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Six solutions for one problem: Minimally invasive approaches for Lumbar Interbody Fusion Surgery in adults suffering from Degenerative Disc Disease

Statement of the Problem: Clear consensus does not exist amongst spine surgeons for selecting one Minimally Invasive (MI) Lumbar Interbody Fusion (LIF) procedure over another for treating patients with Degenerative Disc Disease (DDD). This study aimed to collect patient-reported and surgical outcome data on DDD patients indicated for an MI-LIF using ALIF, DLIF, OLIF, PLIF, TLIF, or MIDLF.

Methodology: DDD patients (N=340) indicated for an MI-LIF surgery were consecutively enrolled in a prospective global clinical study (MASTERS-D 2; NCT02617563). Experienced surgeons determined which, and performed one of 6 MI-LIF procedures in patients seeking help for the treatment of chronic back and/or leg pain. Demographics and outcome data (Oswestry Disability Index, VAS back and leg pain, EQ-5D) were collected before and at 3-months after surgery. Additionally, surgery information, blood loss, and adverse events were collected. Paired t-test was used to test for improvements.

Findings: Three months after fusion surgery, patients attained minimal clinically significant improvement on all patient-reported outcome measures regardless of the approach used. DDD patients who received an ALIF comprised the highest proportion of smokers were the youngest and demonstrated the longest operating time, yet, with a low fluoroscopy exposure. Overall, anterolateral approaches had the least amount of blood loss, despite similar or longer surgical times when compared to posterior approaches. Seven MI surgery-related and 6 device-related Serious Adverse Events (SAEs) were reported up to 3-months post-operation.

Conclusion & Significance: All six approaches for MI-LIF surgery demonstrate favorable short-term patient-reported and surgical outcomes for DDD patients. Small differences in patient characteristics and differences in OR time, estimated blood loss and fluoroscopy time can play a role in making the optimal choice for treating a specific patient. Ongoing data collection may yield valuable information on health economics, long-term effectiveness, and safety of all six MI-LIF approaches.

Biography

Vasileios Arzoglou is a Consultant Neurosurgeon with interest in Complex Spine Surgery. He has extensive experience in Minimally Invasive Spine Surgery with special interest in Oncology and Minimally Invasive Surgery for short Segment Degenerative Deformities. He is a substantive NHS consultant in the University Hospital of Hull and is the primary investigator for the Masters D2 trial in Hull.

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