



INNOVATIVE SURGICAL TECHNIQUES

PRODUCT OVERVIEW AND BENEFITS

SYSTEMS FOR MINIMAL INVASIVE SPINE SURGERY



www.joimax.com

COMPREHENSIVE SOLUTIONS FOR FULL ENDOSCOPIC SPINE SURGERY

As a leading provider in endoscopic spine surgery, joimax® develops state-of-the-art surgical systems for the minimally invasive treatment of spinal disorders. These complete systems are specially designed to enable surgeons to perform precise, safe, and tissue-sparing procedures on the spine. The focus is on combining state-of-the-art endoscopy technology, ergonomic instruments, and innovative surgical techniques.

The systems cover the entire spectrum of fully endoscopic spinal surgery – from transforaminal and interlaminar approaches to cervical procedures. Core products such as **TESSYS®** (Transforaminal Endoscopic Surgical System) and **iLESSYS®** (interLaminar Endoscopic Surgical System) enable the treatment of herniated discs, spinal canal stenosis, and other degenerative diseases under direct endoscopic visualization.

EndoLIF® and **Percusys® Plus** can be used for both endoscopically assisted and percutaneous fusion and stabilization. This technique combines minimally invasive approaches with 3D-printed cages and a percutaneous screw-rod systems to maintain or restore the spinal stability.

Pain therapy systems complete the range of indications:

MultiZYTE® for endoscopic facet joint treatment and denervation, **intENTS®** for intradiscal annulus denervation and nucleoplasty.

STABILIZATION

DECOMPRESSION

PAIN THERAPY

ADVANTAGES OF ENDOSCOPY SPINE SURGERY¹⁻²

- ✓ Minimally invasive surgery; also possible under local anesthesia
- ✓ Reduced tissue disruption and scarring due to small incision and gradual dilation access
- ✓ Minimized destabilization and trauma
- ✓ Continuous visual-endoscopic control of the treatment
- ✓ Shorter recovery times and quicker return to everyday life



TESSYS®

Transforaminal Endoscopic Surgical System

TRANSFORAMINAL SPINE SURGERY

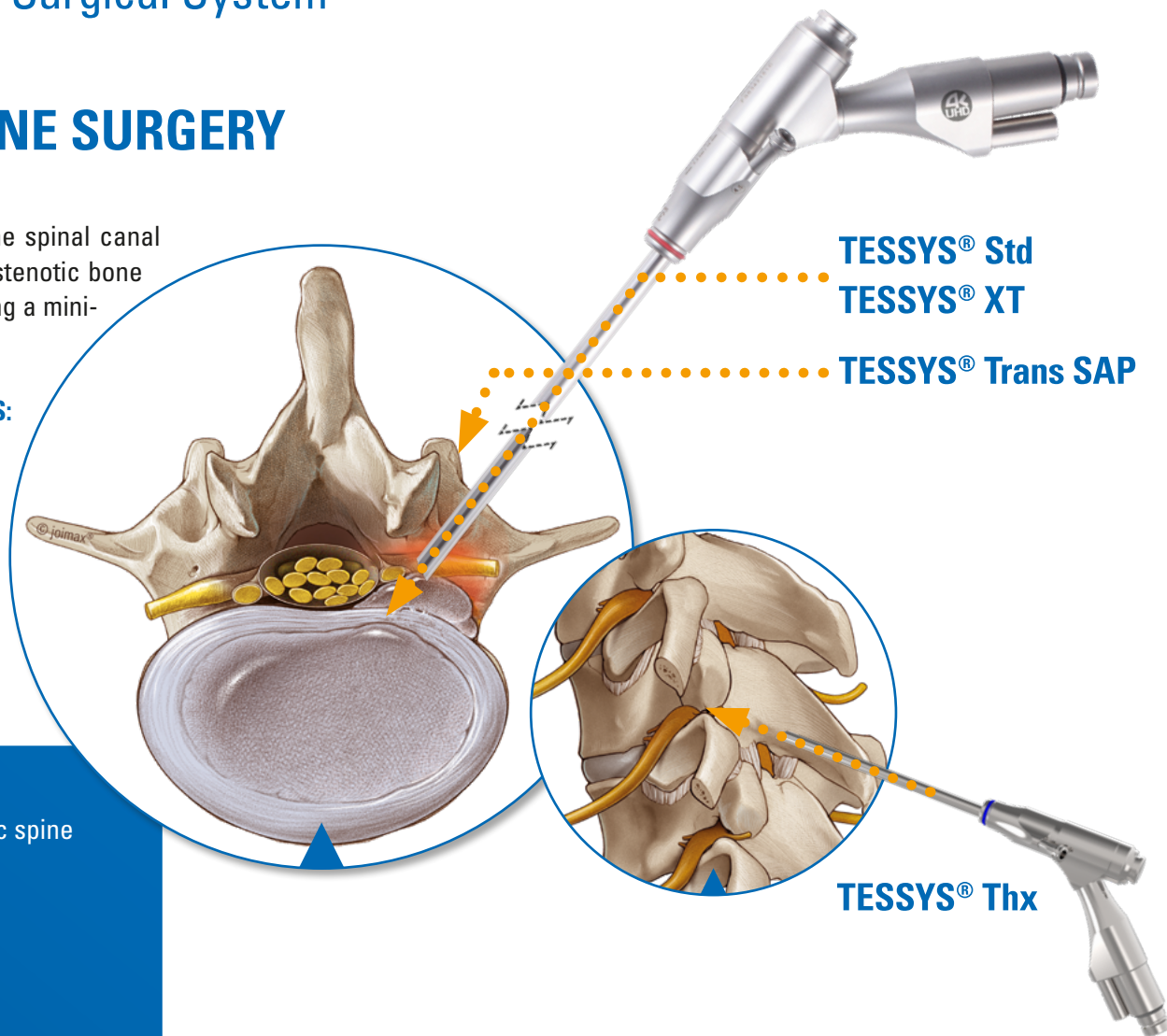
TESSYS® technology enables safe access to the spinal canal via the intervertebral foramen. Disc tissue and stenotic bone tissue can be removed through the foramen using a minimally invasive technique that preserves tissue.

TESSYS® IS AVAILABLE IN DIFFERENT VERSIONS:

- Std** – All-rounder for access through the Kambin triangle
- XT** – Extended working length for obese patients
- TransSAP** – Optimized for TransSAP access
- Thx** – For thoracic procedures

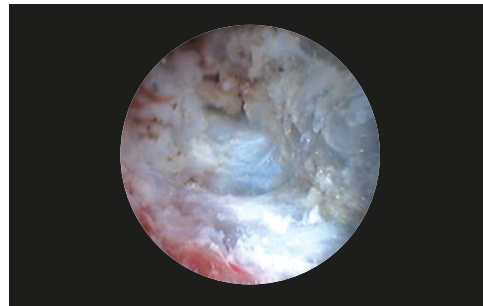
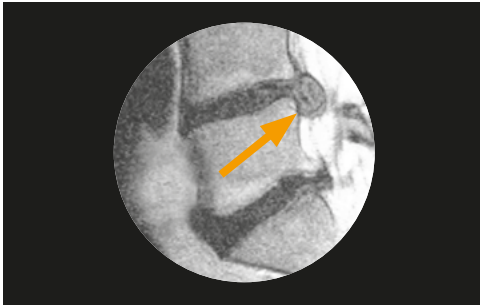
SELECTED INDICATIONS

- ✓ Herniated discs of the lumbar and thoracic spine
- ✓ Foraminal and recess stenosis
- ✓ Hypertrophies of the ligamentum flavum
- ✓ Osteophytes on vertebral bodies
- ✓ Recurrent or revision operations (scarring after other operations)
- ✓ Ventral facet joint cysts



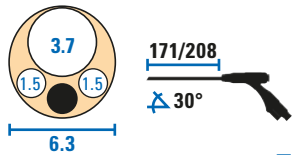
TESSYS® Std
TESSYS® XT
TESSYS® Trans SAP

TESSYS® Thx

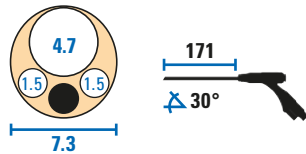


Herniated disc at
L5-S1 (left-caudal)
before surgery.

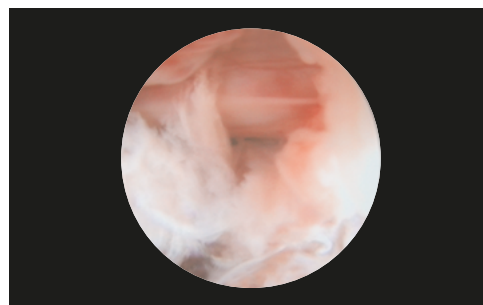
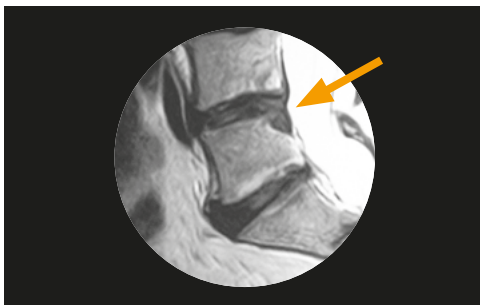
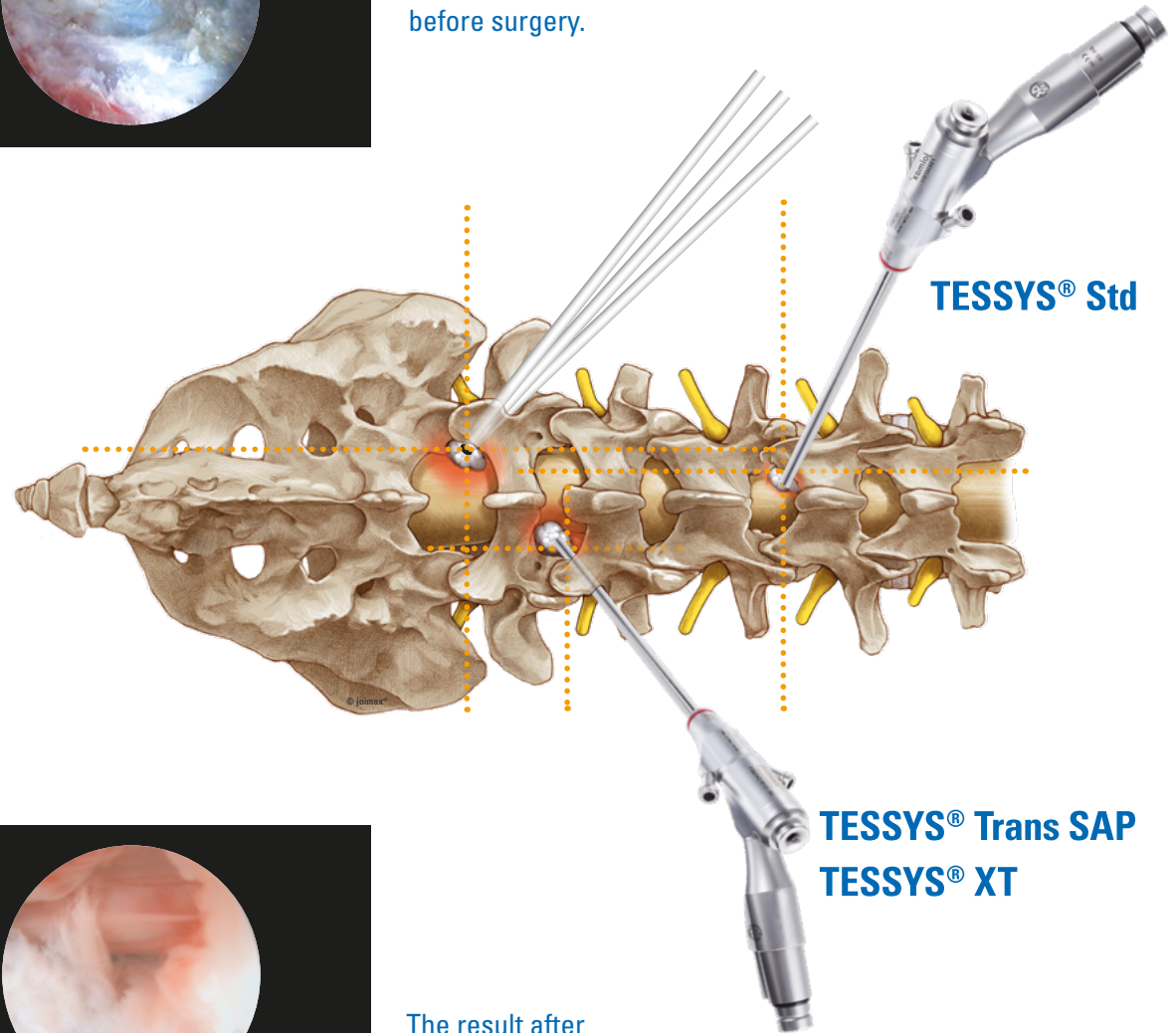
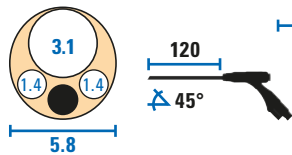
TESSYS® | TESSYS® XT



TESSYS® TransSAP



TESSYS® Thx



The result after
transforaminal
decompression.

iLESSYS®

Interlaminar Endoscopic Surgical System

INTERLAMINAR SPINE SURGERY

The flexible access angle via the interlaminar window allows precise adaptation to the pathology. For central stenoses and mediolateral disc herniations, an ipsilateral approach is chosen, while for lateral recess stenoses, the contralateral “over-the-top” technique is used. Laminotomy is performed with shaver blades selected according to the clinical indication. Diamond blades enable gentle, controlled bone abrasion with reduced bleeding, while cutting burs provide high efficiency for effective bone resection. Strong Kerrisons and finely controlled forceps are available for tissue preparation and resection.

THE iLESSYS® FAMILY INCLUDES:

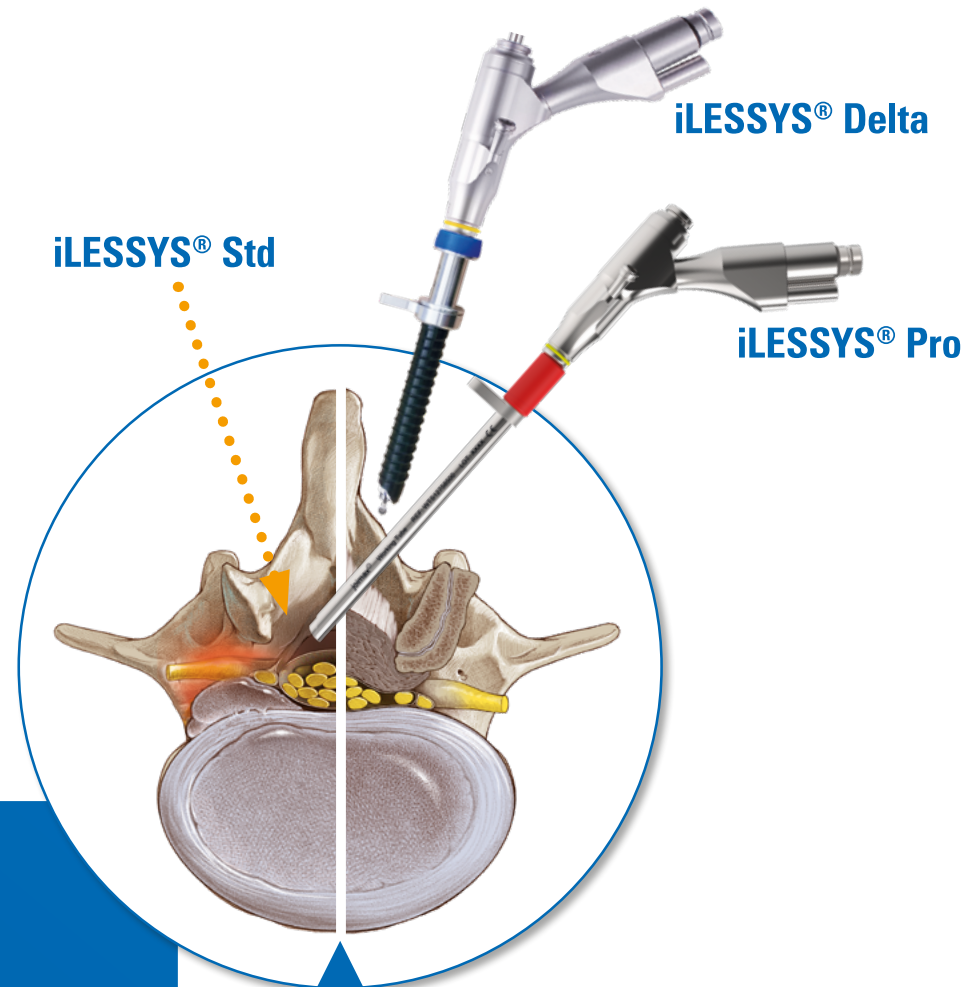
Std – Entry level for interlaminar endoscopy

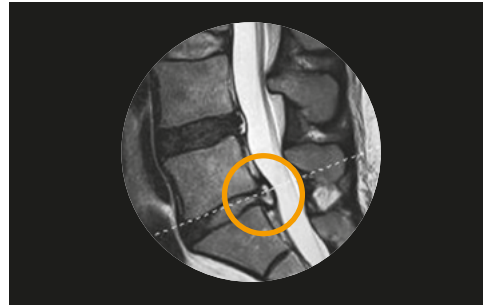
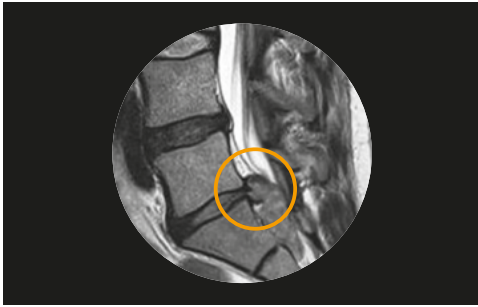
Pro – Advanced all-rounder for interlaminar procedures

Delta – Optimized for massive bone decompression

SELECTED INDICATIONS

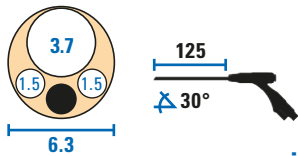
- ✓ Lumbar disc herniations dorsal and lateral of the spinal nerves
- ✓ Facet joint cysts
- ✓ Lumbar central and recessus stenosis
- ✓ Cervical, foraminal herniated discs and dorsal stenosis with radiculopathy
- ✓ Spinal stenosis grade A1-4
- ✓ Foraminal stenosis on both sides



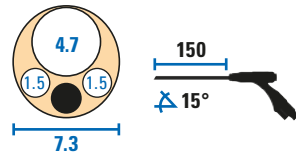


MRI before the procedure (left) and two months after decompression.

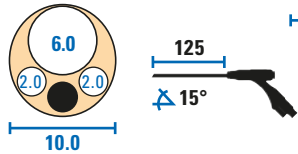
iLESSYS®



iLESSYS® Pro



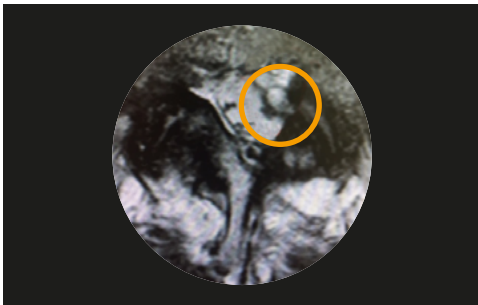
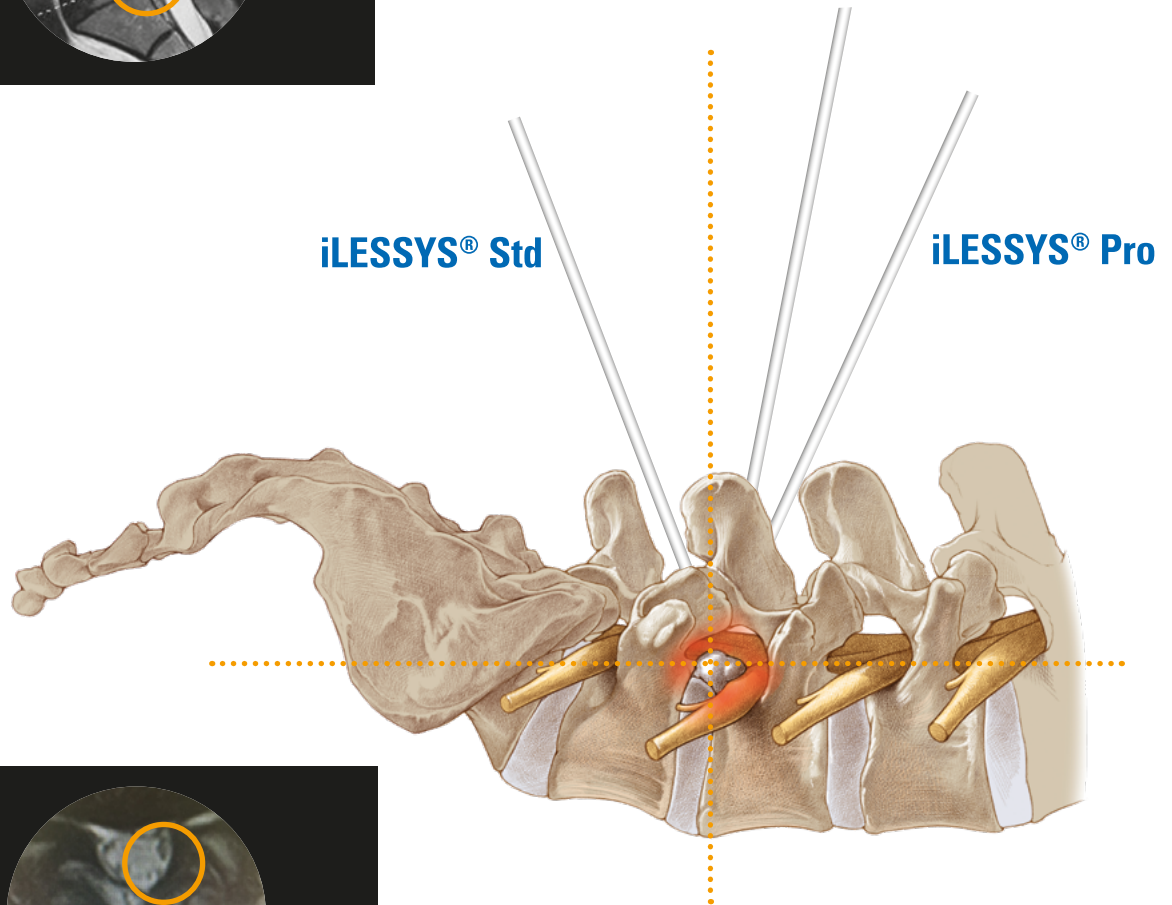
iLESSYS® Delta



iLESSYS® Std

iLESSYS® Pro

iLESSYS® Delta



MRI before (left) and 6 weeks after the surgery.

CESSYS®

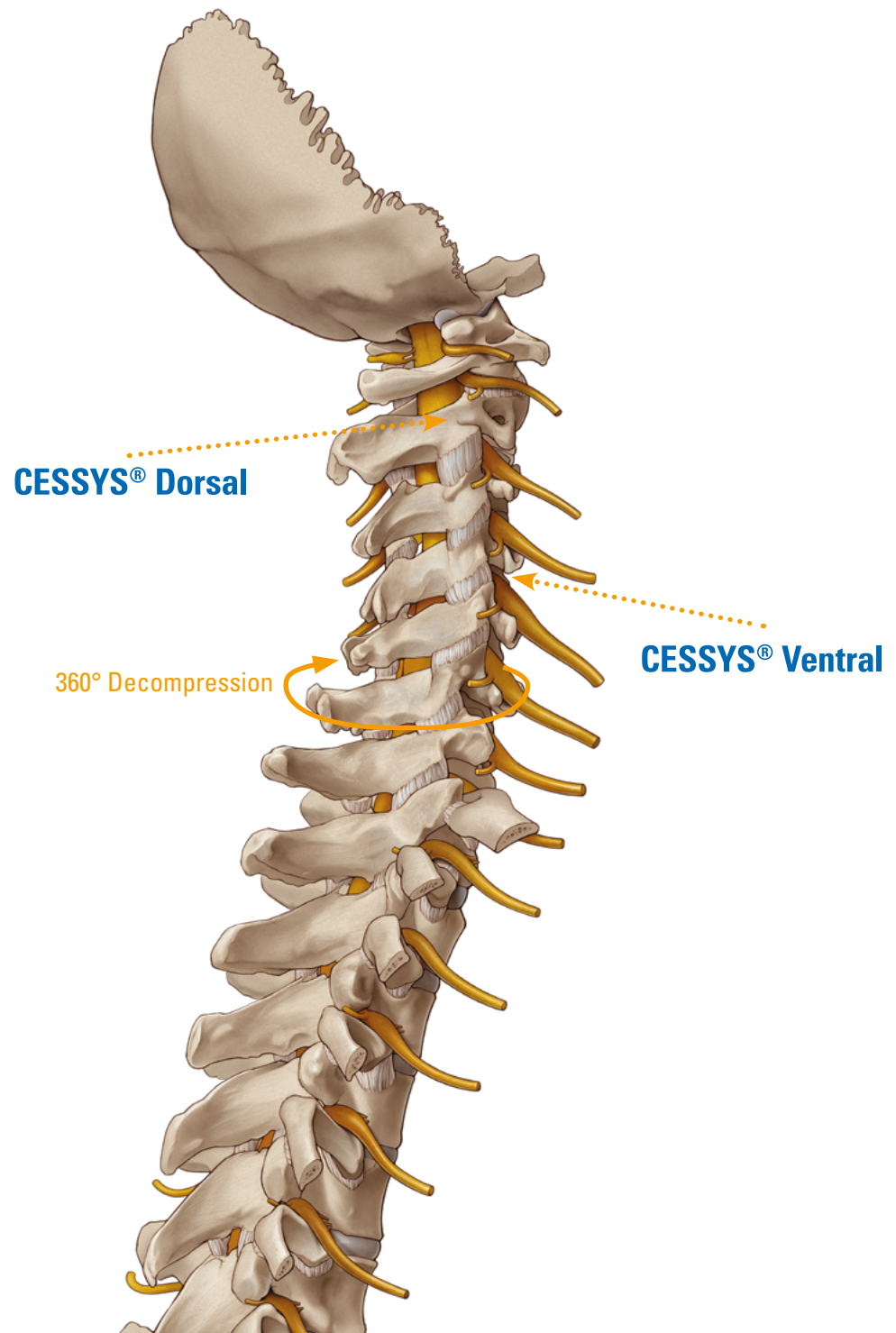
Cervical Endoscopic Surgical System

CERVICAL SPINE SURGERY

The CESSYS® family enables the minimally invasive therapy of cervical herniated discs and stenosis. Depending on the location of the pathology in the spinal canal, the appropriate system can be selected. Through the anterior, intradiscal access with **CESSYS® Ventral** and the posterior intervention with **CESSYS® Dorsal** 360° treatment of the spinal canal is possible.

ADVANTAGES OF ENDOSCOPIC SURGICAL TECHNIQUE³

- ✓ Minimally invasive intervention
- ✓ Tissue-conserving surgical access through gradual dilatation
- ✓ Permanent visual control during the operation
- ✓ Minimal destabilization and traumatization
- ✓ Small incision, therefore hardly any scar tissue
- ✓ Reduced risk of infection
- ✓ Short regeneration time and rapid return to everyday life



CESSYS® Dorsal

Cervical Endoscopic Surgical System

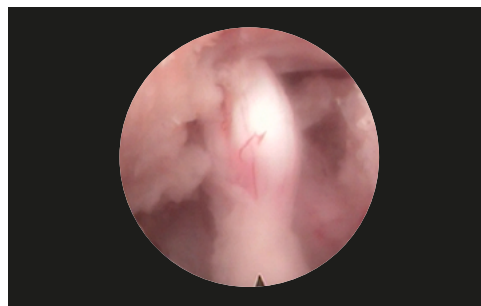
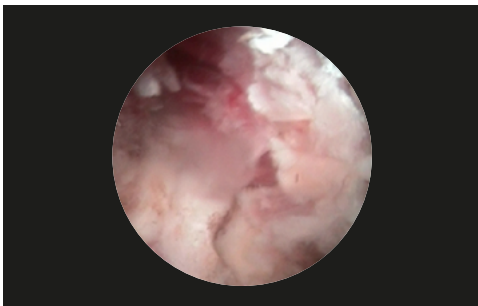
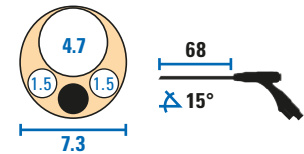
Similar to the interlaminar technique iLESSYS®, the posterior approach of CESSYS® Dorsal uses the interlaminar window for approach. It provides a safe access route through which an endoscope can directly reach pathologies within the spinal canal. It can be used both ipsilaterally and contralaterally.

SELECTED INDICATIONS

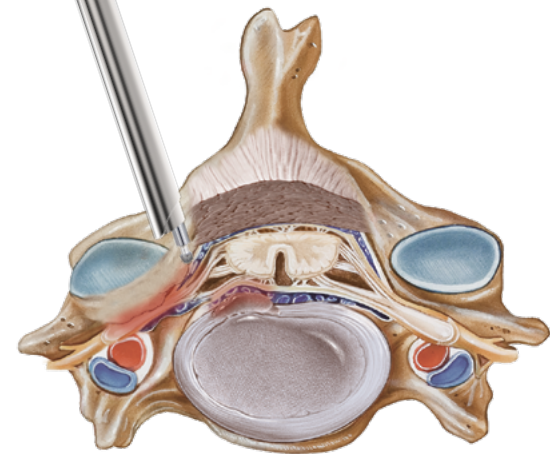
- ✓ Particularly suitable for cervical bone decompression (stenosis)
- ✓ Can be used both ipsilaterally and contralaterally



CESSYS® Dorsal



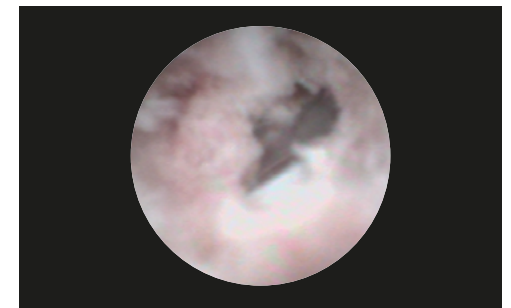
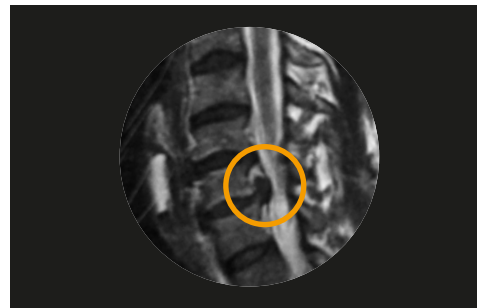
Endoscopic view before decompression (left) and after.



CESSYS® Ventral

Cervical Endoscopic Surgical System

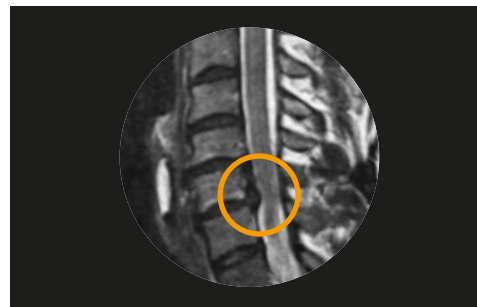
The CESSYS® Ventral method uses an anterior approach through the disc space directly to the site of the herniation. Bulging, compressing disc material can be removed endoscopically under direct visual control without the need for a laminotomy. Its small footprint makes CESSYS® Ventral the perfect instrument for soft central to medio-lateral hernias and mild ventral stenoses.



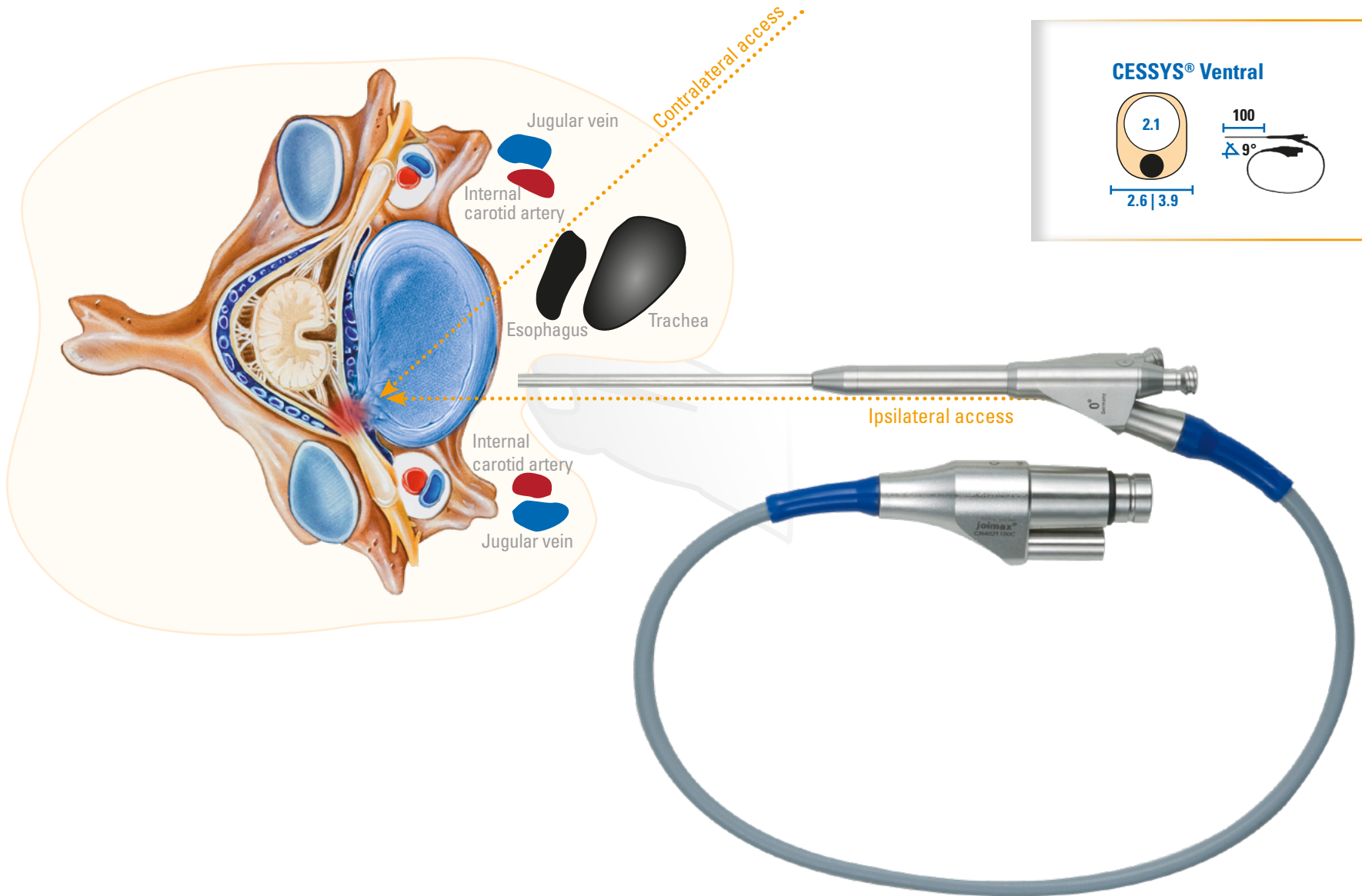
MRI with cervical herniated disc (left) and the endoscopic view before surgery.

SELECTED INDICATIONS

- ✓ Central and mediolateral herniated discs
- ✓ Ventral, foraminal osteophytes and stenosis



MRI (left) and endoscopic view after deherniation.



iLESSYS® Biportal

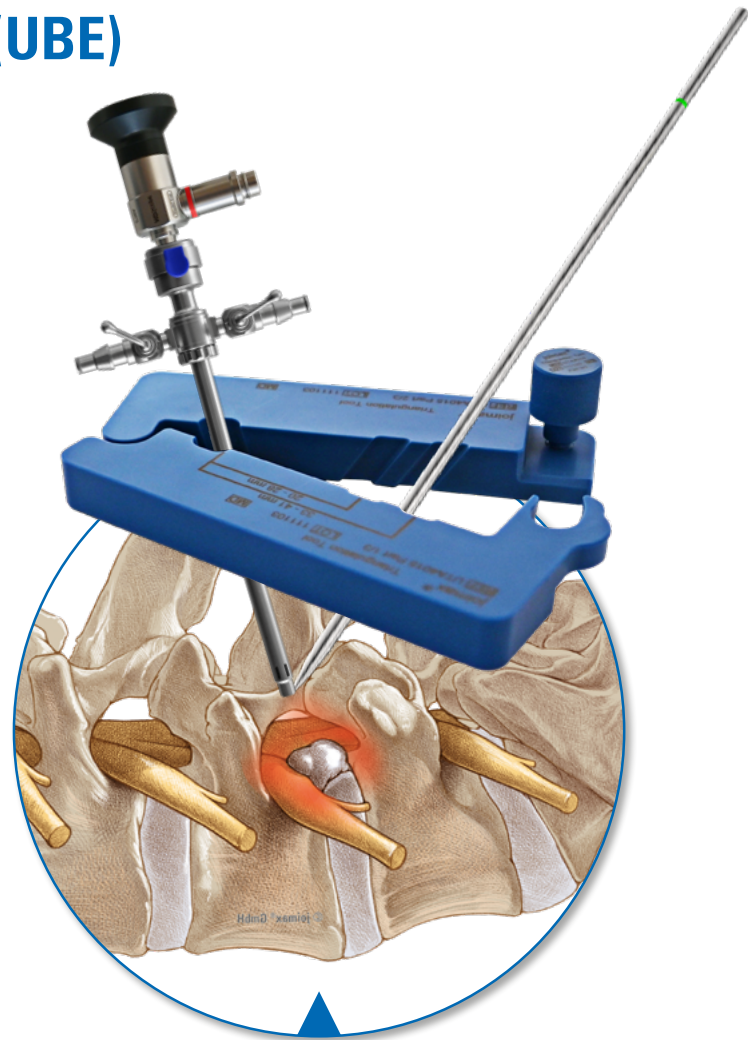
Interlaminar Biportal Endoscopic Surgical System

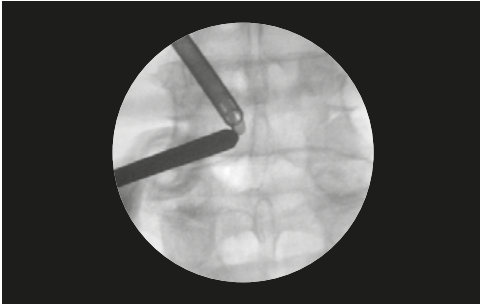
UNILATERAL BIPORTAL ENDOSCOPY (UBE)

The separation of the endoscope and working channel allows interlaminar access with more aggressive instruments and a larger working area. This makes the technique particularly interesting for central, multisegmental diseases and for endoscopic cage implantation.

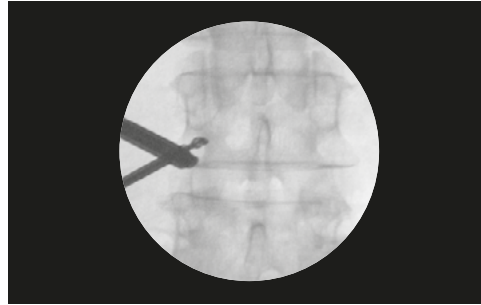
SELECTED INDICATIONS

- ✓ Central stenosis
- ✓ Endoscopically assisted interlaminar fusion
- ✓ Complication management (e.g. dura tear) in the lumbar spine region



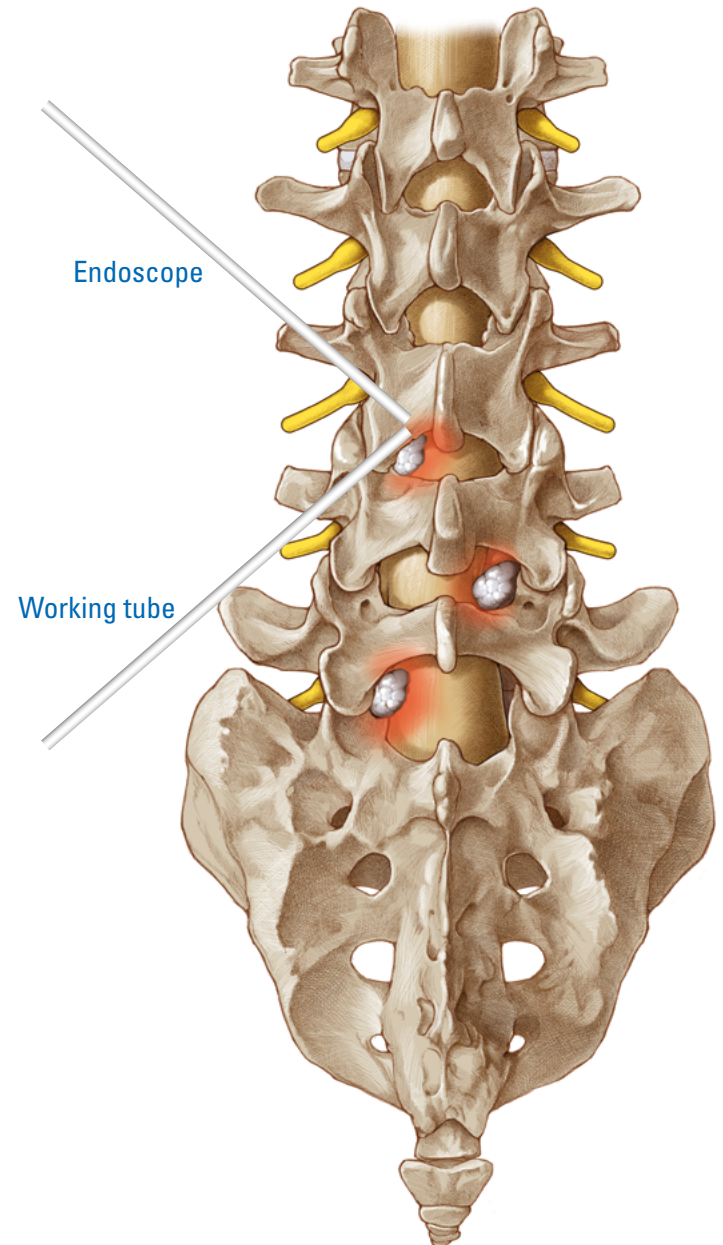
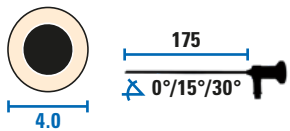


X-ray of the "kissing moment" of the endoscope and the working tube.



X-ray of using a Shrill® Shaver Blade to remove bone tissue.

iLESSYS® Biportal



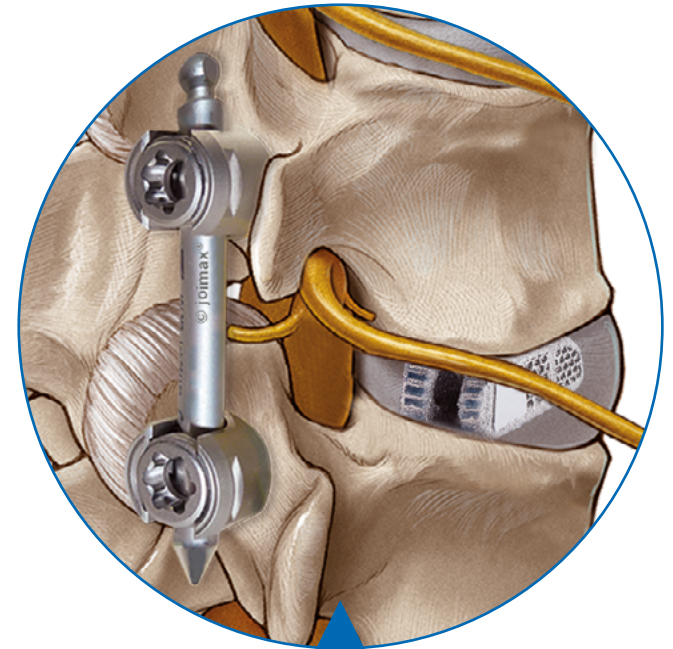
EndoLIF®

Endoscopic Lumbar Interbody Fusion

ENDOSCOPICALLY ASSISTED SPINAL FUSION

The EndoLIF® method is based on the proven TESSYS® approach. However, it can also be performed without previous application of the TESSYS® system.

The EndoLIF® approach offers the possibility to dilate the tissue between the muscle groups by specifically designed dilators. This approach is especially atraumatic and tissue-conserving. Discectomy and insertion of implants are performed endoscopically assisted via the created channel.

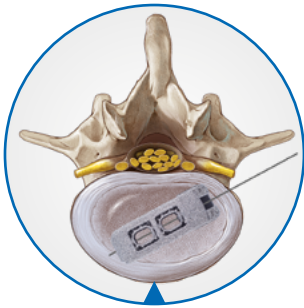


THE ADVANTAGES OF 3D PRINTED IMPLANTS⁴

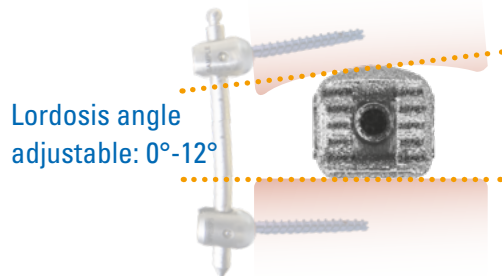
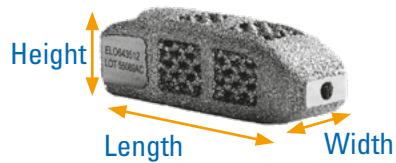
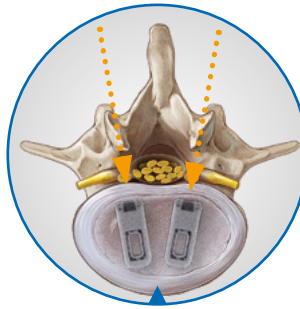
- ✓ Titanium alloy for high biocompatibility
- ✓ Open diamond cell structure for bony augmentation
- ✓ Rough and porous surface ideal for osseointegration
- ✓ Optimal bony ingrowth for stability and ultimately fusion
- ✓ Excellent visibility in X-ray and CT
- ✓ Wide range of dimensions according to indication and anatomical conditions

Lateral X-ray to confirm position and orientation.

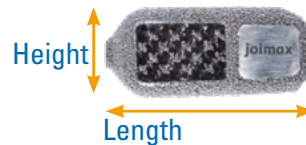


EndoLIF® 0/On-Cage

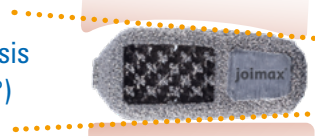
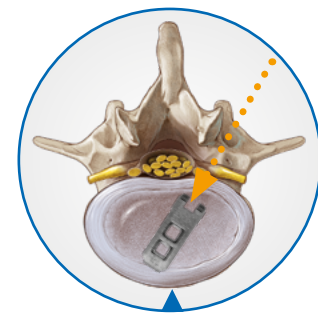
- Lengths (30 | 35 mm)
- Heights 8-14 mm (in steps of 1 mm)
- 12 mm width (footprint)
- Stepless lordotic adjustment possible

**EndoLIF® Delta-Cage**

- Length 25 mm
- Heights 8-12 mm (in 1 mm steps)
- 10 mm width (footprint)
- Lordotic angles (4° | 8°)



Preset lordosis angle (4° | 8°)

**EndoLIF® DoubleWedge-Cage**

- Lengths (27 | 32 mm)
- Heights 10-16 mm (in steps of 1 mm)
- 12 mm width (footprint)
- Lordotic angles (12° | 18°)
- Anatomically shaped with 10° angle from medial to lateral
- Rotatable for implantation from left and right



Preset lordosis angle (12° | 18°)



EndoLIF® LEX®

Endoscopic Lumbar Interbody Fusion

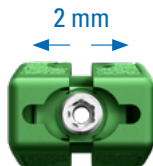
CONTROLLED 3D EXPANSION FOR INTRAOPERATIVE HEIGHT ADJUSTMENT

The EndoLIF® LEX® Cage is designed for minimally invasive endoscopically assisted implantation with TESSYS® TransSAP.

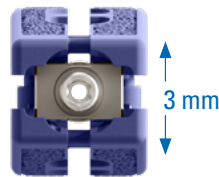
- Color coding for easy identification
- Subsequential biplanar expansion



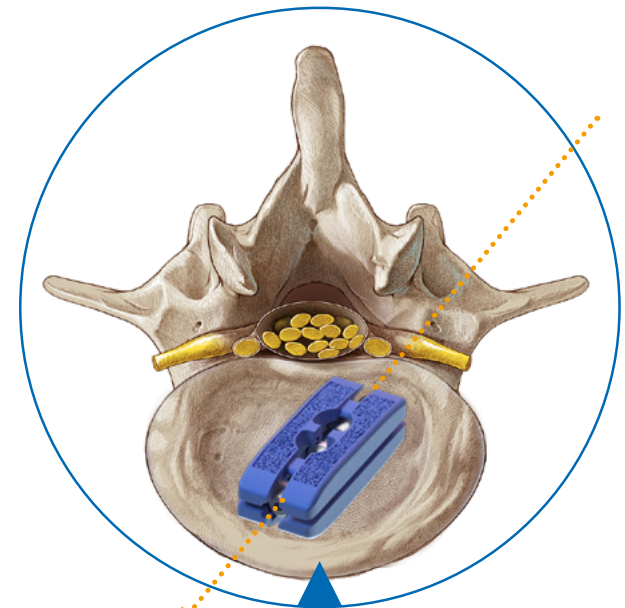
Collapsed
Small insertion
into disc space



Horizontal expansion
Increase of footprint to
prevent subsidence



Vertical expansion
Restoration of
anatomical height



Over-the-wire-Technique

REF	L [mm]	W [mm]	H [mm]	LORDOSIS [°]
ELX300811	30	10-12	8-11	6
ELX301013			10-13	12
ELX301215			12-15	18

EASY BACKFILLING

- ✓ Direct injection of osteoconductive bone substitute material
- ✓ Large filling volume of > 2 mL
- ✓ Easy control via endoscope and X-ray





Percusys® Plus

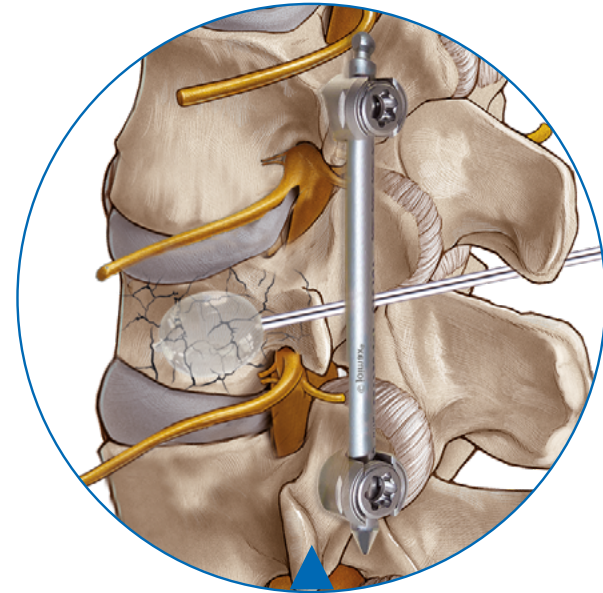
Percutaneous Screw Rod System

PERCUTANEOUS STABILIZATION USING A SCREW-ROD-SYSTEM

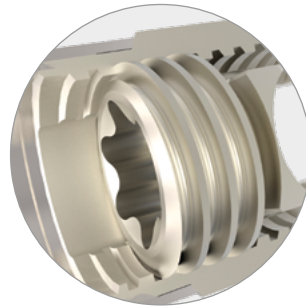
The Percusys® Plus system was developed specifically for minimally invasive vertebral body stabilization. The instrument set is streamlined for all surgical techniques. Depending on the patient and pathology, it can be used percutaneously as well as in open procedures.

INDICATIONS

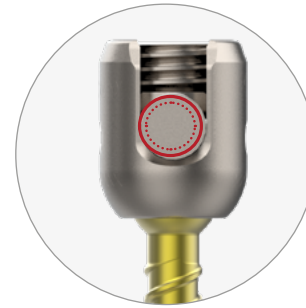
- ✓ Degenerative disc disease
 - ✓ Spondylolisthesis
 - ✓ Trauma (i.e., fracture, dislocation)
 - ✓ Spinal stenosis
 - ✓ Curvatures (i. e., scoliosis, kyphosis, and/or lordosis)
 - ✓ Tumor
-
- Diameter: 5, 6, 7 and 8 mm
 - Length: 35-55 mm (dependet on diameter)
 - Tulip: mono- and polyaxial
 - Cannulated, fenestrated, self-drilling, and self-tapping



Lateral X-ray
to confirm
implant position.



Pre-assembled set
screw



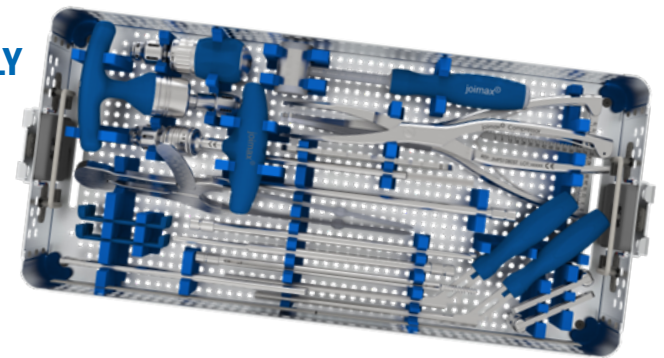
Rod diameters:
5.5 and 6 mm



Up to 5° angulation of
the rod in the tulip

UNIQUE, EFFICIENT, AND EXTREMELY SLIM SCREW DESIGN

- Small instrument set for minimally invasive and open surgical techniques
- Individually sterile packed implants
- Simple, controlled and burr-free shearing of the extension shaft



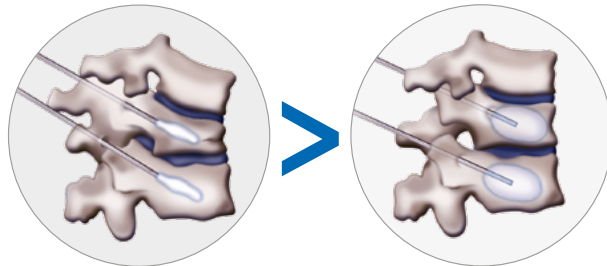
SPASY™*

Spinal Augmentation System

MINIMALLY INVASIVE SOLUTIONS FOR VERTEBRAL COMPRESSION FRACTURES

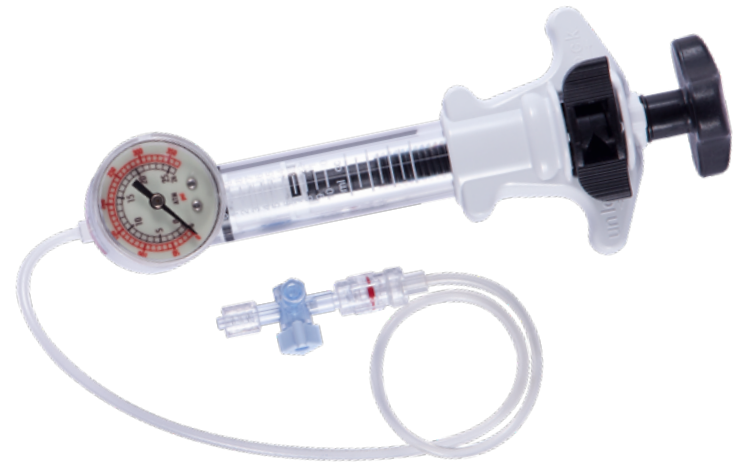
INDICATIONS

- ✓ Vertebral compression fractures
- ✓ Osteoporosis
- ✓ Osteolytic fractures
- ✓ Metastatic bone tumor



BALLOON KYPHOPLASTY

Balloon kyphoplasty is a minimally invasive percutaneous technique for stabilizing the spine. It is a solid alternative treatment for patients who fail to respond to conservative approaches such as bed rest, analgesics, and corsets.



* SPASY™ is a trademark of Seawon MEDITECH Ltd



KYVERMENT® PMMA CEMENT FOR SCREW AUGMENTATION** AND KYPHOPLASTY

Radiopaque PMMA cement for use in skeletal bone and especially in the vertebral body. Kyverment® in this composition has proven itself over many years:

- Simple preparation in a practical mixing cylinder
- Optimal fluidity for easy and fast application
- Outstanding viscosity for excellent control during the injection
- Immediate visualization of the injected cement due to high content of barium sulfate USP (microdispersed and non-sedimentable)
- Adequate volume (22 ml) for one or more injections
- Excellent compression characteristics

**Note: Augmentation in the US only with FDA approval

MultiZYTE®

Endoscopic Facet and Sacroiliac Joint Treatment

PAIN TREATMENT OF THE FACET JOINTS AND THE SACROILIAC JOINT

MultiZYTE® is an endoscopic surgical system for minimally invasive pain therapy. The versatile instrument set enables both the treatment of chronic facet joint pain (**MultiZYTE® Facet method**) and the treatment of the sacroiliac joint (**MultiZYTE® Sacroiliac method**).

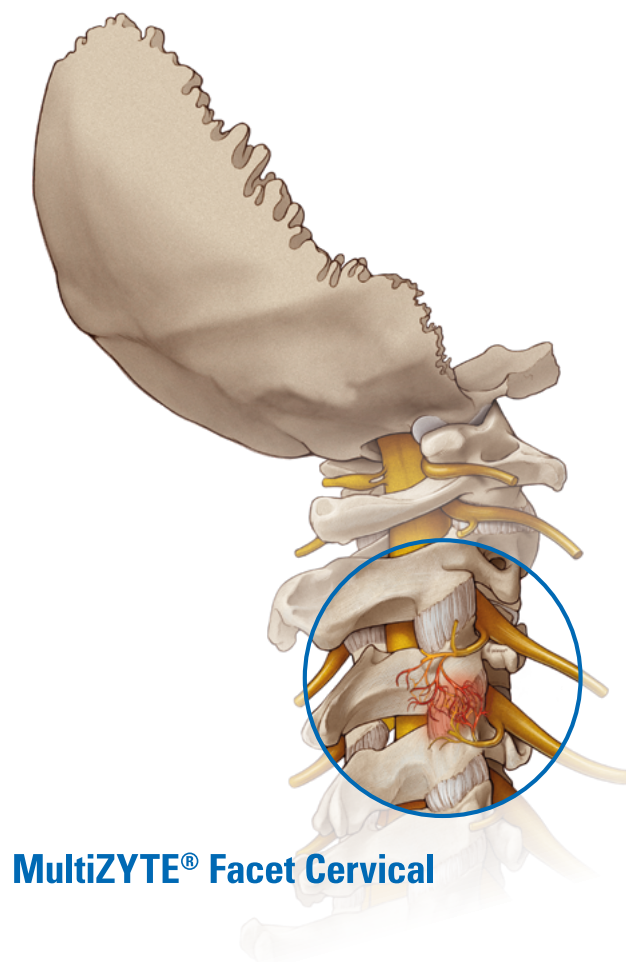
Under continuous endoscopic visualization, the source of pain is treated directly through targeted RF denervation of the medial dorsal ramus. Compared to X-ray-guided procedures, continuous visualization enables area targeted RF ablation and can thus contribute to longer lasting pain relief.

Direct visualization also allows for more comprehensive joint treatment. After opening the capsule, inflammatory fragments can be removed and rinsed out. In this way, a variety of chronic back conditions can be treated effectively and long-term with just one system.

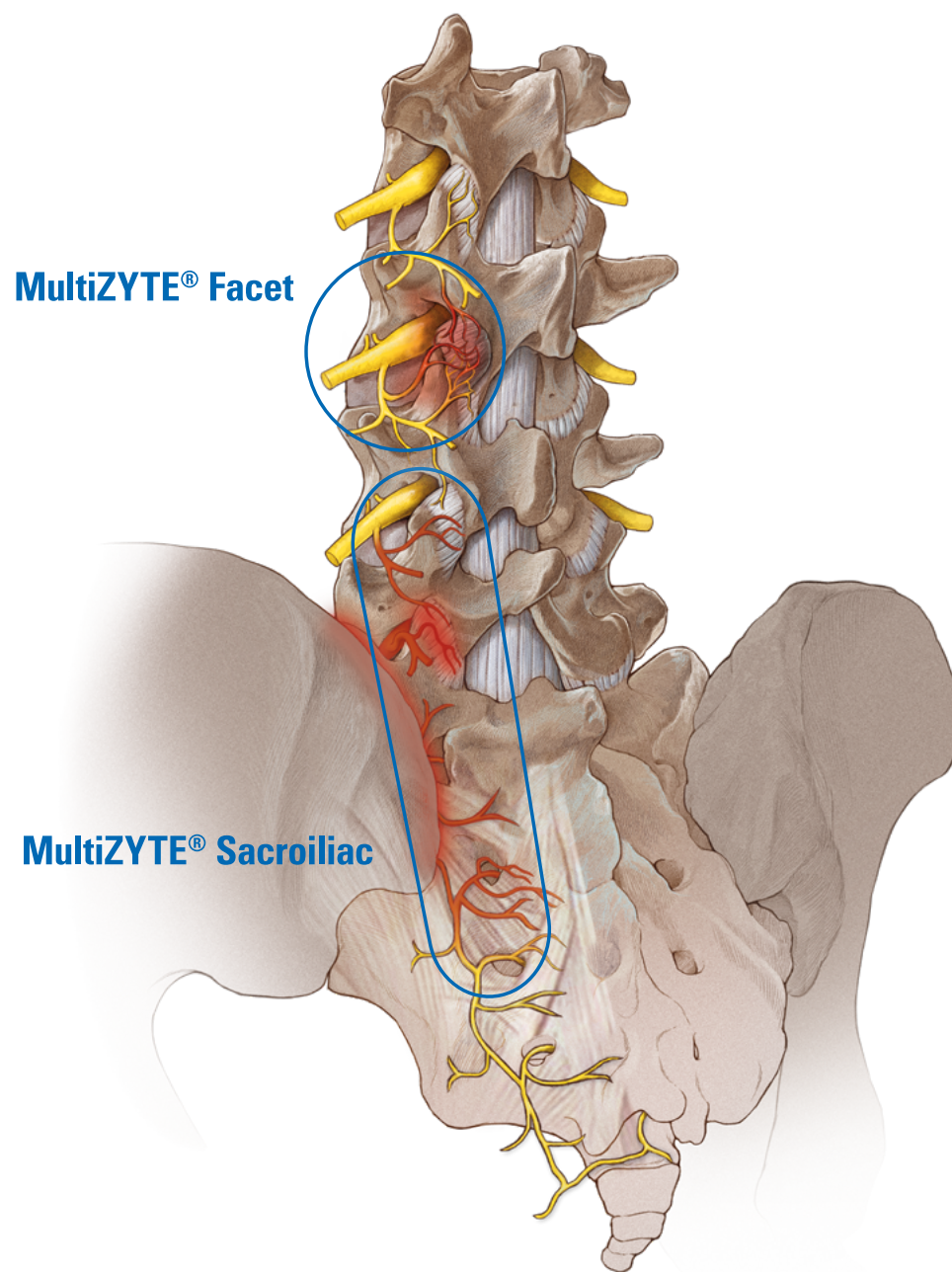
For procedures on the cervical spine, the specialized **MultiZYTE® Facet Cervical** system is available. The narrower endoscope facilitates maneuvering in the confined anatomy of the cervical spine.

ADVANTAGES OF ENDOSCOPIC PAIN TREATMENT⁵

- ✓ Long term therapeutic success due to endoscopically controlled approach
- ✓ Treatment of joint capsule with irrigation and vaporization
- ✓ Effective, precisely focused treatment using RF ablation
- ✓ Small incision, therefore minimal scar formation
- ✓ Short regeneration period
- ✓ Can be performed under local anesthesia
- ✓ Spinal and sacroiliac mobility is preserved
- ✓ Treatment at multiple levels possible with one incision



MultiZYTE® Facet Cervical



MultiZYTE® Facet

MultiZYTE® Sacroiliac

MultiZYTE® Facet | Facet Cervical

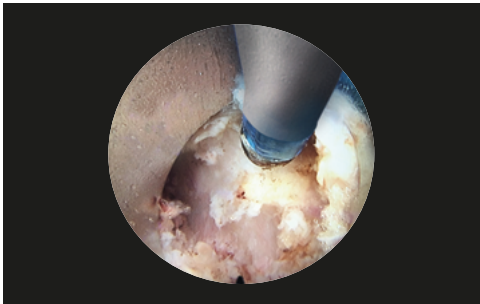
ENDOSCOPIC TREATMENT OF FACET JOINTS

Pain treatment with the MultiZYTE® Facet method enables comprehensive treatment of the pain-causing structures via a gentle, minimally invasive approach. This includes the removal of hypertrophic and inflamed tissue, RF ablation of pain-conducting nerves, and opening of the joint capsule for irrigation and vaporization of free joint bodies.

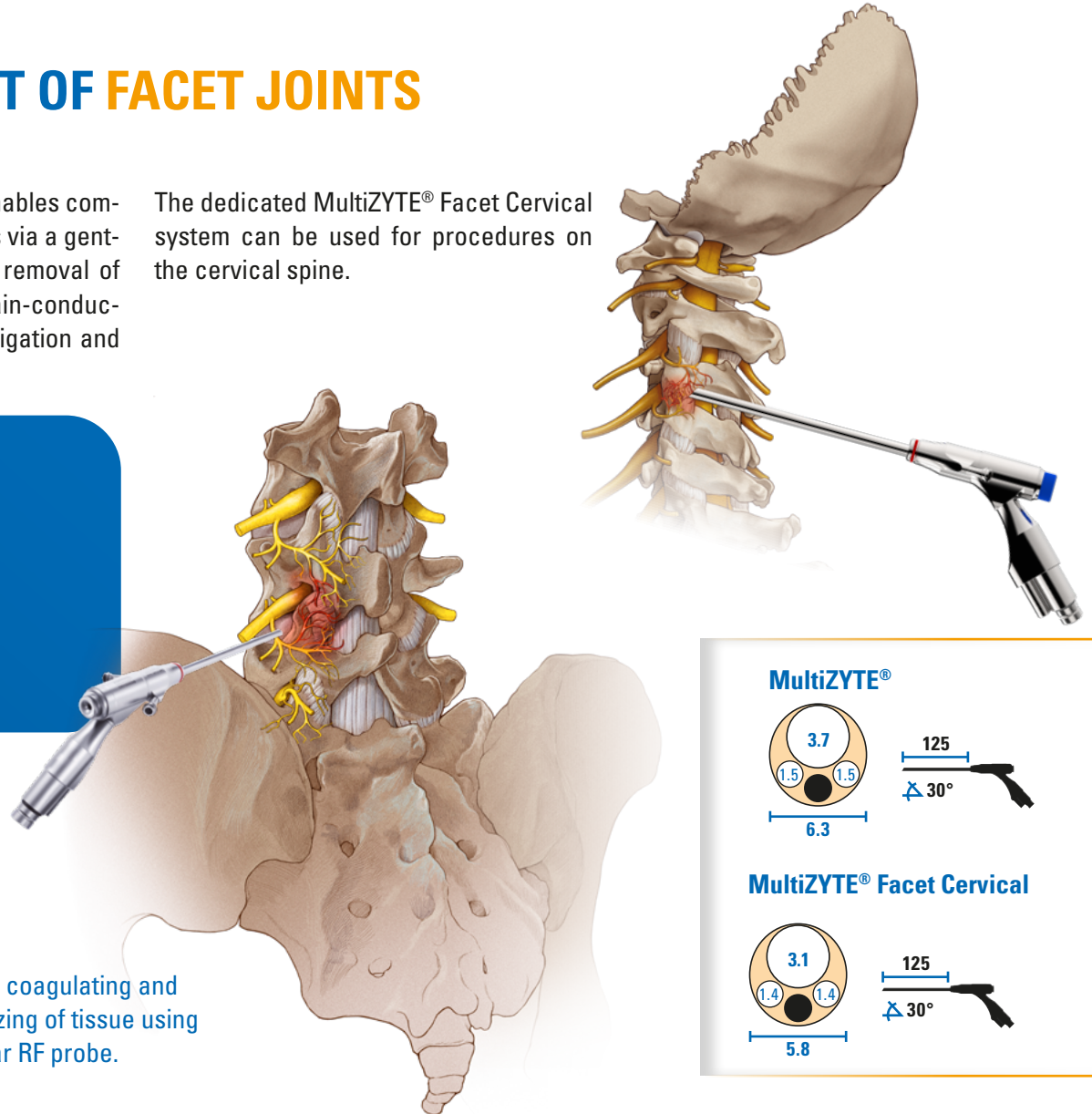
The dedicated MultiZYTE® Facet Cervical system can be used for procedures on the cervical spine.

SELECTED INDICATIONS

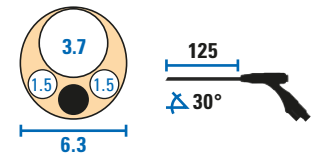
- ✓ Chronic lumbar back pain or neck pain
- ✓ Facet joint hypertrophy
- ✓ Faceted joint arthritis and arthrosis
- ✓ Postdiscectomy syndrome
- ✓ Cervical spine injury
- ✓ Discogenic cervical headaches



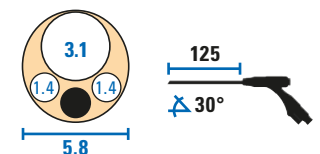
Cutting, coagulating and devitalizing of tissue using a bipolar RF probe.



MultiZYTE®



MultiZYTE® Facet Cervical



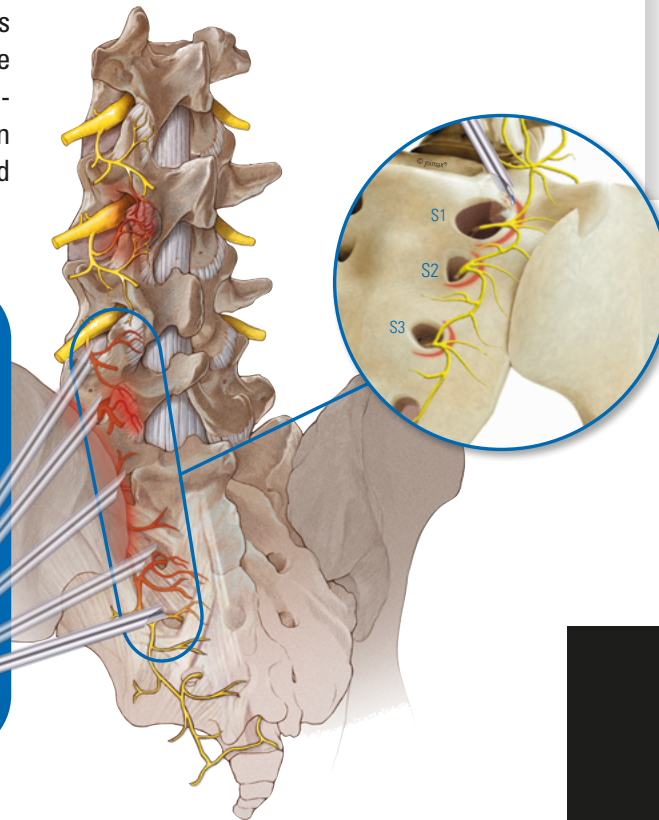
MultiZYTE® Sacroiliac

ENDOSCOPIC TREATMENT OF SACROILIAC JOINT (SIJ)

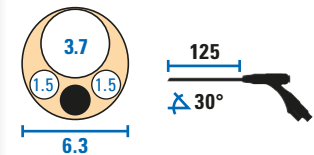
Through endoscopic denervation, the MultiZYTE® system can be used for targeted pain therapy of various pathological changes in the sacroiliac joint. Starting from the sacral foramina, the pain-conducting nerve fibres are ablated under endoscopic visualization. Depending on the indication, inflammatory tissue can also be removed, the joint capsule can be opened and cleaned of fragments.

SELECTED INDICATIONS

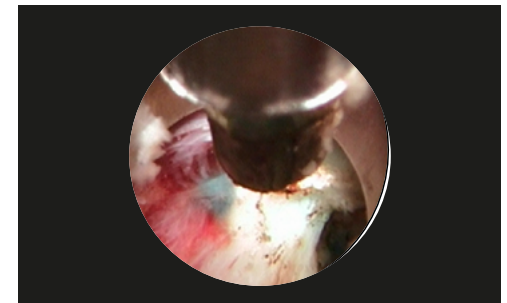
- ✓ Chronic lower back pain
- ✓ Painful, degenerative changes in the sacroiliac joint, e.g. SIJ arthrosis
- ✓ Postoperative complaints after previous lumbar surgery
- ✓ Hypermobility due to a loosened ligamentous apparatus
- ✓ SI-Joint trauma
- ✓ Inflammation of the SIJ
- ✓ Static overload syndrome



MultiZYTE®



Ablation of the pain conducting nerve fiber plexus using the Legato® monopolar probe.

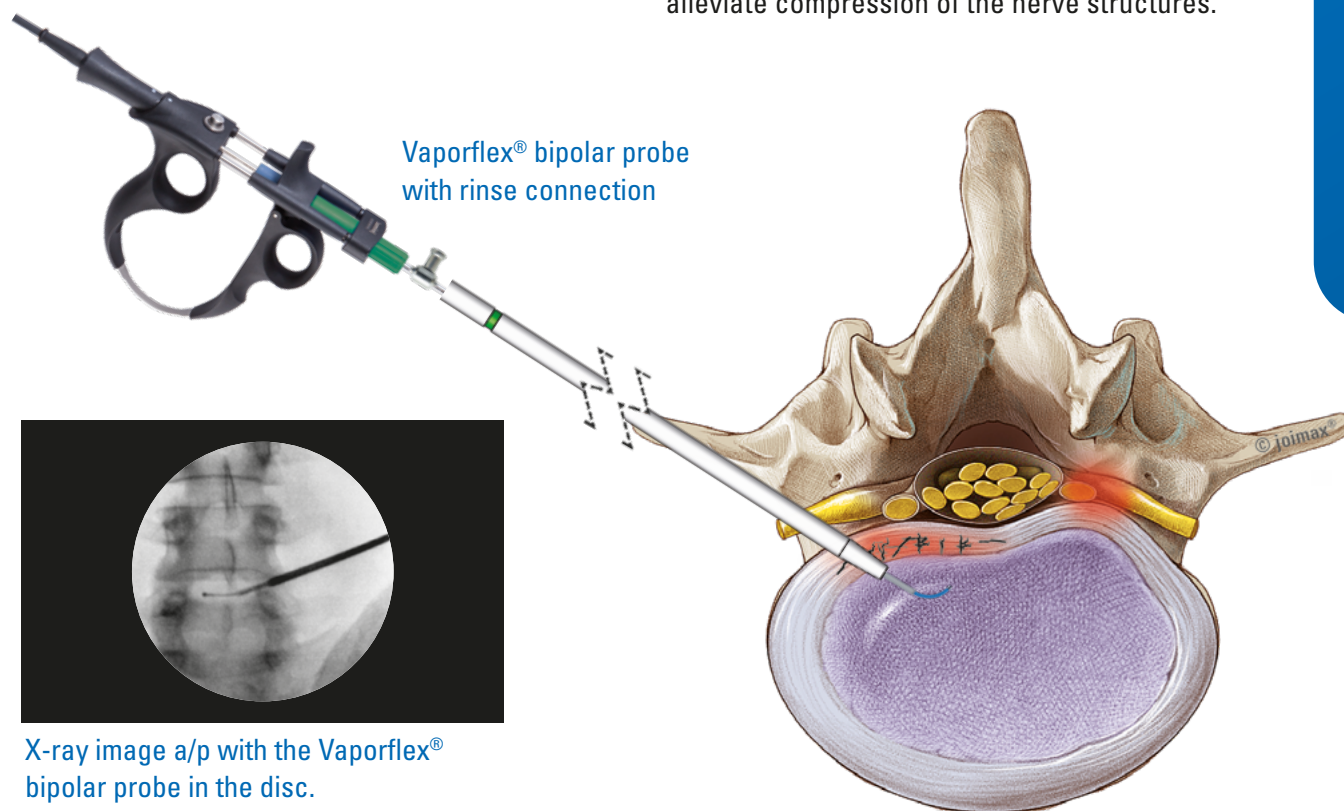


intENTS® Lumbar

INTRADISCAL ENDOSCOPIC NUCLEUS THERAPY

intENTS® is used for the minimally invasive treatment of discogenic pain and symptomatic disc protrusions via intradiscal access.

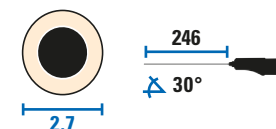
In cases of discogenic pain, the nociceptors are ablated by RF coagulation to block the onset of pain. In cases of protrusions, the volume of the nucleus pulposus is reduced by intradiscal nucleoplasty to alleviate compression of the nerve structures.



ADVANTAGES OF ENDOSCOPIC PAIN TREATMENT⁶⁻⁷

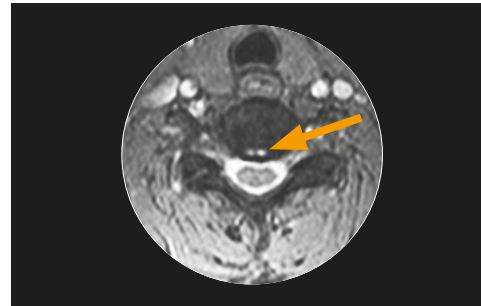
- ✓ Smaller incision
- ✓ Less trauma / less scarring / better cosmetic results
- ✓ Reduced blood loss
- ✓ Less pain
- ✓ Improved mobility and quality of life
- ✓ Faster recovery time / reduced hospital stay

intENTS® Lumbar

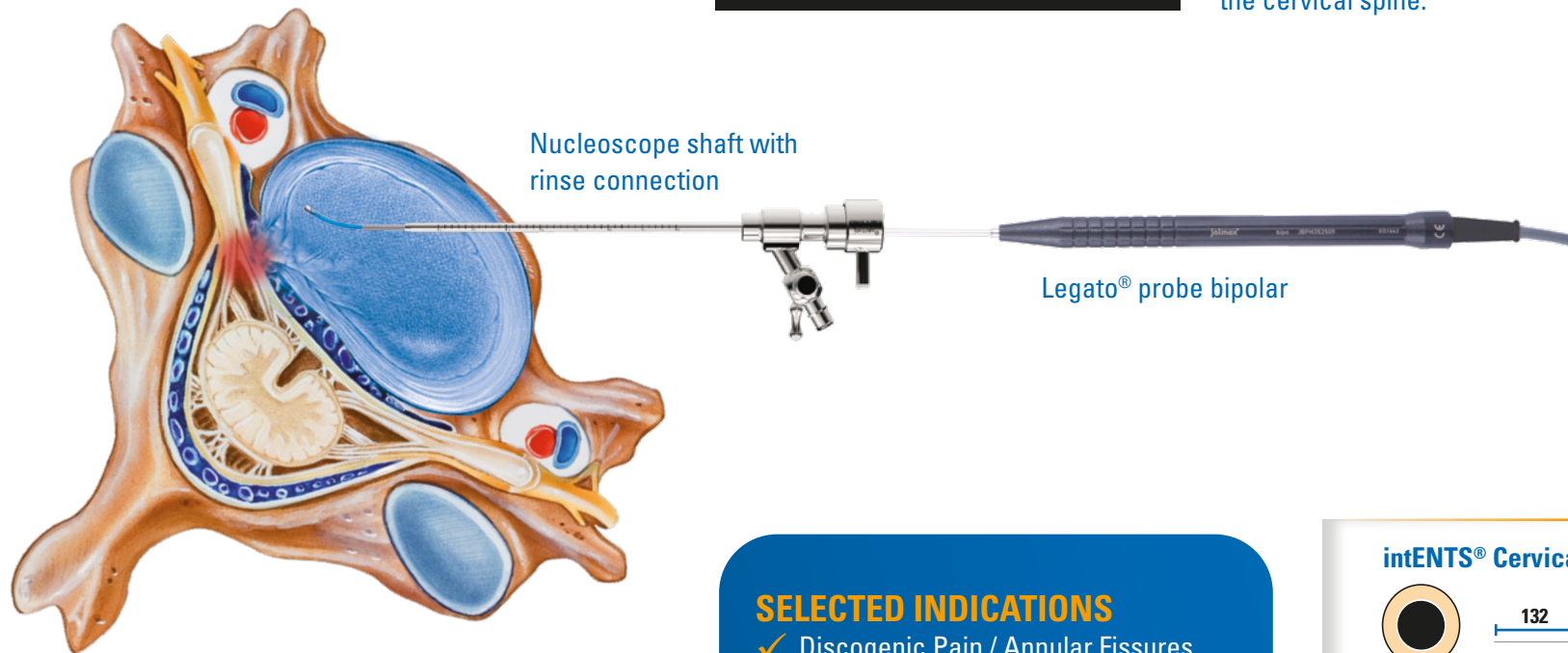


intENTS® Cervical

The intENTS® Cervical System enables procedures in the cervical spine via ventral approach. The slim instruments allow safe access to low-height intervertebral disc spaces and precise, controlled handling in confined spaces.



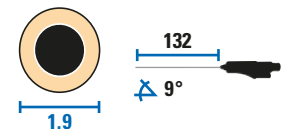
MRI axial with a HIZ
(High Intensity Zone) in
the cervical spine.



SELECTED INDICATIONS

- ✓ Discogenic Pain / Annular Fissures
- ✓ Protrusion of a disc (intervertebral disc protusion)
- ✓ Disc prolapse without a complete tear of the fibrous ring

intENTS® Cervical





REFERENCES

1. Muthu, Sathish et al. "Is Endoscopic Discectomy the Next Gold Standard in the Management of Lumbar Disc Disease? Systematic Review and Superiority Analysis." *Global spine journal* vol. 11,7 (2021): 1104-1120. doi:10.1177/2192568220948814.
2. Hasan, Saqib et al. "The benefit zone of full-endoscopic spine surgery." *Journal of spine surgery (Hong Kong)* vol. 5, Suppl 1 (2019): S41-S56. doi:10.21037/jss.2019.04.19.
3. Shen, Jian et al. "Full endoscopic cervical spine surgery." *Journal of spine surgery (Hong Kong)* vol. 6,2 (2020): 383-390. doi:10.21037/jss.2019.10.15.
4. McGilvray, Kirk C. et al. "Bony ingrowth potential of 3D-printed porous titanium alloy: a direct comparison of interbody cage materials in an in vivo ovine lumbar fusion model." *The Spine Journal* 2018;18:1250–60. <https://doi.org/10.1016/j.spinee.2018.02.018>.
5. Wallscheid, Franziska et al. "Endoscopic Facet Joint Denervation on the Lumbar Spine: A Retrospective Analysis." *Asian Spine Journal* (2022). doi: 10.31616/asj.2021.0150.
6. Meloncelli, Stefano et al. "Endoscopic radiofrequency facet joint treatment in patients with low back pain: technique and long-term results. A prospective cohort study." *Therapeutic Advances in Musculoskeletal Disease* (2020) Vol. 12: 1-10. doi: 10.1177/1759720X20958979.
7. Walter, Sebastian G. et al. "Endoscopic facet joint denervation for treatment of chronic lower back pain." *Clinical Neurology and Neurosurgery* 195 (2020) 105904. doi: 10.1016/j.clineuro.2020.105904.

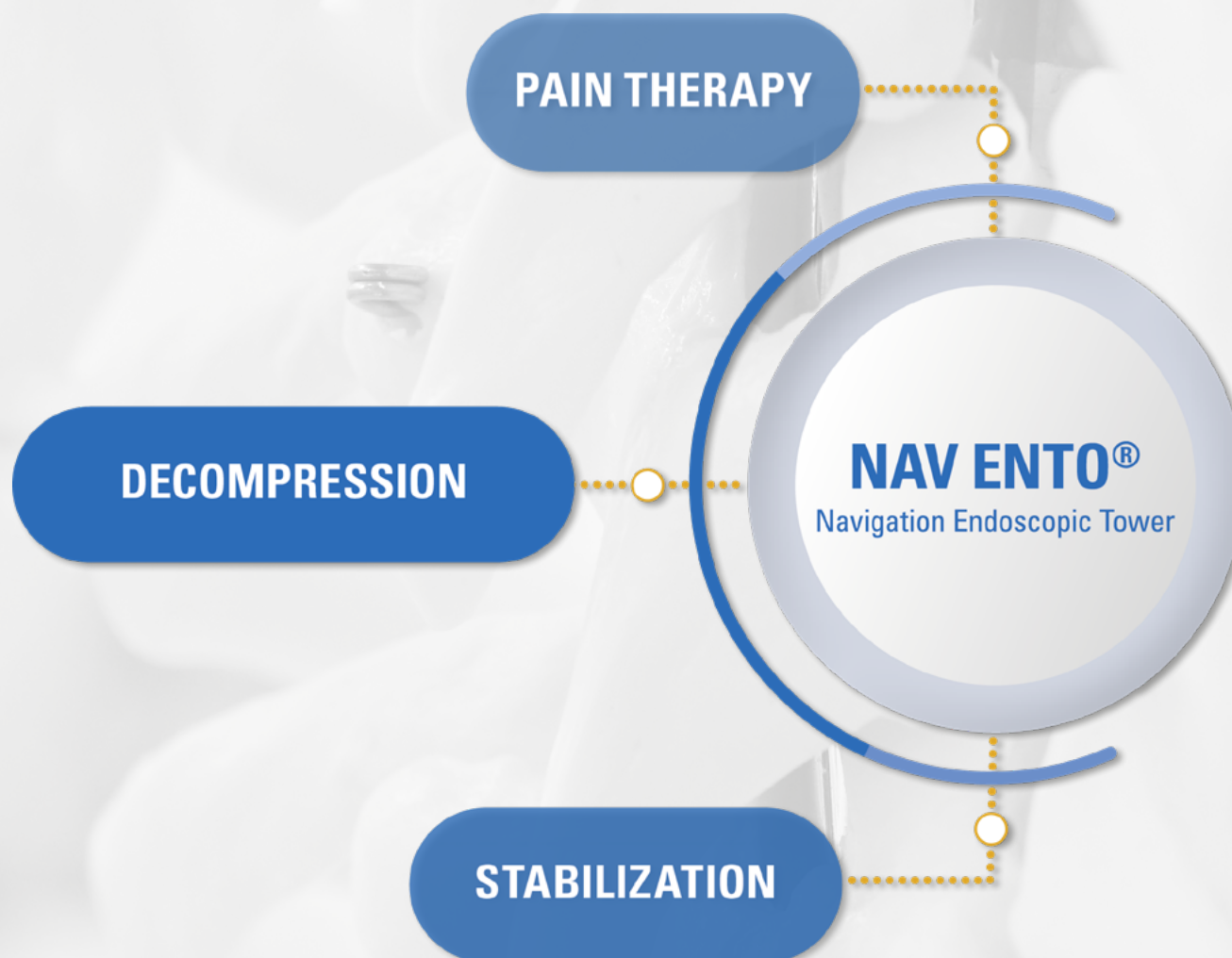


Further reading
and studies:
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NOTES

SPINAL THERAPY SOLUTIONS





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