Minimally Invasive Surgery (MIS) for Instrumented Lumbar Fusion is an attractive concept with obvious advantages between the surgeon, patient, hospital and even worker’s compensation patients and carrier’s. To be effective and offer a benefit it must have an effect on the outcomes of the patient in terms of providing for a shorter hospitalization, more rapid entry into physical therapy, rapid advancement into a work conditioning environment, a quicker improvement in overall functionality and the final outcome a faster return to work with limited restrictions.

The impetus for the development of this technique centers on a wish to avoid paraspinal muscle damage and the associated sequelae that can occur as seen in the classic open approach. This damage has been shown to increase postoperative pain and diminished functional capabilities and can lead to chronic postoperative pain syndromes and prolonged disabilities. MIS has been shown to lessen paraspinal muscle damage as seen in the works of Sihvonen, Kawaguchi, Styl, Gejo, Kim and Suc, and Stevens and has been confirmed in these studies to lessen postoperative pain and improve rehabilitation.

A Study was undertaken to see the effect that MIS has on patient outcomes when compared to the Standard Open approach (OA) for Instrumented Lumbar Fusion Surgery. 200 cases were involved in the study with 100 cases placed into each group MIS versus OA and followed for two years. All were single level fusions performed either at L4-5 or L5-S1 by the same surgeon. All patients were evaluated for age, diagnosis, duration of surgery, blood loss, duration of hospitalization, narcotic use and duration, rehabilitation, return to work status and fusion results. Outcomes were measured using the Oswestry Disability Index (ODI), Back Pain Score (BPS), Leg Pain Score (LPS) and SF-36 and Rehabilitation results were measured using Functional Capacity Evaluations (FCE).

Results revealed in the OA group: OR time (110min), blood loss (300ml), duration of hospitalization (3.3days), duration of narcotic use and quantity (51hrs/220mg) and fusion rate (92.8%). In the MIS group: OR time (125min), blood loss (100ml), duration of hospitalization (1.5days), duration of narcotic use and quantity (25hrs/120mg), and fusion rate (93.3%). Outcome measurements revealed the following:

ODI: OA group 52.5 preop 28.4 postop
MIS group 53.9 preop 19.2 postop
BPS: OA group 16.4 preop 8.1 postop
MIS group 15.9 preop 5.1 postop
LPS: OA group 14.0 preop 6.7 postop
MIS group 15.8 preop 3.7 postop
SF-36: OA group 27.6 preop 39.7 postop
MIS group 21.7 preop 48.6 postop

Rehabilitation revealed in the MIS group a one day sooner entry into Physical Therapy with at one month the MIS group was 50% ahead of the open group as measured by FCE and at one month a 30% return to work (RTW) in the MIS group versus 15% RTW in the OA group with restrictions. At 3 months, a 85% RTW was seen in the MIS group compared to 45% in the OA group with limitation and restrictions seen in the OA group not seen in the MIS group as compared on FCE’s.

Conclusions: MIS offers advantages for the properly selected patient in terms of shorter hospitalization, less blood loss, quicker rehabilitation, shorter use of narcotics, and sooner RTW with proven improvements in all outcome measurements.