Endoscopic Transforaminal Lumbar Interbody Fusion With a Single Oblique PEEK Cage and Posterior Supplemental Fixation

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Abstract

Background: To demonstrate the feasibility of an endoscopically assisted minimally invasive surgery transforaminal lumbar interbody fusion (MIS-TLIF) and to study clinical outcomes with the use of a static oblique bullet-shaped cannulated poly-ether-ether-ketone (PEEK) lumbar interbody fusion cage in conjunction with platelet enriched plasma infused allograft cancellous chips and posterior supplemental fixation.

Methods: In this retrospective study of 43 patients who underwent endoscopically assisted MIS-TLIF for spondylolisthesis (53.5%) and stenosis (46.3%), the Oswestry Disability Index, the visual analog scale (VAS) for back and leg pain, and the modified Macnab criteria were used as primary clinical outcome measures. Clinical outcomes were cross-tabulated against fusion grade using the Bridwell classification of interbody fusion.

Results: The majority of patients (90.7%) had excellent (8/43; 18.6%) and good (31/43; 72.1%) Macnab outcomes. There were significant VAS back score reductions from an average preoperative values of 8.9070 to a postoperative VAS score of 3.8605, and a score of 2.7674 at final follow-up ($P < .0001$). The reductions in the VAS leg scores were also significant from preoperative score of 5.58 to a postoperative value of 2.16, and a final follow-up score of 1.67 ($P < .0001$); the Oswestry Disability Index score went from a preoperative value of 54.4 to 23.3 postoperatively and 18.5 at the final follow-up ($P <$

.0001). The vast majority of patients (92.9%) with Bridwell grade I fusion had excellent and good Macnab outcomes (*P* = .027).

Conclusions: The authors recommend the use of an endoscope as an adjunct to MIS-TLIF, a minimally invasive spinal surgery technique in which many surgeons may be well versed and have a great deal of experience. Clinical outcomes with the endoscopic interbody fusion procedure with a static PEEK cage in conjunction with platelet-enriched bone allograft were favorable.

Level of evidence: 3.

Clinical relevance: Feasibility study.

Keywords: direct visualization; endoscopic; lumbar interbody fusion; minimally invasive.

_____Biography

Alvaro Dowling is one of the national and international references in non-invasive spine surgery. He graduated from the University of Chile as a specialist in Orthopedics and Traumatology, with extensive experience and training abroad in countries such as South Africa, Spain, Switzerland, France, Colombia, Germany, Korea, and the United States. He is recognized for his contribution to the academic world, being a current visiting professor at the University of Sao Paulo (USP), Past President of the Interamerican Society of Minimally Invasive Spine Surgery (SICCMI), author of study books abroad, and invited professor at national and international congresses.

Dr. Dowling's research has been published in over 10 papers, in posters and presentations. Furthermore, he has authored 8 book chapters and edited 1 book.

He currently serves as Director and Surgeon of the DWS Clinical Center in Santiago, Chile, conducting continuing education courses for doctors from all over the world.

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