Microdiscectomy & Partial Laminectomy Surgery on L5 S1 Disc

And the BASI Approach to Rehabilitation
Abstract

The purpose of this paper is to demonstrate the many benefits gained by using the BASI Block System after recovering from a microdiscectomy and partial laminectomy performed on the L5 S1 disc. In this particular case study, Kurt had been recreationally active up until he was 32. A mountain biking accident in his late 20’s caused the initial damage (most likely a bulging disc) due to the impact on a rocky surface. As time and comfort level would allow, he continued his physical activity. Mostly likely, normal life activities caused the disc herniation four years later, which required the surgery.

Kurt came to me two and half years after his surgery (age 34). All activities he enjoyed in the past were no longer a part of his routine. Even some of the simplest tasks or forms of exercise caused pain in his lumbar spine. Kurt’s goal was to gain his core strength back and hopefully live pain free. Using the BASI Block System, Kurt gained strength and mobility, but equally as important he gained an understanding of good posture and how to support and protect his spine performing daily tasks (e.g., yard work, exercise).
## Table of Contents

2

Abstract

4

Anatomical Description

5

Causes, Diagnosis and Treatment

6

Case Study

7

Pilates Practice

8

Conclusion

10

Bibliography
Anatomical Description

The lumbar spine consists of 5 vertebrae known as L1 to L5. In between each vertebra are gel-like cushions called intervertebral discs. The discs help to absorb pressure, distribute stress, and keep the vertebrae from grinding against each other. In a normal and healthy body, an individual can experience a great deal of motion and flexibility in their low back. Because this section of the spine bears most of the body’s weight and allows for such motion and flexibility, this is the area associated with most back problems.

The sacrum is the next region below the lumbar spine. The S1 to S5 are 5 bony segments fused together. The triangular shape they create serves as the base of the spine which makes up part of the pelvis. The L5-S1 joint describes the space between the fifth lumbar and first sacral vertebra in the back. The diagram below is an example of a healthy lumbar spine (left) and a herniated L5 S1 disc (right).
Causes, Diagnosis and Treatment

Damage to the L5 S1 disc can result in pain that originates in the lower back and shoots down the buttocks to the back of the leg and into the back of the foot. This occurs because portions of the gel-like disc are putting pressure on the sciatic nerve. If there is any nerve damage, the patient will also experience numbness and tingling. This kind of injury can make sleeping and performing other activities of daily living difficult or impossible for a patient. In Kurt’s case, the MRI results showed the herniated disc was “free-floating” and impinging the sciatic nerve root. Therefore, a microdiscectomy and partial laminectomy were necessary. A microdiscectomy is the surgical removal of herniated disc/bulging disc material that presses on a nerve root or the spinal cord. Laminectomy is a procedure that involves removing the lamina to increase the amount of space available for the neural tissue.

Treatment post surgery of this type is often tricky. In many cases, because the client has been inactive due to pain from the injury and recovery, he/she will be weak and stiff. Possibly the fear of reinjuring the spine may keep a client from any form of rehabilitation. Assuring the client of the need to regain strength as well as body awareness is a good place to begin. Educating the client on how to engage and therefore strengthen the transverse abdominus and the obliques should be a priority from the beginning. Both function as stabilizers and are the focus of any back care program. Examples of fundamental mat exercises focusing on the both the TA and obliques are Pelvic Curls, Chest Lifts, Chest Lifts w/Rotation, Leg Lifts/Changes, Spine Twist Supine, and Hundreds prep. I will mention more exercises on the other apparatus in the “Pilates Practice” section.
Case Study

Kurt became one of my clients at the age of 34. At a height of 6’1, Kurt carried his 180lb frame well but definitely needed strength. Although he described himself as inactive at the time, he enjoyed many outdoor activities in the past. After a mountain biking accident in his late 20’s, Kurt took a break to heal from what he felt, at the time, was a bruised tailbone. As his body would allow, he got back on the bike and occasionally squeezed in running, weight training, and tennis. Added to his recreational activities, the responsibilities as a husband, father of three, and international traveler for work eventually put him in chronic pain. His neural surgeon believed that while he may have somewhat “recovered” from the initial injury, the L5 S1 disc was probably bulging and over time and with overuse became herniated. A microdiscectomy and partial laminectomy were both necessary in order to remove disc fragmentation that was putting pressure on the sciatic nerve.

Due to a cross-country move and several chronic health issues, Kurt was unable to properly incorporate any sort of rehab program post surgery. Although the surgery was successful, the two year gap of very little activity gave way to atrophy and mobility issues. Our goal from the beginning was to gain strength and mobility as well as a deeper awareness of caring for the spine.
Pilates Practice

Kurt began his Pilates program at Body Dynamic in April of 2009. While speaking with Kurt, I understood he was looking to address the whole body due to overall weakness. The Lumbar Hyperlordosis of his spine was also contributing to weak abdominals, tight hip flexors and tight back extensors. We began with a few of the fundamentals from the BASI mat program. By starting with pelvic rocking, Kurt became aware of how to hold his pelvis in neutral. Due to his lumbar hyperlordosis, the anterior tilt of his pelvis felt more natural. I explained that in order to deeply engaged the TA and therefore stabilize and protect his back, Kurt needed to practice going into more of a posterior tilt in order to keep his hips and pubic bone on the same plane. Rocking the pelvis from anterior tilt, to neutral, and into the posterior tilt several times made him more comfortable with finding his neutral position and holding it as we moved on. Chest Lifts, Chest Lifts w/Rotation, Leg Lifts/Changes, and Hundreds prep were all challenging but he was careful not to force any movements and used his breathing well.

Kurt responded very well to Foot Work, Hip Work, and Standing Lunges on the Reformer. Getting the body warm through Foot Work was something he looked forward to and the Hip Work increased the stability in his pelvis. Standing Lunges were not his favorite because his hip flexors were so tight but the benefit outweighed the challenge. He responded well to Scooter and Elephant. For Kurt, Elephant was a good fundamental exercise to introduce since it focused on the back extensors as well as the abdominals. Holding his legs in tabletop for the Arm Supine Series was not possible. In order for him to keep his pelvis neutral we had to take a break halfway through.
This only helped us to set goals to work toward. Any lateral flexion/rotation and extension was avoided in the beginning due to an aggravated sacroiliac joint.

Below are the some of the intermediate exercises we incorporated as Kurt gained strength and awareness:

<table>
<thead>
<tr>
<th><strong>Reformer:</strong></th>
<th><strong>Cadillac:</strong></th>
<th><strong>Wunda Chair:</strong></th>
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<tbody>
<tr>
<td>Hundred</td>
<td>Roll Up with Roll Up Bar</td>
<td>Standing Pike</td>
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<tr>
<td>Coordination</td>
<td>Mini Roll Ups</td>
<td>Side Stretch</td>
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<tr>
<td>Round Back, Flat Back &amp; Tilt from Short Box Series</td>
<td>Mini Roll Ups Oblique</td>
<td>Swan Basic</td>
</tr>
<tr>
<td>Bottom Lift</td>
<td>Tower Prep</td>
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<tr>
<td>Bottom Lift with Extension</td>
<td>Sitting Forward</td>
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<td>Short Spine</td>
<td>Thigh Stretch with RUB</td>
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<td>Reverse Knee Stretch</td>
<td>Kneeling Cat Stretch</td>
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<td>Long Stretch</td>
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<td>Arms Kneeling Series</td>
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During the stretching block, I also used the Ladder Barrel to help him stretch his gluteals, hip flexors, and hamstrings.
Conclusion

I worked with Kurt on an average of twice a week for four months. In the beginning, we did not fill the whole hour but we were both encouraged by how soon he was strong enough to handle the full 60 minutes. He began to notice how important it was to use the deep strength in his core while raking leaves, mowing the lawn, and using the elliptical. Traveling and sitting at his desk for work, Kurt gained more of an awareness of good posture. The whole body workout laid out by the BASI Block System gave him strength, mobility, flexibility and the confidence that there is a full life to enjoy after surgery.

Kurt still uses some of the mat exercises at home. He is doing well and living pain free but it has been about 2 years since our last session. We recently discussed a plan to get Kurt back in the studio in 2013 knowing he needs Pilates to continue to gain the support he needs for his spine.
Bibliography


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