

## 11 - MANUAL THERAPY TECHNIQUES IN L5-S1 HERNIATED SLIPPED DISC PATIENT: A CLINICAL CASE

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### INTRODUCTION

Low back pain is an extremely frequent health issue and epidemiological data show that approximately 80% of world population suffer or will suffer from low back pain due to current life style, work, load carrying, wrong sitting position, pregnancy, psycho-social factors, physical activities, age and others. Although pain is generally restricted to the person concerned, it may be persistent and give rise to personal, social and economical problems with direct implications to the subject's life quality (WALKER et al., 2003).

Slipped disc is one of the main causes of low back pain whose treatment may undertaken either through surgical or by drugs, physiotherapy, resting in bed, acupuncture, massage and peridural injection (blockage). Since the above treatments may be useless for certain patients, their life quality decreases due to pain (HAMMER, 2004; GLOBE et al., 2008).

When possible conservative treatment is the most indicated in the case of patients with slipped disc who have already underwent surgery and require a second and even a third surgery if the latter have not been associated with a conservative treatment (KELLER, 2006).

Manual therapy is a type of physiotherapy procedure currently used in slipped disc treatment. It involves several techniques, namely Maitland, Mackenzie, Osteopathy, Neural Mobilization, Myofascial Release, and others, coupled to back-stabilizing exercises (BUSANICH; VERSCHEURE, 2006; KELLER, 2006; ELLIS; HING, 2008; FILHO et al., 2009; TRIJFFEL et al., 2009).

Manual therapy betters the life quality of subjects suffering from low back pain through a functional approach in treatment which rehabilitates impaired or even lost functions. Treatment corrects the bony parts, strengthens the muscle system accountable for the sustaining of the spinal cord, improves the neural functions and helps the subject to refrain from overloading the low back region (HAMMER, 2004; ARAKOSKI et al., 2004; KELLER, 2006).

According to WHO, health is not merely the absence of sickness or illnesses but the state of complete physical, mental and social well-being. The above concept has recently been perceived in a broader manner through the term 'health-related life quality' (HRLQ). HRLQ is the perception that the subjects have with regard to their illnesses and their effect on their lives. This naturally includes personal satisfaction associated with physical, functional, emotional and social well-being. Life quality may be considered a multi-dimension concept revealing a subjective evaluation of the patients' personal satisfaction with regard to their lives and to other aspects including family relationship, their health, health of kin, financial issues, housing, independence, religion, social life and leisure (CAMARGOS et al., 2004; FRANCHIGNONI; SALAFFI, 2003).

Therapeutic procedures which increase low back-pain patients' life quality should be better investigated. Current analysis evaluates the influence of manual therapy techniques on the life quality of patients suffering from L5-S1 slipped disc.

### METHODOLOGY

#### Case review

A 28-year-old male patient suffered from severe backache with pain spread throughout the gluteal area, behind the thigh and left calf.

The patient reported that he had back pain in 2006 after a physical effort during load carrying; the doctor prescribed an anti-inflammatory drug and ten isostretching sessions, with good results in pain killing.

In July 2008 during work and after physical efforts the same patient reported backache spread throughout the posterior area of the left thigh with serious consequences after two days. This impaired him from doing any work or practicing sports. Without consulting the doctor, the patient took the anti-inflammatory drug Nimesulida 100 mg; symptoms disappeared and he could exercise normal activities even though the symptoms returned when he stopped taking the medicine. He was advised to have a session with a massotherapist and massages were undertaken. Next day, the patient reported backache spread throughout the gluteal area and, more intensely, in the posterior part of the left thigh. The doctor was seen and radiographic and tomography exams were carried out. Whereas X-rays showed space decrease of L5/S1, tomography revealed a voluminous paramedian/foramen disc protrusion L5/S1, coupled to a posterior median disc protrusion L4-L5. Treatment comprised anti-inflammatory drug Arcoxia® 90 mg and painkiller Tylex® 50 mg, coupled to ten normal physiotherapy sessions. Symptoms decreased on the seventh session, although a slight pain was still felt. Things became worse when the patient returned to work. When physiotherapy sessions ended, the patient was attended by a doctor who maintained the drug therapy and prescribed other ten physiotherapy sessions coupled to acupuncture. Improvement occurred but pain returned either when greater efforts were needed or when Valsalva manoeuvre was induced. The patient started physical activities (swimming) in November of the same year even though he felt slight pain during exercises. When physical efforts during work were undertaken, the patient was impaired from carrying out a back extension after flexion (he was practically jammed), with intensive pain spread throughout the entire left lower member. He reported impairment in undertaking day-to-day activities. Anti-inflammatory Arcoxia® 90 mg and painkillers Tylex® 50 mg and Piroxicam 500 mg were prescribed, coupled to physiotherapy sessions and acupuncture.

In December 2008 when he had already ended acupuncture and conventional physiotherapy sessions, the patient required physiotherapy with manual therapy techniques. The patient was also invited to participate in research on life quality by means of a SF-36 questionnaire during the above sessions.

Current research conforms to the rules of the Ethics Committee on Research with Human Beings and the patient signed the Free Consent Term on the project.

#### Physiotherapeutic evaluation

Patient, height 1.74m and weight 65 kg, featured a decrease in amplitude of movement, backache spread towards the posterior area of the left thigh during left lateral flexion, extension and inclination. Sensorial and reflection neurological evaluation

was normal when compared to that of the contra-lateral member. Spasms of the bilateral quadratus lumborum, psoas, piriformis and leftward paravertebral muscles were reported. The patient felt pain when palpated, without any thorn process spreading between L2 and L4, albeit with a spread towards the posterior area of the left thigh when L5 was patted. Vertebrae L4 and L5 were turned towards the left.

Slump's and Lasegue's tests were positive for the left lower member and Valsava manoeuvre was sensitive for backache and for the posterior area of the left thigh.

The patient was asked to undergo magnetic resonance exams and electroneuromyography at the start of treatment. Magnetic resonance revealed (1) a disc protrusion in the central position between L4 and L5, displacing the ventral surface of the thecal sac and discretely decreasing the dimensions of the conjugation foramen at the right, apparently touching L4 root from this side; (2) extrusion in L5-S1 with a discrete caudal shift on the left and a significant decrease in the dimensions of the lateral recess of this side and of the conjugation foramen, apparently compressing L5 root and displacing roots from S1 to S2. Electroneuromyography revealed (a) inactive neurogene root impairment involving L5 and S1 roots, to the left, chronically, with slight and disproportionate intensiveness, predominantly in L5; (b) absence of neuropraxis troncular / divisional damage.

### TREATMENT

Life Quality Questionnaire SF-36 was filled by the patient prior to treatment and in each of the four manual therapy sessions. Three evaluations were undertaken in all.

Questionnaire comprised the evaluation of eight items: Functional Capacity (FC), Physical Aspects (PA), Social Aspects (SA), Emotional Aspects (EA), Pain (P), Vitality (V), Mental Health (MH), and General Health (GH).

Scores for the different issues in the specific items were adjusted, added, transformed and inferred in a 0-100 scale. Higher rates were closest to normal functions. The first four items were related to the functional state, whereas the other three were related to well-being; the last produced a general health evaluation (BRAZIER et al., 1992).

Recommended physiotherapy treatment was undertaken once a week, for one hour, during 8 sessions, starting December 2008.

Treatment consisted of pain-reduction techniques and later of exercises to stabilize the low back area and recover the region's entire normal movement.

During the first four sessions the following items were undertaken: lengthening techniques to correct the sacrum-iliac articulations; myofascial release of the paravertebral muscles and the quadratus lumborum muscle; tension relaxation through local massage in the piriformis and psoas muscles, especially to the left; Maitland's vertebral mobilization technique at the L2-L5 vertebrae, with pressure increase according to the patient's sensitiveness; lumbar rotation technique with the patient lying on his side with the left side upwards, rotation level between L5 and S1; neural mobilization; lumbar extension (Mackenzie) and daily mobilization of the low back spine column.

The last 5 to 8 sessions consisted of Maitland's vertebral mobilization at L5; neural mobilization; exercises for the stabilization of the low back column, lumbar extension (Mackenzie), daily lengthening of the quadratus lumborum, piriformis, ischiotibial, triceps surae, femoral, rectum and ilium-psoas muscles.

### RESULTS

Life Quality Questionnaire SF-36 assessed life quality in its different aspects, before, during and after treatment (Table 1). At the start of treatment the patient reported that, with regard to functional capacity, it was difficult for him to exercise himself in any activity involving a moderate or intense effort, such as going up a ladder, walking for more than one kilometer, taking a bath, putting on clothes, kneeling, bending or curving his body. These difficulties, however, lessened when physiotherapy was continued.

Table 1 – Rates of items evaluated by Life Quality Questionnaire SF-36 filled by patient before and after manual therapy sessions (scale 0 - 100).

	Functional Capacity (FC)	Physical Aspects (FA)	Social Aspects (SA)	Emotional Aspects (EA)	Pain (P)	Vitality (V)	Mental Health (MH)	General Health (GH)
1 <sup>st</sup> evaluation	50	0	37.5	66.6	0	45	40	67
2 <sup>nd</sup> evaluation	60	0	63.7	66.6	22	75	60	80
3 <sup>rd</sup> evaluation	85	75	100	100	74	90	100	92

In the case of physical aspects, a decrease in labor time and in other activities occurred. In fact, the patient performed few tasks and his physical condition was impaired during the first and second evaluation. However, he did not report any alterations in his general health state after treatment and could undertake his usual activities.

Pain which at the start and prior to treatment was intense became significantly less and an improvement in the patient's life quality may be evidenced.

When asked about his health, such as, whether he became sick more than others or whether he believed that his health would worsen, his replies were more positive during treatment and showed improvement in his general health. More satisfactory results with regard to vitality were obtained during the treatment.

At the start of the treatment, the patient registered that during a long period of time his physical problems, which interfered in his usual social activities in the company of friends and kin, ceased to be of importance after treatment.

In the case of emotional aspects with regard to the evolution of his health conditions, the patient revealed greater optimism as treatment proceeded.

Similar results were obtained with regard to his mental health. The patient reported that before treatment he was an edgy and depressed person; he felt calm and happy after treatment and perceived a gradual and significant improvement in social and emotional aspects and in his mental health.

### DISCUSSION

Current investigation evaluated the influence of manual therapy techniques on the life quality of a patient with L5-S1 slipped disc. Techniques in vertebral mobilization, neural mobilization, myofascial releases, muscle lengthening, lumbar extension and stabilizing exercises of the low back area, already employed in physiotherapy, were carried out. Current experiment revealed that the use of different associated techniques improved the patient's life quality in all aspects assessed in the Questionnaire SF-36.

Bronfort et al. (2008), who analyzed several studies on the benefits of mobilization and/or vertebral manipulation in

low back pain, suggested that these techniques were highly beneficial for the treatment of low back pain. High efficiency and low risk of opposite reactions were evidenced when these techniques were employed. The above techniques employed on the patient under analysis improved pain elimination seen in all aspects in the subjects' life quality. Several investigations thus show that the techniques produced immediate effects on the deformation of different tissues (SHEKELLE, 1994; EVANS, 2002), including the neural tissue (KHALSA et al., 2006).

According to treatment protocol, McKenzie's therapy, which consists of lumbar flexion and/or extension movements, was employed so that the patient's dysfunction could be eliminated. Technique used in current investigation has been revised by Busanich and Verscheure (2006) and by Clare et al. (2004). According to these authors, short term treatment had better results in the treatment of pain and disabilities of pain-bearing patients when compared with other treatments such as non-steroid anti-inflammatory drugs and massage of the low back area. Although neural mobilization is employed in the treatment of low back pain, its therapeutic indication is still controversial (ELLIS; HING, 2008). Our data on its application associated with other techniques revealed positive results in the patient's life quality. When it is employed as an individualized technique, its efficaciousness has been warranted (CLELAND et al., 2007). The above mentioned studies suggest that the technique, associated or not with others, may be beneficial to the patient with low back pain.

During the first four sessions of manual therapy for low back pain, techniques for pain decrease and improvement of the patient's general health were employed. Henceforth stabilization of the lumbar area muscle system was started. It has been reported that patients with chronic lumbar pain experienced an atrophy of the multifidus muscle (the stabilizing agent of the low back area) and a decrease in their capacity for voluntary contraction (WALLWORK et al., 2008; HIDES et al., 2008). Consequently, specific programs for the muscle's stimulation are important. Several assays have shown the importance of lumbar stabilization for pain treatment (MEZIAT FILHO et al., 2008; WALLWORK et al., 2008; HIDES et al., 2008), different from that reported by Arakoski et al. (2004).

### CONCLUSION

Results from Questionnaire SF-36 show that the treatment of low back pain with different techniques of manual therapy may be effective for the improvement of life quality in patients with slipped disc L5-S1-caused dysfunctions.

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#### ABSTRACT

Low back pain is a frequent health problem with approximately 80% of world population suffering or will suffer from the ailment. Aim: to evaluate the influence of manual therapy techniques on life quality in a patient suffering from L5-S1 slipped disc. Methodology: a 28-year-old male patient suffered from severe low back pain and pain spread throughout the gluteal area, at the back of the thigh and left calf. Decreased lumbar mobility in flexion, extension and left side inclination were detected during physiotherapy evaluation, with pain in all his movements. Spasms of the bilateral quadratus lumborum, psoas, piriformis and leftward paravertebral muscles were also perceived. Valsava's test and Slump's and Lasegue's tests were positive for the left lower member. Magnetic resonance reported L5-S1 disc extrusion. Treatment: Life Quality Questionnaire SF-36 was filled by the patient on the first day of treatment and at each four manual therapy session, totally 3 evaluations. Treatment, undertaken once a week, for one hour, totaling eight sessions, consisted of techniques in vertebral mobilization, neural mobilization, muscle lengthening and exercises of low back stabilization. Result: Questionnaire SF-36 comprised an evaluation on eight items: functional capacity, physical aspects, social aspects, emotional aspects, pain, vitality, mental health and general health. The patient improved in all evaluated items. Conclusion: Treatment of low back pain by different manual therapy techniques may be efficient in the improvement of the life quality of patients with L5-S1 slipped disc dysfunctions.

**KEYWORDS:** Slipped disc. Low back pain. Manual therapy.

#### APPLICATION DE TECHNIQUES DE THÉRAPIE MANUELLE DANS PATIENT PORTEUR D'HERNIE DE DISQUE

##### L5-S1: UN CAS CLINIQUE

##### RÉSUMÉ

La douleur lombaire est un problème de santé fréquente et environ 80 % de la population mondiale qu'ils ont ou ils auront la douleur dans la région lombaire. Objectif: évaluer l'influence de la l'application des techniques de thérapie manuelle sur la qualité de vie dans un patient avec la hernie de disque L5-S1. Méthodologie : patient avec 28 ans du sexe masculin se présentait avec sévère lombalgia et douleur rayonnée pour la région du fessier, postérieure de la cuisse et de la mollet gauche. Dans l'évaluation physiothérapique il a été observé la mobilité lombaire réduite dans la flexion, extension et inclination latérale gauche, et dans tous les mouvements qu'il disait douloureuse. Il s'est présenté encore avec le spasme de la musculature de place lombaire bilatérale, psoas, piriforme et plus paravertébral à gauche. Les essais de Slump et de Lasegue ont été positifs pour le membre inférieur gauche, et l'essai de Valsava a aussi été positif. Dans la résonance magnétique a été observée une extrusion discale L5-S1. Traitement : Au premier jour de traitement, Il a été appliqué au patient le Questionnaire de Qualité de Vie SF-36, et à chaque quatre sessions de thérapie manuelle réalisée, en totalisant trois évaluations. Le traitement a été réalisé une fois par semaine, avec durée de 1 heure, en totalisant huit sessions, qui ont consisté de l'utilisation de techniques de mobilisation vertébrale, mobilisation neurale, allongement musculaire et de exercices de stabilisation lombaire. Résultat: le Questionnaire SF-36 comprend l'évaluation de huit domaines : capacité fonctionnelle, aspects physiques, douleur, santé générale, vitalité, aspects sociaux, aspects émotionnels, santé mentale. Le patient a obtenu amélioration satisfaisante dans tous les domaines évalués. Conclusion: le traitement de la douleur lombaire avec l'emploi de différentes techniques de thérapie manuelle peut être effectif dans l'amélioration de la qualité de vie de patients avec l'hernie de disque L5-S1.

**CLÉ DE MOT:** Hernie de disque. Douleur lombaire. Thérapie manuelle.

#### APLICACIÓN DE TÉCNICAS DE TERAPIA MANUAL EN PACIENTE PORTADOR DE HERNIA DISCAL L5-S1:

##### CASO CLÍNICO

##### RESUMEN

El dolor lumbar es un problema de salud frecuente, y cerca de 80% de la población mundial tienen o tendrán dolor en la región lumbar. Objetivo: evaluar la influencia de la aplicación de técnicas de terapia manual sobre la calidad de vida en paciente portador de hernia discal L5-S1. Metodología: paciente con 28 años del sexo masculino se presentaba con severa lumbalgia y dolor irradiado para la región glútea, posterior del muslo y gemelo izquierdo. En la evaluación fisioterápica fue observada movilidad lumbar reducida en la flexión, extensión e inclinación lateral izquierda, y en todos los movimientos relatada dolor. Se presentó aun con espasmo de la musculatura de cuadrado lumbar bilateral, psoas, piriforme y paravertebral más a la izquierda. Los testes de Slump y Lasegue fueron positivos para el miembro inferior izquierdo, y el teste de Valsava también fue positivo. En la resonancia magnética fue observada una extrusión discal L5-S1. Tratamiento: en el primer día de tratamiento, fue aplicado al paciente el Cuestionario de Calidad de Vida SF-36, y a cada cuatro sesiones de terapia manual realizada, totalizando tres evaluaciones. El tratamiento fue realizado una vez por semana, con duración de 1 h, totalizando ocho sesiones, que consistió de la utilización de técnicas de movilización vertebral, movilización neural, estiramiento muscular y ejercicios de estabilización lumbar. Resultado: el Cuestionario SF-36 comprende la evaluación de ocho dominios: capacidad funcional, aspectos físicos, dolor, salud general, vitalidad, aspectos sociales, aspectos emocionales, salud mental. El paciente obtuvo mejora satisfactoria en todos los dominios evaluados. Conclusión: el tratamiento del dolor lumbar con el empleo de diferentes técnicas de terapia manual puede ser efectivo en la mejoría de la calidad de vida de pacientes portadores de disfunciones causadas por la hernia discal L5-S1.

**PALABRAS CLAVE:** Hernia discal. Dolor lumbar. Terapia manual.

#### APLICAÇÃO DE TÉCNICAS DE TERAPIA MANUAL EM PACIENTE PORTADOR DE HÉRNIA DE DISCO L5-S1:

##### CASO CLÍNICO

##### RESUMO

A dor lombar é um problema de saúde frequente, e cerca de 80% da população mundial têm ou terão dor na região lombar. Objetivo: avaliar a influência da aplicação de técnicas de terapia manual sobre a qualidade de vida em paciente portador

de hérnia de disco L5-S1. Metodologia: paciente com 28 anos do sexo masculino apresentava-se com severa lombalgia e dor irradiada para a região glútea, posterior da coxa e panturrilha esquerda. Na avaliação fisioterápica foi observada mobilidade lombar reduzida na flexão, extensão e inclinação lateral esquerda, e em todos os movimentos relatava dor. Apresentou-se ainda com espasmo da musculatura de quadrado lombar bilateral, psoas, piriforme e paravertebral mais à esquerda. Os testes de Slump e Lasegue foram positivos para o membro inferior esquerdo, e o teste de valsava também foi positivo. Na ressonância magnética foi observada uma extrusão discal L5-S1. Tratamento: no primeiro dia de tratamento, foi aplicado ao paciente o Questionário de Qualidade de Vida SF-36, e a cada quatro sessões de terapia manual realizada, totalizando três avaliações. O tratamento foi realizado uma vez por semana, com duração de 01 h, totalizando oito sessões, que consistiu da utilização de técnicas de mobilização vertebral, mobilização neural, alongamento muscular e exercícios de estabilização lombar. Resultado: o Questionário SF-36 compreende a avaliação de oito domínios: capacidade funcional, aspectos físicos, dor, saúde geral, vitalidade, aspectos sociais, aspectos emocionais, saúde mental. O paciente obteve melhora satisfatória em todos os domínios avaliados. Conclusão: o tratamento da dor lombar com o emprego de diferentes técnicas de terapia manual pode ser efetivo na melhoria da qualidade de vida de pacientes portadores de disfunções causadas pela hérnia de disco L5-S1.

**PALAVRAS-CHAVE:** Hérnia de disco. Dor lombar. Terapia manual.

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