Clinical Evaluation of Open and MAS® TLIF for the Treatment of Symptomatic Lumbar Degenerative Conditions

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Introduction: Minimally invasive spine procedures have been shown to result in a faster patient recovery with lower patient morbidity rates but are often associated with difficult learning curves and initial increases in procedure times before the new technique is mastered. This study prospectively compares one surgeon's usual open TLIF procedure with an early MAS TLIF experience to identify evidence of learning curve during adoption of a less invasive technique.

Methods: The operative data of 20 consecutive TLIF cases were prospectively documented. Nine open TLIF cases were completed by a surgeon with extensive open TLIF experience, followed by the same surgeon's first 11 MAS TLIF cases. Surgical statistics and perioperative data was evaluated for evidence of learning hurdles during adoption of the new surgical technique.

Results: 9 patients (78% female) were treated at 13 levels in the open group. 11 patients (64% female) were treated at 11 levels in the MAS group, difference in number of levels treated between groups was not statistically significant (p=0.056). Patient age in the open group ranged from 35 to 85 with a median of 62 years. Age ranged from 30 to 69 in the MAS group with a median of 61 years. Operative time averaged 120.1 minutes for open procedures and 106.5 minutes for MAS cases. Length of hospital stay averaged 3.7 days for open procedures and 2.8 days for MAS procedures. 66.7% of Open patients and 100% of MAS patients experienced less than 100cc of blood loss. The remaining 33.3% of patients in the open group had blood loss between 100 and 300cc. Differences in blood loss between technique groups was not statistically significant (p=0.054). Complications included two instances of wound dehiscence in the MAS TLIF group and one instance of wound dehiscence and a dural tear in the open TLIF group.

Conclusion: Results trended toward decreased blood loss, shorter procedure time, shorter hospital stay, and fewer approach related complications for the minimally invasive procedures in comparison to traditional open procedures, with no evidence of a learning curve during adoption of the MAS technique.