



Physiotherapy Rehabilitation in an Ignored Case of Spinal Compression Fracture- A Case Report

Neha Chitale¹, Tushar Palekar²

Authors Affiliation

1. Assistant Professor, Dr. D Y Patil College of Physiotherapy, Dr. D Y Patil Vidyapeeth, Pimpri, Pune-411018
2. Principal, Dr. D Y Patil College of Physiotherapy, Dr. D Y Patil Vidyapeeth, Pimpri, Pune-411018

Abstract

Spinal Compression fracture is a result of osteoporosis most common in post-menopausal women. Osteoporosis is the condition in which bones become brittle as the bone density is reduced. In post-menopausal women due to the hormones, Calcium uptake is reduced leading to osteoporosis. Physiotherapy is a way of manage such fractures. A 58 year old postmenopausal female with L1 wedge compression fracture was treated with physiotherapy rehabilitation protocol along with bracing. Rehabilitation protocol included interferential therapy, isometric exercises and strengthening exercises. In Conclusion physiotherapy with bracing was considered effective in managing pain and disability post lumbar compression fracture.

Keywords- Spinal fracture, Osteoporosis, Rehabilitation, Case Report.

Introduction-

Osteoporosis is a condition in which the bone density is significantly reduced leading to pathological fractures. Many a times osteoporosis remains undiagnosed and untreated until the subject experiences fracture. Post menopausal women due to estrogen deficit the bone turnover cycle is impaired (1). Leading to osteoporosis .9% of postmenopausal women have osteoporosis (2). Wedge compression fracture is a common complication of osteoporosis leading to pain and reduction in height (3). Diagnosis of such fracture is a challenge , diagnosing includes assessment ,physical examination and medical imaging. Management of compression fracture comprises of conservative and surgical management; Conservative treatment includes medication, bracing and physiotherapy while surgical management includes vertebroplasty.

Subjects with wedge compression fracture presents with pain and disability. The pain post fracture is due to the instability at the joint. Common complications of fracture include neurodeficit and kyphosis (4).

Physical therapy plays an important role in managing cases with vertebral fracture. In subjects with osteoporosis physiotherapy can reduce the risk of fractures and can improve the bone density by improving the calcium absorption.

Case Presentation

A 58 years old female presented with lower back pain in physiotherapy OPD of Dr. D. Y. Patil College of physiotherapy. Patient had difficulty in walking and sitting for prolong period of time. On examination tenderness was present at the thoracolumbar junction. On Numerical Pain rating scale patient had 7/10 pain. MRI revealed compression fracture of L1 vertebrae. On sensory examination all superficial and deep sensations were present in all the dermatomes. On myotome assessment L5 was weak.

Modified Oswestry Disability index showed 70 percent disability. While on range of motion assessment rang of motion was reduced for both lum8bar region and lower limbs (Table 1)

Movement	Right 3	Left
Hip flexion	0-30 degree	0-30 degree
Hip extension	0-10 degree	0-10 degree
Hip abduction	0-15 degree	0-20 degree
Hip adduction	15-0 degree	20-0 degree
Knee flexion	0-130 degree	0-130 degree
Knee extension	130-0 degree	130-0 degree

Range of Motion of Lower limb

Movement	Range
Lumbar flexion	3 cm
Lumbar extension	-

Range of Motion for Lumbar region.



Figure 1 – MRI for Lumbar Spine



Figure 2 – MRI of Spine

Intervention

Short term goal of rehabilitation was to immobilize the spine and maintain the quality of life. Bracing for prescribed for 3 weeks along with dietary modification to include more calcium rich food. Prolong standing was restricted. For Pain management Interferential therapy was

given for 20 minutes in clove leaf pattern. Moist heat application was done for 10 minutes. Isometric exercises for multifidus, rectus abdominus and transverse abdominus was prescribed. The exercises were done for 10 repetition with 10 seconds hold.

In the second phase the focus of the treatment was to improve the range of motion and the strength of the lower limb muscles as well as the back. For lower limb, range of motion with assistance was initiated. Mild stretching for hamstrings, Gastrocnemius and quadratus lumborum was given for 3 sets with 30 seconds hold. For Muscle strength Theraband activities were initiated. Starting with yellow theraband and progressing till blue. As the patient had a hip hiking gait. Gait training was initiated with mirror biofeedback.

In Phase 3 the goal of rehabilitation was to work on the osteoporosis to avoid further damage. Aerobic exercises were initiated which included 15 minutes of brisk walking and 10 minutes of cycling.

Goal	Intervention	Dosage	Rationale
Phase 1 (0-2 weeks)			
Pain Management	1. Interferential Therapy 2. Moist heat application	20 minutes 10 minutes	Interferential therapy and moist heat therapy increases blood supply and promote healing.
Maintain the strength	Isometric exercises for Multifidus Rectus abdominus Transverse abdominus	10 repetitions with the hold of 10 seconds	In isometric exercises the length of the muscle remains the same. So the movement wont be performed but the strength will be maintained.
Phase 2 (2- 6 weeks)			
Improve the range of motion of lower	1. Range of motion exercises	10 repetitions 3 times a day	Range of motion for hip joint was

limb	- Assisted - active		restricted to improve range of motion initially assisted range of motion was given followed by active range of motion
Improve the Muscle strength	Strength training was initiated after 4 weeks	15 repetitions – 2 sets	Muscle strength plays an important role in activities of daily living.
Gait Training	Mirror Biofeedback Hurdle walking		
Phase 3 (7-12 weeks)			
Maintain the goals achieved in 1 st 2 phases	All the exercises were continued	Progression was decided on assessment of strength and range of motion	
Aerobic exercises	Walking Cycling	15 minutes of walking 10 minutes of cycling	As the patient was osteoporotic aerobic exercises helps in improving the bone density.

Table 3- Treatment protocol

Discussion

In this case report we presented a case of 58 years old female with wedge compression fracture of L1 due to osteoporosis. Physiotherapy rehabilitation was given to the patient. Post rehabilitation the patient showed improvement in range of motion and muscle strength.

Stadhouders et. Al conducted a randomized control trial to evaluate the effect of non operative management for lumbar compression and burst fracture (5). They concluded that bracing with physiotherapy showed improvement in fracture management while Kim et. Al compared effect of treatment with various types of braces, they concluded that bracing does not affect the improvement in disability score (6).

Wood et. Al reviewed thoracolumbar fracture management they concluded that thoracolumbar fractures are sources of mortality but with advancement non-invasive management of such fractures is possible (7). Goldstein et. Al reviewed the management of elderly vertebral compression fracture they concluded that 40% failed to achieve significant pain relief in conservative management (8).

Conclusion

Physiotherapy Rehabilitation along with bracing has shown significant improvement in reducing disability and improving the range of motion and strength of back and lower limb in patient with L1 wedge compression fracture.

Conflict of Interest

None

Authors Contribution

All authors did equal contribution.

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