

Persistent Postoperative Axial Pain Following Lumbar Instrumentation in a Young Woman with Suspected Sacroiliac Pathology: A Longitudinal Case Report from a Remote Setting

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Abstract:

Background: Chronic low back pain after spinal instrumentation remains a difficult clinical dilemma often categorized as Failed Back Surgery Syndrome (FBSS). While workups routinely focus on the instrumented vertebral levels, adjacent pelvic structures and hardware-induced soft-tissue irritation can also serve as primary pain generators.

Case Presentation: Following the CARE guidelines, I describe a 27-year-old woman from rural Sumbawa Island who presented in September 2022 with severe low back and buttock pain (VAS 8/10) and bilateral lower-limb motor weakness (grade 4/5) after lifting a heavy object, against a background of untreated childhood trauma. Preoperative MRI demonstrated normal thoracolumbar alignment without disc herniation or listhesis, but revealed bilateral sacroiliac joint (SIJ) narrowing and subchondral fat metaplasia suggestive of suspected sacroiliitis. After conservative care failed, posterior stabilization from L3 to L5 was performed based on progressive motor deficits and suspected dynamic instability. Following surgery, her radicular leg pain resolved (resting VAS 1/10), but axial lumbosacral pain persisted at VAS 4–5/10 during weight-bearing activities for nearly three years. Physical examination consistently showed bilateral positive Patrick tests. In July 2025, persistent tenderness over the pedicle screws led to elective hardware removal, which reduced her axial pain to VAS 2–3/10.

Conclusion: This case highlights the clinical challenge of evaluating back pain when severe disability clashes with modest supine MRI findings in a rural setting. Clinicians should consider adjacent SIJ overload and hardware irritation before contemplating revision spinal surgery.

Keywords: chronic low back pain; suspected sacroiliac joint dysfunction; lumbar stabilization; failed back surgery syndrome; hardware irritation; rural healthcare.

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Introduction

Low back pain is still the main cause of physical disability and loss of productivity worldwide (Ferreira et al., 2023). Posterior instrumented stabilization is often

performed for lumbar instability due to degenerative or isthmic spondylolisthesis (Narayanan et al., 2025). Although fusion is achieved very frequently, 10% to 40% of patients are still experiencing a persistent or recurrent

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problem, and this is generally classified as Failed Back Surgery Syndrome (FBSS) (Osama et al., 2025). If postoperative pain does not improve, the primary concern is the instrumented lumbar level instead of other areas of the body, such as the sacroiliac joint (SIJ).

Three related disorders are important to treat as a clinical concern: The case of sacroiliitis is a purely inflammatory arthropathy associated with axial spondyloarthropathies or infections and is either confirmed by inflammatory markers or changes in subchondral bone marrow on MRI. Sacroiliac joint dysfunction is a condition of abnormal joint kinematics and altered pelvic mobility with no systemic inflammation. Mechanical SIJ pain is a direct nociceptive pain caused by a combination of shearing and compressive forces on the joint.

It is difficult to distinguish between lumbar spine pathology and SIJ-induced pain, because both are associated with pain in the buttocks, groin, and posterior thighs (Yoo, 2023). Long-lasting compensatory posturing in lumbar disorders adversely changes normal gait and also puts excessive mechanical stress on the pelvic ring (Shimoda et al., 2010). Furthermore, rigid multi-level fusion creates a stiff lever arm that shifts the mechanical stress downwards on the SIJ (Cho et al., 2023; Lee et al., 2019).

The diagnosis of SIJ pathology requires physical provocation and confirmatory image-guided local anesthetic blocks (Poilliot et al., 2022). In remote areas of developing nations, access to fluoroscopy and specialized testing is very limited (Hermosura et al., 2024). In this report, I describe the longitudinal course of a patient from rural Sumbawa Island with persistent axial back pain following stabilization of L3–L5 due to suspected SIJ pathology and coexisting hardware irritation from other factors.

Case Presentation

This case report follows the CARE guidelines. In September 2022, a 27-year-old woman residing in a remote village on Sumbawa Island presented to Orong Telu Primary Healthcare Center with severe lower back and buttock pain that left her bedridden. Her history was notable for blunt lumbar trauma at age six, which had received only empiric home rest due to the absence of local imaging facilities. Throughout her adolescence, she experienced intermittent dull lower backache (baseline VAS 3–4/10) following physical exertion. Her condition deteriorated sharply in July 2022 after lifting a heavy object, developing severe pain that radiated down her right leg (VAS 8/10). Her family cared for her at home with over-the-counter medications for two weeks. Because she showed no improvement, she sought care at our primary clinic and was referred to the orthopedic

clinic at Sumbawa Regional Hospital, where she received conservative outpatient analgesics. Due to persistent symptoms, she was reassessed at the hospital's neurology clinic and subsequently transferred across islands to the provincial tertiary referral hospital in Mataram, Lombok.

At the tertiary referral hospital, the patient walked with an antalgic, forward-flexed posture. Neurological examination revealed lower limb motor weakness (grade 4/5 in bilateral hip flexors, knee extensors, and ankle dorsiflexors), a positive right Lasègue test at 30°, intact sphincteric function, and bilateral positive Patrick (FABER) tests. Preoperative supine MRI performed on July 28, 2022 (Figure 1), showed normal thoracolumbar alignment without vertebral compression fracture or listhesis, preserved disc signal across all lumbar levels with no herniation or spinal canal stenosis, and a normal conus medullaris at L1. However, significant pelvic findings were documented: multiple hyperintense signals on T1WI and T2WI across the bilateral sacrum and ilium (isointense on T2-SPIR) consistent with fat metaplasia, suggestive of suspected bilateral sacroiliitis, alongside mild bilateral joint space narrowing.

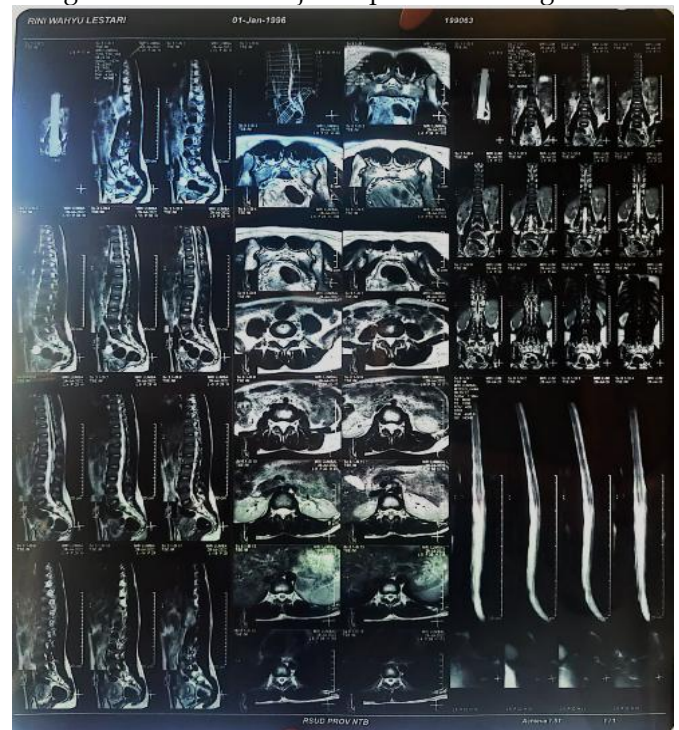


Figure 1. Preoperative lumbar MRI (July 28, 2022) showing normal lumbar disc morphology without overt stenosis, and subtle bilateral sacroiliac joint narrowing with subchondral signal changes

Despite the absence of high-grade canal stenosis on supine MRI, the treating orthopedic spine team decided to perform posterior instrumentation across L3–L5 based on the complete failure of three weeks of

intensive inpatient oral analgesics and structured physical therapy, progressive motor deficits, and the clinical presumption of dynamic mechanical instability causing intermittent neural stretch that was underrepresented on supine imaging. The patient underwent uneventful posterior pedicle screw instrumentation from L3 to L5 in late 2022, with postoperative radiographs confirming stable implant positioning and preserved spinal alignment (Figure 2).



Figure 2. Postoperative lumbar radiograph demonstrating posterior instrumentation across L3–L5 with preserved spinal alignment.

Following surgery, the patient remained in Lombok for six months of structured rehabilitation, attending outpatient visits three times weekly for two months and then weekly for the remaining four months. Her radicular leg pain resolved completely, with resting pain dropping to VAS 1/10, bilateral Lasègue normalizing to 70°, and motor strength recovering to grade 5/5. Because the visiting orthopedic surgeon ceased practice at Sumbawa Regional Hospital, she transitioned her outpatient follow-up back to Sumbawa under the neurology and physical medicine departments.

Over the subsequent three years, she struggled with persistent axial mechanical low back pain (VAS 4–5/10), provoked by standing for more than 15 minutes, sitting upright, or walking. Palpation consistently elicited marked tenderness over the posterior hardware and bilateral posterior superior iliac spines, with

persistent bilateral positive Patrick tests. A repeat lumbosacral MRI performed on March 25, 2023 (Figure 3), confirmed maintained thoracolumbar alignment without listhesis, stable L3–L5 instrumentation, and no evidence of disc herniation, stenosis, pseudarthrosis, or infection.



Figure 3: Postoperative lumbar MRI (March 25, 2023) confirming intact posterior hardware positioning across L3–L5 without pseudarthrosis, canal compromise, or adjacent disc herniation.

Although the surgical team initially recommended retaining the instrumentation for five years, the chronicity of her axial symptoms and localized hardware tenderness led to a decision for earlier removal. In July 2025, elective implant removal was carried out. Intraoperatively, the screw heads were noted to be prominent beneath the thoracolumbar fascia with adjacent bursal thickening, but the underlying fusion was solid without implant loosening. Following hardware removal and ongoing rehabilitation, her axial back pain decreased noticeably to VAS 2–3/10. Currently, in 2026, she maintains periodic outpatient follow-up at the neurology clinic in Sumbawa, remaining fully independent in daily household activities despite mild, manageable intermittent aching.

Table 1. Longitudinal Clinical and Provocative Findings

Clinical Parameter	Preoperative Baseline (Sept 2022)	Post-Fusion Follow-up (Nov 2023)	Post-Fusion Follow-up (Nov 2023)
Axial Back Pain (VAS)	8/10 (Acute exacerbation)	4–5/10 (Mechanical/weight-bearing)	2–3/10 (Substantial axial relief)
Radicular Leg Pain (VAS)	8/10 (Sharp radiating)	1/10 (Resolved at rest)	0–1/10 (Resolved)
Gait & Posture	Antalgic, severe forward flexion	Improved posture; independent ambulation	Normal gait; unassisted ambulation
Motor Strength (LE)	Grade 4/5 bilaterally	Grade 5/5 bilaterally	Grade 5/5 bilaterally
Lasègue Sign	Positive (30° right side)	Negative (70° bilaterally)	Negative (>70° bilaterally)
Patrick (FABER) Test	Positive bilaterally	Positive bilaterally	Mildly positive bilaterally
Hardware Site Tenderness	None	Marked midline/paraspinal tenderness	Resolved
Daily Functional Status	Bedridden; dependent	Ambulatory; limited sitting/standing	Independent in domestic activities

Discussion

This case demonstrates the clinical challenges of post-fusion back pain when severe functional disability clashes with modest supine MRI data. The L3-L5 posterior instrumentation achieved its primary surgical objective by dealing with radicular pain and motor deficit. However, the patient has continued to face axial mechanical back pain for three years, which suggests that there are multiple symptoms of post-fusion back pain and need to be recognized in the whole body rather than to isolate them from one region of the spine.

Hardware-induced soft tissue irritation played a significant role in her intermediate-term disability. In relatively thin persons, posterior pedicle screws and rods are often placed dorsal to the vertebral cortex and must be kept in contact with the underlying paraspinal muscles and thoracolumbar fascia (Niu et al., 2021; Üçler and Çaylı, 2020). This mechanical impingement causes localized bursal inflammation that worsens with trunk extension and prolonged sitting, as evidenced by the intraoperative bursal thickening and high pain relief to VAS 2-3/10 after implant removal in July 2025.

At the same time, we suspect mechanical overload of the SIJ is a potential source of pain. Since multi-level lumbar fusion does not involve segmental motion, it creates a stiff lever arm that sends torsional and shearing forces downwards to the sacroiliac joint when walking (Cho et al., 2023; Yao et al., 2022). Biomechanical data demonstrate that pressures on the SIJ become high after lumbar instrumentation (Elhewala et al., 2024). For this patient, the preoperative MRI had already shown bilateral joint space narrowing and subchondral fat metaplasia, which combined with a chronic compensatory posture since childhood trauma and positive Patrick tests indicate a pre-existing joint vulnerability that was mechanically overloaded by the

fusion construct (Nagasumanth et al., 2023; Nolet et al., 2021). However, since image-guided diagnostic blocks could not be performed, this should be a presumptive clinical diagnosis.

Other known causes of Failed Back Surgery Syndrome were also considered and contextualized. Pseudarthrosis was ruled out by solid bony bridging on follow-up imaging and direct verification when surgical hardware was retrieved. Moreover, the pathology of the adjacent segments and sagittal malalignment may have also put some mechanical stress on unfused mobile segments over time since rigid stabilization adds stress to adjacent junctions (Yan et al., 2026). In patients with chronic pain from childhood injuries, central sensitization and paraspinal muscle deconditioning from long-term immobilization are also more common and can lead to stronger pain perception when in their upright position (Nicol et al., 2023; Şahin and Aktoklu, 2026).

The management of spinal disorders across different islands is a systems issue. Dynamic flexion-extension radiographs were not available to measure dynamic instability before surgery and no interventional fluoroscopy could be performed to diagnose SIJs, and clinical evaluation had to be done based on physical provocation, which are known to be false-positive. This case is a reminder for clinicians in resource-constrained settings that persistent axial back pain after spinal fusion should be evaluated for hardware prominence and pelvic ring mechanics before performing spinal surgery.

Conclusion

Persistent axial back pain following lumbar stabilization is often multifactorial and should not be reflexively blamed on failure of the instrumented vertebrae. In this patient, posterior L3-L5 stabilization

resolved severe radiculopathy and functional weakness, but persistent axial discomfort was driven by a combination of suspected sacroiliac joint mechanical overload and hardware-related soft-tissue irritation. While the marked improvement following elective implant removal confirmed the role of hardware irritation, her ongoing mild symptoms emphasize the need for continued rehabilitative support for her pelvic mechanics. In clinical practice, physicians must carefully distinguish documented objective findings from presumptive diagnoses, recognizing that without dynamic radiographic evidence or image-guided diagnostic injections, adjacent joint pathology should be interpreted as suspected rather than proven. Therefore, before considering invasive revision spinal surgery for persistent axial symptoms, clinicians should conduct a comprehensive evaluation of adjacent extra-lumbar structures particularly the sacroiliac joint and local hardware prominence.

Ethical Consideration

The patient provided written informed consent for the publication of her clinical details and accompanying radiographic images.

Limitations

This report is limited by the absence of preoperative dynamic flexion-extension radiographs to objectively evaluate dynamic segmental translation, incomplete retrieval of tertiary hospital operative records, and the unavailability of fluoroscopy-guided SIJ diagnostic blocks and dedicated rheumatological testing due to regional resource constraints.

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