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Posterior Lumbar Dynamic Stabilisation with TTL/DMT System for Degenerative Spondylolisthesis and Spinal Stenosis: A New Stabilisation System

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Introduction: In degenerative lumbar spondylolisthesis with spinal stenosis, decompression and fusion have been widely recommended; however, possible adjacent disc degeneration and pain at the bone donor site are the main drawbacks of this method. More recently, dynamic stabilization with Dynesis system have shown encouraging results. We present our experience in a series of 22 patients with degenerative lumbar spondylolisthesis with spinal stenosis who were treated using new stabilization systems.

Materials & methods: There were 22 patients who underwent central decompression and dynamic stabilization for degenerative lumbar spondylolisthesis with spinal stenosis in our Spinal unit; we used the Scient’x IsoBar TTL Dynamic Rod Stabilization and the Inlign™ Multi-Axial Screws (Disc Motion Technologies - DMT) stabilization systems. The pain intensity was evaluated using the Visual Analogue Score for back pain (VAS-BP) and leg pain (VAS-LP) and functional outcomes were measured with Oswestry Disability Score (ODS). To assess the overall general patients’ health the Bodily Pain component of the SF -36 questionnaire was used (SF36-BP). Data was analysed with the SPSS 16.0 for Windows (SPSS Inc, Chicago, IL). Paired sample t-test for normally distributed data and Wilcoxon signed-rank test for non-parametric data were used. Statistical significance was designated at p < 0.05.

Results: There were 3 male and 19 female patients; the average age at operation was 68.95 years (Range 57-79 years). The average duration of follow up was 16.18 months (Range 8-37 months). Mean duration of symptoms prior to surgery was 61.45 months (Range: 12-410 months). Most common level of spondylolisthesis was L4/5 (18 cases), followed by L5/S1 (2 cases) and L3/4 (2 cases). 21 cases presented with grade I spondylolisthesis and in 1 case the lysthesis was grade II. Decompression and instrumentation involved 1 level (7 cases), 2 levels (9 cases), 3 levels (1 case) and 4 levels (5 cases). All patients underwent conservative treatment (spinal rehabilitation programme, regular analgesia, sacral epidural injections) for at least 6 months before the surgical intervention. Our results show a statistically significant improvement in clinical outcomes following central decompression and dynamic stabilization for degenerative spondylolisthesis. ODS improved from 49.45 (SD=14.35) to 22.91 (SD=16.38), p< 0.001. There was also significant improvement in VAS-BP (p< 0.001), VAS-LP (p< 0.001) and SF36-BP (p=0.002).

Conclusion: In our study, we conclude that central decompression and dynamic stabilization using the new systems (TTL/DMT) for degenerative lumbar spondylolisthesis is a reliable method and offers good clinical outcomes. Comparing to the standard decompression and fusion, this method has the advantage of an absent bone donor site pain and possibly less adjacent level degeneration due to the motion allowed by the stabilization system.