IOF 2025 Case Report - Andrew Pelle

Integrated Management of Acute Lumbar Radiculopathy Using Platelet-Rich Plasma, Platelet Lysate, and Osteopathic Manipulative Treatment: A Case Report

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Introduction

Acute lumbar radiculopathy, particularly following trauma, poses significant challenges in management, with patients often experiencing debilitating pain and functional impairment (Berry 2019). This report discusses the case of a 25-year-old man with severe lumbar radiculopathy successfully treated using osteopathic manipulative treatment (OMT) in conjunction with a functional spinal unit (FSU) approach to the lumbar spine with platelet-rich plasma (PRP) and platelet lysate (PL). The FSU approach treats the spine as an integrated biomechanical system, targeting discs, facets, ligaments, and muscles with orthobiologic therapies to restore stability and function (Williams 2021). Orthobiologic therapies, including PRP and PL, have demonstrated efficacy in improving pain and function for axial and radicular spine-related conditions, offering a promising non-surgical alternative (Desai 2020). OMT has been shown to significantly reduce low back pain, offering sustained relief and a cost-effective, evidence-based complement to conventional management strategies (Licciardone 2005). The combined approach presented in this case exemplifies a useful treatment strategy for achieving pain relief and restoring function in acute lumbar radiculopathy.

Case Description

A 25-year-old male undergraduate presented with acute low back pain and difficulty standing and walking following a motor vehicle accident (MVA) 18 days prior. He was a restrained rear passenger in a vehicle rear-ended during a merge. The patient did not lose consciousness and exited the vehicle unassisted. Initially, he experienced cervical tightness and mild low back pain, which worsened over the following weeks.

Five days post-accident, his pain significantly increased, forcing him to limit activity, standing and walking. While attempting to walk he had to shuffle his feet while ambulating. Despite a six-day course of oral steroids, muscle relaxants, ice, and spinal traction, symptoms persisted. A pain management physician prescribed opioids despite the patient being a recovering drug addict and recommended epidural steroids, with a four-week delay for scheduling. Frustrated by limited improvement and long wait times, the patient sought care at our clinic.

Eighteen days post MVA the patient presented to the Centeno-Schultz Clinic. At the initial visit, he reported worsening low back pain (6/10) radiating to both legs, left worse than right, aggravated by walking, sitting, and bending. He had extreme difficulty transitioning from

supine to erect and was only able to take 2-3 steps. His legs trembled when standing and was unable to stand fully erect. Symptoms were relieved by lying flat.

Physical Examination

Category	Initial Visit	Follow-Up
Strength	Strength 4/5 throughout except: Bilateral plantar flexion: Unable to sustain single-leg calf raise. Knee extension: Right 3/5, Left 1/5.	Right plantar flexion: 10 single-leg calf raises. Left: 5 single-leg calf raises with difficulty. Otherwise strength 5/5 throughout
Sensation	Decreased sensation in L4 dermatome.	Hyperesthesia in left L4 dermatome and reduced sensation in left S1.
Reflexes	Diminished left patellar reflex.	Symmetric patellar and achilles reflexes.
Range of Motion	Severely limited lumbar flexion/extension due to pain.	Lumbar flexion limited but without pain. Full lumbar extension with no facet loading discomfort.
Ambulation	Severe instability, tremulous gait, unable to stand erect.	Marked improvement, normal gait, no tremulousness.
Osteopathic Findings	Fascial restrictions in thoracolumbar and gluteal regions, left iliopsoas hypertonicity, lumbar left flexion.	Resolved restrictions, minor residual tightness in left iliopsoas.

Imaging

MRI of the lumbar spine without contrast revealed a broad-based left eccentric L4-L5 disc bulge with reduced disc height and foraminal narrowing, compressing the exiting L4 and descending L5 nerve roots. A partially sacralized L5 vertebra was also identified.

Treatment and Intervention

1. **Osteopathic Manipulative Treatment (OMT):**
    - **Myofascial Release**: Focused on the thoracolumbar fascia, iliolumbar ligaments, and gluteal regions.
    - **Counterstrain**: Applied to iliopsoas and quadratus lumborum tender points.
    - **Spinal Traction**: Provided mechanical unloading of the lumbar spine. During one session, the patient experienced complete symptom relief, though pain returned to a lesser degree post-traction.
2. **Epidural PRP and PL Injections:**
   Using fluoroscopic guidance the patient underwent bilateral L4-L5 and L5-S1 transforaminal injections of PL, bilateral L4-L5 and L5-S1 intraarticular facet joints with PRP, bilateral iliolumbar ligaments with PRP. Using ultrasound guidance thoracolumbar fascia, supraspinous and interspinous ligaments were injected with prolotherapy.

Follow-Up and Outcome

Two weeks post-treatment, the patient reported significant improvement. Right leg pain had resolved, left leg pain was intermittent and reduced to 3/10, and low back pain had decreased from 10/10 to 5/10. Functionally, he noted improved strength, ambulation, and a return to daily activities. Examination showed normal gait, restored strength, and improved sensation with residual hyperesthesia in the left L4 dermatome.

Discussion

This case highlights the value of combining OMT with PRP and PL injections for acute lumbar radiculopathy. OMT addressed mechanical contributors such as fascial restrictions, muscle hypertonicity, and segmental dysfunctions, while PRP and PL provided regenerative and anti-inflammatory benefits, targeting multiple structures within the functional spinal unit. The efficacy of OMT in alleviating neurological deficits, including conditions like foot drop, through biomechanical correction and nerve decompression has been previously demonstrated in the literature (Tafler 2022).

The temporary resolution of symptoms during spinal traction in this case underscores the importance of mechanical unloading in mitigating nerve root compression, as supported by imaging findings of foraminal narrowing. Regenerative therapies such as PRP and PL have demonstrated efficacy in improving axial and radicular spine-related pain, offering a promising non-surgical alternative when conventional treatments fail (Desai 2020). Together, these treatments provided substantial functional recovery and meaningful clinical improvements, even in a patient refractory to prior therapies.

Conclusion

The integrative use of osteopathic manipulative treatment and spinal orthobiologic injections offers a promising non-surgical option for severe lumbar radiculopathy. This case demonstrates the potential for meaningful clinical improvement in cases refractory to conventional care.

References

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