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Clinical Outcomes after Posterior Dynamic Transpedicular Stabilization with Limited Lumbar Discectomy: Carragee System Classification of Lumbar Disc Herniations

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Background: The observed rate of recurrent disc herniation after limited posterior lumbar discectomy is the highest in patients with posterior wide annular defects, according to the Carragee classification of type II (fragment-defect) disc hernia. Although the recurrent herniation rate is lower in both type III (fragment/contained) and type IV (no fragment/contained) patients, recurrent persistent sciatica is observed in both groups. A higher rate of recurrent disc herniation and sciatica was observed in all three groups, in comparison to patients with type I (fragment/fissure) disc hernia.

Methods: In total, 40 single level lumbar disc herniation cases were treated with limited posterior lumbar microdiscectomy and posterior dynamic stabilization. The average follow-up period was 32.75 months. Cases were selected following preoperative MRI and intraoperative observation. We used the Carragee classification system in this study and excluded Carragee type I (fragment/fissure) disc herniations. Clinical results were evaluated using VAS and Oswestry scores. Patients' reherniation rates and clinical results were evaluated and recorded 3, 12, and 24 months postoperatively.

Results: The most common herniation type in our study was type III (fragment/contained), with 45% frequency. The frequency of fragment-defects was 25% and the frequency of no fragment-contained defects was 30%. The perioperative complications observed were as follows: one patient experienced bladder retention that required catheterization; one patient had a superficial wound infection; one patient had a malpositioned transpedicular screw. The malpositioned screw was corrected with a second operation, performed one month after the first. Recurrent disc herniation was not observed during the follow-up period.

Conclusions: We observed that performing discectomy with posterior dynamic stabilization decreased the risk of recurrent disc herniations in Carragee type II, III, and IV groups, which experienced increased reherniation and persistent/continuous sciatica after limited lumbar microdiscectomy. Moreover, after two years' follow-up, we obtained improved clinical results.