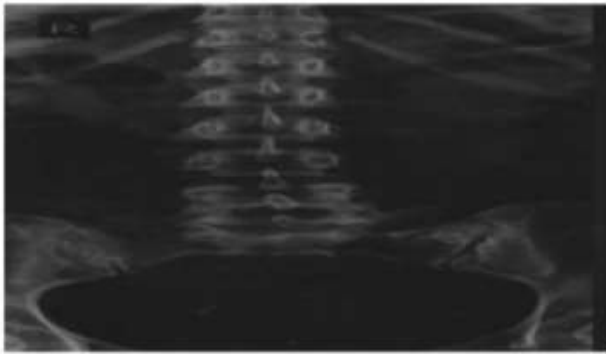
Day	Physiotherapy view	Day	Physiotherapy view
1.	IFT – 15 mins ST exercise – 15-20 mins	13.	IFT – D (10 mins) Moist heat therapy –10 mins
2.	IFT – Duration-10 mins STS exercise – Duration- 20 mins	14.	IFT – Duration-10 mins
3.	IFT – Duration- 10 mins STS exercise – Duration-20 mins	15.	IFT – Duration- 10 mins, MHT– Duration- 10 mins
4.	IFT – Duration-10 mins STS exercise –Duration-20 mins	16.	-----
5.	IFT – Duration-10 mins STS exercise –Duration-20 mins	17.	-----
6.	IFT – Duration-10 mins STS exercise – Duration-20 mins	18.	STS exercise – Duration- 20 mins
7.	IFT – Duration-10 mins STS exercise – Duration-20 mins	19.	STS exercise – Duration- 20 mins
8.	IFT – Duration-10 mins STS exercise – Duration-20 mins	20.	STS exercise – Duration -20 mins
9.	-----	21.	IFT – Duration-10 mins
10.	IFT – Duration-10 mins STS exercise – Duration-20 mins	22.	STS exercise – Duration-20 mins
11.	IFT – Duration -10 mins STS exercise – Duration-20 mins	23.	STS exercise – Duration -20 mins
12.	IFT – Duration-10 mins STS exercise –Duration-20 mins	24.	STS exercise – Duration -20 mins

IFT-Interferential Therapy, ST-Sustained Stretching, MHT-Moist Heat Therapy

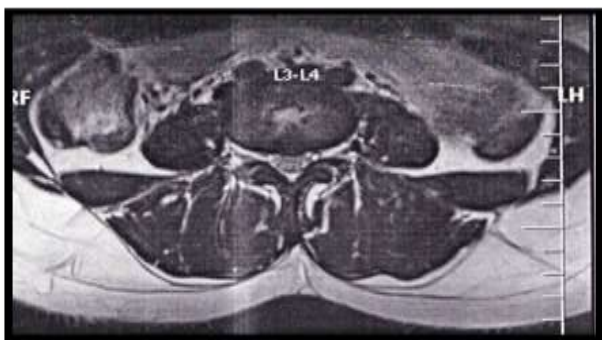
Patient was admitted to our hospital for chronic back pain with postural instability in spine. On physical examination we could analysed that walking pattern with

radiating towards left leg and limbing in right leg because of pain in the back. Clinical test for lumbar vertebrae and hip were normal except with SLR of 60°, Slump test

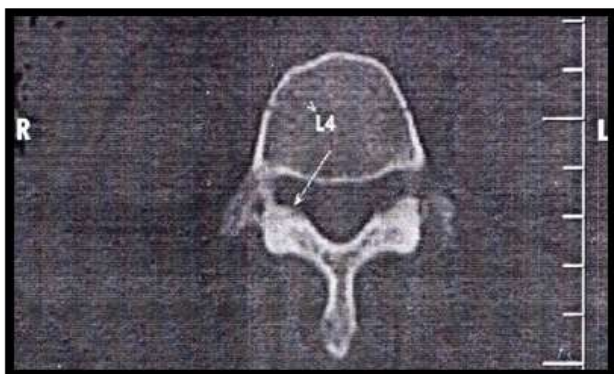
[Flexion of spine with 35°]. Radiographic of x-rays shows there is sacralisation of L<sub>4</sub>-L<sub>5</sub>, with sacral deformities as shown in Figure 1. MRI study of lumbo-sacral spine shows, there is sacralisation of L<sub>5</sub> vertebrae, L<sub>3</sub>-L<sub>4</sub> level-disc dissection, posterior central disc protrusion causing mild narrowing of spinal canal and crowding of cauda equine nerve roots and L4-5 mild diffuse disc prolapsed seen on thecal sac. Mild right facet arthrosis noted as in Figure 2. Reporting was done as complete sacralisation of L<sub>5</sub> vertebrae by radiologist.



**Figure 1: X-ray of spine shows sacralisation of L4-L5, with sacral deformities.**



**Figure 2: Sagittal MRI scan shows L3-4 disc dissection, posterior central disc protrusion causing mild narrowing spinal canal and crowding of the cauda equine nerve roots.**



**Figure 3: Sagittal whole spine screening shows at L4-5 mild diffuse posterior and bilateral posterolateral disc prolapsed on the thecal sac.**

We planned to do integration of hydrotherapy and physiotherapy for minimal days of 10-12 days with alternate treatment protocol. Radiating type of pain and difficulty in walking, lying postures was not normal. A sudden range of movements was seen on during stretching of gluteal region and raising the both legs beyond 60 degrees. An abnormal movement was seen in the both legs while during the physiotherapy i.e. stretching with 3-4 repetition of movements. We decided to treat with integratively with hydrotherapy and physiotherapy for minimum of 15 days with follow ups of 10 days with questionnaire and clinical tests. The clinical test of pattern of walking and pain scale revealed that the spinal column was intact with pain which is a feature consistent with pain. Patient has improved significantly after stretching and hydro treatments like Water massage, and at last follow up 2 months; the patient was asymptomatic and involved in daily activities with full range of movements as shown in Table 1 and 2.

## DISCUSSION

The vertebral column not only functions as a support to the body, it also acts as a pathway for the spinal cord. Therefore for the spinal cord to work efficiently it is mandatory that vertebral column follows a normal pathway of development. Development of the spine occurs through a number of complex steps which involve the genes, signalling pathways and many metabolic processes. During the formation of vertebral column, in fourth week of intrauterine life the sclerotome part of somites migrate around the notochord and the neural tube and undergo a process called resegmentation.<sup>3</sup> Any defect in such a process can lead to vertebral anomalies like LSTV causing neurological and vascular deficits. Complete sacralisation shows complete bony union between L<sub>5</sub> and S1. Incomplete sacralisation shows a well-defined joint line between L<sub>5</sub> and S1.<sup>4</sup> The improper formation and union of somites can cause vertebral abnormalities, including block vertebrae, cleft vertebrae and unilateral and bilateral hemivertebrae.<sup>5</sup> Various studies have been done to find out the causes, incidence and clinical features of sacralisation of lumbar vertebrae and found 6.2% to 20.8% incidence of scarlization.<sup>6,7</sup> The sacralisation may present as back pain, disc degeneration, L4/L5 disc prolapsed, lumbar scoliosis and lumbar extradural defects or mostly asymptomatic.<sup>8</sup> In sacralisation segmentation, it was observed that the lumbo sacral intervertebral disc is significantly narrowed.<sup>9,10</sup>

Kim et al established relation between sacralisation and the degree of slippage in spondylolytic spondylolthesis.<sup>11</sup> There are reports of surgical being performed at the wrong lumbar level due to sacralisation. Castellvi et al suggested that sacralisation can cause abnormal torque movements which may result in disc denegation.<sup>12</sup> Complications of sacralisation of 5<sup>th</sup> lumbar vertebrae causes pain are actual pressure on nerves or nerve trunks, ligamnetous strain around the sacralisation, compression

of soft tissues between bony joints, by an actual arthritis if a joint is present by a bursitis if a bursa is present. During parturition, pelvis fails to expand in sacralisation.

In a study by Mehemet et al, in patients to determine the relationship between sacralisation and low back pain, it was noted that 21.2% patients showed sacralisation, whereas in individuals without low back pain, sacralisation was observed in 16.8%. Various studies are being conducted worldwide to determine the association between sacralisation of lumbar vertebrae with low back ache and many other clinical conditions.

Diagnosis is made by a combination of Clinical signs, and radiographs and MRI. But, in this case, an accurate diagnosis was approached through MRI and Clinical signs. MRI showed sacralisation of L5 vertebrae. Figure 1, 2 and 3. To rule out criteria for diagnosis, radiological diagnosis needs to be evaluated. Passive stretching and Water Massage is treatment of choice for sacralisation, which can perform alternatively for 15-20 min with 3-6 repetition. Advanced stabilization exercise in this case can be attributed due to muscular spasm and pain just beneath of gluteal region, so whenever spasm and weakness of muscle over back region patient experiences difficulty in walking and moderate pain.

In conclusion, sacralisation of lumbosacral of spine with mechanical symptoms is a rare entity, which can be successfully managed with integrated approach (or) Indian system of medicine like naturopathy (therapeutically water massage) and physiotherapy (alternate stretching of spine) with good clinical outcomes and prognosis.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not Required*

## REFERENCES

1. Dullerud R. Diagnostic imaging in lumbago and sciatica. Ugeskr Laeger 1999;161(38):5299-303.
2. Bertolotti M. Contributo alla consociazione di differenziazione regionale dei rachide conspical eriguarelo all assimilarly. Radiol med. 1917;4:113-44.
3. Deepa TK, Martin KJ. A study of lumbarisation of first sacral vertebra among the south Indians. Int J Med Res Health Sci. 2014;3(1):1-4.
4. Karan BK, Manisha BR. Sacralization of lumbar vertebrae. Indian J Basic Applied Med Res. 2013;2(6):510-4.
5. Schmorl G, Junghans H. The human spine in health and disease (2nd American Edition) Edited and translated by Basemann EF. New York: Grune & Stratton; 1971: 186-198.
6. Khairnar KB, Rajale MB. Sacralisation of lumbar vertebrae. Indian J Basic Applied Med Res. 2013;6(2):510-4.
7. Savage C. Lumbosacral transitional vertebrae: Classification of variation and association with low back pain. A thesis presented to the faculty of the graduate school University of Missouri-columbia, 2005.
8. Standing S (Ed). Gray's anatomy. 39th edition. Elsevier Churchill Livingstone; 2005: 742-744.
9. Tini PG, Weiser C, Zinn WM. The transitional vertebrae of the lumbosacral spine: its radiological classification, incidence, prevalence and clinical significance. Rheumatol Rehabil. 1977;16(3):180-5
10. Ebraheim NA, Miller RM, Xu R, Yeasting RA. The location of the intervertebral lumbar disc on the posterior aspect of the spine. Surg Neurol. 1997;48(3):232-6.
11. Kim NH, Suk KS. The role of transitional vertebrae in spondylosis and spondylolytic spondylolithesis. Bull Hosp Jt Dis. 1997;56(3):161-6.
12. Castellvi AE, Goldstein LA, Chan DPK. Lumbosacral transitional vertebrae and their relationship with lumbar extradural defects. Spine. 1983;9(5):493-5.

**Cite this article as:** Vijayaraghavan N, Niveditha P, Priya M, Renya KR. Clinical profile of a case of lumbar sacralisation- a naturopathy and physiotherapy management: case report. Int J Res Orthop 2017;3:639-42.