



## Enhanced relief of low back pain following surgical repair of a ventral hernia: A case report

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### Abstract

The effectiveness of core muscle strengthening in treating Low Back Pain (LBP) is well-established. The laxity or defect of the important portion of core muscle groups, transverse abdominis muscle, as seen in ventral hernia could be a contributing factor for core weakness and instability and thereafter results in LBP. The contribution of ventral hernia to LBP is scantily documented. Ventral hernias can be easily missed if a thorough physical exam is not performed. A 50-year-old male patient presented to the clinic with a 10-year history of LBP; a physical exam revealed a previously undiscovered ventral hernia. He reported a reduction in LBP and improvement in back support after his ventral hernia repair surgery. This case report highlights the importance of a thorough assessment and treatment of the underlying connection between ventral hernia and chronic LBP.

**Keywords:** Low back pain; Physical exam; Ventral hernia; Herniorrhaphy; Pain reduction.

### Introduction

Chronic Low Back Pain (CLBP) is a prevalent and debilitating musculoskeletal problem that most people will experience at some point in their lives [1]. The overall incidence of Low Back Pain (LBP) is challenging to determine, as initial episodes are notably prevalent by early adulthood, and there is a tendency for symptoms to recur [1]. The etiology of LBP is multifactorial, and weakness in core muscles is a significant factor leading to less core support and trunk instability [1]. The abdominal muscle group is an important part of the core muscles and plays a pivotal role in stabilizing the lower spine and pelvis, making them integral to overall posture [2]. A well-documented connection exists between core muscle weakness and LBP, as there is a recognized inverse relationship between abdominal wall defects and abdominal muscle strength [3].

However, despite the recognized association between core muscle weakness and LBP, there is a paucity of literature exploring the link between ventral hernias and LBP. This link remains unexplored, possibly due to the varied clinical

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presentations of ventral hernias. Ventral hernias, or anterior abdominal wall hernias, result from the protrusion of intra-abdominal contents through congenital or acquired defects in the transverse abdominis muscles [4]. These hernias often develop due to repetitive stress on the abdominal wall. Obesity significantly increases the risk of developing larger hernias and elevates the likelihood of hernia recurrence [3]. Other factors, such as ascites, coughing, vomiting, or pregnancy, can also contribute to their development [5]. Ventral hernias can often present with an asymptomatic mass or development of pain from bowel strangulation and obstruction.

Currently, there are no standardized treatment guidelines for asymptomatic ventral hernias, reflecting the complexity of individualized patient scenarios. Surgeons may opt for elective surgery or adopt conservative approaches like watchful waiting, considering the patient's risks, comorbidities, and life expectancy [3]. In contrast, symptomatic hernias usually warrant surgical care, with the majority requiring mesh placement. The introduction of mesh repair has greatly reduced the recurrence of ventral hernias to around 10-23% [6]. While more than

400,000 ventral hernia repair surgeries are performed annually in the United States, ventral hernias are often easily ignored due to the lack of imaging techniques and the unreliability of clinical examination alone to make the diagnosis [7,8]. The diagnosis of ventral hernias can often be overlooked without a comprehensive physical examination. This case study explores a 50-year-old male patient who experienced substantial relief in LBP and promotion of back support following surgical ventral hernia repair with mesh.

### Case report

A 50-year-old male patient with past medical history of cervical fusion, cervicogenic headache, Gastroesophageal Reflux Disease (GERD), diverticulitis, and obesity presented to the clinic with a 10- year history of LBP. Previously treated in the clinic for his cervicogenic headache and neck pain, he described his LBP as intermittent and dull, without radiating pain into his legs. He denied any weakness or numbness in his bilateral lower extremities and denied acute bowel or bladder dysfunction. His LBP worsened with back movement, particularly back twisting. He typically could stand for only eight to ten minutes at a time. He had tried several medications including Cymbalta, NSAIDs, Tylenol, and had completed multiple physical therapy courses.

His physical examination revealed bilateral lumbar paraspinal tenderness at L4-L5, exacerbated by back extension and lateral bending. Muscle strength, reflexes, and sensation to light touch were normal in all extremities. An abdominal examination showed a bulge and a palpable mass that increased in size with coughing and sit-ups. The bulge was reducible in a supine position, and his Carnett's sign was positive. His X-ray of lumbar spine revealed mild facet joint arthropathy at L4-5 and L5-S1 and mild degenerative changes at the sacroiliac joints.

The patient was advised to undergo a diagnostic medial branch nerve block for his lumbar facetogenic pain and referred for a surgical consultation to evaluate a potential ventral hernia. At a five- month follow- up, the patient reported an 80% improvement in LBP following Radiofrequency Ablation (RFA) for his left- sided L4/5 and L5/S1 facet arthropathy/pain, after receiving two diagnostic medial branch nerve blocks. Additionally, a Computed Tomographic (CT) scan of his abdomen at an outside facility confirmed a large abdominal wall defect, indicative of a ventral hernia (Figure 1). He subsequently completed a ventral hernia repair surgery with a mesh. He endorsed additional relief of his LBP and enhanced back support, to which he noted "feeling greater stability in my back" after his ventral hernia repair. He was later followed in this clinic for continuity of neck pain management.

### Discussion

This case report draws attention to the multifactorial nature of LBP and the less explored link between ventral hernias and LBP. While ventral hernias can remain asymptomatic, some may cause LBP due to their weakening impact on abdominal muscle strength. Patients who present to the clinic with LBP are often recommended to perform core strengthening, reconditioning, and stabilization in the management of LBP [9]. However, in this patient, the unaddressed ventral hernia would likely hinder the effectiveness of physical therapy. This case illustrates that surgical intervention may be necessary to fully address the root causes of pain and enable effective rehabilitation.

Furthermore, this case underscores the indispensable role of comprehensive physical examinations in the accurate diagnosis



**Figure 1:** Axial view of patient's ventral hernia as shown in contrast-enhanced CT scan.

LBP. A thorough physical exam, coupled with a detailed patient history, emerges as fundamental in guiding clinicians toward making the correct diagnosis. However, the diagnostic sensitivity of physical examinations for ventral hernias may be significantly compromised among patients who have subtle hernia presentations, those with a large body habitus, or individuals with a complex surgical history [10]. Despite these challenges, the current medical practice lacks a universally accepted standard of care for diagnosing ventral hernias, oscillating between physical examinations, imaging modalities such as CT scans, ultrasound, MRI, and diagnostic laparoscopy as potential options. With advancements in imaging technology, CT scans are increasingly becoming the preferred method for accurate diagnosis, offering superior precision over physical examinations alone [10].

The patient's clinical journey—from the initial presentation of debilitating LBP through the diagnostic revelations of lumbar facet arthropathy and a ventral hernia, to the symptomatic relief following RFA for facetogenic LBP and the subsequent surgical mesh repair of the ventral hernia—illustrates a compelling narrative. This progression not only highlights the necessity of a dual approach in addressing both the direct and indirect causes of LBP but also underscores the evolving diagnostic and treatment paradigms in the management of chronic LBP. By delving into the complex relationship between structural anomalies like ventral hernias and LBP, this case report contributes valuable insights into broader LBP management strategies, advocating for a more holistic, patient-centric approach that spans beyond conventional treatments.

### Conclusion

In conclusion, this case highlights the importance of addressing core instability in CLBP patients and a reminder to perform thorough physical examinations. This is especially important prior to initiation of conservative treatments like physical therapy as patients with abdominal wall defects will likely be unable to take advantage of the benefits of physical therapy. Significant ventral hernias are readily assessed on physical exams; thus, clinicians should bear this condition in mind when assessing for contributors to back pain in their

patients. Further work is needed to clarify the role of ventral hernia repair in improving chronic back pain. Preferably, future studies should take the form of randomized control trials that assess reporting outcomes of patients with chronic low back pain and ventral hernias that had their hernia repaired or elected to leave the defect unrepaired. Additionally, future studies should focus on establishing the prevalence of hernias in chronic low back pain patients and how severe these defects tend to be.

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