The Long-term Clinical Efficacy of Epidural PRP in Discogenic Lumbar Radiculopathy: A Literature Review

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Lumbar radiculopathy is defined clinically by symptoms such as radiating pain, paresthesias, and weakness of the lower extremity that occur secondary to mechanical compression or inflammatory irritation of a lumbar nerve root (1). Lumbar radiculopathy has an incidence of 3-5% worldwide, with the most common etiology being disc herniation (2,3). Epidural administration of steroids has been a pain management treatment for this diagnosis since the 1950s. The time to onset for pain relief is 2-6 weeks with an average time of relief lasting no greater than 3 months. Moreover, steroids offer no notable long-term impact on the need for surgery or functional improvement (4,5). While epidurally administered steroids are efficacious in the short term, there remains a need for *long-lasting* pain relief and functional improvement in those suffering from lumbar radiculopathy. Thus, this literature review aims to compile relevant articles in the field of orthobiologics to highlight the persistent pain reduction, augmented healing process, and functional improvement that follows epidurally administered platelet-rich plasma (PRP) for the treatment of discogenic lumbar radiculopathy.

"Platelet-rich plasma epidural injection an emerging strategy in lumbar disc herniation: A Randomized Controlled Trial" compared transforaminal epidurally administered PRP to triamcinolone in treating disc-mediated lumbar radicular pain. Clinical radicular symptoms correlated with MRI confirmed unilateral herniated nucleus pulposus. Outcome assessment utilized the Visual Analog Scale for radicular symptoms and the Oswestry Disability Index for functional outcomes. This study used a triple-blind design, including 30 patients who had failed conservative management. The PRP concentration exceeded 10^6 platelets/ml with 12,610 WBC/ml, achieved through a double-spin protocol. 2ml of PRP was delivered to the epidural space. The results showed PRP to be superior in VAS scores compared to steroids at 6, 12, and 24 weeks, with comparable results in ODI (6). The more significant pain reduction in the short-term and continued pain reduction in the long-term show that PRP provides a greater analgesic effect to steroids in those with discogenic radicular pain. Lasting pain reduction also implicates underlying regenerative mechanisms. Other studies have shown improvements in VAS *and* ODI sustained for > 12 months following epidural PRP for discogenic lumbar radiculopathy (7).

PRP and steroids demonstrate improvement in discogenic lumbar radiculopathy following epidural administration (4,5,6). Notably, multiple studies have shown additional, superior benefits to PRP through a lasting decrease in radicular pain and improvement in functional outcomes beyond that of steroids (6,7). The improved benefit of PRP could be explained by

regenerative mechanisms, which may be further elucidated by examining the correlation between the biochemical processes, tissue changes, and clinical outcomes following epidural PRP administration in those with discogenic mediated lumbar radiculopathy.

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