

Time Bound Acute Lumbar Disc Lesion - Physiotherapy, How Much Can be Effective?

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Abstract: Long hours of sitting and standing with high levels of professional demands resulting in high stress and musculoskeletal disorders at productive age from 30-50 are globally recorded. Early rehabilitation with non pharmacological intervention using evaluation based, structured exercises can be with in a time frame. Also further follow-ups with physiotherapy to avoid recurrence. This research on acute lumbar disc lesion was conducted in Chennai from 06.09.2019 to 30.09.2019. Proper physiotherapy techniques, clinical prognosis on a time frame for lumbar disc lesions were presented ($P < .01$) and discussed with evidence in this original research. Aims & Objective of this research was to analyse with evidence how time framed exercises can be effective in lowback rehabilitation in acute lumbar disc lesion subject.

Keywords: LDH - Lumbar Disc Herniation, LBA – Lowback Ache, Mckenzie's Exercises Lumbar Stabilization

1. Introduction

- 1) Lumbar disc herniation is the most common spinal degenerative disorders causing LBA (Yang et al 2015) among middle aged adults (Schoenfeld et al 2010) and occurs at the L4-L5 and L5-S1 spinal levels (Jordon et al 2009) with cardinal symptoms including LBP, radicular leg pain, muscle weakness and incontinence (Rajagopal et al 2014) bed rest, physical therapy, manipulation, NSAID are the most used non invasive treatment active exercise therapy is usually preferred to passive modalities (Franco et al 2015)
- 2) IVD provide a measure of shock absorbing protection to the spinal column and appropriate stability for the spine during load bearing activities. Cadaveric studies evidence suggest the disc degeneration relationship with instability is growing (Zhao et al 2007)
- 3) Mechanism of healing of a herniated IVD and the influence of exercise, where homeostasis of both bony and soft tissues is maintained through the appropriate balance activity and rest. Reversing disc degeneration and effecting healing involves the inner annulus and NP apparatus to be an extremely slow process (Lachlan et al 2011). With NP, a vascular structure, homeostasis is largely managed by diffusion and bulk fluid flow, the extent of flow across NP is influenced by patients physical activity level. Guehiring et al 2009 have demonstrated that distraction of the disc promotes its rehydration, stimulates extra cellular matrix gene expression and increases the number of protein expressing cells in rabbits.

- 4) Conservative non surgical management of a herniated lumbar intervertebral disc is a complex task, with exercise rehabilitation to pre injury level (Vangel Der et al 2013). **As few patient centric, shorter time bound researches were less available for acute lumbar disc lesion, this original research strives to analyse the effectiveness of stabilization exercises on acute lumbar disc lesion.**

2. Aims & Objectives

Background in Information

Male aged 44 years mesomorph, non vegetarian, with sedentary, long hours of sitting, from nature of profession non DM/ HT gives recurrent episodes of lowback ache, since two years this physical condition as on 04.09.2019

C/o

Acute LBA with difficulty in walking and daily routines

O/e

- SLR 40° - 60° procedures disc symptoms
- Bilateral hamstring lightness – Positive
- Obliterated lumbar lordosis
- Abdominal muscles – III / V
- Hip motor power abdomen – 3/5, extremities – 3/5
- Fibrositis noted generally
- Cervical lordosis with no radicular symptoms
- Waist circumference – 108 Cm
- An increased urinary incontinence, NMRI revealed L4, L5 disc lesion as on 03.09.2019

Methodology & Clinical Prognosis from 06.09.2019 to 30.09.2019

Session	Techniques & Procedure	Clinical Prognosis
1st Day	1) Isometric abdominal contractions 2) unilateral, then bilateral lumbar stretch 3) Prone position, MC kenzie's exercises, hot pac	Pain as on day one VAS -8/10 After 6 th session VAS 2/10 Functional activities such as professional work, travelling social activities were painful and restricted. Has low confidence with LBA prior to starting this therapy sessions
2 nd Day	4) Hamstrings stretching in side lying 5) Core strengthening with physioball mainly pelvic stabilization	Gait: Ambulant with antalgic gait with severe lowback ache

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3 rd Day	6) Cat and camel posture with physioball strengthening of hip extensors, hamstring, short gluts	Has resumed his job from 6 th session, able to travel, attends social functions and resumed his pre injury level for his daily routines level of confidence has increased adequately
4 th Day	7) Pelvic bridging in a closed kinematic way in supine 8) Cervical spine strengthening with bracing, isometric resisted exercises	
5 th Day	9) Supine, prone plank with physioball 10) Shoulder bracing with closed kinematic means	
6 th Day	11) Sitting on the ball, core strengthening along with bilateral arm resistance	
	12) Above exercises were done on floor level duration, frequency, progression, intensity	
Duration, frequency, intership of exercises and follow up	Frequency decreased with weekly twice and after a month to have follow-up exercises of weekly once. Each session has lasted for 30-35 minutes at intensity of 70-80% of his MHR, progression were done based on his physical exertion, pain tolerance and vital signs.	Subjective evaluation score was Oswestry after 6 th session VAS – 2/10

3. Results

Table of results on Oswestry score

	SD	SE	t	P	
Pre	56	16	9.23	4.22	.01
Post	17				

Critical Research Questions Arising Were:

- a) How shorter lowback ache can be rehabilitated
- b) Does follow-up helps in disc lesions
- c) Factors, variables influencing prognosis in acute disc lesions

- 1) Jeong et al 2017 have among 30 patients with LDH (Lumbar Disc Herniation) in 12 sessions of lumbar stabilization exercises to improve function KODI. **This research has shown in 6 sessions an adequate prognosis could be due to added Mckenzie concept and closed kinematic exercises along with lumbar stabilization.**
- 2) Lumbar stabilization exercise is used to retrain Proprioceptive senses of the tissues surrounding the joint (Kim et al 2011). Han et al 2010 have reported that LS exercise which eases the mental effort, decreases spinal movements, improve pelvic tilt, had positive effects in body balance. Pourahmadi et al 2016 in a meta analysis where motor control exercises among lumbar disc herniation were evidenced to be effective on pain and functional disability. **This research subject was treated with lumbar stabilization and has shown good functional recovery as shown in table 1 and table 2**
- 3) Cho et al 2011 have analyzed the correlation between lumbar disc herniation and inter costal line height in 445 back pain subjects with illio lumbar LG instability leading to disc herniation (Goudzuard et al 2003). Vangelder et al 2013 have recorded that individual assessment and prescription to be made among herniated lumbar disc lesions, which reviews and addresses movement in all planes of motion. Also segmental instability is related to degenerative disc degeneration. **This hypothesis can support the rehabilitation protocol based on stabilization protocol. However adherence with further follow-up, home programme could influence on benefits clinically recorded here.**

4. Conclusion

Proper evaluation, advocacy of time bound exercises along with due clinical reevaluation can be more effective along with proper follow-up early roll back to work and avoidance of recurrent LBA, can be eliminated.

References

- [1] Yang H, Liu H, Li Z et al. Low back pain associated with lumbar disc herniation: role of moderately degenerative disc and annulus fibrous tears. Int J Clin Exp Med 2015;8:1634–44.
- [2] Schoenfeld AJ, Weiner BK. Treatment of lumbar disc herniation: evidence-based practice. Int J Gen Med 2010;3:209–14
- [3] Jordan J, Konstantinou K, O'Dowd J. Herniated lumbar disc. BMJ Clin Evid 2009;3:1–34.
- [4] Rajagopal TS, Marshall RW. Chapter 28: Microdiscectomy. In: Bentley G, ed. European surgical orthopaedics and traumatology: the EFORT textbook. Springer Berlin Heidelberg 2014:557–80.
- [5] Franco JL, Vaccaro AR, Benzel EC et al. Advanced concepts in lumbar degenerative disk disease. Springer, 2015.
- [6] Zhao C.Q., Wang L.M., Jiang L.S., Dai L.Y. (2007). The cell biology of intervertebral disc aging and degeneration. Ageing Res. Rev. 6, 247–261
- [7] Lachlan J. Smith, Nandan L. Nerurkar Kyung-Suk Choi, Brian D. Harfe, and Dawn M. Elliott Degeneration and regeneration of the intervertebral disc: lessons from development. Dis Model Mech. 2011 Jan; 4(1): 31–41.
- [8] Guehring T., Wilde G., Sumner M., Grunhagen T., Karney G.B., Tirlapur U.K., Urban J.P. (2009). Notochordal intervertebral disc cells: sensitivity to nutrient deprivation. Arthritis Rheum. 60, 1026–1034
- [9] Vangelder LH, Hoogenboom BJ, Vaughn DW. A phased rehabilitation protocol for athletes with lumbar intervertebral disc herniation. Int J Sports Phys Ther. 2013 Aug;8(4):482-516.
- [10] Jeong, Hyun-Ho Choi, Jeong-il Kang, Hyun Choi. Effect of lumbar stabilization exercise on disc herniation index, sacral angle, and functional improvement in patients with lumbar disc herniation.

The Journal of Physical Therapy Science. J. Phys. Ther. Sci. 29: 2121–2125, 2017

- [11] Kim GY, Ahn CS, Kim SS: The effects of 3-dimensional lumbar stabilization exercise have an effect on the improvement of pain and static or dynamic balance ability in 20's age group with low back pain. J Korean Soc Phys Med, 2011, 6: 235–246.
- [12] Han JE, Kim JH, Lee WJ, et al. : Effects of body balance and trunk temperature on modes of waist-hip exercise stability after operated by percutaneous endoscopic discectomy. Korean J Sports Sci, 2010, 19: 1173–1187
- [13] Pourahmadi MR, Taghipour M, Ebrahimi Takamjani I, Sanjari MA, Mohseni-Bandpei MA, Keshtkar AA. Motor control exercise for symptomatic lumbar disc herniation: protocol for a systematic review and meta-analysis. BMJ Open. 2016 Sep 27;6(9):e012426. doi: 10.1136/bmjopen-2016-012426.
- [14] Choo WJ, Kim MY, Seo MS, et al. : Radiological findings of relation between intercrestal line and HIVD of lumbar spine. J Korea CHUNA Man Med Spine Nerves, 2011, 2: 53–60.
- [15] Goudzwaard A, Hoek van Dijke G, Mulder P, et al. : The iliolumbar ligament: its influence on stability of the sacroiliac joint. Clin Biomech (Bristol, Avon), 2003, 18: 99–105.