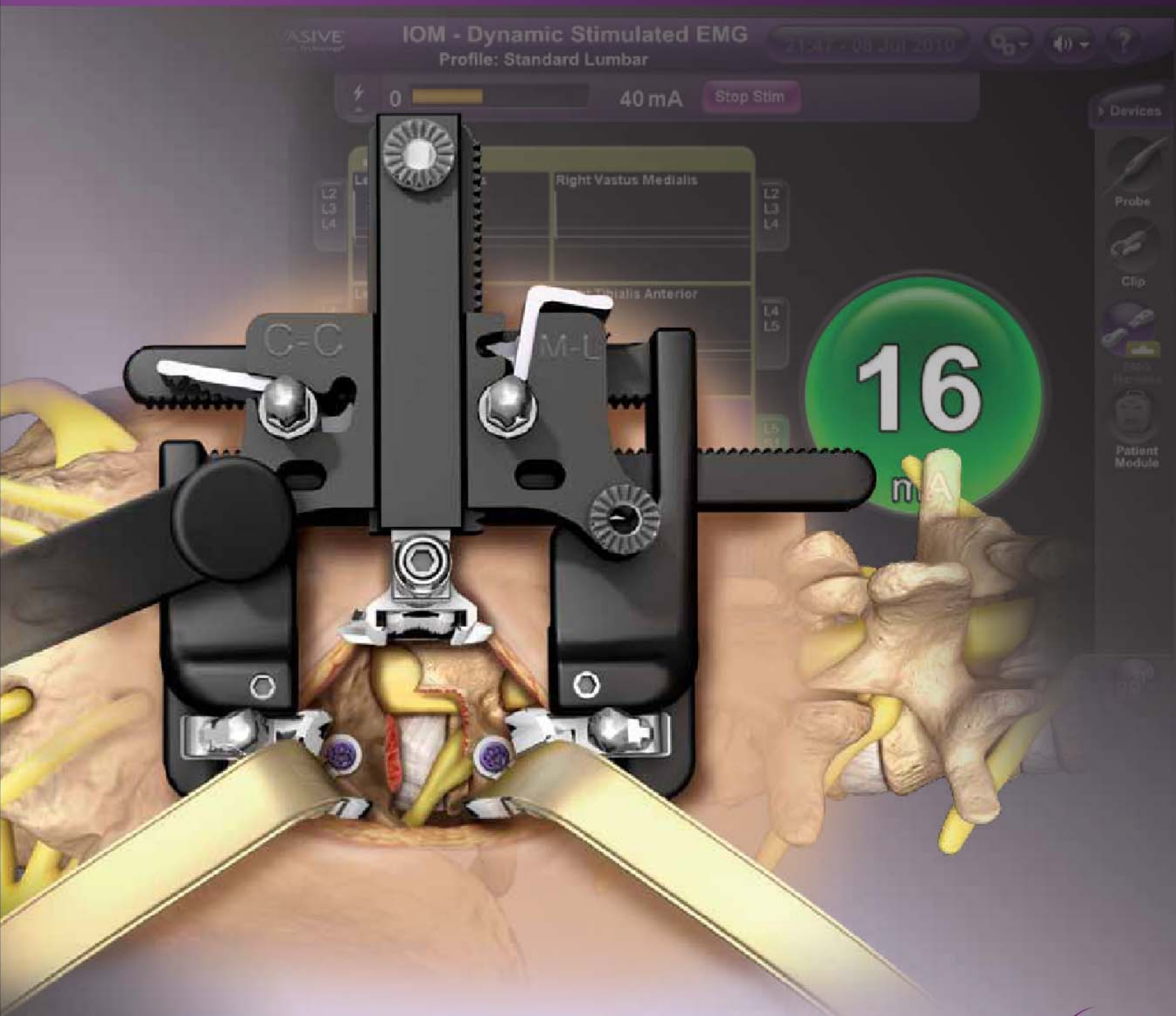


MAS TLIF

Minimally Disruptive Surgery. Reproducible Technique.

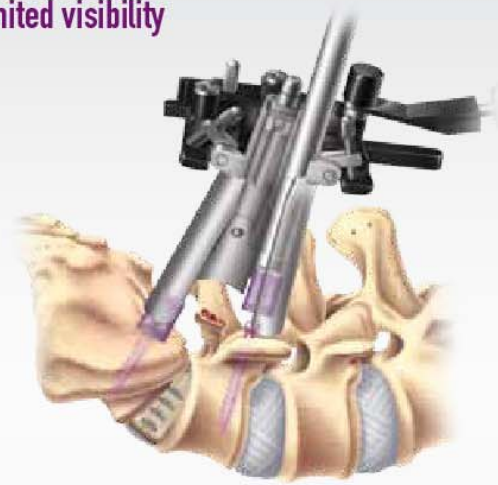


CHALLENGES OF MIS SURGERY

The adoption of minimally disruptive spine surgery has been limited by the challenges associated with steep learning curves, inefficiencies, and the perceived limited effectiveness of minimally invasive procedures.

Common challenges include:

- Restrictive surgical corridor
- Difficulty identifying anatomy
- Limited visibility
- Unintentional retractor movement
- Exposure not meeting surgical requirements
- Difficulty achieving established TLIF objectives



MAS® TLIF – MINIMALLY DISRUPTIVE SURGERY. REPRODUCIBLE TECHNIQUE.

The MAS TLIF procedure was developed to provide all the benefits of less disruptive surgery, while eliminating the typical MIS challenges. Advantages of MAS TLIF include:

- Efficient, step-by-step, reproducible technique
- Avoids the steep learning curve commonly associated with MIS
 - Anchored to spine via modular pedicle screw system
 - Pedicle-based technique facilitates anatomical orientation
- Conventional surgery through a less disruptive approach
 - Direct visualization
 - Conventional instruments
 - Conventional methods
- Integrated technologies provide a complete procedural solution



1 PEDICLE-BASED

Reproducible Anatomy Identification

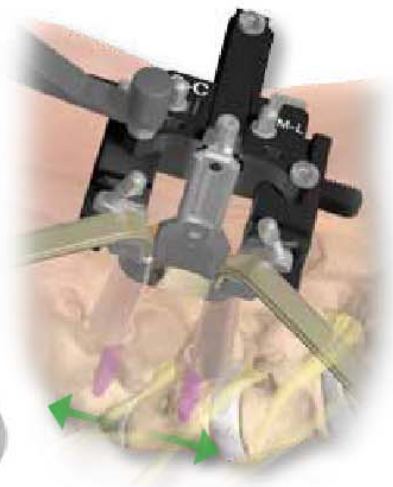
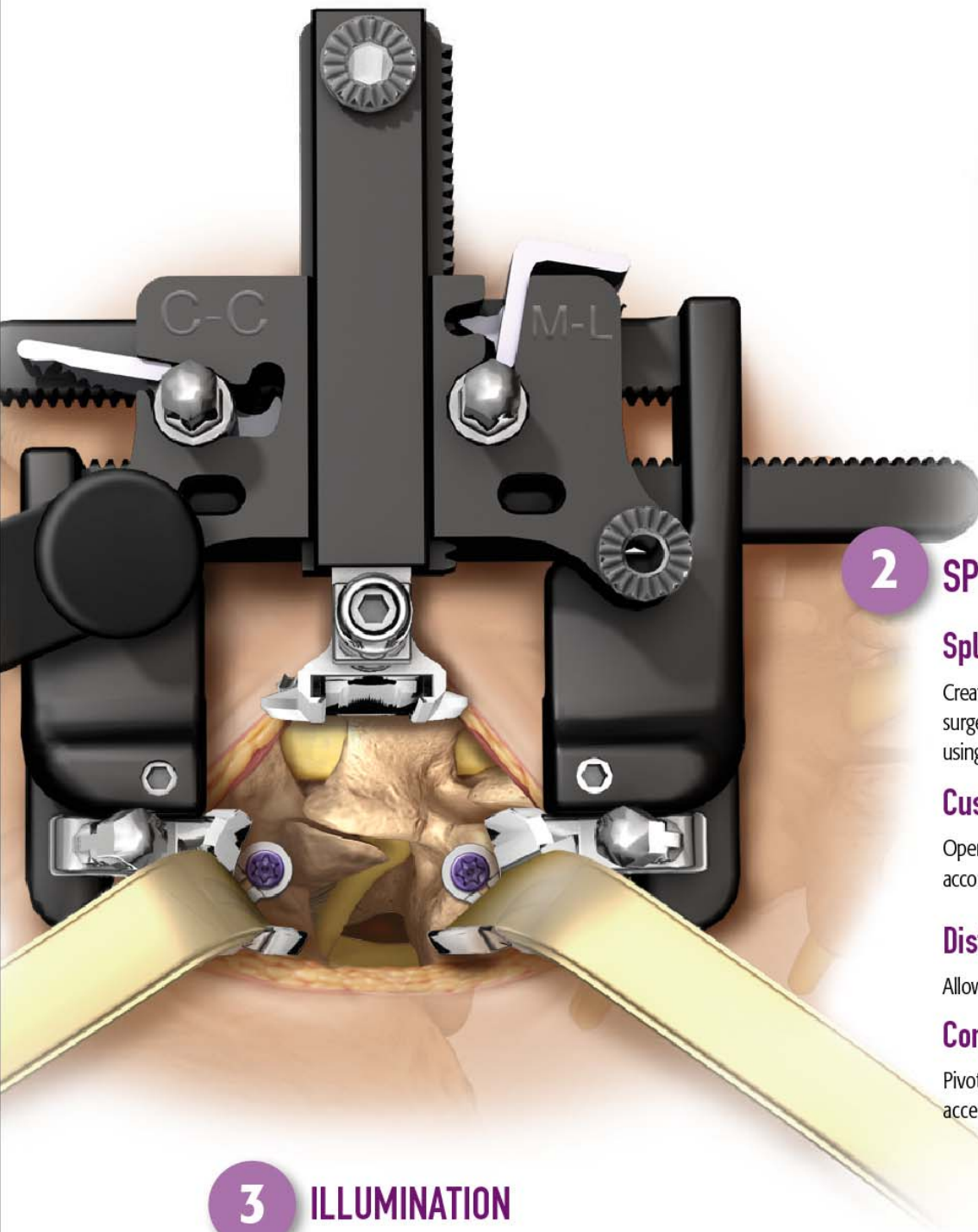
The pedicle-based system enables a surgeon to easily identify the anatomy using the pedicles as a reference for anatomical orientation.

Unimpeded Access

Pedicle screw heads do not impede surgical exposure, allowing for direct visualization and easy access to the anatomy.

Anchored to the Spine

Provides stability, which minimizes challenges of repositioning and tissue creep.



2 SPLIT BLADE RETRACTOR

Split Blade Design

Creates an unconstrained exposure, enabling surgeons to perform conventional surgery using conventional instruments.

Customizable Exposure

Operative corridor provides intraoperative flexibility to accommodate varying surgical requirements.

Distraction Capability

Allows both screw-based and intervertebral distraction.

Contralateral Decompression

Pivoting retractor designed to provide reproducible access for contralateral decompression.

3 ILLUMINATION

Optimal Visualization

Low-profile light guides designed to eliminate shadows and provide excellent visualization.

MAS® TLIF – A complete procedural solution

NVM5®

- Dynamic Stimulated and Free Run EMG designed to facilitate safety and reproducibility
- Dynamic Screw Test provides real-time, discrete information regarding pedicle integrity by stimulating instruments during pedicle preparation
- Free Run EMG provides immediate notification of nerve irritation during disc space preparation, distraction, and implant placement

I-PAS™ III
needle



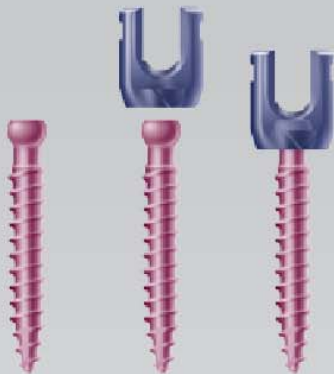
NVM5



Real-time,
discrete
stimulation
thresholds



SPHERX® PPS MODULARITY



The modular SpheRx PPS screw system provides distinct advantages when performing a minimally disruptive TLIF:

- Efficient screw/blade placement
- Pedicle shanks form a basis for anatomical orientation
- Unimpeded access throughout the procedure
- Simple, reliable, and secure head attachment

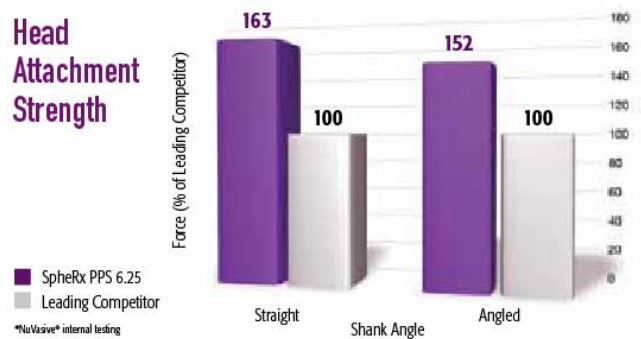
*Data on file (TR #9600417)



DESIGNED FOR SECURITY

- SpheRx PPS outperformed a market-leading conventional system when comparing the amount of force required to disengage the head from the shank
- Biomechanical testing results demonstrated that *SpheRx PPS screws are 63% (straight) and 52% (angled) stronger than a leading competitor* in straight and angled orientations

Head Attachment Strength



*NuVasive® internal testing

Procedure: To determine static polyaxial pull-off strength, screw shanks were driven into plastic blocks in one of two orientations: straight (vertical, 0°) and angled (30° off vertical). The polyaxial lip head was then engaged into the shank. *Testing was performed in displacement control, with axial tension applied at a rate of 5mm/second to failure. The load-displacement curve was recorded at 100Hz. Maximum pull-off force values were calculated.

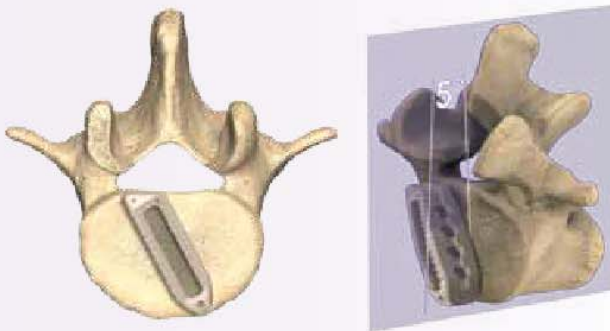
INTERBODY PORTFOLIO

The CoRoent[®] Large TLIF interbody portfolio offers multiple approach, insertion, and placement options to accommodate surgeon preferences and surgical goals.

OBLIQUE PLACEMENT

CoRoent Large Oblique (LO)

Designed for maximum support and height restoration



- Apophyseal ring coverage from a TLIF approach
- Easy and efficient Insert and Rotate technique
- Beveled posterior end for safety and added surface area coverage
- Proper sagittal alignment induced by appropriate lordosis in the oblique plane

CoRoent Large Impacted (LI)

Designed for optimal efficiency and speed

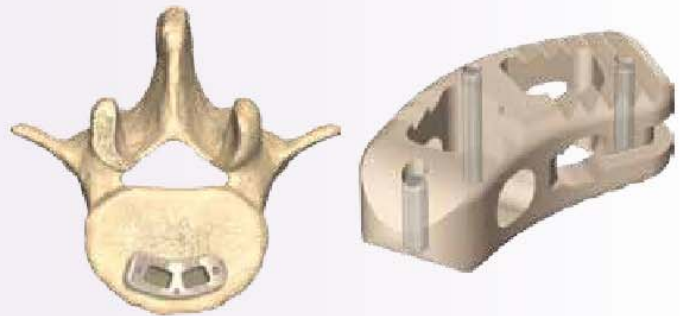


- Aggressively tapered nose enhances ease of insertion
- Large unimpeded aperture to promote fusion

ANTERIOR PLACEMENT

CoRoent Large Contoured (LC)

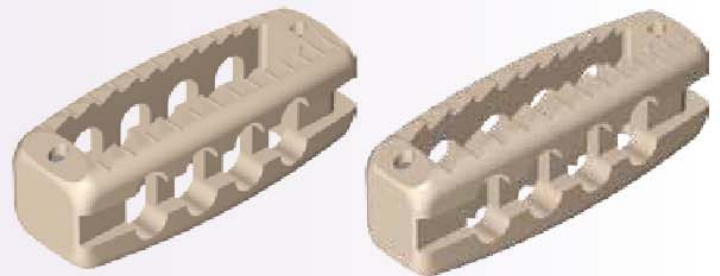
Designed for reproducible placement



- Efficient instrumentation for reproducible anterior placement
- Unique, patented markers for simple radiographic interpretation
- Anterior placement, combined with posterior compression, facilitates maximum sagittal correction

CoRoent Large Narrow/Wide (LN/LW)

Designed for intraoperative versatility



- Allows implants to be placed oblique or anterior
- Biconvex surfaces match endplate geometry
- Placed using the Insert and Rotate technique to provide maximum distraction

BIOLOGICS – THE COMPLETE FUSION SOLUTION

Osteocel® Plus is an advanced cellular bone matrix, designed to mimic the biologic profile of autograft, and is the ideal adjunct for the MAS® TLIF application.

COMPLETE - Provides cells, signals, and scaffold essential for bone formation; no need to add BMA, proteins, or an additional scaffold.

PHYSIOLOGIC - Mimics the biologic profile of autograft; avoids dosing concerns.

CONSISTENT - Every lot tested for post-thaw osteogenic potential (cell count, viability, activity); minimum 250,000 cells per cc, including mesenchymal stem cells and osteoprogenitor cells.

EXPERIENCED - 50,000+ patients treated since 2005; no reported adverse events.*

*As of date of publication, November 2010

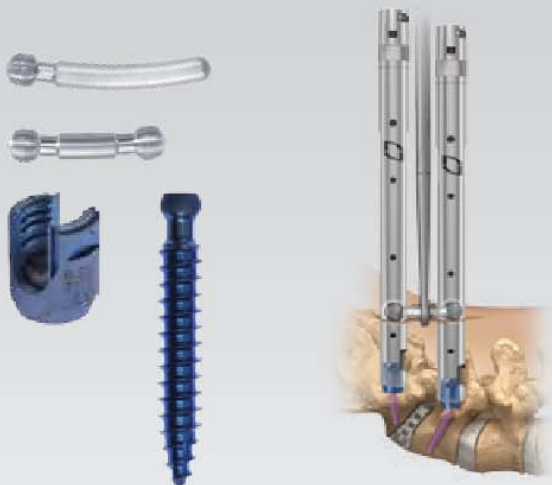


POSTERIOR FIXATION

The SpheRx® DBR® II and 5.5 EXT posterior systems offer minimally disruptive rod delivery options and rod diameters providing optimal fixation for each patient.

SpheRx DBR II with PPS 6.25

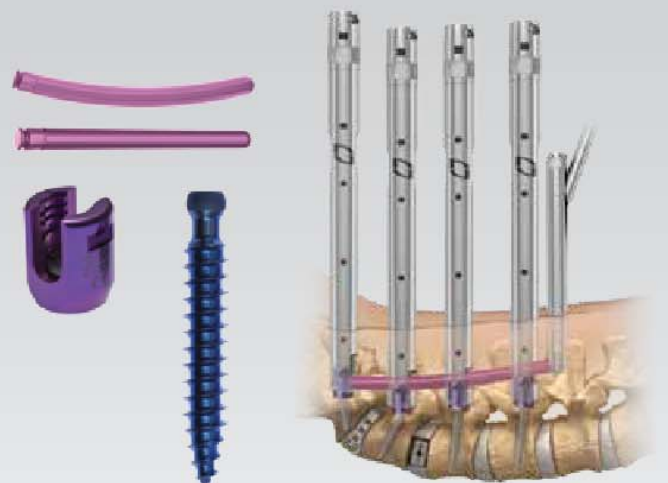
- 6.25mm rod system
- Dual or single ball rod: multiple rod delivery options
- Zero rod overhang: decreases the potential of adjacent segment disease
- Instrument-free compression
- Helical Flange® locking mechanism
- Recommended for single-level MAS TLIF fixation



Single-level MAS TLIF construct

SpheRx 5.5 EXT with PPS 5.5

- 5.5mm rod system
- Hex-ended rod: secure, controlled, and efficient rod delivery
- Helical Flange locking mechanism
- Recommended for multi-level fixation constructs



Multi-level MAS TLIF & XLIF® construct

PREMIERE PROCEDURAL SUPPORT



UNPARALLELED SURGEON TRAINING

A state-of-the-art cadaver operating theatre, expert-led didactic sessions, and a unique culture make the NuVasive® Marquis Visit Program an outstanding experience for surgeons.

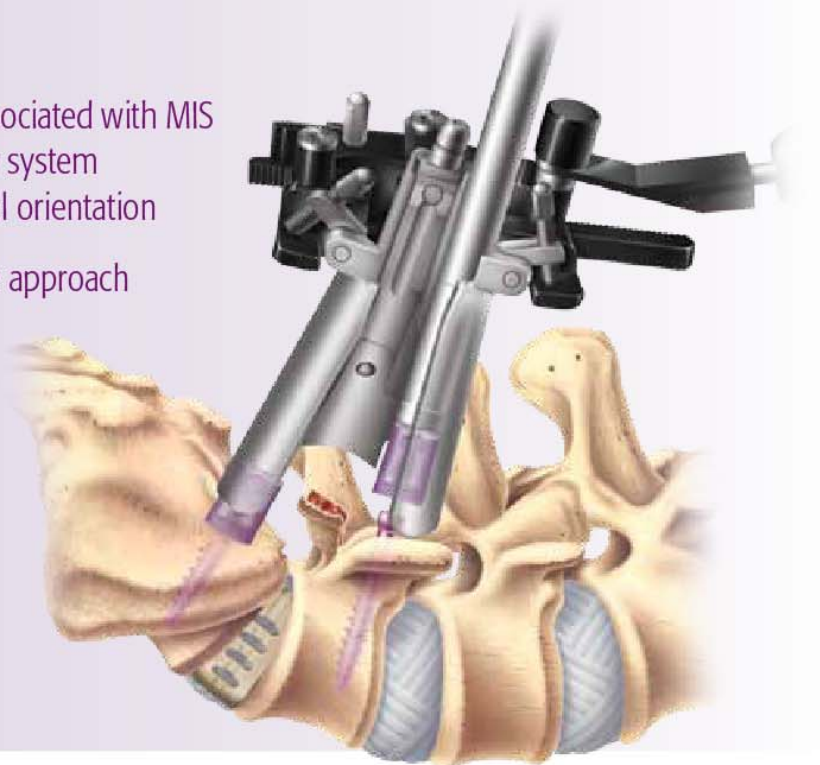


MOST EXPERIENCED AND EDUCATED REPRESENTATIVES

- Dedicated clinical experts – MAS® TLIF Market Development Team
- MAS TLIF certified representatives

MAS TLIF – MINIMALLY DISRUPTIVE SURGERY. REPRODUCIBLE TECHNIQUE.

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CASE STUDY: SINGLE-LEVEL MAS® TLIF

Case Info:

- 40-year-old female with two previous micro-discectomies
- Patient was experiencing back and leg pain, hypoesthesia, left S1, absent ankle jerk, and difficulty heel walking
- CoRoent® Large Oblique and SpheRx® PPS screws with DBR® II dual ball rod



Pre-op



Pre-op



Intra-op



Post-op



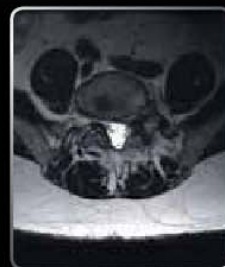
Post-op

"In my practice, MAS TLIF has drastically reduced blood loss, operative time, hospital stay, and return to normal function when compared to open TLIF surgery. The pedicle screw-based retractor system provides reproducible access to the pertinent anatomy and placement of the interbody device. It also enables me to simultaneously use both pedicle and interbody distraction to restore disc space height and sagittal alignment. MAS TLIF shares the same philosophy with XLIF®, which emphasizes apophyseal ring support with minimal soft tissue disruption. When coupled with XLIF, MAS TLIF provides an excellent minimally disruptive solution for patients who need L5-S1 fusion."

—Dr. Antoine Tohmeh, Orthopaedic Surgeon, Spokane, WA



Pre-op



Pre-op



Pre-op



Post-op



Post-op

CASE STUDY: TWO-LEVEL XLIF/MAS TLIF

Case Info:

- 63-year-old male with previous laminectomy at L4-L5 and L5-S1
- Patient was experiencing severe back and left leg pain, left leg weakness of ankle dorsiflexion, and EHL function
- DDD L4-L5 and L5-S1 with L4-L5 lateral listhesis, left L5-S1 foraminal degenerative disc herniation, right L4-L5 foraminal stenosis
- L4-L5 XLIF, L5-S1 CoRoent Large Oblique, and SpheRx PPS screws with DBR II single ball rod



To order, please contact your NuVasive® Sales Consultant or Customer Service Representative today at:
NuVasive, Inc. 7475 Lusk Blvd., San Diego, CA 92121 • phone: 800-475-9131 fax: 800-475-9134

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