



## PERCUTANEOUS LUMBAR FIXATION VIA PERPOS™ PLS SYSTEM FROM INTERVENTIONAL SPINE

**T**he PERPOS™ PLS System from **Interventional Spine® (Irvine, CA)**, is the first and only percutaneous transfacet-pedicular compression system for posterior stabilization during a fusion procedure of the lower spine. Surgeons can perform posterior lumbar stabilization and achieve lumbar fusion at single or multiple levels without cumbersome rod and screw technology. The PERPOS System contains a complete set of instruments engineered for percutaneous implantation of **BONE-LOK® implants**. Developed with the company's **CLASP®** custom compression fit technology and designed to achieve facet-to-pedicle fixation, the PERPOS PLS System is intended to provide secure fixation, leaving less hardware in the patient and preserving the adjacent facet joint(s). Utilizing the innovative **Teleport® Tissue Retractor**, surgeons can access the spine using only a single 15-mm percutaneous entry site, minimizing disruption to the soft tissue. The axial compression of the 'one-size-fits-all' device allows the BONE-LOK to size to appropriate length *in vivo*. The PERPOS System offers surgeons not only a less invasive method of fixating the lumbar spine, but one that is designed to provide consistent results time after time.

Darren L. Bergey, MD, an orthopedic spine surgeon at the Bergey Spine Institute (Colton, CA), has made the change from a "pure" NuVasive® XLIF procedure, to one that substitutes the Interventional Spine PERPOS System for part of the NuVasive system. Dr. Bergey describes the cases of two patients in which he performed an XLIF and why utilizing the PERPOS System was his preferred approach.

### Patient #1

"A 53-year-old man presented with a history of lumbar fusion 12 years prior. This patient underwent successful lumbar surgery with

fusion from L3 to the sacrum, with pedicle screws from L3 to the sacrum posteriorly. This patient had a one-year history of worsening back pain and pain into the right groin and anterior thigh, with weakness in the right hip flexor and quadriceps. MRI revealed adjacent segment degeneration at L2-3 with disc space collapse, disc herniation, and a disc bulging with lumbar stenosis. Despite conservative measures, including epidural steroids and physical therapy, symptoms progressed and he felt surgical intervention was his only option."



*The PERPOS™ PLS System from Interventional Spine contains a complete set of instruments engineered for percutaneous implantation of one-size-fits-all BONE-LOK® implants.*

"Surgical options for this patient included a posterior lumbar interbody fusion at L2-3 above a previous fusion mass and previous laminectomy site with instrumentation from L3-S1. This option involved removing all instrumentation from L3-S1, which would involve a large incision, to perform an L2-3 PLIF with instrumentation. A second option, and the one I chose, was to perform an XLIF. I chose the extreme lateral peritoneal approach to access the L2-3 disc space through the non-operated area, performing a complete discectomy and lumbar interbody fusion. This could be performed through a 3-cm incision and I could access the spine through virgin tissue planes. Following the XLIF, I performed a right-sided laminotomy and decompressed the nerve root from a mini-incision and instrumented the spine at L2-3 with the BONE-LOK implant from the PERPOS System on the left side, and performed a posterior lateral fusion through this approach

as well, for augmentation of the anterior fusion. Despite the previously placed pedicle screw at L3 from prior surgery, the transfacet pedicular screw was successfully placed at the L2-3 level without removal of any previous hardware. This allowed for a surgical procedure of approximately two hours.

The patient ultimately had resolution of his back and leg pain, and his leg weakness went on to improve."

"As I was able to perform this procedure through two mini incisions, there was minimal blood loss, tissue exposure, operative time, and postoperative pain for the patient."

#### Patient #2

"This patient (48 yrs./F) had a history of back pain for nine months, as well as leg pain extending into the anterior thighs and shins into the dorsal feet due to stenosis at L3-4 and L4-5. Disc degeneration and herniations at L3-4 and L4-5 were confirmed by discography. The patient failed conservative measures, including epidural steroids and physical therapy, and subsequently could not tolerate symptoms of back and leg pain. Based upon the two-level problem in the lumbar spine, a decision was made to operate on the patient. I chose an XLIF at L3-4 and L4-5, which I was able to be performed through a 5-cm incision on the left flank, directly exposing the discs through a peritoneal transposas approach to the L3-4 and L4-5 disc space. The discs were removed at L3 through L5 and were fused with interbody cage placement and anterior instrumentation. I then performed posterior bilateral decompression with laminotomies at L3-4, L-5 to treat the leg pain, and a posterior stabilization with transfacet fixation using the PERPOS System. The surgery resulted in the posterior decompression and fusion with stabilization, which I was able to perform through a small 5-cm incision in the back, with minimal exposure of the posterior musculature. This approach also allowed for access to the posterior spine for posterior fusion to increase the ultimate fusion rate, giving the patient resolution of leg and back pain."

"I chose the PERPOS System over other posterior stabilization techniques, such as percutaneous pedicle screws, as those screws do not allow for access to the spine for decompression of the nerve roots, nor do they allow for access to the spine for posterior


fusion with decortication of the spinal elements and placement of bone graft posteriorly. A mini open approach, on the other hand, allows for minimal tissue retraction, much like microdiscectomy. This approach also allows for access to the facet for instrumentation with the PERPOS System to permit posterior stabilization of the spine, as well as access for a decortication of the posterior elements to augment the anterior fusion with placement of bone graft posteriorly, whereas percutaneous pedicle screws only allow for posterior stabilization of the spine. Open techniques of pedicle screw stabilization do allow for decompression and fusion as well, but require a much larger incision and much wider tissue retraction to allow access for placement of the pedicle screws, and the pedicle screw and rod size decreases the surface area of the bone available for fusion posteriorly."

"I was able to save time during the procedure, as it takes much less time to put in the transfacet PERPOS BONE-LOK implant system than it would to place pedicle screws at a single level, let alone two levels. Additionally, the cost of utilizing the PERPOS System for the posterior stabilization of the spine is far less expensive than the cost of a pedicle screw construct, thereby minimizing cost for the case while providing the needed stabilization posteriorly."

Dr. Bergey further emphasizes that proponents of a purely percutaneous approach for posterior stabilization can also utilize the PERPOS System to provide percutaneous posterior stabilization of the spine if decompression and fusion are not necessary and would require only one 2-cm incision for placement of unilateral or bilateral facet screws. "Whether it's a mini open approach to decompress, stabilize and fuse the spine, or a purely percutaneous approach to posteriorly stabilize the spine, the PERPOS System provides potential advantages over other types

of posterior fixation. It provides a safe, viable alternative for posterior stabilization of the spine with the potential advantages of saving time and reducing tissue exposure, cost, blood loss and postoperative pain from the posterior approach, while providing proven biomechanical stabilization."

Surgeons familiar with percutaneous pedicle screws are familiar with utilization of intraoperative fluoroscopic x-ray to facilitate placement of the pedicle screws. Dr. Bergey explains that "when utilizing the same technique to place facet screws, the trajectory of screw placement orientates the screw away from the spinal canal, whereas with placement of percutaneous pedicle screws, the trajectory is directed towards the spinal canal, which may increase the risk of medial breach of the pedicle and nerve root compression, resulting in postoperative pain or weakness."

Dr. Bergey received his fellowship training at Cedars-Sinai Institute for Spine Disorders. Dr. Bergey has been in private practice in the inland empire of Southern California at the Bergey Institute in Colton, CA, and specializes in minimally invasive approaches to the spine and total disc arthroplasty. 

#### To Learn More

For more information about **Interventional Spine** or the **PERPOS™ PLS System**, please speak to a company representative at the CNS conference, Booth #1249 and #1251, or visit the company's Web site at [www.i-spineinc.com](http://www.i-spineinc.com).



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