

Successful Chiropractic and Rehabilitation Prevents Spinal Fusion Surgery for Chronic Low Back Pain: A Case Report

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Case report

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Abstract

A 37-year-old female presented with low back and right leg pain that increased over a year despite interventions from a Chiropractor, Physical Therapist, Orthopedist, Pain Specialist, and Neurosurgeon. The patient failed medical management, local steroid injections, physical therapy, and had a very brief period of relief following surgical discectomy. She was considering spinal fusion surgery when she sought a second opinion. She described radiating pain that extended beyond the knee into the calf and ankle area latera and anterior as “sharp” and “twisted”. Treatment began with Chiropractic adjustments and soft tissue work using post-isometric relaxation (PIR) due to the amount of pain the patient was in and progressed from twice a week to weekly intervals using both passive therapy and active rehabilitation exercises. Using the Oswestry disability index (Fairbank JC, 2000), the patient progressed from a 62% disability “(crippled)” to 36% “(moderate disability)” during five weeks of in-office treatment, to 16% “(minimal disability)” during a 5 ½ week hiatus from in office care during which she continued at home active rehabilitation exercises. The goal of this report is to detail the importance of proper assessment and incorporating both passive and active care into a treatment plan. This report shows the effectiveness of a comprehensive history that leads to patient informed goal determination, in conjunction with examination, functional assessment, with the addition of active exercise to a passive treatment plan.

Introduction And History

A 37-year-old Caucasian female presented with pain in the lower back with radiation to the right leg to the ankle. She was unsure why it started, only relating it to following “shortly after” a carpal tunnel surgery and denied any other trauma. She went to a Chiropractor first receiving “normal adjustments,” but not remembering the number of times (other than stating in two different conversations “a couple of times” and “a handful of times”). She reported minor relief following adjustments, but ultimately progression of pain. She sought out the opinion of an Orthopedist without success, then a pain treatment center evaluation. She was prescribed Celebrex 200 mg and Ibuprofen 200 mg. An MRI of the lumbosacral spine was performed and revealed degenerative disc disease from L3-S1, moderate central and bilateral foraminal stenosis at L3-4 and L4-5. Right side disc herniation at L5-S1. She underwent four injections of Kenalog into the spinal space, which provided “minimal relief” and led to “terrible side effects”.

Concomitantly, she was referred for physical therapy. The prescribed physical therapy consisted of manual therapy, modalities, and therapeutic exercise 2–3 times per week for 8–10 weeks. The patient was unable to follow the treatment plan due to her work but was seen 6 times over the course of the first month. Treatment notes revealed some relief over the course of the month, but still she suffered back and leg pain extending into the right calf. She experienced an exacerbation at this point reporting her pain as 8/10 on visual analog scale (VAS). She was referred again to the pain treatment center for care receiving the latter two of the four total injections.

During physical therapy she received mainly passive treatment consisting of electrical stimulation, cold packs, ultrasound, and instrument assisted soft tissue mobilization to the low back bilateral, right gluteal, and piriformis muscles. The active therapy was instruction of transversus abdominus specific isometric exercise, there were no stated exercises given other than a mention of the patient doing core strengthening exercises at home and gym with some cardio given.

Finally referred to a Neurosurgeon and underwent right sided discectomy of L5-S1 using a mini open technique. She only experienced pain relief for “about 2–3 weeks”. A follow up MRI of the lumbosacral spine was ordered, which showed “minimal broad-based disc bulge L3-4 with no significant spinal canal narrowing. Mild right neural foraminal narrowing with effacement of the right L3 nerve root. Minimal broad-based disc bulge L4-5 with no significant spinal canal narrowing and mild bilateral neural foraminal narrowing with effacement of the exiting L4 nerve roots. Interval right L5-S1 discectomy with residual or recurrent central and right paracentral disc protrusion causing no significant spinal canal narrowing and mild right neural foraminal narrowing with effacement of the exiting right L5 nerve root and the traversing S1 nerve root in the lateral recess.” At her neurosurgical follow up appointment, she was diagnosed with the same disc bulge she had surgery for and was prescribed another 6 weeks of physical therapy. A spinal fusion surgery was planned if physical therapy proved unsuccessful.

Comparison of success rates in alleviating back pain between treatment modalities such as pain management, physical therapy, chiropractic, and neurosurgery are scarce. In one comparison of 473 patients at 11 years follow-up in which roughly half the patients had lumbar fusion surgery and the other half had “non-operative” treatment consisting of cognitive behavioral therapy and exercise rehabilitation found no difference in patient self-rated outcomes between fusion and multidisciplinary cognitive-behavioral and exercise rehabilitation. The results suggest that, given the increased risks of surgery and the lack of deterioration in non-operative outcomes over time, the use of lumbar fusion in patients with chronic low back pain should not be favored in health care systems where multidisciplinary cognitive-behavioral and exercise rehabilitation programs are available (Mannion AF, 2013).

The patient presented to our office seeking a second opinion to spinal fusion surgery. Her assessment revealed many yellow flags that contributed to the chronicity of her low back pain. Stress with family life, the start of a new business, duration of symptoms, distress over the lack of alternatives to surgery, her fear of poor recovery and functionality in her life activities contributed to decreased activity due to pain and frustration. She was motivated to improve and succeed, which ultimately contributed to her success with dual Chiropractic and Rehabilitation therapy (University of Western States College of Chiropractic Clinic Protocol, 2011).

Case Report (Methods)

This patient was first assessed in our office three months following discectomy. She just bought a business and was worried she would not be able to perform work or life tasks as a mother due to limited mobility from chronic low back pain. Difficult tasks included: sitting for long periods at a desk and

computer, bending and lifting pots and watering cans, as well as normal activities of daily living, such as walking and sleeping.

Physical assessment was based on the Selective Functional Movement Assessment (SFMA) from Functional Movement Systems (Cook, 2010) (Honarbakhsh & Rose, 2017). Orthopedic, neurologic, and motor tests were also included as well as functional attributes from First Principles of Movement and the text *Rehabilitation of the Spine: A Practitioner's Handbook* (Liebenson, *Rehabilitation of the Spine - A Practitioner's Manual*, 2007) (Liebenson, *Prepare*, 2019). Positive Orthopedic Tests included: Straight Leg Raise (right) with radiating pain from the lower back continuously into the mid-calf just prior to 70 degrees, same results with Well Leg Raise, Milgram's with moderate pain increasing into stopping the test at ten seconds due to pain and radiating symptoms into the right calf, Ely's bilateral greater on the right during right sided testing in the lower back, Patrick Faber's bilateral with the pain on the lateral hip describing an impingement type feeling, Jack's test (assessment of dorsiflexion of the metatarsophalangeal joint of the great toe) showing significantly decreased ROM on the right in supine both active and passive with associated tenderness in the right plantar area and none on the left. Motor testing showed decreased strength bilateral in the Quadratus Lumborum and Gluteus Medius worse on the right with pain associated only on the right. Full strength findings were demonstrated in the Gluteus Maximus, but pain in the low back testing bilateral, with leg pain on the right with right sided testing.

Significant findings during the SFMA included: (1) A functional non-painful multi-segmental flexion test (she was able to touch toes, had posterior weight shift, and smooth spinal curve), (2) dysfunctional painful multi-segmental extension test across the L-S junction, bilateral dysfunctional non-painful multi-segmental rotation (unable to reach 100 degrees rotation standing bilateral), (3) Left single leg stance with eyes closed (patient was unable to stand more than 2–3 seconds with eyes closed), and (4) dysfunctional non-painful deep squat arms in front (knees fall far in front of the toes and cave inward). An assessment of rotation at the joint level revealed decreased internal rotation bilateral of the hips actively, but full ROM past 30 degrees passive with pain in the lower back during right side moving. She demonstrated bilateral decrease in thoracic ROM actively in "reach back" position, but full passive ROM passively reaching 45 degrees bilateral (Honarbakhsh & Rose, 2017). Light touch evaluation of the lower extremities revealed NAF bilaterally.

An Oswestry Disability index was used on the first visit which resulted in 62% disability (crippled) (Fairbank JC, 2000). Single leg glute bridging showed the inability to keep pelvis level bilateral with worse drop of the right pelvis during left leg testing. She was unable to perform shin box (seated with one hip in external rotation and the other in internal rotation) testing unless laying on her opposite elbow, and inability to hold torsional buttressing (single arm planking) unless she was on her knees. Gait visualization showed a relatively normal gait pattern during left swing phase. During right swing phase the patient pulled her entire hip and body through the motion essentially twisting the right side to step through.

Her initial treatment plan consisted of in office adjustments twice weekly for 3–4 weeks, then weekly for 2–4 weeks depending on both progress and compliance to the prescribed therapeutic plan. A reassessment was performed following one month of care using an ODI and functional. Passive treatment consisted of Sacro-occipital Technique blocking of the pelvis with the use of drop table adjusting, and P-A high velocity low amplitude adjusting in the T-L junction. Soft tissue treatment consisted of post-isometric relaxation of the quadratus lumborum, erector spinae, psoas on various appointments based on tight muscle findings. Early on the patient did have radiating symptoms into the right leg with pain in the lumbosacral junction on the right. “Hip scouring” was also performed periodically.

Active treatment exercises included: press up exercise based on McKenzie protocol, single leg standing in Brugger’s relief position with the goal of eyes closed for a minimum of 10 seconds working to 30 seconds. She was taught how to activate short foot through modeling and Vele forward lean, Bird dog hold 8-10 seconds at 6, 5, 4 reps 1-3 times per day (McGill, 2017), and shin box with activation of gluteus medius. As a side note on Bird Dog: with the patient having her main dysfunctional pattern in the transverse plane, it was extremely difficult for her to level out her pelvis in this pose. After multiple visits, modeling, and trying to have a family member observe, we discovered the best “cue” was external with some type of object on her low back. In the office we used a yoga block. Following this, she made the most progress with motor control in this plane. See photos (1-3).

The patient underwent the prescribed in-office therapy and reported compliance with active at home rehabilitation exercises. After one month we noted remarkable improvement in her ODI, decreasing to 36% (moderate disability). Reassessment and functional testing following one month of therapy, showed decreased pain, resolution of radiating leg pain, and reduction in the feeling of being “twisted”. She required external input (yoga block) to fully level the pelvis during Bird Dog exercise but was able to self-correct. Single leg gluteal bridging improved with pelvis un-leveling. At this point, and to expedite active treatment to a more real-life situation, she was given vertical loading exercises to help her improve her daily activities. These included a farmer’s carry exercise and a single leg squatting exercise with a doorknob or other object to help stabilize, an isometric hold was used with the opposite leg behind her to “kickstand” for 6–8 reps while holding the single leg squat position. Due to Covid-19, her Chiropractic treatment was on hold, but email communication allowed us to know her function was much better at work and regular life. During her visit following the hiatus from care, we were able to reassess the ODI to find that her self-care strategies were enough to continue to improve to 16% disability (minimal). Complaints include flares of low back pain when sitting, carrying, and/or lifting for long periods throughout the day. The night prior she began to get some radiating pain into her right leg.

Supplementation and general dietary advice were also given to the patient to maintain healthy diet of anti-inflammatory foods along with fish oil at roughly 2,500 mg per day, since this has been shown to “be the floor for anti-inflammation” (Murphy, 2005).

Discussion

Low back pain is an extremely common phenomenon that can lead to disruption in work and life. Current medical practice guides patients towards increased imaging, medications, referrals to specialists, and costs associated with treatment. Referral to physical therapists with emphasis on passive therapies can lead to decreased loading while trying to over-correct movements leading to deconditioning and “chronic rehabbing” (Gabbett & Hughes, 2020). Not adhering to evidence-based protocols by Chiropractors can lead to a dependence of patients on the passive care given, leading to the same type of purgatory described for physical therapists.

The goal of a functional assessment is to find the “silent killer” as described by Grey Cook and correct this first (Cook, 2010). “Silent killer” refers to a movement strategy that is dysfunctional but not painful. It is the compensation strategy that the patient has created to move that creates the pain, typically in an area different than the dysfunctional movement pattern.

When learning to move, humans hardwire their movements for the rest of their lives around the ages of 6–9 (Liebenson, Rehabilitation of the Spine - A Practitioner's Manual, 2007). It can take years for pain to develop due to a faulty movement pattern. It is up to the attentive Chiropractic practitioner to relieve chronic pain through passive care, find faulty patterns that created the complaint, and finally teach the patient how to either correct, or prepare for the load that they are putting on their bodies that has and will continue to create pain.

In this case, it was found that the patient had pain with extension but was unable to move in rotation, and had to “twist” her entire right side to pull her hip and leg through the swing phase during gait assessment. Additionally, during single leg glute bridge her pelvis fell on the non-weight bearing side. Hence, rotation is where active exercises began in this case. Having pain in extension locally and radiating leg pain, passive care was targeted in these areas.

Limitations in her treatment included her inability to comply with a full treatment plan due to factors relating to life stressors of being a new business owner, family duties that limited full compliance of active exercises. In addition, her therapy bridged at a time of an unprecedented pandemic which led to a lapse in in-office care. These factors highlight the importance of giving patients the tools to help themselves, so they are not dependent on a practitioner, treatment, or medication for relief. Another limitation in this case is that a full reassessment of the initial positive tests was not performed, such as her orthopedic, neurologic, muscle, and SFMA testing. It was streamlined to assess the working theory of rotation being the dysfunctional non-painful “silent killer,” which subjectively appeared to be the correct working theory. Also, there was not a formal assessment for “yellow flags” other than her history, such as an outcome assessment tool to track objectively through her care.

Conclusion

This case shows that Chiropractic and Rehabilitation therapy can alleviate chronic low back pain and may be an alternative to surgical intervention. Multifaceted therapy including a musculoskeletal practitioner, trainer or exercise therapist, pain management, and cognitive behavioral therapy may

intersect to provide relief. In this case, the yellow flags for chronicity were present, but the patient was extremely determined to get better facilitating her recovery.

Functional testing appeared to be a key component in this case when compared to the other types of treatment the patient received. In observation of symptoms only, providers risk missing the root cause of the complaint, which can be in a completely different part of the body. Principles of the SFMA and First Principles of Movement may be helpful strategies for any practitioner to investigate in patients who have sought out many prior treatment modalities, such as in this case, or if the patient is sub-acute or trending toward or have crested into chronic classification.

Moving forward with this patient, we plan to reassess the new loading strategies in standing position. She states that she is excited to continue to be able to work, take care of her family, and go turkey hunting which she was unable to do last year because of pain.

Declarations

Declarations

• **Ethics Approval and Consent to Participate:**

- Informed consent was obtained from this patient for participation in this study. Ethical guidelines were followed based on the approval of the National Board of Chiropractic Examiners for the level of Doctorate of Chiropractic.

• **Consent for Publication:**

- There is no identifiable personal data regarding this patient. Pictures obtained have no facial recognition. Consent was given for participation and publication.

• **Availability of Data and Material:**

- All information and data regarding this case can easily be accessed from the “References” page. Data from the case itself is retained in the clinic in hard copy form including but not limited to: all notes, images, and reports from every provider obtained.

• **Competing Interests:**

- The author has no financial relationships or other conflicts of interest relevant to this article to disclose.

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Joel Roloff was the only contributing author in this report.

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Figures



Figure 1

Photos 1-3 from Left to Right: Photo 1 correct stabilized left leg bird dog, Photo 2 inability to stabilize and hip level during right side stabilized bird dog, Photo 3 significant improvement using external input device such as a yoga block.