

A Case of Spinal Canal Stenosis with Sacroiliac Dysfunction:-Role of Physiotherapy Affiliation

Sayali Darmode¹, Payal Toshniwal², Nabeela Fatema², Dr. Satyam Bhodaji*

1. BPT, MGM Institute of Physiotherapy, Aurangabad
sayalidarmode@gmail.com

2. BPT, MGM School of Physiotherapy, Aurangabad
toshniwalpayalm@gmail.com
shaikhnabeelapt@gmail.com

*Corresponding Author.

Dr. Satyam Bhodaji.

Assistant Professor, HOD Department of Community Physiotherapy, MGM School of Physiotherapy, Aurangabad,
Maharashtra.

Research2drsatyam@gmail.com

Abstract: - Spinal stenosis is defined as the narrowing of the spinal canal, lateral recesses, or intervertebral foramina, which may cause bone or soft tissue to compress nerve root. Spinal Stenosis is most often attributed to degenerative changes. Sacroiliac joint dysfunction is the common term used to describe the joint pain related to disorientation of the joint structures. The main aim of this study is to reduce the pain and increase the strength of cervical, lumbar, sacral region, and shoulder joint. In this case study we used outcome measures like Numerical Pain Rating Scale (NPRS) for pain and Swiss Spinal Stenosis Score for severity of the disease and physical function. In Intervention M2T blade was used for soft tissue mobilization followed by dynamic spinal McKenzie mobilization in extension position with other conventional modalities. In Conclusion present case study report M2T blade mobilization with spinal McKenzie mobilization showed significant improvement in reducing pain and improving Quality of life.

Keywords: - Spinal Canal Stenosis, Sacroiliac joint dysfunction, M2T blade.

Introduction:-

Spinal stenosis is defined as the narrowing of the spinal canal, lateral recesses, or intervertebral foramina, which may cause bone or soft tissue to compress nerve root.⁽¹⁾ Mostly it's a common degenerative counterpart. Primary lumbar spinal stenosis (LSS) is congenital in origin with short pedicles predisposing patients to central canal narrowing.^(2,3) The clinical syndrome associated with LSS is commonly neurogenic claudication, which often presents as lower back and extremity pain, numbness, and tingling.⁽⁴⁾ Reduced in sagittal diameter of the cervical canal is the main factor of the primary degenerative process in cervical spinal stenosis (CSS). The clinical course is mainly insidious and progressive. It frequently begins with stiffness and axial pain in the neck, progressing with pain and strength loss in the arms, numbness in the hands, loss of dexterity and sensation, gait imbalance, weakness and stiffness in the legs and rarely, sphincter control loss and urinary incontinence over time.⁽⁵⁾ Sacroiliac joint (SIJ) dysfunction is a common origin of low back pain.⁽⁶⁾ The location of pain upon presentation can be unilateral or bilateral but is most frequently midline.⁽⁷⁾ Females are more commonly present with SIJ dysfunction than males.⁽⁸⁾ SIJ pain can be associated with most of the inflammatory conditions to include osteoarthritis, inflammatory arthritis, ankylosing spondylitis, infectious and post-traumatic arthritis. Similarly, mechanical faults at the pubic symphysis or SIJ can cause pelvic asymmetry or joint instability.⁽⁹⁾ SIJ stiffness, joint hyper mobility, and insufficient pelvic girdle stability causes faulty load transfer to the spine or lower extremity and increased shear forces through the SIJ.⁽¹⁰⁾

Case Report

45 yrs old female suffering from back pain since 10 yrs, had complains of inability to do daily activity effectively. In October 2020 during the house work she experienced radiating pain and numbness to bilateral upper and lower extremity. Patient visited to emergency OPD where medications were prescribed. Not much relief was achieved. She was then recommended for physiotherapy. Similar history of pain was noted in her mother. She also gave associated complains of obesity and fatigue. On examination postural assessment revealed forward head, protruded abdomen and protracted shoulders. Spinal deformity was also noted. Grade 2 spasm was present over anterior back region. Cervical, lumbar, hip and shoulder ranges were measured by the universal goniometer that was incomplete and painful. On muscle strength is evaluated by manual muscle testing, according to MRC grading all the muscles of cervical, lumbar, hip and shoulder belongs to Grade 3 (pre - treatment).

Investigations MRI relived C5 - C6, L4 - L5 disc bulge with peri - osteophytes causing mild stenosis. Special tests that showed positive signs were SLUMP test, FABER test, Thomas test, Gillets test. SWISS spinal stenosis questionnaire was taken for severity of symptoms and physical function.⁽¹¹⁾

Interventions: - Based on the physical evaluation, physical therapy treatment was designed to reduce pain and spasm, improve posture, increase cervical, lumbar, shoulder, and hip range of motion and strength for better Quality of life. Patient education and ergonomic advice were given at the end of every session.

On the first day M2T blade soft tissue mobilization and Cryotherapy was given. Followed static Hamstring, static quadriceps, static back was done .Spinal McKenzie mobilization was done in prone followed by mobilization in dynamic spinal extension position. SI joint mobilization was also performed.

The above treatment protocol was followed for 3 days, at the fourth day all free joint exercises, strengthening exercises of upper limb, lower limb and back was advised. Theraband exercises were advised with least resistance. Same protocol was followed for 10 days.

After which alternate days treatment was carried out, in which M2T blade soft tissue mobilization was given along with other exercises and TENS for pain relief.

Prognosis: - On Numerical Pain Rating Scale (NPRS), pain had reduced markedly from 9 to 4 on NPRS on the fourth day of physiotherapy treatment .ROM increased with increased in muscle strength. Radiating pain and numbness on activity was reduced. In the treatment protocol of 4th day to 14th day, the pain gradually decrease by 2 more points I.e. 2 on NPRS and significant range and strength improved. Post - treatment muscle strength of all the muscles of cervical, lumbar, hip and shoulder was grade 4 according to MRC grading system. According to SWISS spinal stenosis score questionnaire the severity and physical functional of the patient pretreatment was 37 and post treatment was 19 that shows decreased in the severity of symptoms and improvement in physical functioning.

		Pre- treatment		Post treatment	
Cervical	Flexion	50		60	
	Extension	40		50	
	Lateral flexion	10		25	
	Left Lateral flexion	15		25	
Lumbar	Flexion	40		50	
	Extension	10		15	
	Right Lateral rotation	10		20	
	Left Lateral rotation	15		20	
		Pre- treatment		Post treatment	
		Right	Left	Right	Left
Shoulder	Flexion	170	160	180	180
	Extension	70	80	80	80
	Abduction	180	180	180	180
	Medial rotation	70	80	80	80
	Lateral rotation	80	80	80	80

Figure1 Pre and Post ROM Values

Discussion: - This case report represents physical management of a patient with spinal canal stenosis along with sacroiliac joint dysfunction. The physical impairments' comprised of pain, decreased ROM, decreased strength and decreased functional ability. Significant improvement was seen in patient by therapy which showed decreased pain intensity score on numerical pain rating scale.

Recent study shows that M2T blade soft tissue mobilization is more effective for soft tissue mobilization .One of the study carried out on comparative effect of foam roller and M2T blade on hamstring flexibility in elderly population. Study showed that M2T blade treatment is more effective than foam roller technique.⁽¹²⁾ Instrument assisted soft tissue mobilization(IASTM) is used to remove scar tissue that formed in soft tissues and assist in the healing process by activation fibroblast ⁽¹³⁾.Treatment with chronic low back pain with TENS showed a substantial decrease in pain .The use of TENS may lead to less use of pain medications and should be included

in the armamentarium for chronic low back pain care.⁽¹⁴⁾ One of the research reviewed McKenzie exercise group is more effective than stabilization exercise in reducing pain and functional disability with low back pain patients.⁽¹⁵⁾ One of the study compared McKenzie method to manual therapy for treating chronic low back pain and he found positive result in case McKenzie method was successful in improving the pain level and disability level as compare to manual therapy.⁽¹⁶⁾

Conclusion

The present study examined that M2T blade followed by McKenzie exercise are very effective in reducing pain in patient with spinal canal stenosis along with SI joint dysfunction .

Informed consent

Informed consent of patient was taken.

Acknowledgement

We thank the participant who contributed in the study.

Funding

This study has not received any external funding.

Author Contributions

SD, PT, NF, SB conceptualized the case SB assisted in the designing and implication of the treatment SD, PT, NF, SB assisted documenting the case SB wrote the case report.

Conflict of Interest

The authors declare that there are no conflicts of interest.

Data and materials availability

All data associated with this study are present in the paper.

References:-

1. Andaloro, Alicia MS, PA-C Lumbar spinal stenosis, Journal of the American Academy of Physician Assistants: August 2019 - Volume 32 - Issue 8 - p 49-50 doi: 10.1097/01.JAA.0000569788.21941.ca
2. Cansever T, Civelek E, Sencer A, et al. Intermittent priapism in degenerative lumbar spinal stenosis: case report. Turk Neurosurg 2007;17:260-3
3. Singh K, Samartzis D, Vaccaro AR, et al. Congenital lumbar spinal stenosis: a prospective, control-matched, cohort radiographic analysis. Spine J 2005;5:615-22.
4. Katz JN, Dalgas M, Stucki G, et al. Degenerative lumbar spinal stenosis. Diagnostic value of the history and physical examination. Arthritis Rheum 1995;38:1236-41.
5. Chiles BW 3rd, Leonard MA, Choudhri HF et al. Cervical spondylotic myelopathy: Patterns of neurological deficit and recovery after anterior cervical decompression. Neurosurgery. 1999;44:762-9.
6. Laslett M: Evidence-based diagnosis and treatment of the painful sacroiliac joint . J ManManip Ther. 2008, 16:142-152. 10.1179/jmt.2008.16.3.142.
7. Fortin JD, Dwyer AP, West S, Pier J: Sacroiliac joint: pain referral maps upon applying a new injection/arthrography technique. Part I: asymptomatic volunteers. Spine. 1994, 19:1475-1482.
8. Sizer PS Jr, Phelps V, Thompsen K: Disorders of the sacroiliac joint. Pain Pract. 2002, 2:17-34.10.1016/j.spinee.2005.02.022.
9. Brolinson PG, Kozar AJ, Cibor G: Sacroiliac joint dysfunction in athletes. Curr Sports Med Rep. 2003, 2:47-56.

10. Vleeming A et al. The sacroiliac joint:an overview of its anatomy, function and potential clinical implications. J Anat. 2012,221:537-567. 10.1111/j.1469-7580.2012.01564.x
11. Cristin M et al. Internal Construct Validity of the Swiss Spinal Stenosis Questionnaire Rasch Analysis of a Disease-Specific Outcome Measure for Lumbar Spinal Stenosis. February 2011Spine 36(23):1969-76 DOI:10.1097/BRS.0b013e3181fc9daf
12. Pathania t, muragod ar. Comparative effect of foam roller and m2t blade on hamstring flexibility in elderly population: a randomized control trial. Indian j health sci biomed res 2019;12:160-5
13. Kim j et al.Therapeutic effectiveness of instrument-assisted soft tissue mobilization for soft tissue injury: mechanisms and practical application <https://doi.org/10.12965/jer.1732824.412>
14. Jauregui JJ, Cherian JJ, Gwam CU et al. A Meta-Analysis of Transcutaneous Electrical Nerve Stimulation for Chronic Low Back Pain. Surg Technol Int. 2016 Apr;28:296-302. PMID: 27042787.
15. Alhakami, Anas Mohammed et al. “Effects of McKenzie and stabilization exercises in reducing pain intensity and functional disability in individuals with nonspecific chronic low back pain: a systematic review.” Journal of physical therapy science vol. 31,7 (2019): 590-597. doi:10.1589/jpts.31.590.
16. Namnaqani FI, et al. The effectiveness of McKenzie method compared to manual therapy for treating chronic low back pain: a systematic review. J Musculoskelet Neuronal Interact. 2019 Dec 1;19(4):492-499. PMID: 31789300; PMCID: PMC6944795.