Significant Symptom Resolution of Spinal Lipomatosis with Weight Loss

Treah Haggerty¹, Savannah Milligan², Laura Davisson³, Megan Cavrak¹, Riley Imlay¹, and Cara Sedney¹

¹West Virginia University Health Sciences Center
²West Virginia University
³West Virginia University - Health Sciences Campus

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Abstract

71-year-old male with epidural spinal lipomatosis and spondylolisthesis. Conservative treatment failed, and a spinal fusion and laminectomy were performed. Postoperatively, the patient reported a reduction in pain; however, the pain recurred soon after surgery. After losing 53 pounds with medical management, the patient reported a complete absence of pain.

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Treah Haggerty MD MS¹, Savannah Milligan RN², Laura Davisson MD³, Megan Cavrak BS⁴, Riley Imlay BA⁴, Cara Sedney MD MA⁵

¹West Virginia University Department of Family Medicine, WVU Medicine Medical and Surgical Weight Loss Center’s Medical Weight Management Program, 2nd Floor HSS, Morgantown, WV, 26506 Email: haggertyt@hsc.wvu.edu

²WVU Medicine, 1 Medical Center Drive, Morgantown, WV, 26506 Email: savannah.milligan@wvumedicine.org

³Department of Internal Medicine, West Virginia University School of Medicine, WVU Medicine Medical and Surgical Weight Loss Center’s Medical Weight Management Program, Morgantown, WV, 26506 Email: lдависсон@hsc.wvu.edu

⁴School of Medicine, West Virginia University, Morgantown, WV, 26506 Emails: mec0076@mix.wvu.edu and rkimlay@mix.wvu.edu

⁵West Virginia University Department of Neurosurgery, 4th Floor HSCS, Morgantown, WV, 26506 Email: csedney@hsc.wvu.edu

Corresponding Author:
Treah Haggerty MD, MS
Department of Family Medicine
West Virginia University,
1 Medical Center Drive, PO Box 9152, Morgantown, WV 26506
Email: haggertyt@hsc.wvu.edu Fax: 304-581-1646 Telephone: 304-598-6900
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Abstract:

71-year-old male with epidural spinal lipomatosis and spondylolisthesis. Conservative treatment failed, and a spinal fusion and laminectomy were performed. Postoperatively, the patient reported a reduction in pain; however, the pain recurred soon after surgery. After losing 53 pounds with medical management, the patient reported a complete absence of pain.

Background:

Epidural spinal lipomatosis is a rare condition characterized by the deposition and hypertrophy of adipose tissue in the spinal canal, sometimes resulting in stenosis or compression of the dural sac and nerve roots. Although several factors are considered to precipitate the disease, steroid use and obesity are considered among the most prevalent, with obesity controversially being listed under “idiopathic” causes occasionally. Weight reduction and decreased steroid use are first line treatments for this disorder, and usually surgery is considered only when conservative treatment is ineffective.

Objective:

To describe a case of treating spinal lipomatosis within an evidence based multidisciplinary medical weight management clinic.

Case Report:

A 71-year-old male patient with a known history of class 3 obesity, sleep apnea, prostate cancer, hypertension, hyperlipidemia, and deep vein thrombosis presented to a specialized spine center secondary to persistent bilateral pain in the buttocks and calves which worsened with walking, a classic neurogenic claudication picture. The patient completed a course of physical therapy for two months prior to presentation with a spine specialist. On presentation in the spine clinic, the patient complained of bilateral pain of the hamstrings, which he described as similar to “toothache” pain and “sharp at times.” The patient reported mid-lumbar pain that was exacerbated by walking or standing. No history of exogenous steroid use was reported.

The patient underwent initial imaging. X-rays revealed degenerative spondylosis at L3 and L4, facet osteoarthritis at L3 through S1, and mild diffuse degenerative disc disease. Follow-up flexion and extension x-rays revealed grade 1 anterolisthesis of L3 and L4 (Figure 1) which was not evident on supine films.

As part of conservative treatment, the patient underwent a lumbar epidural steroid injection under fluoroscopy at L2 and L3. Following this procedure, the patient reported pain relief that lasted one day before symptoms returned. Because of failure of conservative treatment, the patient underwent a L3-L4 spinal fusion with midline laminotomy. Preoperative counseling centered on the likely contribution of epidural lipomatosis to his overall picture, but that his mobile spondylolisthesis likely contributed to his symptoms. In early postoperative follow-up, he related that his symptoms had resolved, but they recurred by his three-month follow-up. Repeat MRI was ordered because of his recurrent symptoms and demonstrated “moderate to severe narrowing of the thecal sac contributed to by prominent ventral epidural fat.” (Figure 2)

The patient was then referred to the Multidisciplinary Medical Weight Management clinic. At his initial presentation to the weight management clinic, it was noted at the first appointment that the patient had a weight of 283 pounds (approximately 108 kilograms) and a height of five feet and 10 inches (approximately 1.8 meters) resulting in a BMI of 41 kg/m². A hemoglobin A1C test with a value of 5.9 revealed prediabetes. The patient reported barriers to weight reduction such as high sugar intake, sedentary lifestyle, eating quickly and frequently, lack of vegetable and fruit intake, and fluid intake containing sugar.
The first follow up with weight management included prescribing oral extended-release metformin 500 mg once daily. The following goals were implemented: counting calories, tracking dietary intake, reducing sugar intake, and incorporating five servings of fruits and vegetables into daily diet. Upon meeting with a dietician, the patient established the goal of logging dietary intake on a phone application. Initial medical weight management goals included losing 10% of body weight (29 lbs.) within 6 months.

At the second follow up appointment, the patient’s prescription of oral metformin was increased to 500 mg twice daily. The previous goals were continued. The dietician met with the client and established a moderately carbohydrate controlled eating pattern of approximately 1800-2000 calories daily. Intermittent fasting and food logging was continued per patient report.

The patient followed up with the spine specialist, approximately 13 months after initial presentation, where it was noted that he had lost 29 pounds (approximately 13 kilograms) resulting in a BMI of 36 kg/m². The patient reported resolution of pain in the calf and hamstrings and improved mobility. It was noted that the patient’s weight decreased from 283 pounds (approximately 128 kilograms) to 230 pounds (approximately 104 kilograms) for a total weight loss of 53 pounds (approximately 24 kilograms). Patient continued to have resolution of symptoms at last follow-up which was held 14 months after initial presentation, the patient reported to his medical weight management physician a continued weight loss and that his symptoms remain resolved, and he is pain free. He also reports walking and hiking daily with his dogs.

Discussion:

Spinal lipomatosis is a rare condition in which excess adipose tissue deposits in the spinal column causing significant morbidity, such as decreased mobility, related to the radiculopathy effects of nerve compression. Previously, treatment for spinal lipomatosis has often centered on surgical removal however with varying success in improving patients’ subjective complaints such as function, overall wellbeing, quality of life measures, and disability. Also, laminectomy surgical treatment in patients with obesity has significant risk associated. Research suggests that there is a need for less invasive procedures to manage SEL due to the high morbidity associated with spinal fusions and decompression. Conservative treatment options such as weight loss, physical therapy, and pain management may have value in patients with obesity and spinal lipomatosis. Because of this, another treatment modality for spinal lipomatosis, without concerning signs such as cauda equina syndrome, has been weight reduction to reduce spinal adipose tissue through obesity treatment.

Understanding the complexity of obesity as a disease highlights the difficulty in treating obesity in the clinical setting. According to the Obesity Medicine Association, obesity is a “chronic, relapsing, multifactorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences.” One method of treatment for obesity is delivered in multidisciplinary comprehensive obesity medicine clinics. In a comprehensive obesity medicine clinic, obesity is treated with a combination of lifestyle change factors including nutrition, movement, and in-depth behavioral change goals but also includes a medical evaluation and the use of anti-obesity medications. Obesity is a chronic disease which needs continued followup and management in the patient’s maintenance phase.

This case describes the management of a patient with significant disability secondary to spinal lipomatosis treated in a multidisciplinary medical weight management clinic. Comprehensive medical weight management is a valid treatment for SEL and further emphasizes the important role that medical weight management plays in managing the condition. A collaborative approach between neurology, neurosurgery, and obesity medicine contributed to the patient’s resolution of symptoms. Medical weight management in a comprehensive multidisciplinary setting should be considered as an evidence-based approach to managing spinal lipomatosis. Emphasis on collaboration with obesity medicine specialists may improve outcomes of surgical intervention or mitigate the need for surgical intervention entirely.

Author Contributions:

Treah Haggerty: Conceptualization, Data Collection, Resources, Writing- Reviewing and Editing
Savannah Milligan: Writing- Original draft preparation
Laura Davisson: Writing- Reviewing and Editing
Megan Cavrak: Writing- Original draft preparation
Riley Imlay: Writing- Original draft preparation
Cara L Sedney: Conceptualization, Data Collection, Writing- Reviewing and Editing

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Conflict of Interest: None

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Consent: Approved by all authors. Written informed consent was also obtained from the patient to publish this report in accordance with the “journal’s patient consent policy”.

References


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*Figure 1.docx* available at [https://authorea.com/users/508848/articles/586483-significant-symptom-resolution-of-spinal-lipomatosis-with-weight-loss](https://authorea.com/users/508848/articles/586483-significant-symptom-resolution-of-spinal-lipomatosis-with-weight-loss)

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*Figure 2.docx* available at [https://authorea.com/users/508848/articles/586483-significant-symptom-resolution-of-spinal-lipomatosis-with-weight-loss](https://authorea.com/users/508848/articles/586483-significant-symptom-resolution-of-spinal-lipomatosis-with-weight-loss)