

Conservative and non-surgical management of lumbar disc herniation

Seema Rathi¹, Jalandhara², Amit Singh³, Nagaratna R.⁴, Kashinath G. Metri^{5*}

¹Consultant, Dentist, Dadar, Mumbai

²Yoga therapist, Arogyadhama, SVYASA University, Bengaluru

³Assistant professor, SVYASA University, Bengaluru

⁴Chief Medical Officer, Arogyadhama, SVYASA University, Bengaluru

⁵Assistant Professor, Central University of Rajasthan

KEY WORDS

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ABSTRACT

A case of a 16-year-old Indian adolescent with discal herniation in L4 – L5 region with classical sign of 'foot drop' was successfully managed by conservative, non-surgical approach following principles of yoga intervention. Patients practised yoga under supervision of yoga expert, four times a day for first two weeks followed by once a day for consecutive two years. Yoga protocol included gentle yoga based loosening practices, simple asanas, yogic breathing techniques and yogic guided relaxation, *pranayama* and meditation. One year and two-year follow-ups showed complete revival of normal function and healing of the affected spinal cord disorder. A case which was recommended for surgery recovered with yoga intervention.

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*Corresponding Author:

Kashinath G Metri, MD

Central University of Rajasthan

Contact no: +91 9035257626

E-mail: kgmhetre@gmail.com

Introduction

Disc herniation is a serious condition that may lead to significant disability. If it is untreated, eventually it leads to spinal cord compression and serious neurological deficits such as foot drop, difficulties related to bowel and bladder evacuation and walking. In the present day's long hours of desk work and long driving has increased the risk and prevalence of disc herniation (1–3). Though, disc herniation is more common in old age, its prevalence has increased in young adults also. Conventional management of disc herniation includes surgical correction followed by physiotherapy and medication (4).

Yoga is one among the popular alternative and therapies. Yoga intervention found to be useful in various chronic conditions including chronic low back pain (CLBP). It is a safe and effective intervention for CLBP (4).

The present case report is on teenager with adolescent disc herniation followed by foot drop and severe disability and recovery of the disease with yoga intervention and avoiding the surgery.

Case presentation

A 16-year-old male patient, height 6-foot, weight 118 kg, Mumbai, India reported with the chief complaint of severe pain in the left calf region extending up to the toes. The debilitating pain made it very difficult for the patient to even walk or sit or lie down in supine position. He was unable to even perform

his daily chores such as passing his motions. He was not able to straighten up his leg and was dragging it while walking as he was unable to lift it. There was a tingling sensation along with numbness in the left leg. The big toe of the leg foot could not pronate equally as much as the right leg big toe as shown in Figure 1.



Fig. 1: Pre-treatment Left Leg Big Toe Drop is seen.

Patient parents consulted an orthopaedic surgeon who advised a Magnetic Resonance Imaging (MRI) scan and advised immediate hospitalisation for complete bed rest and further

observation. MRI revealed disc herniation in L4–L5 region of the vertebral column.

Patient visited a neurologist who diagnosed the left leg foot drop and sensation loss at calf level. He advised pain killer and further consultation with a spine specialist.

A second opinion was sought with a spine specialist who examined the patient and the MRI and advised complete bed rest for 10 days followed by surgical intervention if the symptoms persist after 10 days. Considering the patient's age, the parents were not so keen to do an immediate surgical approach.

The Patient was so much in pain that he was prescribed multiple pain killers by the doctors (Table 1).

Table 1: Showing prescription treatment with multiple pain killers

	Medications	Dose	Duration
1.	Chymoral Forte	2 Tablets T.D.S	1 st week when pain started
2.	Flexon MR	1 Tablet B.D	
3.	Pantoacid	1 Tablet	
4.	Gabapentin 100 mg	1 Tablet	2 nd week onwards
5.	Lycra 50 Ultracet	1 Tablet	3 rd week onwards

Conservative treatment approach was sought. The mother contacted Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA) University, Bengaluru, After examining the reports, the physicians at S-VYASA also felt that surgical approach was the only option but could try the conservative intervention and a non-surgical plan was adopted under physician's guidance. As the patient was in Mumbai and unable to travel to Bengaluru, a yoga therapist and expert was appointed to the patient.

The therapist after understanding the chief complaints of the patient, went and examined the toilet commode and immediately advised to change the toilet seat to a higher-level seat so that the patients discomfort and pain due to impinging of the nerve in the lower back region would be minimal. The rationale behind this decision comes from the fact that the oblique muscles of the back and the vertebral column face maximum amount of force in seated position. This force is further increased when the seat is has its base lower than the thigh. So, increasing the height of the toilet seat lead to change in the angulation between the resting position of the patient's thighs and the toilet seat subsequently leading to lesser force being exerted on the vertebral column, decreasing the pain felt due to the nerve impingement.

Treatment regimen

The treatment regimen was as follows: For four continuous days, only passive therapy was given four times a day, followed by Pranayama and Deep Relaxation Technique (DRT). In addition to this, mind sound resonance techniques (MSRT) – a mindfulness-based relaxation technique is also given. After four days of passive therapy, the patients are

advised to move on to active movements mentioned in the list below (Table 2).

Table 2: Various active exercises

Table 2.1: *Sithlikarna Vyayama and Yogasanas*

	<i>Sithlikarna Vyayama and Yogasanas</i>	Duration of procedure	Frequency	Duration of intervention
1.	Loosening of fingers	1 minute	2 times a day	2 weeks
2.	Loosening of Wrist	1 minute	2 times a day	2 weeks
3.	Shoulder Rotation	1 minute	2 times a day	2 weeks
	For Foot Drop			
4.	Toe Bending	1 minute	2 times a day	2 weeks
5.	Ankle Bending	1 minute	2 times a day	2 weeks
6.	Ankle Rotation	1 minute	2 times a day	2 weeks
	For Improvement in Walking			
7.	Toe Walking	1 minute	2 times a day	2 weeks
8.	Heel Walking	1 minute	2 times a day	2 weeks
9.	Line Walking	1 minute	2 times a day	2 weeks
10.	Cross Walking	1 minute	2 times a day	2 weeks
11.	Drill Walking	1 minute	2 times a day	2 weeks
12.	<i>Padasanchalana</i>	1 minute	2 times a day	2 weeks

Table 2.2: Breathing practices

	Breathing practices	Duration of procedure	Frequency	Duration of intervention
	Hand Stretch Breathing	2 minutes	5 Rounds for 2 times day Once a day	2 weeks Till Date
	Hands In and Out Breathing	2 minutes	5 Rounds for 2 times day Once a day	2 weeks Till Date
	Ankle stretch Breathing	2 minutes	5 Rounds for 2 times day Once a day	2 weeks Till Date
	Tiger Breathing	2 minutes	5 Rounds for 2 times day Once a day	2 weeks Till Date

The frequency and duration of the exercises were maintained keeping in mind the comfort of the patient.

After seven days, the patient was able to walk longer distances with less discomfort. A small walk of about 500 meters was introduced in his daily regimen once a day.

By 10th day, Yogasanas (Table 3) were added in his regimen which were as follows.

Once the Yoga Intervention started, the dose of allopathic medicines reduced gradually (Table 4).

Table 3: Showing various Yoga asanas

	<i>Yoga asanas</i>	Duration of procedure	Frequency	Duration of intervention
Standing Position				
1.	<i>Ardhakati Chakraasana</i> : Reduces fat in waist region, stimulates the sides of the body. Give lateral bending to the spine.	2 minutes	3 Rounds two times a day 5 Rounds once a day	2 weeks Till date
2.	<i>Ardha Chakraasana</i> : Makes the spine flexible, stimulates the spinal nerves, promotes circulation of blood into head. Strengthens the neck muscles. Expands chest and shoulders. Improves breathing.	2 minutes	3 Rounds two times a day 5 Rounds once a day	2 weeks Till date
Sitting Position				
3.	<i>Vakrasana</i> : Lateral twist gives flexibility to the spine, tones up the spinal nerves. helps to treat constipation. Improves lung capacity.	2 minutes	3 Rounds two times a day 5 Rounds once a day	2 weeks Till date
Prone Position				
4.	<i>Bhujangasana</i> : Brings flexibility to the dorsal spine, strengthens the spinal muscles. Reduces the abdominal fat.	2 minutes	3 Rounds two times a day 5 Rounds once a day	2 weeks Till date
5.	<i>Shalabhasana</i> : Helpful in managing sciatica and low back ache. Reduces fat on thighs and buttocks.	2 minutes	3 Rounds two times a day 5 Rounds once a day	2 weeks Till date
Supine Position				
6.	<i>Sethubandhasana</i> : The extensor muscles of the back grow powerful and the hips are contracted and hardened. The asana strengthens the neck and tones the cervical, dorsal, lumbar and sacral regions of the spine.	2 minutes	3 Rounds two times a day 5 Rounds once a day	2 weeks Till date

Table 4: Showing the reduction of medications in the prescription

	Medications	Dose	Duration
1.	Flexon MR	1 Tablet B.D	First 2 weeks of Yoga Intervention
2.	Gabapentin	1 Tablet	1 month of Yoga Intervention

After a month of yoga intervention all allopathic medications were stopped. Forward bending asanas were strictly contraindicated at this stage of recovery. Patient also took up to himself to reduce his weight by weight training exercises and strict dietary control under the controlled supervision of a personal trainer and a dietician respectively.

Patient Progress Report

Pain

Reduction in pain was achieved gradually from the start of the yoga therapy. The patient started to perform his daily chores comfortably by the second week. The patient could appear for his board Exams which were a month later.

The patient was initially taking high doses of neuropathic pain killer like Gabapentin. As the Yoga Therapy progressed, the dosage gradually reduced to nil by the end of the month.

Foot Drop and Big Toe Extension

Patient became totally ambulatory by the end of one month. Foot drag recovery was much gradual and it took almost six months to get above 95% recovery. The toes of the left foot which had lost their ability to pronate recovered to full normalcy (as compared to the unaffected contra lateral toe) in

about 10 months. The patient had to be careful many a times while walking as he would tend to lose some body balance because of the inadequate toe control. Figure 2 shows big toes of both feet pronating simultaneously post treatment.



Fig. 2: Both feet simultaneously pronating post treatment.

Numbness and Tingling

In the left calf region, the numbness and tingling reduced significantly in one week which completely healed by over four months. There was a drastic loss of muscle mass in the left calf leading to circumferential loss of approximately five cm

as compared to the right calf in the same region. There was improvement of four cm over next two years with aid of intensive ipsilateral training using resistance bands and calf raises.

Radiographic Changes

The MRI reports did not show much difference in the discal herniation in L4-5 level of clinical significance. There is additional disc protrusion seen in L5-S1 level. But since the patient was absolutely sign and symptom free of foot drop, pain in lower back, numbness and tingling sensation in left leg, decision was taken to ignore the changes.

Limitations

This was a tailor-made treatment protocol of yoga and may not be effective in all the individuals.

Conclusion

A case of a herniated disc in L4 L5 region in a teenager patient was conservatively managed using principles of yoga therapy as proposed by the SVYASA institute at Bengaluru, India. Foot drop, a sign which most clinicians advise to be treated by surgical intervention, was successfully corrected by non-invasive yoga therapy. All other symptoms like pain, numbness, and tingling were also effectively treated in the adolescent patient whose parent was not keen to take the high risk of surgical intervention at such a young age. Strengthening of back muscles using relevant *asanas* is a long-term approach to prevent the recurrence of the same. It is therefore proposed that further prospective studies be carried out using yoga therapy so that an evidence-based model of non-surgical therapy can be formulated for all patients in this sensitive adolescent age group.

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Authorship contributions

SR and KGM: has contributed to the writing of the manuscript
NR and AS: has planned the treatment protocol
JL: is the yoga therapist

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Informed consent

Yes.

Conflict of interest

Authors declare no conflict of interest.

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