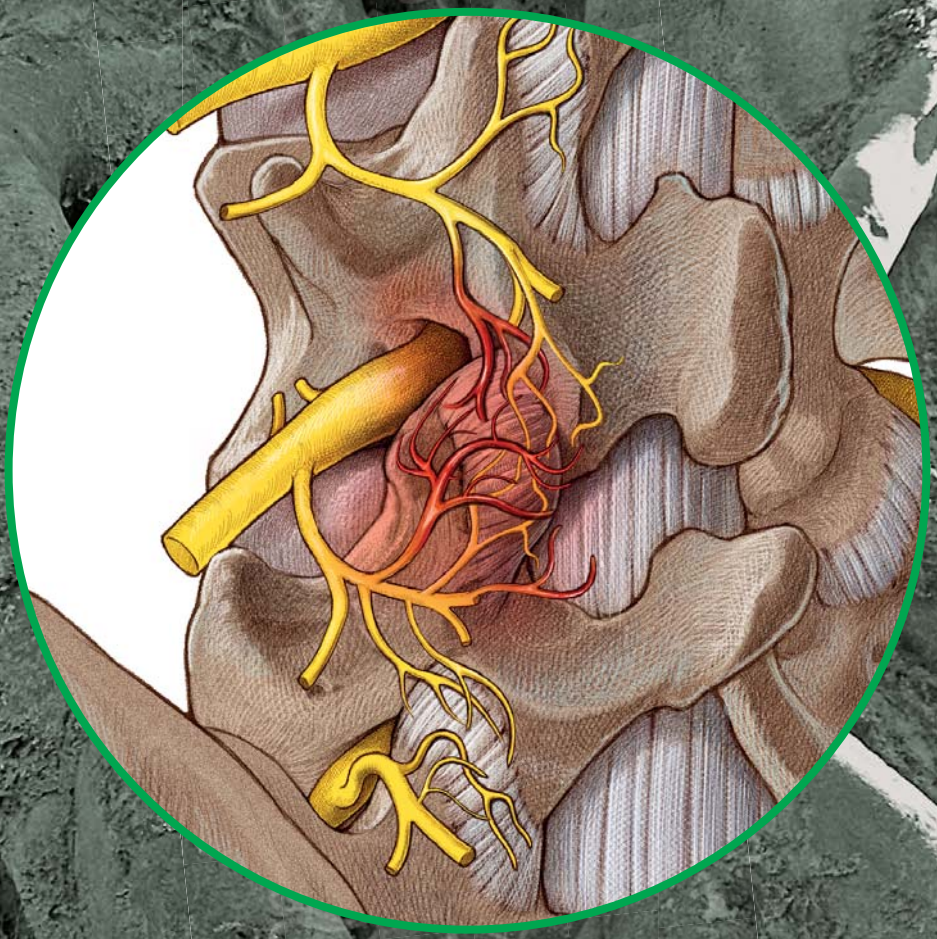
joimax®
Endoscopic Spine Experts



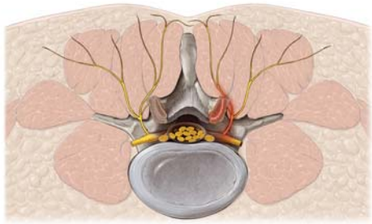
HIGH QUALITY MADE IN GERMANY SYSTEMS

MultiZYTE® RT

Endoscopic Multipurpose Rhizotomy Set

Endoscopic minimally invasive Facet Joint Denervation (Zygapophyseal Joint)

MultiZYTE® RT – INTRODUCTION



The spinal column consists of 24 separate "free" vertebrae (neck, thoracic and lumbar spine) and the sacrum and coccyx. The facet or zygapophyseal joints link the separate vertebrae at the back, one on each side of the spinous process. Degenerative and/or inflammatory processes in these joints can result in pain that may be restricted to the joint structures, but may also spread to the neighboring nerve branches and extend as far as the back and thigh.

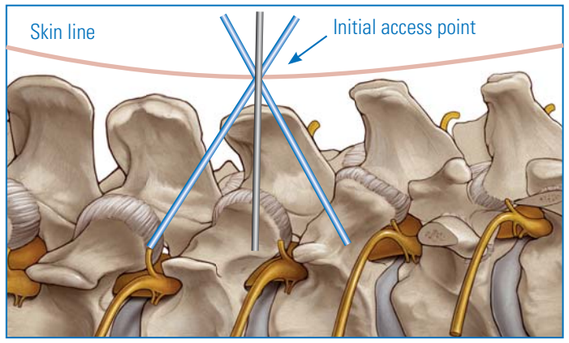
Endoscopic facet joint denervation (rhizotomy)

The term „facet syndrome" was introduced by Ghormley[1] in 1933. Shealy[2] proposed the use of percutaneous thermocoagulation for the denervation of facet joints in 1976. Based on this technique, Charles Ray and Nikolai Bogduk[3, 4] introduced radiofrequency neurolysis of the ramus medialis. In 1997, studies by Dreyfuss[5] scientifically proved that targeted neurolysis of the ramus medialis can be used to treat pain emanating from the facet joint. The approach of endoscopically controlled radiofrequency facet joint denervation is likely to produce long-lasting pain relief[6].

MultiZYTE® RT – CONCEPT

Endoscopic minimally invasive treatment of the facet joint (Zygapophyseal Joint)

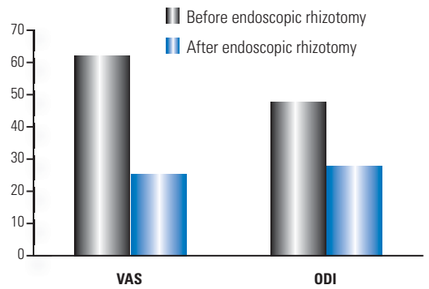
MultiZYTE® RT is an instrument set for endoscopic minimally invasive treatment of the facet joint. The nerve fibers causing pain are identified and selectively treated. The tissue is spared thanks to the endoscopic procedure, and muscles and ligaments are prevented from damage. This means that the stability of the spine is maintained.



Benefits of endoscopic facet joint treatment

- > Small incision, therefore hardly any scar tissue
- > Long-term therapy success thanks to the endoscopically controlled procedure
- > Effective and targeted treatment using radiofrequency ablation
- > Treatment of joint capsule with irrigation and vaporization
- > Treatment at multiple levels possible with one incision
- > Short recovery time
- > Can be performed under local anesthesia
- > Spinal mobility is preserved

Point values for VAS and ODI



Endoscopic facet joint denervation is a relatively new procedure, for which the initial clinical results are already available including the follow-up period of 1 to 3 years. As a result of the treatment, 90 % of patients experienced a significant reduction in pain (VAS), improvement in physical function and a better quality of life (ODI).[7]

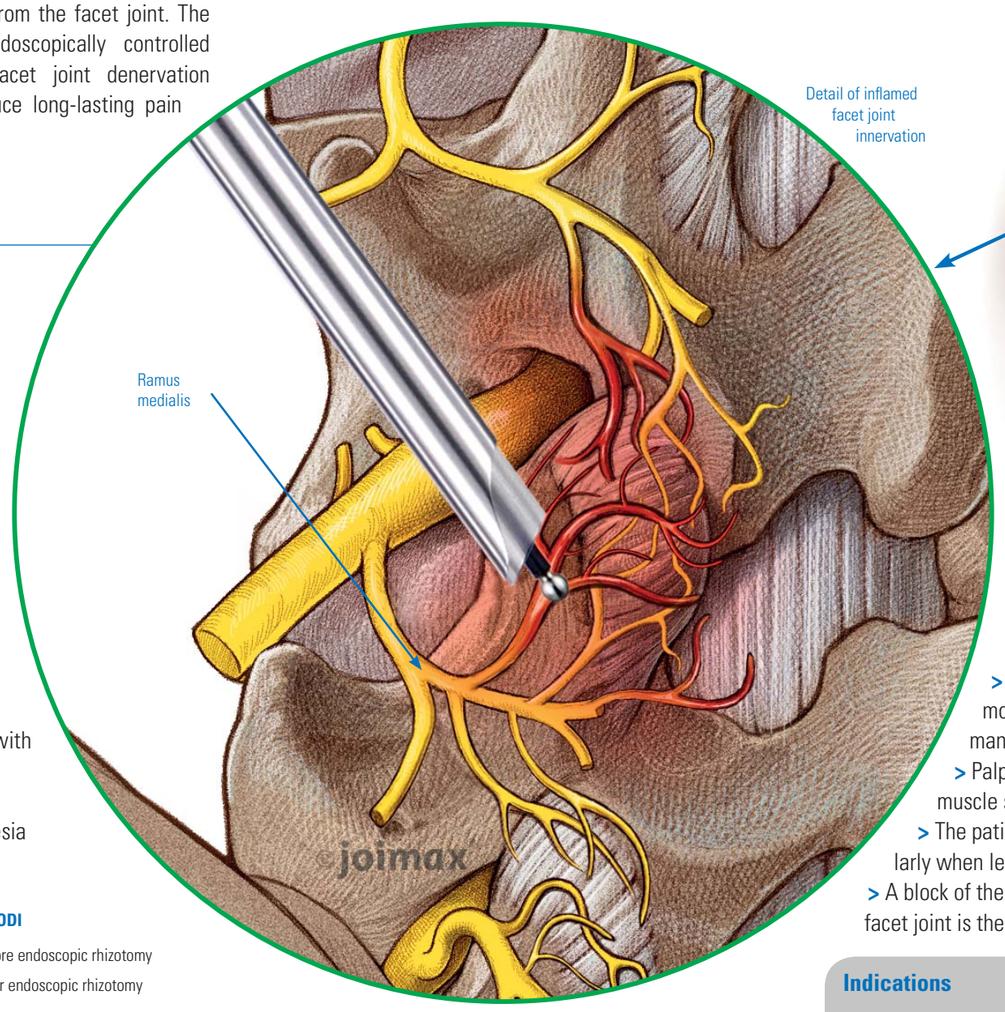
MultiZYTE® RT – INDICATION

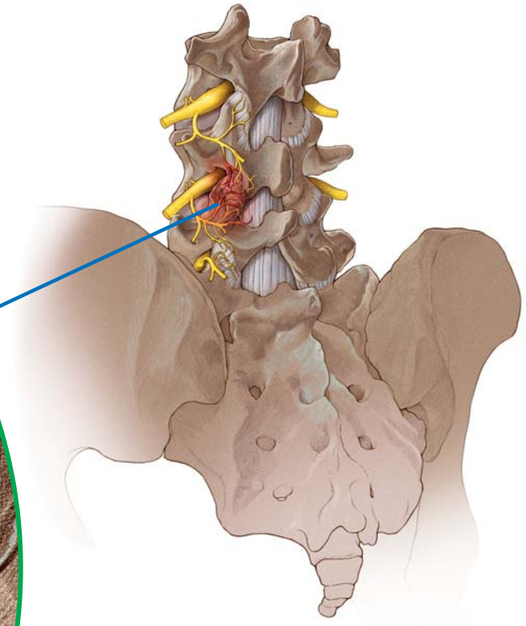
joimax®

MultiZYTE® RT can be used for several diagnostic and therapeutic procedures on the spine. These include periradicular therapy (PRT) and facet joint block. All surgery to the spine, including facet joint treatment, must be carefully prepared with a clinical diagnosis, magnetic resonance imaging (MRI) and/or computed tomography (CR), and various conventional X-ray images. Facet joint infiltration provides final verification of the facet joint level generating the pain. If pain stops after infiltration with painkillers, the corresponding nerve branch can be denervated using radiofrequency.

Treatment of the joint capsule

The joint capsule can also be treated during the same procedure depending on the indications. Under endoscopic view, the joint can either be punctured, infiltrated or tissue can be removed. Various instruments are available for this purpose (forceps, shaver blades, RF probes).



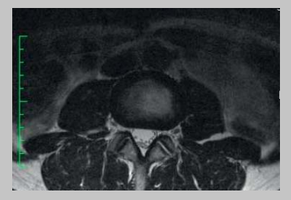


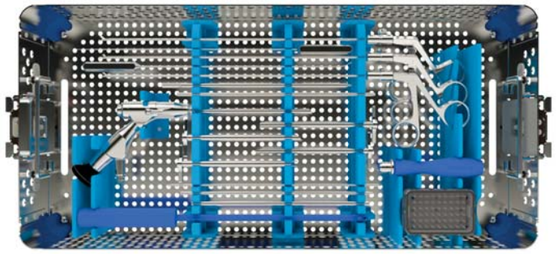
When is endoscopic facet joint treatment recommended?

- > The patient has lumbar back pain that has persisted for more than six weeks and has not responded to conservative management
- > Palpation of the facet joint triggers severe pressure pain and muscle spasms
- > The patient has restricted movement in the lumbar spine, particularly when leaning back
- > A block of the facet joint or medial nerve branch confirms that the facet joint is the source of the pain

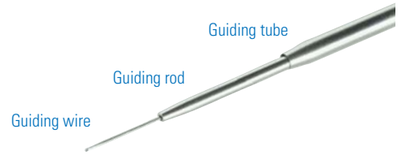
Indications

- > Chronic lumbar back pain
- > Facet joint hypertrophy
- > Facet joint arthritis and osteoarthritis
- > Post-discectomy syndrome
- > Cervical spine trauma





MultiZYTE® RT instruments are designed for optimal treatment of the facet joints. Access is directly to the base of the processus transversus. This can be accomplished by gradual dilation (Seldinger technique) using a guiding rod, guiding tube and working tube. Alternatively, a double-cannulated guiding rod can be positioned directly onto the processus transversus using the guiding wire.

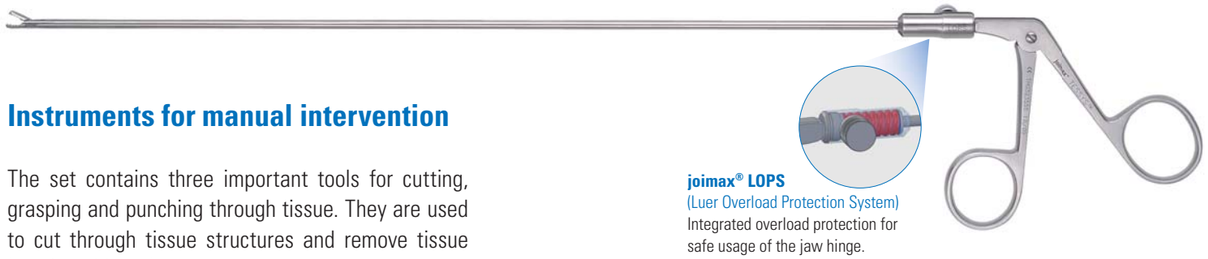


Access by gradual dilation

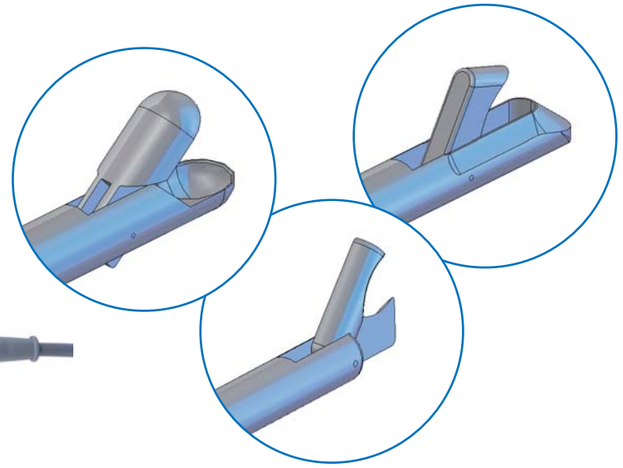
Instruments for manual intervention

The set contains three important tools for cutting, grasping and punching through tissue. They are used to cut through tissue structures and remove tissue (e.g. for a biopsy).

The forceps are equipped with the patented „Luer Overload Protection System – LOPS". This prevents overtensioning of the forceps and guarantees a longer service life.

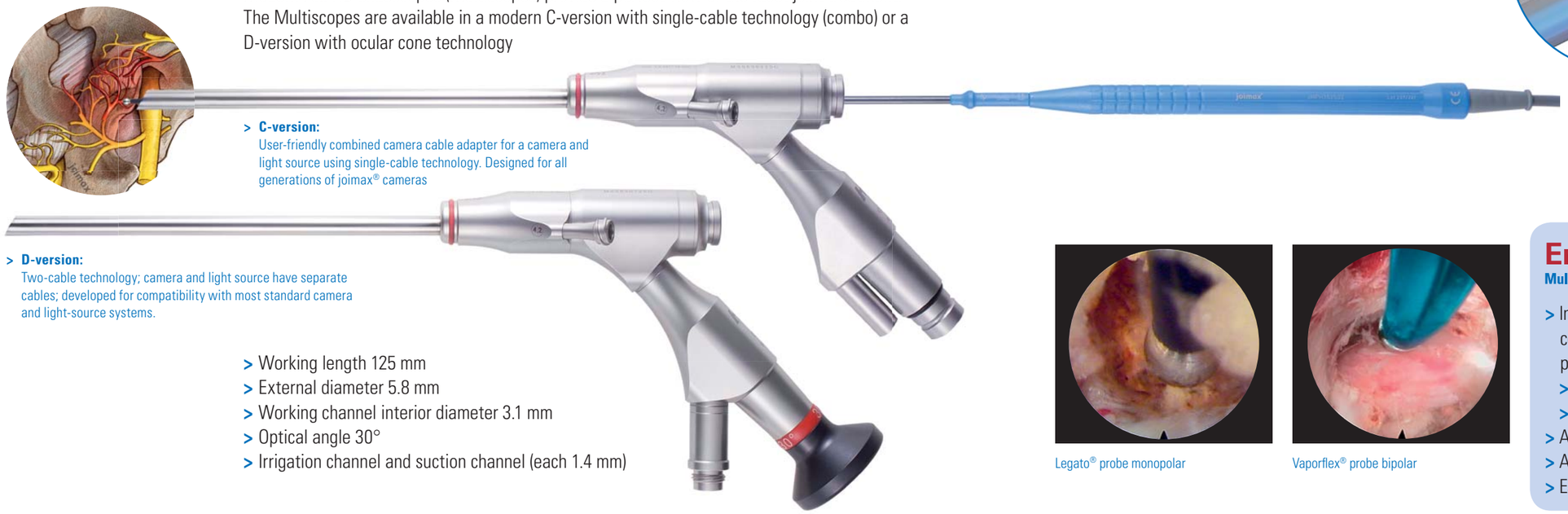


joimax® LOPS
(Luer Overload Protection System)
Integrated overload protection for safe usage of the jaw hinge.



Multiscope

Modern Full HD endoscopes (Multiscopes) provide a perfect view of the facet joint treatment. The Multiscopes are available in a modern C-version with single-cable technology (combo) or a D-version with ocular cone technology



> **C-version:**
User-friendly combined camera cable adapter for a camera and light source using single-cable technology. Designed for all generations of joimax® cameras

> **D-version:**
Two-cable technology; camera and light source have separate cables; developed for compatibility with most standard camera and light-source systems.

> Working length 125 mm
> External diameter 5.8 mm
> Working channel interior diameter 3.1 mm
> Optical angle 30°
> Irrigation channel and suction channel (each 1.4 mm)

Legato® probe monopolar

Vaporflex® probe bipolar

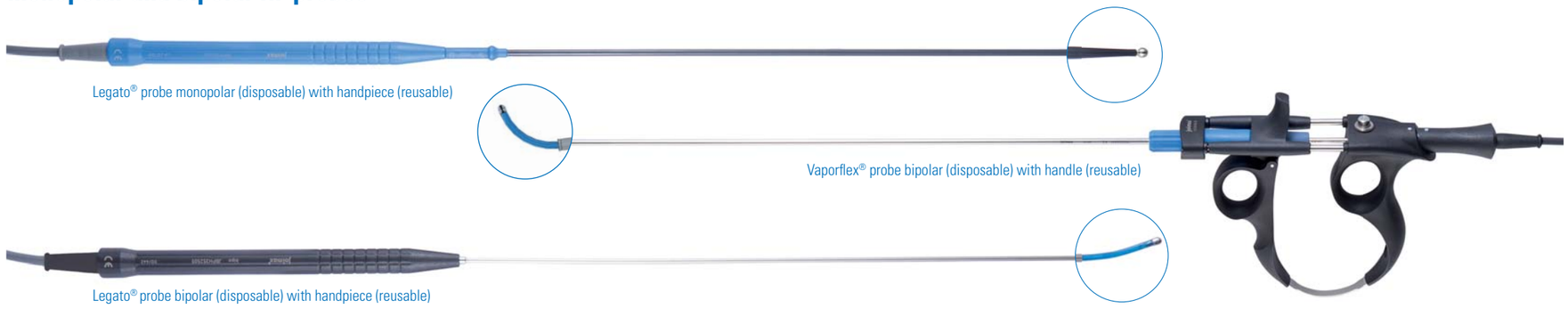
Endovapor®2

Multi Radio Frequency System

> Integrated spinal column surgery programs
  > Bipolar: vaporization, coagulation
  > Monopolar: rhizotomy
> All-in-one generator with interdisciplinary application
> Arc regulator for safe operation
> Easy neutral electrode monitoring

Vaporflex® bipolar and Legato® monopolar and bipolar RF probes

joimax® radiofrequency probes are suitable for cutting, coagulating and devitalizing tissue.
The facet joints are treated efficiently with pinpoint precision endoscopically controlled. Denervation of these joints can produce long lasting pain relief.



The handles of the probes are reusable and fitted with disposable probes. The Vaporflex® and Legato® probes are operated with a suitable RF/HF generator, e.g. the joimax® Endovapor®2.

FURTHER **joimax®** PAIN THERAPY SYSTEMS

As experts in endoscopic treatment of the spine, joimax® provides further pain therapy systems. **MultiZYTE® SI** was specially developed for denervation of the sacroiliac joint.

MultiZYTE® RT

intENTS® *Lumbar / Cervical*

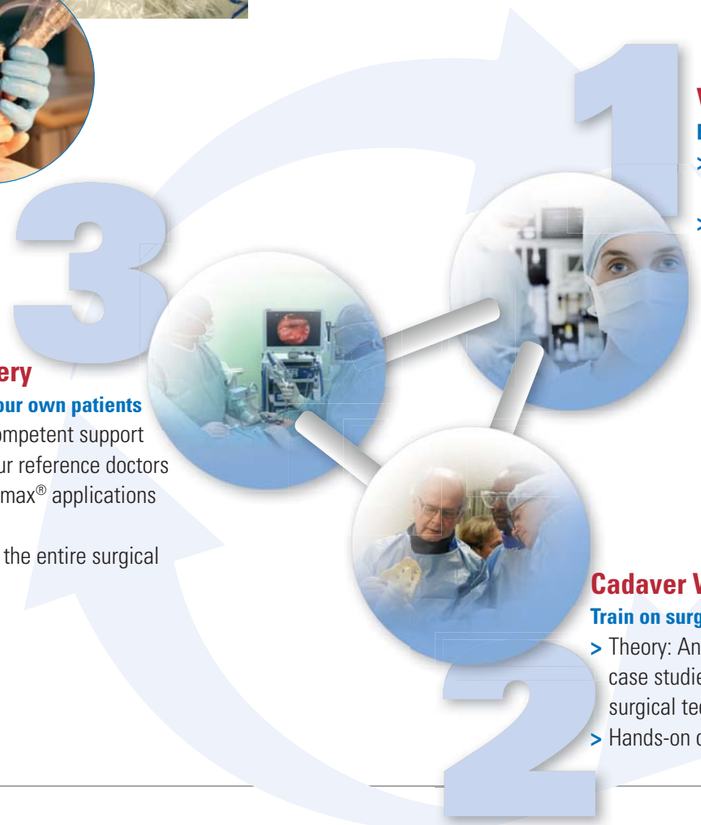
MultiZYTE® SI

The **intENTS®** *Lumbar* and **intENTS®** *Cervical* systems are available for intradiscal endoscopic nucleus therapy (cervical and lumbar). They are used to treat nerve compression and discogenic pain in the lumbar and cervical spine, annulus fissure, and disc protrusion.

joimax® EDUCATION PROGRAM

joimax® provides a dynamic program to learn the **MultiZYTE® RT** surgical technique in 3 steps – training for the surgeon and the entire surgical team. The primary objectives of the joimax® education program CME (Continuing Medical Education) are:

- Hands-on training to acquire the skills required for endoscopic surgery
- Understanding the basic principles, opportunities and limitations of the technique
- Building clinical experience, knowledge gain from scientific studies
- Exchange of experience, learning from other surgeons



Visitation

Experience live procedures

- Participation in surgical operations at our reference centers
- Share experiences with surgeons, anesthesiologists, the surgical staff and speak to patientst

First Surgery

Operate on your own patients

- Safe and competent support by one of our reference doctors and/or a joimax® applications specialist
- Training for the entire surgical team

Cadaver Workshop

Train on surgical techniques – Step by Step

- Theory: Anatomy, indications/contraindications, case studies, anesthesiology, step-by-step surgical technique, instruments
- Hands-on cadaver training, tips and tricks

joimax® ENDOSCOPIC DEVICES

Full HD Endoscopy Tower

The expert solution for Spinal Surgery and Neurosurgery. All devices match perfectly with one another. They are designed specifically for treatment of sensitive structures.

The image shows only one of various mounting options.

1 **Vitegra® 3**
Visual Integration System

Fully integrated digital documentation system

- Multi-functional operation and usage
- Intuitive, due to touchscreen and voice control
- HD quality in full-screen mode
- Transparent – menu follows the sequence of the operation
- HD Multi Record on 500 GB hard disk
- HD Multi Memory in common formats, also LAN and DICOM ready

2 **Intracs®**
Intraoperative Navigation Tracking & Control System (Not yet FDA cleared!)

With electromagnetic navigation simple and safe to any spinal target

- Fully integrated in the endoscopic tower
- Vector-Tip-Target navigation for needle-based procedures
- For endoscopic and open surgery

3 **C-Camsource® HD** *Twister*

Brilliant images with maximum resolution

- Single-cable technology with combo-quick connection for joimax® Full HD endoscopes
- Full HD image quality for maximum safety during surgical applications

4 **Shrill®**
Shaver Drill System

Multi-functional milling and resection system

- Handpieces and shaver blades specially developed for spine surgery
- Safe removal of soft tissue and bone in cases of stenosis
- The suction function ensures an unobstructed and clear view of the operating field
- Vacuum effect due to specially protected design

5 **Versicon®**
Versatile Irrigation Control

Multi-range rinse pump for flexibility

- Integrated spine mode for low flow and pressure
- Permanent control of flow and pressure
- Rapidly insertable, disposable tube set
- Replaceable patient lead, with check valve

6 **Endovapor® 2**
Multi Radio Frequency System (Not yet FDA cleared!)

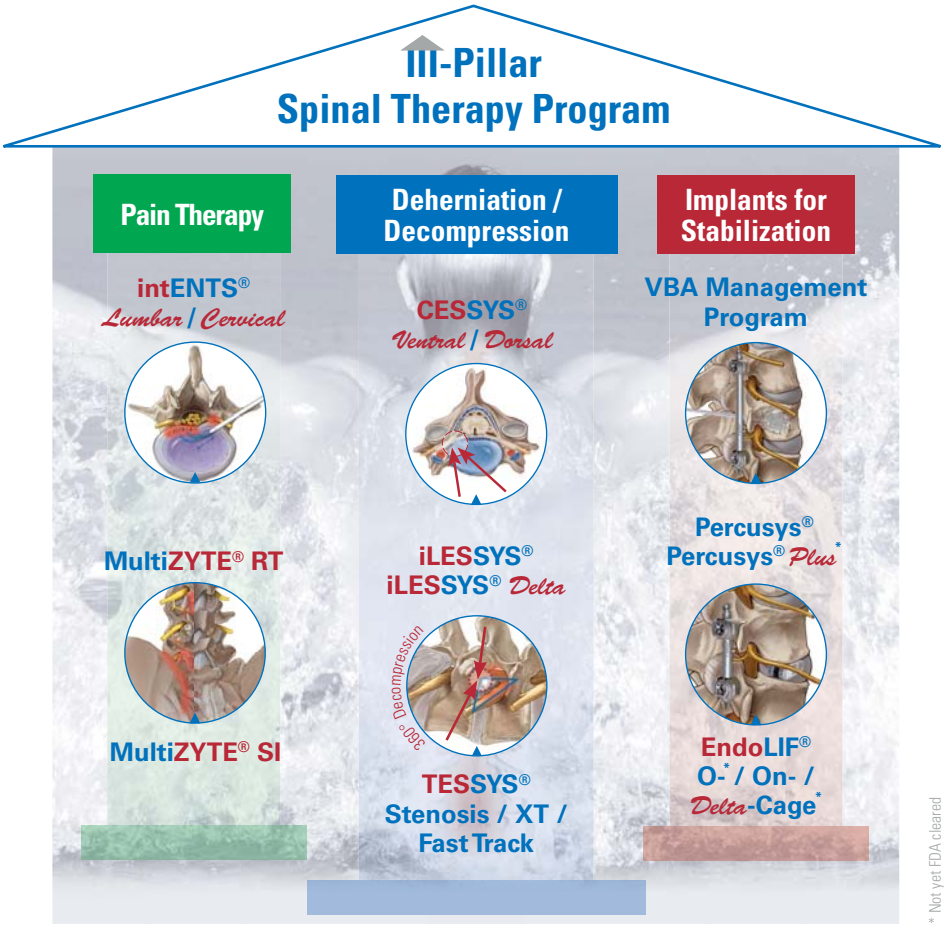
Combines a variety of different electro-surgical modes and effects

- Specially integrated programs for spinal cord surgery
  - Bipolar: vaporization, coagulation
  - Monopolar: rhizotomy
- All-in-one generator with interdisciplinary application
- 4 sockets: 2 x monopolar, 2 x bipolar
- Easy, intuitive touchpad operation
- Arc control for safe application
- Easy neutral electrode monitoring

7 **JFMS 2420 | JFMS 3220 | JFMS 2620**
High Definition Flatscreen Monitor

Medical Full-HD TFT Displays

- Full HD resolution: 1920×1080 pixels
- Viewing angle vertical/horizontal 178°/178°
- Automatic signal detection
- Touch control panel



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