

Manual Therapy Treatment for Lumbar Stenosis and Accompanying Radiating Pain: A Case Report

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Introduction

- There is a lifetime prevalence of low back pain of 84%.
- Conservative treatment including various forms of manual physical therapy management have been shown to be effective in the management of lumbar pain through improving pain pressure thresholds, neural analgesic mechanisms, and through physical changes to address weakness, hypomobility, or improper physiological motions.
- It is suggested that conservative management of lumbar radiating pain should be attempted prior to surgical management in the absence of worsening neurological signs or cauda equina syndrome.
- A recent systematic review of literature also demonstrated that there is evidence for the use of mobilization and soft-tissue manual therapy techniques combined with exercise for both short and long term pain and disability management

Objectives

- Collect evaluation data regarding strength, range of motion, pain, and associated disability level of a patient with stenosis related low back and radiating pain at initial evaluation and throughout a period of physical therapy treatment.
- Utilize manual therapy techniques including Maitland flexion and rotational mobilization and soft tissue manipulation.
- Report on the appropriateness and effectiveness of manual therapy interventions within the scope of this case report.

Patient History and Examination

- Patient was a 53 year old female who presented with severe (10/10) left lumbar spine and left lower extremity radiating pain that began after being in a motor vehicle accident approximately 3 weeks prior to beginning physical therapy.
- Activities that were limited included: prolonged sitting and standing, ambulation of community distances, transfers, lifting or carrying objects required for household activities, sleeping through the night, work and recreational activities secondary to severe pain.
- Physical therapy evaluation indicated that the patient was likely to have intermittent nerve root compression with neurogenic claudication as a result of spinal stenosis.
 - Diagnostic imaging confirmed that there was stenosis of the left L4-L5 intervertebral foramen.
- Patient displayed significant range of motion limitations throughout the lumbar spine as well as diminished strength of the lumbopelvic stabilizers

Methods

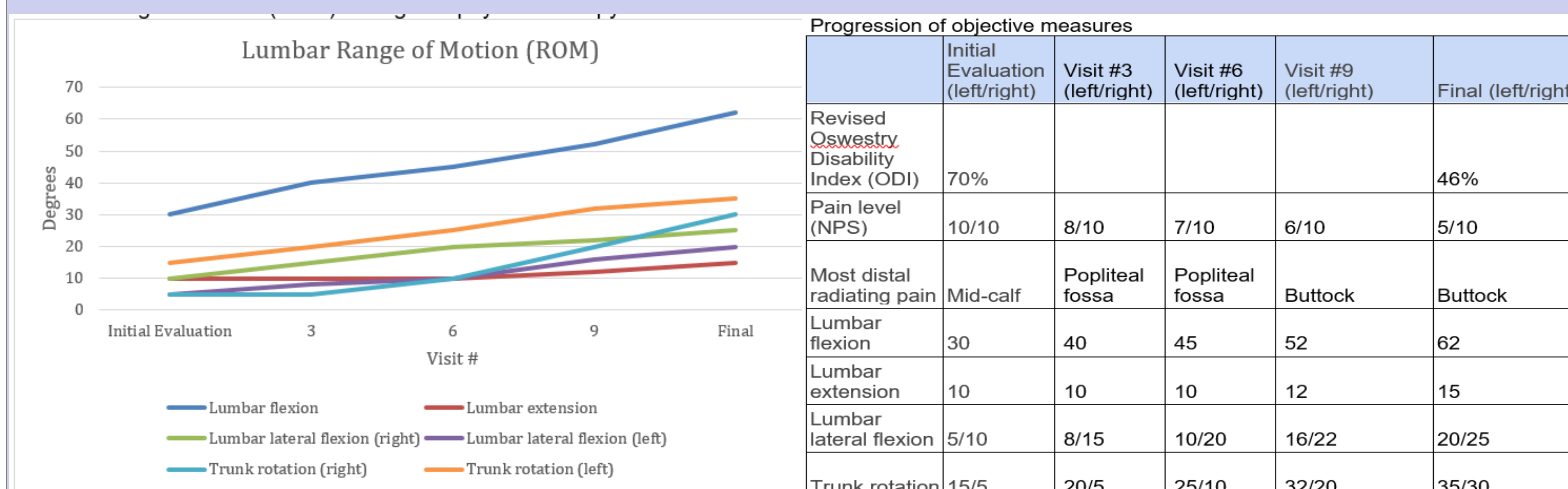
- The patient received physical therapy 12 sessions over approximately 5 weeks (2-3 times per week based on patient schedule).
- Grades II-III Maitland flexion and rotation mobilizations were administered to hypomobile lumbar spine segments with focus on L4-L5 due to location of pain and lateral stenosis present at this segment
- Soft tissue mobilization was utilized as tolerated to the quadratus lumborum, lumbar paraspinals, gluteus medius, gluteus minimus, and thoracolumbar fascia.
- Lumbopelvic stabilization exercises were utilized to improve active stability within the lumbar spine and to improve postural mechanics
- Patient was educated regarding ergonomics, spine safety, and precautions to avoid further exacerbation

Intervention	Parameters	Position	Target structure
Maitland Grade II and Grade III left rotational mobilization	60 seconds, 30 movements/minute 10 sets	Right side lying	L4-L5 spinal segment
Maitland Grade II and Grade III flexion mobilization	60 seconds, 30 movements/minute 10 sets	Right side lying	L4-L5 spinal segment
Soft tissue mobilization	15 minutes	Seated in manual massage chair	Erector spinae, thoracolumbar fascia, gluteus medius, gluteus minimus, and quadratus lumborum
Patient education regarding ergonomics and spine safety to avoid further exacerbation			

Intervention	Parameters	Position
Transverse abdominis (TA) activation with posterior pelvic tilt	10 second isometric hold 10 repetitions 2 sets	Hook-lying
Alternating marching with TA activation	30 seconds 2 sets	Hook-lying
Straight leg raise with TA activation	30 seconds 2 sets per leg	Supine with non-moving leg in hook-lying
Side lying clam shell with TA activation	30 seconds 2 sets per leg	Side lying with hips at 60 degrees and knees at 90 degrees
Side lying straight leg raise with TA activation	30 seconds 2 sets per leg	Side lying with legs extended
Standing hip abduction with TA activation	20 repetitions 2 sets	Standing
Standing marching with TA activation	20 repetitions 2 sets	Standing

Results

- After 5 weeks of treatment the patient displayed greatly improved pain free range of motion, strength as well as significantly decreased pain level and functional limitations/disability.
 - Her radiating symptoms had centralized with no symptoms present in the left lower extremity with any activity besides prolonged upright sitting
 - The patient also was able to return to previous work and household duties including those that required bending, carrying, lifting, and repetitive motions.
 - The patient's tolerance for sitting improved with being able to sit upright for 30 minute prior to increase of pain, and ability to sit in a reclined or forward flexed position for greater than 1 hour without increase of pain.
 - The patient reported that she could once again sleep through the night and sleep on her left side without disruption due to low back or lower extremity referred pain.



Discussion

- As a result of the classification of the patient into the “subacute low back pain with mobility deficits” ICF-based category, the emphasis of treatment was to utilize manual therapy and therapeutic exercise to improve and maintain spinal, hip, and lumbopelvic mobility and preventing further episodes of pain through therapeutic exercise for active stabilization and patient education.
- The use of spinal mobilization has been shown through evidence-based research to decrease pain and disability associated with lumbar pain.
- Manual therapy and spinal mobilization can be used to address hypomobility of a spinal segment and has been shown to improve the accessory mobility and increase the mobility of the surrounding tissue to reduce compression on the sensitive neural tissue.
- Mobilizations of the L4-L5 segment served to move the mechanical interface around the affected nerves that would serve to reduce inflammation and compression surrounding these neural structures.
- Soft tissue mobilization has been shown to reduce focal points of pain due to increased muscle compliance, decreased stiffness, improved circulation, decreased neural excitability, changed parasympathetic activity, and promotion of systemic release of endorphins.
 - It has also been shown to decrease anxiety that can also have a positive predictive effect on the patient's pain level

Conclusions

- This case study patient had radiating lower extremity pain that was severe in intensity combined with anxiety.
 - A positive outcome with significant reduction of symptoms was demonstrated even with this combination of poor prognostic factors.
- Although the results of this case report cannot be generalized, it does depict the successful outcomes of one patient through the use of manual therapy techniques as part of a conservative physical therapy treatment.
- The treatment plan implemented addressed severe lumbar spine pain and radiating lower extremity pain and related functional limitations with positive outcomes including: centralized radiating pain, reduction of low back pain, reduction of physical disability, improved pain free range of motion, resolution of various physical limitations, and return toward prior level of function.
- Additional research regarding the use of alternative manual therapy techniques in the treatment of lumbar stenosis and lumbar spine disorders as part of physical therapy treatment is indicated as these techniques utilized are only a small portion of the techniques available.