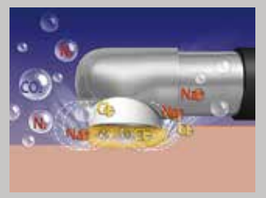
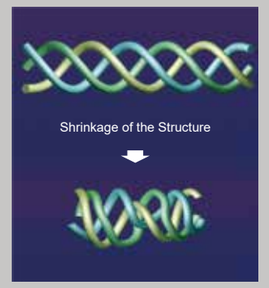
ARS Radio Frequency PlasmaSurgical System

NMPA CE 0197 TÜVRheinland

How it works





ABLATE (Cutting & Ablation)

The Radio Frequency energy flows through active electrode and return electrode, and by the conductive saline solution it generates precisely focused plasma sheath of 100μm thin plasma layer around the electrodes. The plasma sheath consists of massive charged particles, which can generate sufficient energy of strong oxidizing when accelerated by the electric field. The generated energy is powerful enough to break the organic molecular bonds within the tissue, and make the tissue rapidly dissolved into molecular and atoms level at a relatively low temperature of 40-70°C. The device provides rapid and efficient ablation and resection capabilities of soft tissues in a relatively low temperature.The lesion is decomposed into simple molecules, atoms, and low-molecular-weight gases (oxygen, nitrogen, hydrogen, and carbon dioxide) after cutting and ablation by low temperature plasma.

COAG (Bipolar Coagulation & Hemostasis)
Strong vessels closure function Effective control of bleeding

The RF Plasma Surgical System is added with a macro-variable power supply module in addition to the plasma generator. Through the feedback signal from the electrode and the tissue, that module can generate a lower plasma voltage and radio frequency peak waveform between the working electrode and the target tissue. Corresponding changes in the RF voltage, waveform, and peak value would gradually reduce the proportion of the plasma threshold, and at the same time would generate the RF effect threshold. The ratio of plasma ablation effect and radiofrequency coagulation hemostasis effect changes with the change of power value setting. At a high COAG power value setting, the plasma ablation effect is bigger thus the better plasma ablation outcome is realized. When the COAG power value setting is low, the radio frequency coagulation effect is bigger to achieve better coagulation and hemostasis effect.

Advantages of Shrinkage Function:
Different from the other heat shrinking technology that realizes necrosis of tissues by high temperature, the RF plasma technology can accurately control the temperature at 40-70°C, which can not only ensure the shrinkage of the helical structure of collagen molecules, but also to maintain cell vitality.

Excellent Performance

Systematic Working Modes

Two working modes:
ABLATE for cutting and ablation activated at Yellow control panel and Yellow foot pedal.
COAG for coagulation and hemostasis activated at Blue control panel and Blue foot pedal.

Adjustable Coagulation Capability

ABLATE (Plasma ablation & cutting): 1-9 settings adjustable;
COAG (RF& Plasma coagulation & hemostasis): 1-9 settings adjustable. This innovative “Plasma & Radio frequency” coagulation and hemostasis function can form thrombi in blood vessels to achieve the sealing effect.

Smart Recognition, Simplified Design

The console can automatically identify the connections of electrode, foot switch, and power cord, and has corresponding displays and indicators on the control panel. When the electrode is properly connected, the default power setting would be selected automatically. Integrated with the intelligent design, the console can precisely adjust the power value of the same setting according to different target tissues.

Automatic Protection

The patented electrical circuit system can constantly monitor power output and automatically suspend power output when there is instantaneous peak current. It would automatically suspend radio frequency output when electrode contacts metal, and automatically resumes work after electrode has returned to a proper distance.

Cutting and Ablation under Endoscopy

ARS Radio Frequency Plasma Surgical System has unique endoscopic cutting and ablation function. The system and electrodes have been tested according to the standards of endoscopic surgery by the health authorities, being able to safely and effectively perform foraminal endoscopic surgery. With precise endoscopic ablation, it avoids nerve reflexes and ensures the smooth performance of intervertebral disc surgery.

Dual/Triple Foot Switch (optional)

The foot switch, which is waterproof pressure-resistant and convenient to use, can support two working modes of ABLATE (ablation & cutting) and COAG (coagulation & hemostasis), each identified in different colors and different working sound settings.
The triple foot switch can easily realize the power setting adjustment of ABLATE on the foot switch. No need to adjust the power setting on the console control panel.

Temperature Control Feedback Technique

This Plasma technology provides a Controlled and Non Heat-driven process to gently dissolve target tissues at relatively low temperatures of 40-70℃. Integrated with temperature control feedback technology, the system automatically optimizes output value according to the plasma layer status around the electrode tip and the target tissue feature, by which the electrode can ensure a stable and efficient performance while keeping at the lowest working temperature.

Precise Work Control System

Under conventional discography, the specialized plasma surgical electrode of less than 1mm diameter ablates the nucleus pulposus tissue within a temperature range of 70℃with plasma energy penetration controlled at 200μm, creating effective decompression and plasty of intervertebral disc.

Integrated Function

In one versatile single-use electrode, it provides ABLATE for cutting, resection and ablation, COAG for coagulation and hemostasis, and suction capabilities. The integrated suction electrode enhances surgical vision, controlled resection for rapid removal of soft tissues.

UXD

Perfect solution for extraspinal canal in UBE surgery

Patented Innovative Design for UBE Extraspinal Surgery

Fully indicated for multiple anatomical sites of soft tissue (including cartilage) and clinical applications for various diseases

RF Plasma Surgical System

Revolutionary precise reaction technology

UXD

Powerful and Efficient

Insulation design of the front end reduces nerve tissue damage and makes surgical operation safer

Super suction performance reduces intraoperative bubbles for clearer surgical vision

Special coating avoids tissue adhesion of the tip and continuously ensures low temperature operation

Integrated Design

With enhanced visibility and more controllable cutting accuracy, the electrode with both suction and cutting functions is used for rapid resection of various soft tissues. In addition to removing bubbles from the field of view, the great suction power attracts small floating tissues to the tip, which enables the surgeon to focus on the surgery without disturbing from the floating tissues.

Stretched out

Used for “hooking, picking” and other actions in intraspinal canal to reduce the risk of nerve damage

Retracted

Used for cutting, ablation, hemostasis of annulus or soft tissues

UGD

Perfect integration for both intraspinal canal and extraspinal canal in UBE surgery

Specially designed for UBE surgery to reduce the risk of nerve damage

UGD

Millimeter-level tip makes surgical control more precise
Retractable front end can be adjusted as needed, making the surgery more efficient
Special angle design of the front end realizes the perfect combination of cold instruments and power systems
Meeting the needs of special surgical operations such as “hooking, picking” to reduce nerve tissue damage

Patented Innovative Design for UBE Intraspinal Canal, An Integrated Design
Integrated with cutting, ablation, coagulation,
hemostasis, stripping capabilities in one versatile device

Plasma Electrodes

UBE is an innovative and efficient surgical solution, which is able to meet the needs of dealing with different parts and tissues with various electrodes. It has significant clinical effect and high surgical safety, with the advantages of short surgery time, high efficiency, small tissue damage, less scar residue, light pain, and fast recovery.

A revolutionary surgical solution for spinal degenerative diseases such as spinal stenosis and spondylolisthesis, with safe, fast, and efficient surgical outcome.

Comprehensive solutions of RF Plasma Electrodes designed for UBE

Specially designed for UBE surgery to reduce the risk of nerve damage

Integrated with cutting, ablation, coagulation, hemostasis, stripping capabilities in one versatile device.

UBE Hook

UBE Flexible Spine-o-UBE

UBE Needle

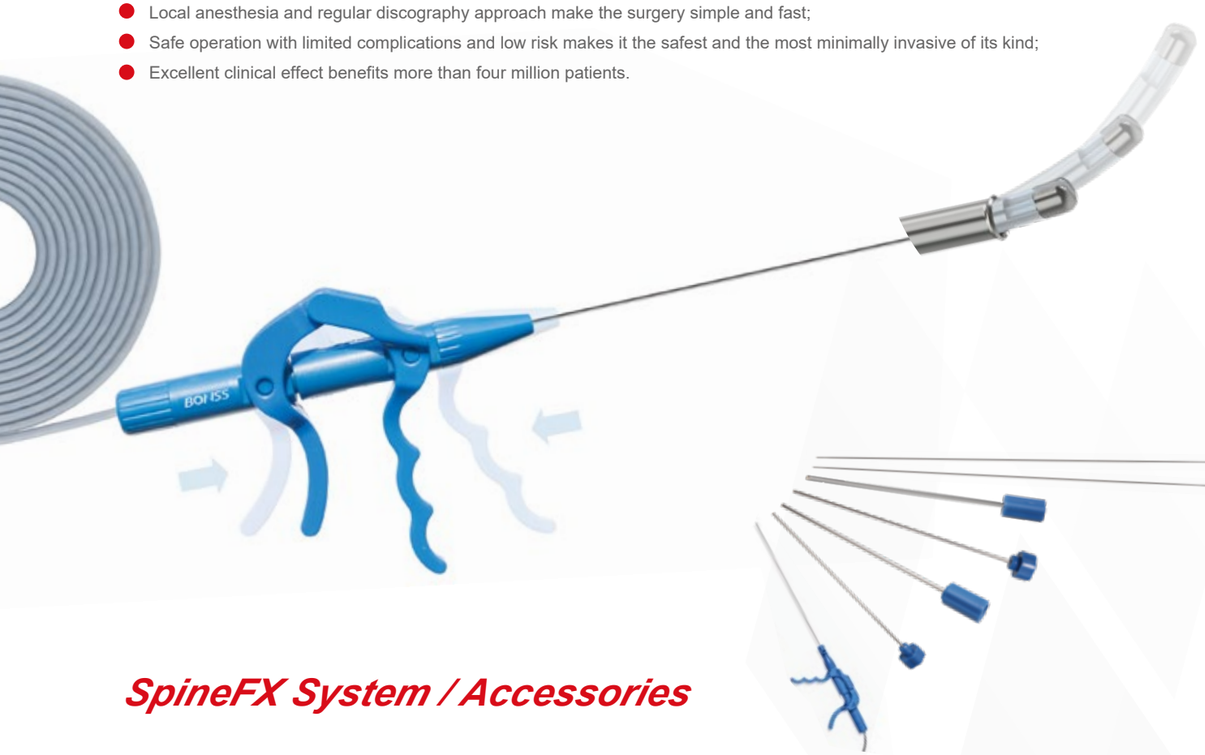
With decades of crucible and promotion in research and development of RF Plasma Surgical System, BONSS has developed the Unilateral Biportal Endoscopy (UBE) solution for minimally-invasive spine surgery, with specialized, patented and integrated surgical electrodes for intraspinal and extraspinal surgery.
UGD - Retractable electrode design m akes the surgery simple and convenient, no need of changing among different electrode types during surgery;
UXD - Unique angle and insulation design ensures safe operation, and optimized coagulation effect.

BONSS RF Plasma Surgical System has become an integral part of UBE surgery.

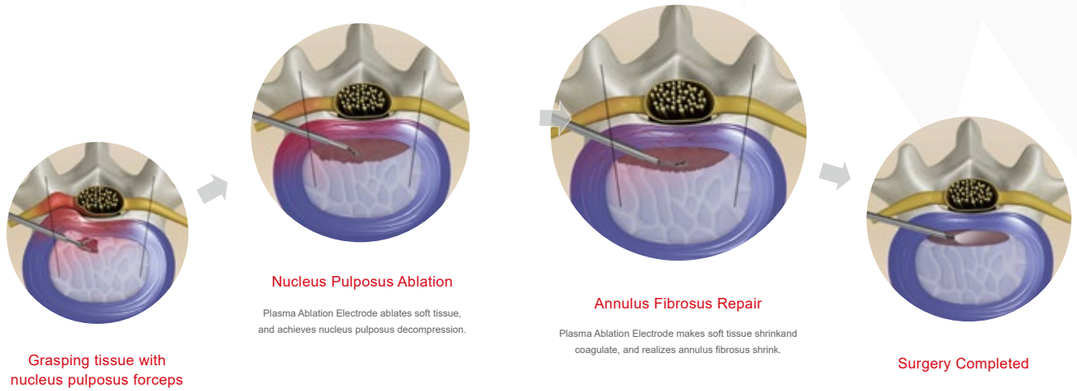
Plasma Ablation Electrode

Used in Disc Decompression Surgery, the Plasma Ablation Electrode can achieve the accurate disc decompression in a minimally-invasive way, by vaporizing the nucleus pulposus tissue in a low working temperature, with enough tactile feedback provided to the operator.

- Pathological tissue is precisely removed without injury and with obvious decompression effect in the intervertebral disc;
- Significant pain relief effect to improve the patient life quality with pain levels reduced;
- Fast recovery with no need of the fixation device;
- Local anesthesia and regular discography approach make the surgery simple and fast;
- Safe operation with limited complications and low risk makes it the safest and the most minimally invasive of its kind;
- Excellent clinical effect benefits more than four million patients.



SpineFX System / Accessories



Grasping tissue with nucleus pulposus forceps

Nucleus Pulposus Ablation

Plasma Ablation Electrode ablates soft tissue, and achieves nucleus pulposus decompression.

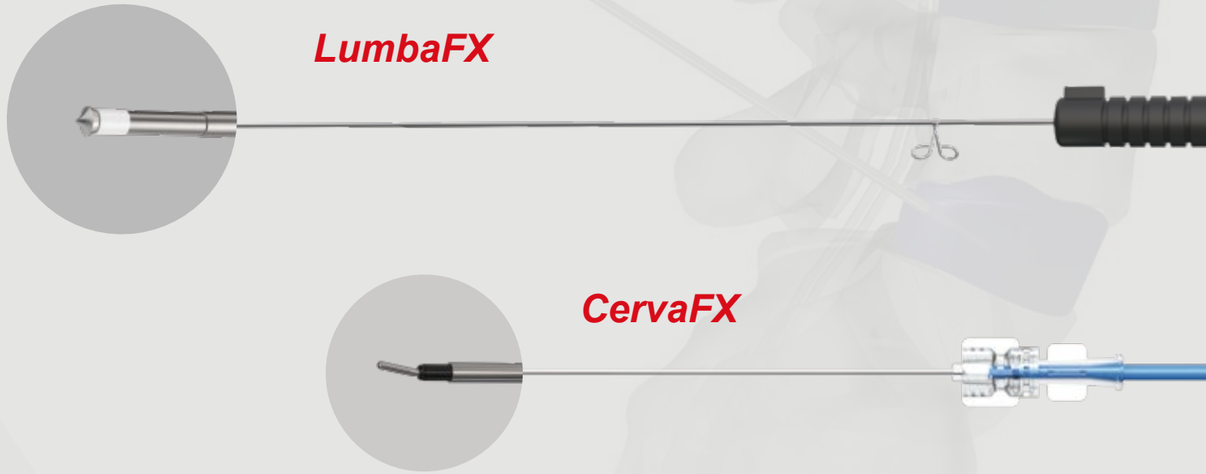
Annulus Fibrosus Repair

Plasma Ablation Electrode makes soft tissue shrinkand coagulate, and realizes annulus fibrosus shrink.

Surgery Completed

Nucleus-plasty

Designed for cervical and lumbar disc herniation.
With plasma energy applied for nucleus vaporization and shrinkage, to achieve disc decompression and effectively release the compression from herniated disc on the the surrounding tissues such as nerves, artery and nucleus. Thus, the relevant symptoms is removed or relieved which effectively relieve the compression on nerves meanwhile keeping annulus intact.



Fine Needle Design

Accurate Real-time Decompression

Indications of Lumbar Nucleus-plasty

Low back pain ≥ Leg pain, Inclusive Disc Herniation and Positive Discography confirmed by MRI.
Positive Lumbar Discography, Disc Height ≥ 75% and Central-type Disc Herniation.

Indications of Cervical Nucleus-plasty

Radicular Pain (Lateral-type Herniation): Upper Limb Pain > Neck Pain, Inclusive Disc Herniation and Positive Discography displayed by MRI.

Neck and Shoulder Pain (Central-type Herniation): 3-month ineffective conservative treatment, positive discography, disc height > 50%.

Uniportal Endoscopic Spine Surgery

With RF Plasma process, to provide an innovative and effective surgical effect with excellent clinical outcome.
A surgical procedure of safe, rapid and effective performances.

UXD90L

UXD70L

Powerful and Efficient ***Ablation***

Optimized ***Coagulation*** *Effect*

Super ***suction*** *performance to reduce*

intraoperative bubbles for clearer surgical vision

Spine-o-QFX Plasma Ablation Electrode

- Bipolar Plasma Ablation Electrode is an innovative and efficient surgical method with significant.
- Designed for contained disc herniations discectomies.
- A surgical procedure of safe, rapid and effective performance.
- An innovative and minimally invasive surgical solution for discogenic diseases.
- Compatible with different spine scope size.

Cannon

Powering your spine surgery

Ablation

The efficient plasma ablation and resection performance makes it an ideal choice to remove the soft and tough tissues such as ligaments, requiring only occasional use for the other manual instruments and reducing the exchange of instruments like scissors or graspers to remove tough tissues.

Coagulation

The standard RF Plasma function, to provide optimal coagulation and hemostasis performance.

Flexibility

Ergonomic handle design, to press down or up the trigger on the handle to control the angle of the flexible tip.

Suction

Unique Design integrated with suction in the 3.4mm diameter flexible shaft, to ensure a good surgical vision and safe operation.