Posterior Dynamic Stabilization versus Anterior Dynamic Stabilization in Lumbar Degenerative Disc Disease: A Comparison of Results

T. Kaner¹, M. Sasani², T. Oktenoglu², B. Solmaz³, A.F. Ozer²
¹Pendik State Hospital, Neurosurgery, Istanbul, Turkey, ²American Hospital, Istanbul, Turkey, ³Karaman State Hospital, Karaman, Turkey

Study design: This study was a prospective clinical study.

Objective: The objective of this study was to compare the clinical results of both anterior lumbar total disc replacement and posterior dynamic transpedicular stabilization.

Summary and Background Data: Over the last two decades, both anterior total disc replacement and posterior dynamic transpedicular stabilization have emerged as alternative treatment options to fusion surgery in degenerative diseases of spine that cause chronic lumbar instability. Clinical studies related to both dynamic systems have yielded satisfactory results; however, the lack of studies comparing the clinical results of these biomechanically different systems is apparent in the literature.

Methods: This study was conducted between 2004 and 2008 and included a total of 40 patients (20 in each group). Total disc replacement with anterior dynamic stabilization was performed on 20 patients (11 females and 9 males). The mean age of the patients was 39.5 (ranged from 33 to 50 years), and the mean follow-up period was 28.7 months (ranged from 24 to 32 years). Posterior dynamic transpedicular stabilization was also performed on 20 patients (12 females and 8 males). The mean age of the patients was 43.6 (ranged from 25 to 55 years), and the mean follow-up period was 34.1 months. Clinical and radiological evaluations of the patients were carried out preoperatively and in the 3rd, 12th, and 24th postoperative months. We evaluated and compared the average duration of surgery, blood loss during the surgery, and the length of the hospital stay of both groups.

Results: There were not any surgical morbidity and/or observed complications in the posterior dynamic stabilization group. In two patients of the anterior stabilization group, however, iliac vein injury occurred during the placement of the lumbar disc prosthesis, but it was sutured during the operation.

Conclusion: Positive results in the treatment of symptomatic lumbar degenerative disc disease with both posterior dynamic transpedicular stabilization and lumbar anterior disc prosthesis suggested that both dynamic systems could be important alternative treatment options to fusion surgery. Although both dynamic systems seemed to be similar in terms of providing spine stability, having a short operation time, allowing early mobilization, and an early return to work, the posterior dynamic system was slightly more advantageous than the anterior disc prosthesis because of conveniences in its application and a reduced rate of possible complications.