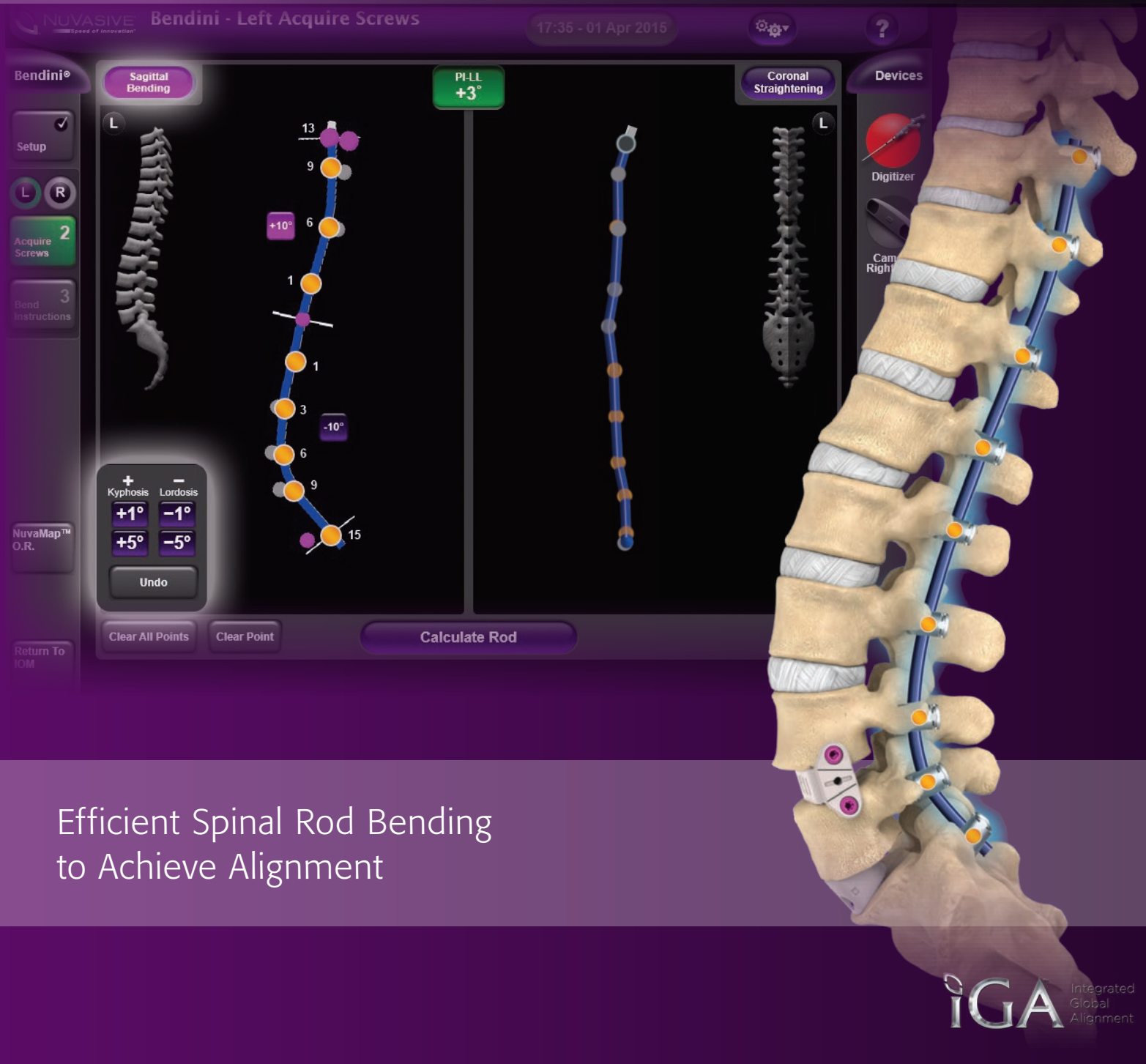
NUVASIVE®
Speed of Innovation®

BENDINI®

NVM5® Computer-Assisted Rod Bending



Efficient Spinal Rod Bending to Achieve Alignment

iGA Integrated Global Alignment

Integrated Global Alignment

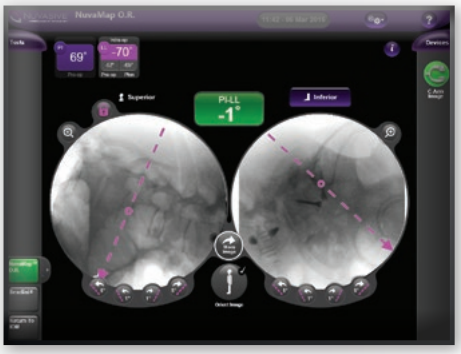
iGA™ Integrated Global Alignment
PRESERVATION | RESTORATION

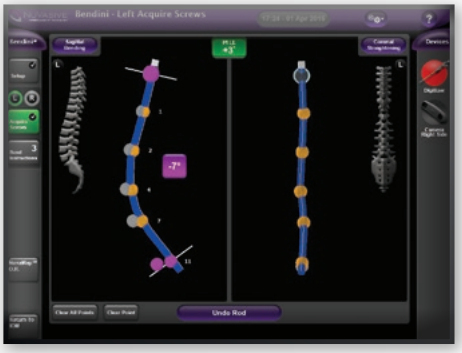
CALCULATE
ANTERIOR COLUMN
CORRECT
POSTERIOR COLUMN
CONFIRM

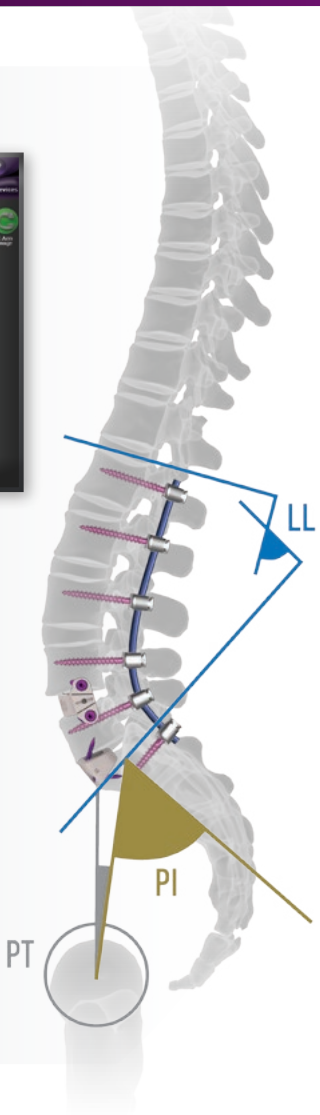
Integrated Global Alignment (iGA™) is a platform comprised of procedurally based technologies, designed to enhance clinical and economic outcomes by increasing the predictability of achieving global alignment in all spinal procedures. Integration across the surgical workflow allows the surgeon to confidently and reproducibly:

- **Calculate** alignment parameters with preoperative planning tools.
- **Correct** the anterior and posterior column with comprehensive procedural solutions from NuVasive® with the industry's only real-time intraoperative assessment.
- **Confirm** the restoration and preservation of global alignment postoperatively.

WHY ALIGNMENT MATTERS.







Current and emerging data illustrate a direct correlation between spinal alignment and long-term clinical outcomes.[1] Specific spinopelvic parameters, including the proportionality of pelvic incidence (PI) and lumbar lordosis (LL), are key predictors in determining successful patient outcomes in all spinal procedures from single- to multi-level pathologies. NuVasive is committed to a global approach for assessing, preserving, and restoring spinal alignment in an effort to promote surgical efficiencies, lasting patient outcomes, and improved quality of life.

Alignment Matters.

[1]Terran J, Schwab F, Shaffrey CI, et al. The SRS-Schwab adult spinal deformity classification: assessment and clinical correlations based on a prospective operative and nonoperative cohort. *Neurosurg* 2013;73(4):559-68.

FOR A MALALIGNED SPINE

The Bendini® spinal rod bending system offers correction tools, which can assist in complex degenerative deformity cases. The procedure is designed to benefit surgeons and patients with:

RESTORED ALIGNMENT

- Surgeon-driven menus enable rapid intraoperative alignment assessment and rod customization.
- Coronal and sagittal design tools help guide surgeons to achieve alignment goals prior to exiting the O.R.

INTRAOPERATIVE FLEXIBILITY

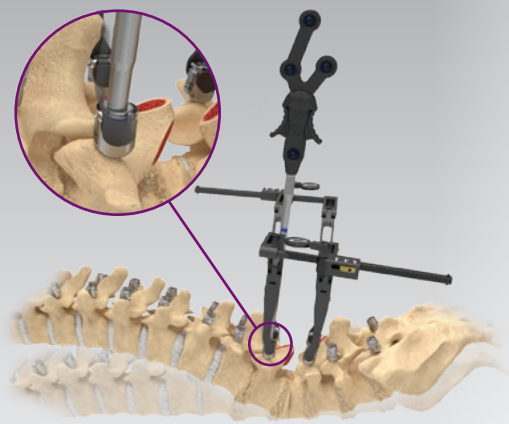
- Real-time rod bending provides the surgeon with the ability to modify rod bends at any time during the case.
- Bender adaptability allows the surgeon to bend 5.5 or 6.0mm rods.

STREAMLINE ADVANCED CASES WITH BENDINI

Tumors and Trauma

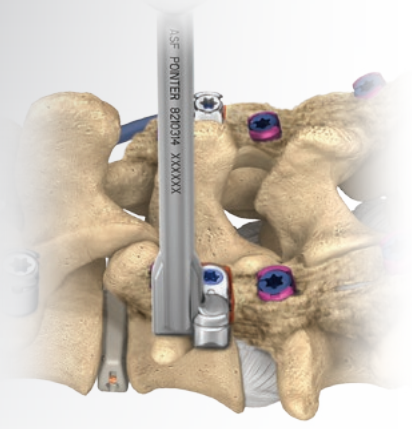
By bending the rod to implant locations, Bendini-bent rods exert less force on the bone-screw interface,[2] which may reduce the potential of screw pull-out.

Posterior Column Osteotomies



Utilize the Lock Screw Pointer to digitize on top of the 3CO Rack and maintain correction post-osteotomy.

Adjacent Segment Fixation



Simplify revision surgery with the ASF Pointer by digitizing around ASF Connectors and creating a custom "Z" rod.

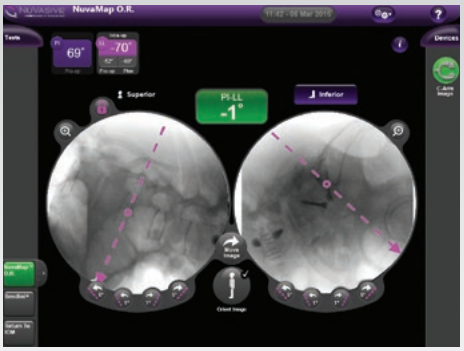
[2]Tohmeh AG, Isaacs RE, Dooley ZA, et al. Long construct pedicle screw reduction and residual forces are decreased using a computer-assisted rod bending system. *J Spine Neurosurg.* 2014;S2.

BENDINI®

Correction Features

SAGITTAL BENDING TOOL

- Surgeon-driven menu enables rod customization in the sagittal plane to help achieve sagittal alignment.
- Menu options include:
  - Lumbar lordosis – Evenly distributes lordosis across a segment;
  - 1/3, 2/3 lumbar lordosis – Splits distribution of lordosis values between 1/3 and 2/3 of defined points;
  - Thoracic kyphosis – Evenly distributes kyphosis across a defined segment.
- Intuitive display shows point movement in millimeters, post segment adjustment.



Integration with NuvaMap™ O.R.

- NuvaMap O.R. is an NVM5® software application which enables intraoperative assessment of various patient anatomical parameters, like lumbar lordosis (LL), through the use of lateral fluoroscopic images.
- The Sagittal Alignment Assessment Tool (PI minus LL indicator) is displayed in both NuvaMap O.R. and on the Bendini® Rod Preview screen.
- When used in conjunction with NuvaMap O.R., the PI minus LL display in the Bendini application helps to facilitate quantified and informed sagittal rod bending to assist in restoring alignment.

CORONAL STRAIGHTENING OPTION

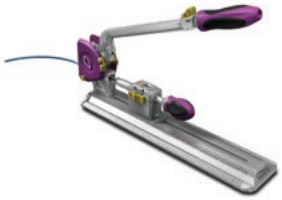
- Surgeon-driven menu enables customized rod straightening in the coronal plane.
- Straightening options include:
  - 25% to line,
  - 50% to line,
  - 75% to line,
  - 100% straight (no coronal bends).
- Intuitive display shows point movement in millimeters, post segment adjustment.

BENDINI®

Preservation

FOR AN ALIGNED SPINE

The Bendini® spinal rod bending system is used to create customized rods which are bent exactly to implant locations. The system expedites manual rod manipulation via computer-assisted bend instructions, designed to benefit surgeons and patients with:



Decreased O.R. Time

Predictable, reproducible rod bending helps surgeons create rods which often require only a single pass.[3]

Reduced Screw Strain

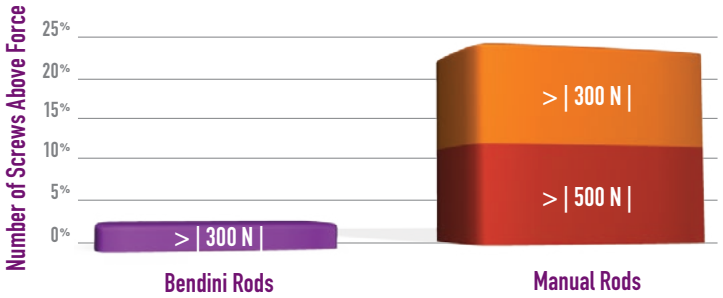
Implant-specific rods are designed to minimize forces on the screw bone interface and prevent unnecessary preloading of the construct.[2]

Minimized Residual Rod Overhang

Custom overhang enables accurate rod length. Excess rod overhang may lead to potential adjacent-level facet impingement.

Decreased Reduction Force Required with Bendini[2]

- Average residual screw forces, which indicate potential for postoperative screw pullout or loosening, were 60% less with Bendini than with manual rod bending.
- The proportion of screws with reduction force peaks greater than 500 N, which may lead to intraoperative screw pullout, was 0% with Bendini and 20% with manual rod bending.
- The proportion of screws with reduction force peaks greater than 300 N, which may lead to intraoperative screw pullout in compromised bone, was 5% with Bendini and 39% with manual rod bending.



CASE STUDY

Surgeon: Richard Wupperman, M.D.
Lakeway Regional Medical Center, Lakeway, TX, USA

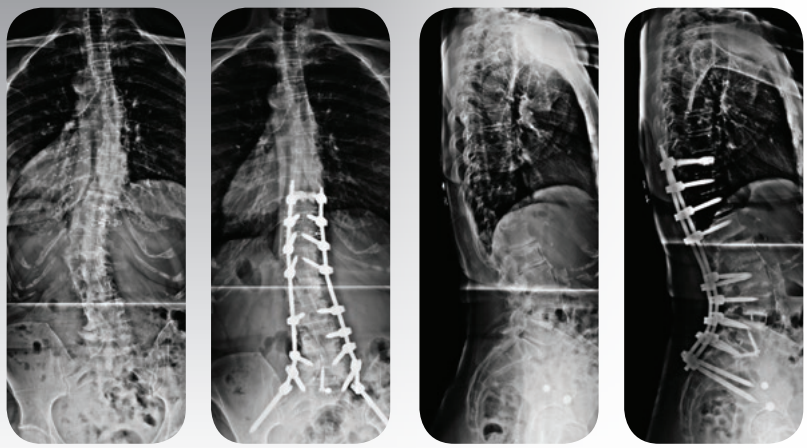
Patient: 72-year-old female

Diagnosis:
- Lumbar degenerative scoliosis (30° Cobb angle)
- L4 spondylolisthesis
- Degenerative disc disease

Procedure: T10–pelvis posterior MAS® fixation with Precept® and Bendini

Post-Op: 1 month later – nearly pain-free, no longer taking narcotics, walking ¼-mile per day

3 months later – walking 3 miles per day



PRE-OP A/P | POST-OP A/P | PRE-OP LATERAL | POST-OP LATERAL

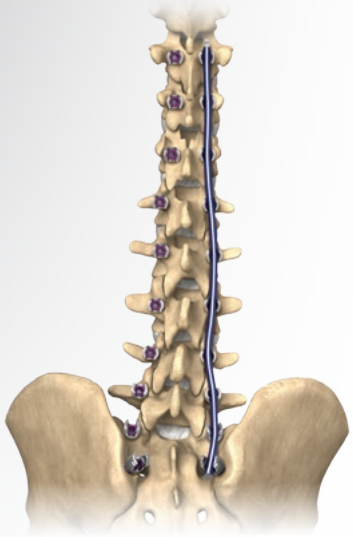
[3]Wupperman RM, Isaacs RE, Taylor WR. The Bendini spinal rod bending system for long percutaneous pedicle screw constructs: cadaveric utility study and early clinical experience. Society of Lateral Access Surgery (SOLAS®) 2013 Annual Meeting. San Diego, CA, USA.

RELINE

EVOLVING POSTERIOR FIXATION TECHNOLOGY WITHIN THE IGA™ PLATFORM

The Reline® portfolio is the evolution of posterior fixation technology within the iGA platform. Reline provides integrated Open and MAS® procedural solutions, delivering a highly efficient surgical experience to help drive reproducible patient outcomes.

Whether preserving or restoring spinal alignment, the seamless and versatile design of Reline provides one system to address even the most difficult pathologies.



Surgical Efficiency

Universal Open and MAS solutions created to help deliver an enhanced surgical experience:

- Fully compatible Open and MAS instrumentation
- Seamless integration with NuVasive® Power instruments and NVM5®
- Streamlined rod insertion facilitated by the Bendini® spinal rod bending system

Operative Reliability

Multiple surgical options designed to provide dependable strength:

- Patented Helical Flange® Locking Technology providing reliable performance
- Rigid instrument engagement delivering intraoperative dependability
- Multi-functional instruments offer a flexible approach to help with challenging procedures

Procedural Versatility

Pathology-based instrumentation to approach a variety of surgical techniques:

- Implants accommodate multiple rod diameters and materials
- Anatomically designed kyphotic, lordotic, and tapered diameter rods

NVM5

SINGLE-PLATFORM INTEGRATION

NVM5 is the NuVasive platform for surgical efficiency, intraoperative alignment assessment, and neuromonitoring technologies. No other system combines all of these capabilities into one minimal footprint, specifically designed to support the unique requirements of spine surgery.

PROCEDURALLY INTEGRATED NEUROMONITORING

Comprehensive suite of intraoperative neuromonitoring modalities designed to promote positive neurological outcomes.

- Real-time information on nerve proximity when placing screws with Dynamic EMG.
- Continuous monitoring for mechanical disturbances to nerve structures with Free Run EMG.
- Combined SSEP and MEP monitoring for a reliable method of monitoring spinal cord function with greater sensitivity and predictability than single-modality techniques.[4]

[4]Pelosi L, Lamb J, Grevitt M, et al. Combined monitoring of motor and somatosensory evoked potentials in orthopedic spinal surgery. *J Clin Neurophys*. 2002;113(7):1082-91.

NUVASIVE®
Speed of Innovation®

To order, please contact your NuVasive® Sales Consultant or Customer Service Representative today at:
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