

Early Results of Patients Treated with Percutaneous Interbody Fusions

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Purpose: Less tissue trauma is shown to result in shorter hospital stays and quicker recovery. MIS pedicle screw systems has led to an increase in MIS procedures. Refinements in device designs are resulting in treatments requiring little or no bone removal, or neural retraction. We are presenting the early outcomes from a prospective series of patients. These patients were treated using an expandable mesh device implanted via a percutaneous approach and MIS posterior hardware.

Methods: Patients presenting with surgical findings in the lower lumbar spine completed pre- op and post op outcome questionnaires. Intraoperative/hospitalization data were collected and presented. Patients are given antibiotics and taken to the OR where general anesthesia is administered. The patients are placed in a prone position and EMG leads are attached. Continuous EMG monitoring is utilized throughout the procedure. Fluoroscopy is used for visualizing the appropriate spinal segment (s). A 4mm stab incision is made; the surgeon passes a spinal needle into the disc space, anterior to the transverse processes and through Kambin's triangle. A k-wire is threaded through the spinal needle. A dilation tube is passed over the k- wire, followed by a 7mm working channel. The working channel is held in place while a series of disc debridement and endplate shaving tools are used. The tools remove the affected disc material, decompress the nerve roots and remove the cartilaginous endplates, providing a bleeding bed of cancellous bone. The same approach to the disc is used on the contra-lateral side until irrigation can be inserted on one side and removed with suction on the other side. This debridement methodology insures that the surgeon prepares the disc space properly for the insertion of the device. Tubes of bone graft are placed in the ventral portion of the disc space. After bone graft is packed ventrally the device is inserted. With the device in position, (near the IAR), it is filled with tubes of allograft and autograft until the graft packs tightly within the device. The device expands and conforms to the prepared cavity. The tightness of the bone pack within the device provides fixation of the intervertebral space, distraction of the neuroforamen and tightening of the annular fibers. After packing is complete, the posterior hardware is inserted.

Results: There were 13 patients involved in this prospective case series. Outcome data is presented in the following tables. There were 5-one level implantations, 7-two level implantations and 1-three level implantation. Blood loss averaged 56.2cc, Op time averaged 158 min and hospital stay averaged 0.5 days, (outpatient surgery). Pre op VAS scores averaged 6.92, at 1 mos post op VAS scores averaged 4.00. SF-8 scores averaged 29.45 pre-operatively and 37.28 at 1 mos post op. The average pre op Oswestry score was 28.92 and at I mos the average decreased to 20.31. There were no complications.

Conclusions: Interbody fusion can be effectively accomplished using percutaneous interbody devices and MIS posterior hardware. An expandable mesh device offers the added benefits of a smaller access portal, no bony removal, no neural refraction, fewer complications, lower blood loss, and lower operative time.

Key words: MISS, percutaneous, lumbar, fusion, outcomes