RIWOSPINE
A Richard Wolf Company

Takes the Pain

PERCULINE nucleo

Interventional percutaneous 4 MHz radiofrequency nucleoplasty of the vertebral disk

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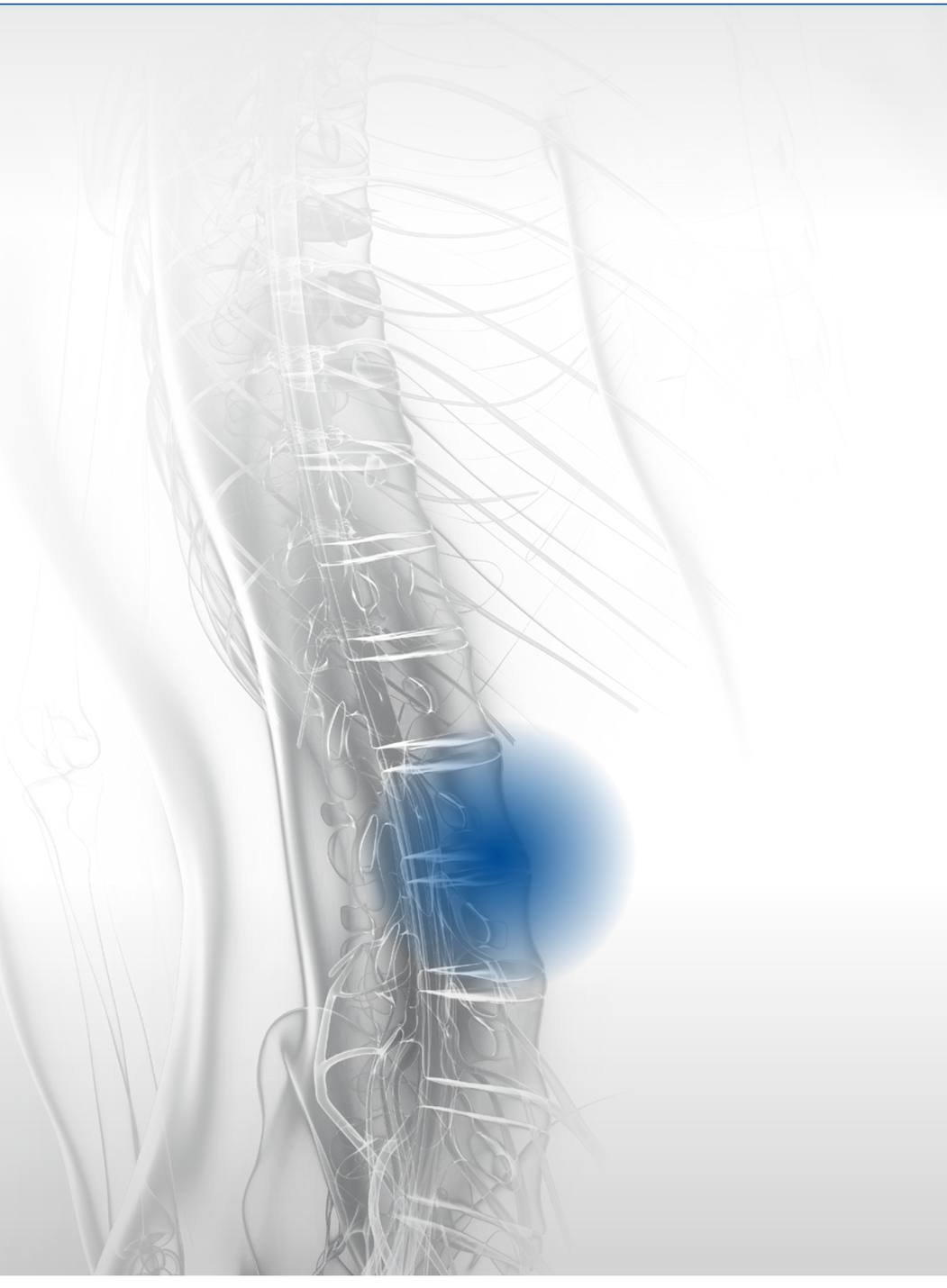
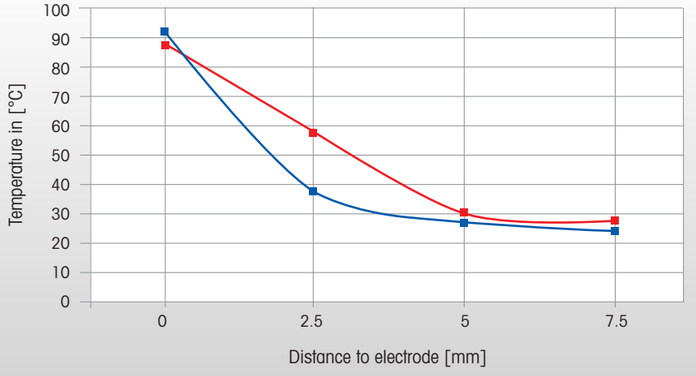
At a glance



Precise and tissue conserving

The Radioblator RF4 Radiofrequency Generator with a working frequency of 4 MHz is the centerpiece of an effective tissue-preserving coagulation system. By comparison with standard radiofrequency devices supplied commercially in the marketplace, the electricity frequency of the Radioblator RF4 is approximately 10 times higher. While safe coagulation and ablation of the tissue can be achieved at the electrode through contact with the tissue, neighboring areas of tissue experience significantly less heat (see picture). The occurrence of thermally induced tissue necrosis and irritations in adjacent nerves are thereby minimized. The actively articulating TipControl RF Electrode facilitates the controlled positioning of the radio frequency application in the tissue.



The temperature profile in the muscle tissue depends on the distance to the bipolar electrode tip and the device frequency.

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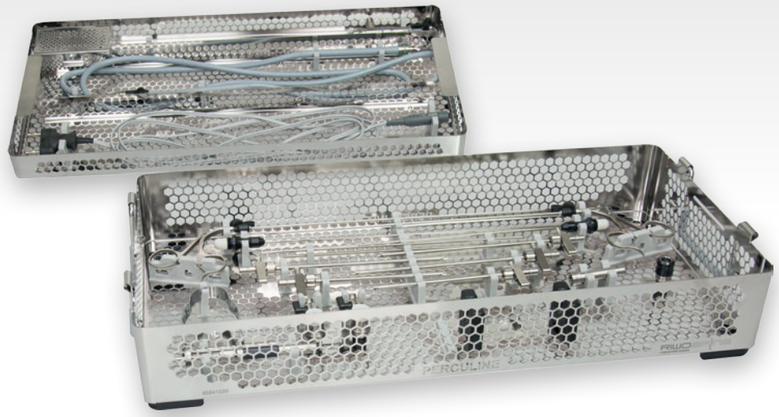
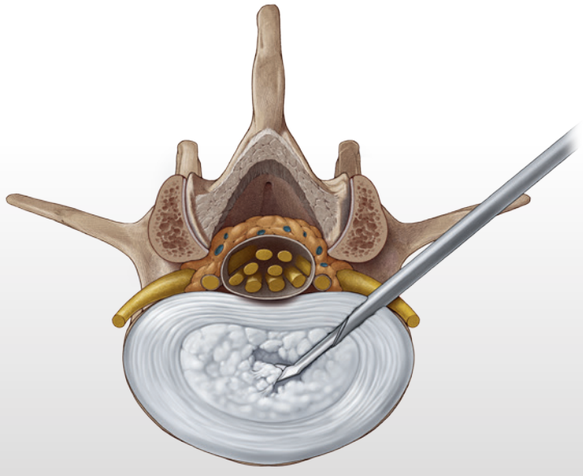
At a glance



Multifunctional and endoscopically assisted

Additional instruments such as biopsy and grasping forceps can be inserted in the working sleeves as necessary. This enables additional decompression of neural structures by means of larger volume reduction of the vertebral disk.

Using a mini-endoscope permits direct visualization of the interior of the vertebral disk and visual control and documentation of the therapy.



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Pathologies and therapeutic target

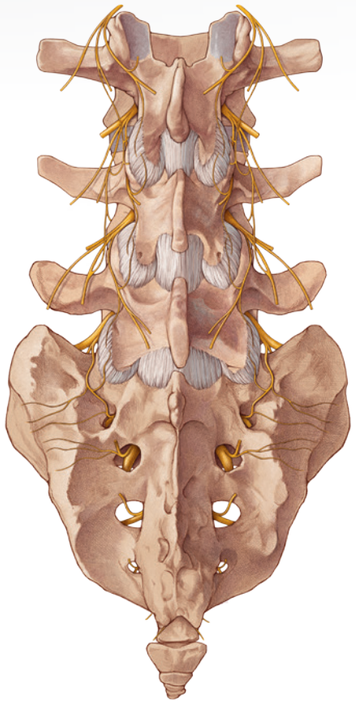
Diskogenic pain syndrome

Diskogenic pain syndrome is one of the degenerative diseases (wear-related) of the spine. The cause of diskogenic pain syndrome is degenerative wear of the vertebral disk, starting with a loss of fluid in the inner core of the vertebral disk (nucleus polposus). Since the vertebral disks then lose resilience and elasticity, this can lead to segmental instability. Hyper mobility in the affected segment, sheering loads and restrictions of the mechanical properties of the vertebral disk cause inflammatory reactions as a result of this.

Sensitization of the region can result in a reduction of the stimulus threshold and lead to chronic diskogenic pain. The vertebral disk is regarded as the trigger for pain, even if there is no disk herniation.

Furthermore, protrusions of the vertebral disk can press on the spinal and extra-spinal nerve structures and generate radicular pain as a result.

Percutaneous nucleoplasty uses 4 MHz radiofrequency current to selectively reinforce the vertebral disk tissue (volume reduction) and to destroy the small nerve fibers at the fiber ring of the vertebral disk using ablation. The spinal nerves are indirectly decompressed and the destruction of the nerve fibers prevents conduction of pain information to the brain.



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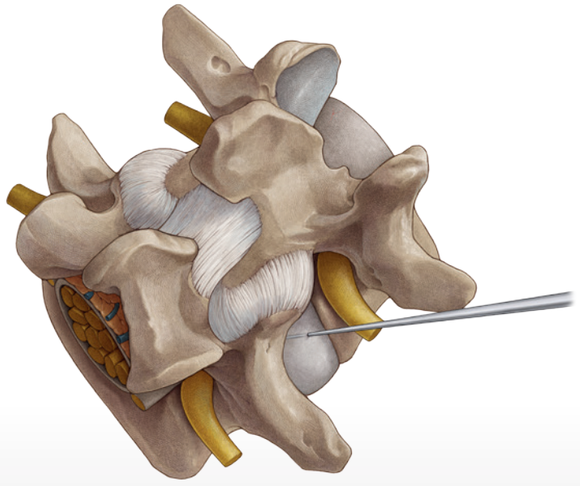
Interventional approach for 4 MHz radiofrequency nucleoplasty of the vertebral disk

Patient positioning, setup and anesthesia

The patient is in the prone position with slightly bent knees. The operating area and the C-arm are covered with sterile drapes. The intervention is generally carried out under local anesthetic.

Positioning the cannula and guide wire

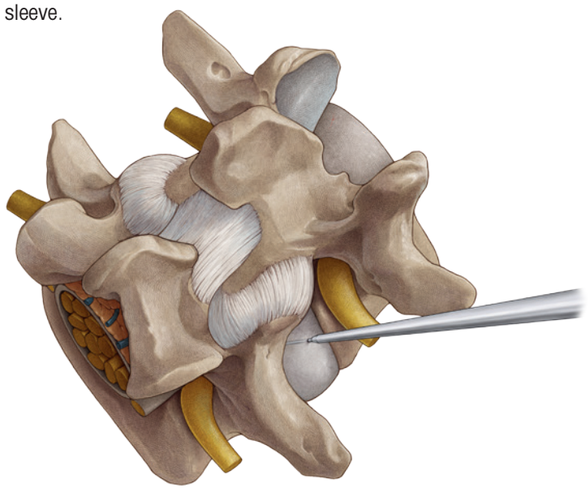
Marking the entry point of the cannula on the skin surface under AP and lateral X-ray control for a posterolateral access port. Application of local anesthetic and placement of the puncture cannula under X-ray control in the vertebral disk. Replacement of the puncture cannula with a guide wire.



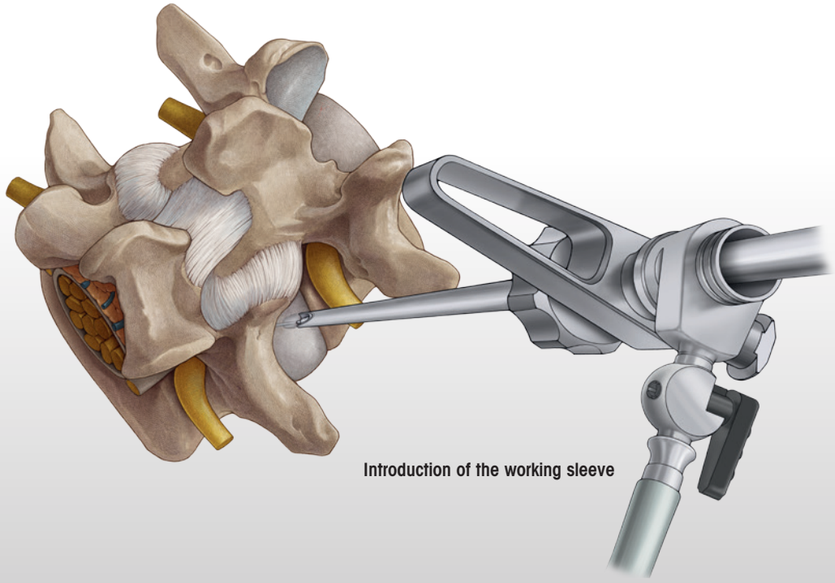
Posterolateral access of the puncture cannula to the vertebral disk

Introduction of the dilator and working sleeve

Introduction of the dilator using the guide wire under X-ray control. Introduction of the working sleeve using the dilator and moving the working sleeve further forward through the fiber ring of the vertebral disk by knocking slightly with a hammer until the inner core has been reached. This is also carried out alternately under AP and lateral X-ray control. Connection of the irrigation fluid to the working sleeve.



Dilation of the access port



Introduction of the working sleeve

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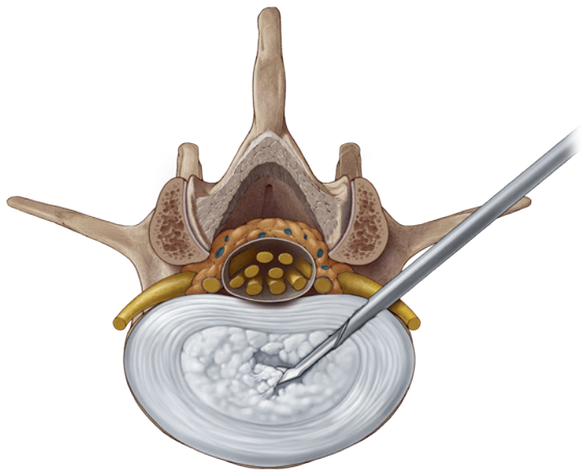
Interventional approach for 4 MHz radiofrequency nucleoplasty of the vertebral disk

Introduction of the biopsy or grasping forceps for manual removal of tissue

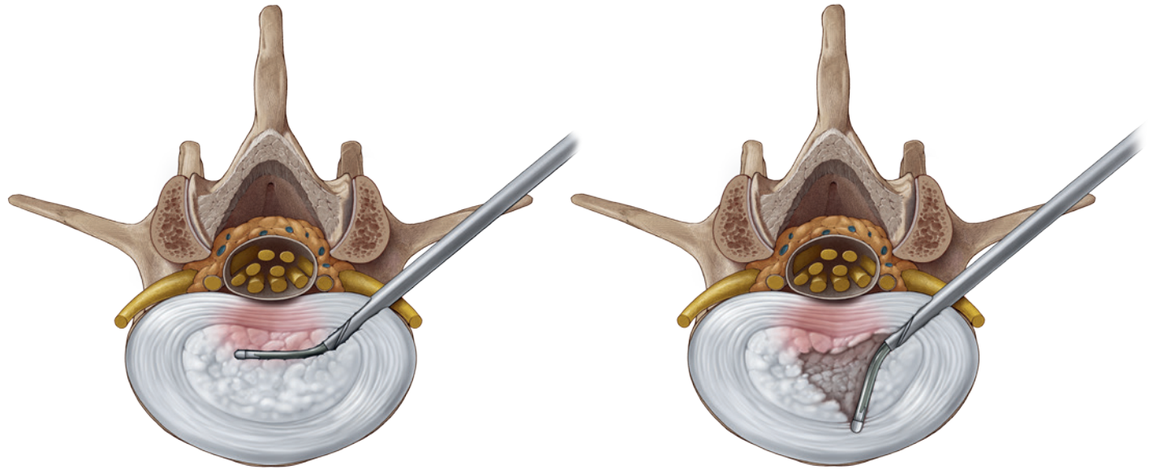
Introduction of biopsy or grasping forceps through the working sleeve into the inner core of the vertebral disk and volume reduction by removing tissue from the vertebral disk under X-ray control.



Introduction of manual instruments for removal of tissue

Radiofrequency application TipControl RF Electrode

Introduction of the TipControl RF Electrode into the cavity created and activation of the RF application (Bicut2 and Precise Mode) with the foot switch for tissue shrinking of the inner core of the vertebral disk and as necessary for coagulation of the inner fiber-ring parts of the vertebral disk for electrothermal denervation.



Application of the TIPControl RF Electrode

Introduction of the mini-endoscope through the working sleeve into the vertebral disk and monitoring and documentation of the therapy

The endoscope connected to an endoscopic camera and light source can be introduced through the working sleeve into the vertebral disk for visualization of the vertebral disk.

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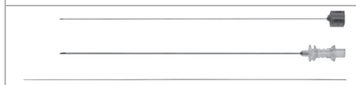
Instruments for 4 MHz Radiofrequency Nucleoplasty

Instruments

Access instruments

WORKING SLEEVE OD 4 mm, WL 160 mm
for denervation, graduated 892209204

DILATATOR ID 1 mm, OD 2.9 mm
TL 230 mm 892209404



SPINAL CANULA SET
OD 1.25 mm, WL 150 mm, Pack = 10 PCS, sterile 4792.803

Working instruments

RONGEUR Ø 2.6 mm, WL 290 mm
color code orange, TL 388 mm, with irrigation connection, reusable 89240.2025

PUNCH Ø 2.6 mm, NL 290 mm
color code orange, TL 388 mm, with irrigation connection, reusable 89240.2225

Accessories

FLUSHING ADAPTER FOR WORKING SLEEVE OD 7 mm
reusable 89220.1307

ACL-HAMMER TL 248 mm
reusable 8866.956

STERILIZATION BASKET PAIN THERAPHY
Basket lower part with integrated small parts basket,
brackets made of silicone and 2 handles,
basket lid with lock 85841226

Endoscope

FIBER LIGHT CABLE BNDL, consisting of:
80662523 Fiber Light Cable Ø 2.5 mm, TL 2.3 m,
8095.09 Adapter endoscope side,
8095.07 Adapter projector side 806625231

TELESCOPE 0°, Ø 2 mm, WL 268 mm
rigid, TL 365 mm, semi-rigid image carrier 8754.401

Radiofrequency Surgical System

TipControl RF Instrument, bipolar, sterile

TIPCONTROL RF INSTRUMENT BIPO
Ø 2.5 mm, WL 280 mm for endoscopic spine surgery,
flexible insert, integrated connection cable WL 3 m with
device plug to Radioblator RF 4 MHz, sterile, for single use 4993691

TIPCONTROL RF INSTRUMENT BIPO
Ø 2.5 mm, WL 280 mm for endoscopic spine surgery,
flexible insert, integrated connection cable WL 3 m with
device plug to US 2-PIN, sterile, for single use 49936911

TipControl RF Instrument, bipolar

TIPCONTROL RF INSTRUMENT BNDL SHORT, consisting of:
899351100 RF Electrode handle bipo,
899351010 sheath tube Ø 2.5 mm, SL 290 mm 899351000

TIPCONTROL RF ELECTRODE BIPO
Ø 2.5 mm, WL 290 mm, for endoscopic spine surgery,
flexible, Pack = 5 PCS, sterile, for single use 499351000

TIPCONTROL CONNECTION CABLE BIPO
WL 3 m, 2 PIN international plug, connection to EU flat plug,
reusable 899351210

Accessories

SHEATH TUBE
Ø 2.5 mm, SL 290 mm, compatible with TipControl handle bipolar,
reusable 899351010

TIPCONTROL CONNECTION CABLE BIPO
WL 3 m, US 2 pin plug, connection to EU flat plug,
reusable 899351220

Radioblator RF 4 MHz
4 MHz working frequency – precisely focused and tissue presserving, monopolar and bipolar cutting and coagulation mode, program memory for 4 User Presets

RADIOBLATOR RF 4 BNDL, consisting of:
2330001 Radioblator RF 4,
2330901 footswitch 2 pedals,
2330045 connection cable mono WL 3 m,
2440.03 power cable 23300011

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A Richard Wolf Company

we perform **innovation**

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