

Procedure for a Percutaneous Interbody Stabilization Procedure for the Treatment of Lumbar DDD

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Purpose: Minimally invasive techniques are more widely used in surgery. Less tissue trauma is shown to result in shorter hospital stays and quicker recovery. This paper presents a percutaneous surgical technique and early post op outcomes for treating lumbar DDD.

Methods: Clinical information reveals nerve root compression and/or disc degeneration as the likely cause of pain. Patients are given antibiotics and taken to the OR. Under general anesthesia 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). Planning determines the incision location, size and angle of approach for the bone containment device as well as the pedicle screws/facet screws. 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 then 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. Disc debridement is performed again 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 then placed in the ventral portion of the disc space. The dilation/distraction tube is used on the contra-lateral side to tamp the bone graft. After some bone graft is packed ventrally the device is inserted through the working channel into the disc space. With the device in proper position, (near the IAR), it is filled with pre-filled tubes of allograft and autograft tubes filled intra-operatively, until the graft packs tightly within the device. The device is expandable and conforms to the prepared cavity. The tightness of the bone pack within the device provides fixation of the intervertebral space, as well as a distraction of the neuroforamen and tightening of the annular fibers. After packing is completed, the posterior hardware is inserted. Once the posterior hardware is in place, the wounds are closed and the patient is taken to recovery. Patients are generally discharged home the same day following either a brief admission to the hospital or from PACU.

Results: To date there have been no nerve root injuries, graft retropulsions or far lateral herniations. There have been no post op wound infections. The entire procedure averages less than 90 minutes. Patient stay averages 0.5 days. Blood loss averages 35cc.

Conclusions: This technique is safe, repeatable, reliable and novel requiring the least morbidity to the spinal anatomy for treating degenerative disc disease. Patients have shown a rapid recovery both post operatively as well as in the first few months post operatively.

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