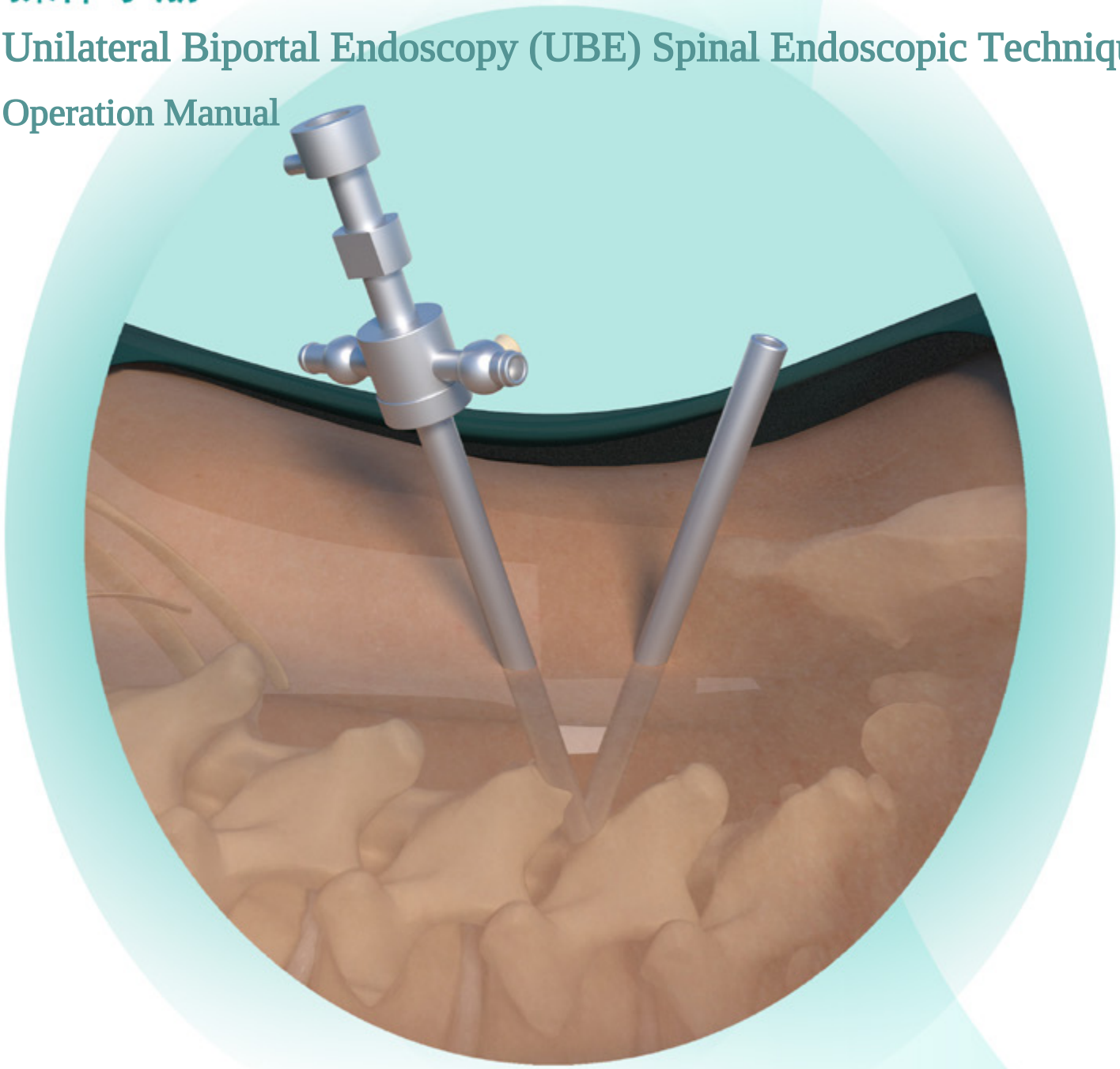
UBE单侧双通道脊柱内镜技术

操作手册

Unilateral Biportal Endoscopy (UBE) Spinal Endoscopic Technique

Operation Manual



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专注骨科事业

Why choose Fule?

Our strengths

- The company is a national high-tech enterprise integrating research and development, production and sales of medical devices, with a full intelligent processing equipment production line.
- The establishment of the Academician Expert Studio helps to enhance the R& D capabilities of Fule and further deepen the cooperation between industry, academia,andresearch; Approved postdoctoral research workstation.
- The hardware facilities are complete, the R&D team is excellent, and we work closely with clinical experts, obtaining more than 100 domestic and foreign patents.
- Based on the agent cooperation model, establish a nationwide sales and service network, supply products to nearly a thousand tertiary hospitals nationwide, and export to more than 20 overseas countries.

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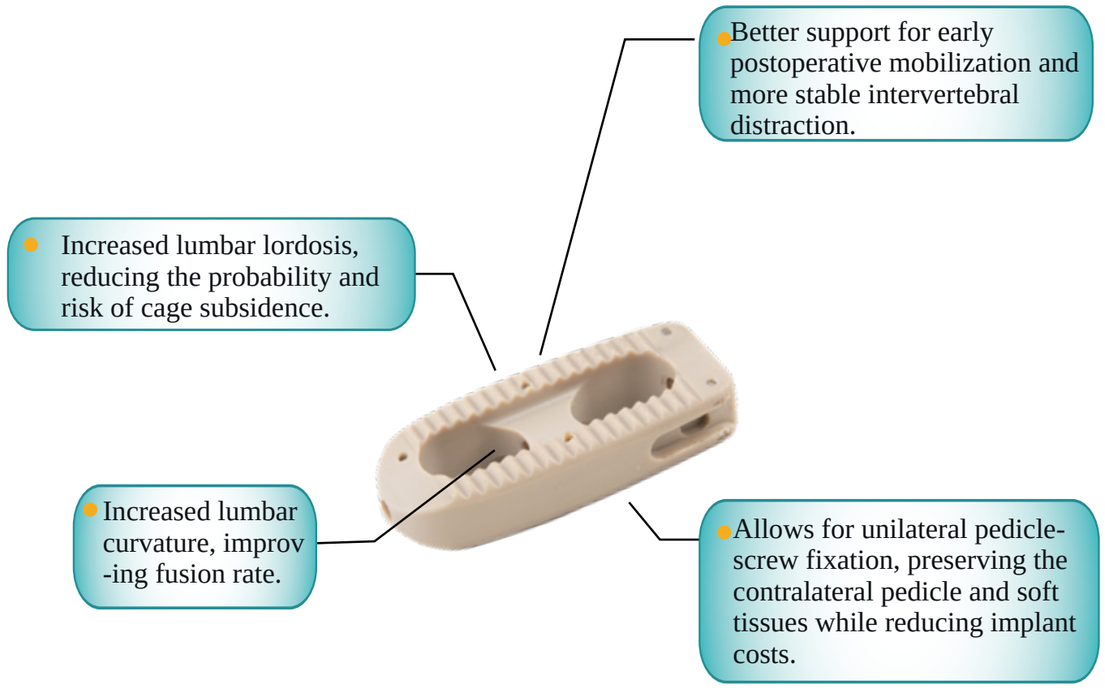
Product Advantages

Technical Features of UBE:

- Combines the magnified field of view of endoscopy with the flexible manipulation of open surgery.
- Utilizes conventional arthroscopic instruments and spinal open surgery instruments.
- Causes minimal muscle damage and requires less fluoroscopy (potentially zero).
- Allows for interbody fusion under endoscopy.
- Offers unique advantages for spinal stenosis.
- Shorter learning curve for those with endoscopic experience.
- Can also be used in the cervical and thoracic segments when conditions are suitable.

Product Advantages

Increased lumbar lordosis, reducing the probability and risk of cage subsidence.Differential elongation of the dual-body tie rod reduces the risk of contralateral vertebral process fracture and saves on lever costs.



Product Advantages

Forepare-Expansible Cage with Microendoscopic Discectomy (Titanium)

1. Provides a larger bone graft space, resists migration, and effectively restores spinal physiological curvature.
2. External threading enhances endplate purchase and increases resistance to cage back-out.
3. Bullet leading edge facilitates cage insertion.

Posterior Lumbar Interbody Fusion Cage

1. Dual-arched convex profile preserves the integrity of the endplate rim and prevents cage migration.
2. Serrated teeth on the superior and inferior surfaces reduce post-implantation shift and malposition.
3. Multiple through-holes enhance bone graft contact and promote fusion.
4. Compatible with minimally invasive transforaminal or posterior lumbar approaches.

Instruction For Use

Indications

-Various types of lumbar disc herniation (lateral recess);

-Spinal canal stenosis;

-Mild lumbar spondylolisthesis (BET-LIF);

-Lumbar instability with or without the aforementioned conditions.

Contraindications

Surgical Procedures

【Step 1】 Approach Selection

- **Interlaminar Approach:** Under fluoroscopy, identify the superior vertebral body of the target level. The puncture target point is the intersection of the lower border of the lamina on the affected side and 1cm lateral to the ipsilateral spinous process. Make an 8-10mm incision directly above this point. Under fluoroscopic guidance, sequentially dilate along the guidewire through the incision and musculofascial layers to place the working channel. Then, make a 1cm longitudinal incision approximately 2-3cm cranial to the first incision, and place a 0° or 30° arthroscope.

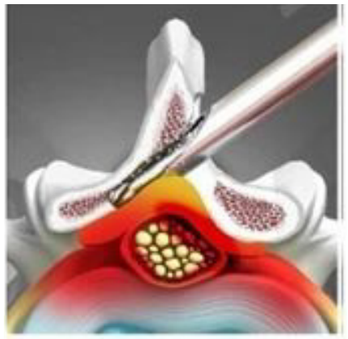


Fig.1a

- **Transforaminal Approach:** Patient positioning and anesthesia method are the same as for the interlaminar approach. In the transforaminal approach, the two working channels are placed 1cm above and below the midpoint of the target intervertebral space, respectively, 2cm lateral to the lower border of the pedicle of the superior vertebra at the surgical level on the affected side. The area from the ipsilateral spinous process to the facet joint in the paraspinal muscles is exposed to reveal the interforaminal region. This surgical approach is primarily used for the treatment of foraminal stenosis and lateral disc herniation in the interforaminal region.

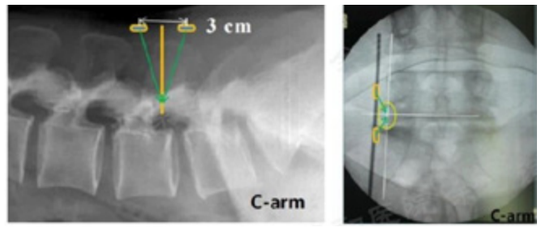


Fig.1b

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Surgical Procedures

【Step 2】 Surgical Localization

- The patient is in the prone position. Use an orthopedic localization rod with the assistance of an X-ray machine to determine the intervertebral disc position.

Select two points 1.5cm above and below the midline spacing as the localization points for the two channels. In this case, the lower border of the L5 lamina and the upper border of the S1 lamina were selected as the localization points for the V and W channels, respectively. If the surgeon stands on the patient's left side, the arthroscope is generally held in the left hand and the operating instrument in the right hand; the opposite applies if standing on the right side. This determines the superior/inferior positions of the two channels.

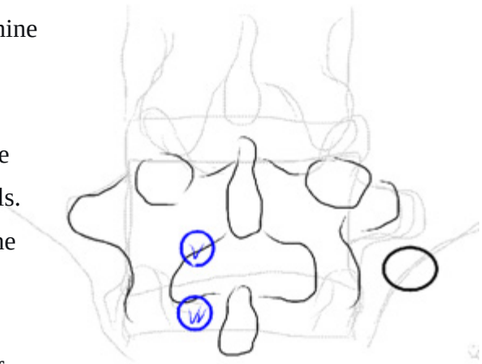
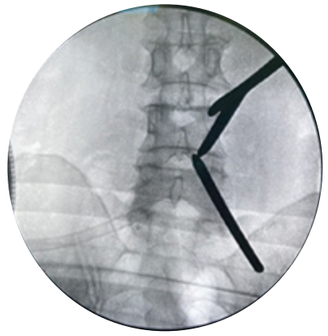


Fig.2a

【Step 3】 Incision

- Two incisions: Observation port approximately 0. 5cm, working port approximately 1.5cm. The function of the dilators and periosteal elevators is to create a working space through dilation and stripping of the bone surface.



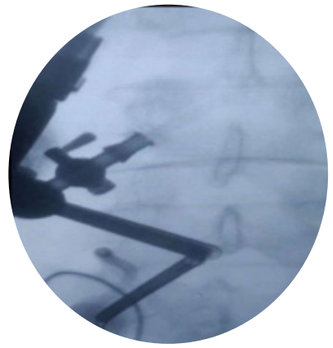


Fig. 3a

【Step 4】 Channel Establishment

- Method One: Using a Working Cannula to Establish the Channel

  Transition the guidewire into the channel and position it for placement into the body. Along the guidewire channel, use an appropriate bone graft protector connected to the dilator for expansion. Press the bone graft protector firmly against the annulus fibrosus position, then remove the bone graft locator and bone graft guide (Figure 4a).

Fig. 4a

- Method Two: Using a Skin Blunt Dissector to Establish the Channel

  Use a skin blunt dissector, which can be used with a nerve retractor. Once proficient, the nerve retractor may not be necessary (Figure 4b).During the process of establishing the working channel, use retractors to protect the thecal sac and nerve roots.

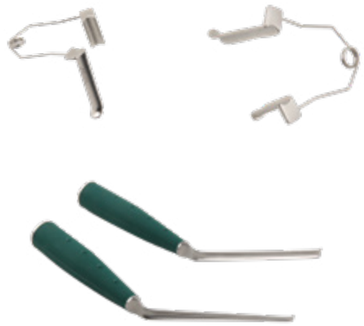


Fig. 4b

Surgical Procedures

【Step 5】 Exposing the Lamina

- Use an osteotome to remove structures like the facet joint; instruments such as a high-speed burr or articulating burr can also be used.

- Insert the articulating probe, use the radiofrequency probe/forceps to clear the muscle tissue on the surface of the interlaminar space, exposing the superior and inferior laminae (Figure 5a).

Fig.5a

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Surgical Procedures

【Step 6】 Managing the Intervertebral Space

- Identify the gap between the ligamentum flavum and the lamina. At this point, probing can be performed with a nerve hook. Safe and rapid "fenestration" of the ligamentum flavum is key to this technique.

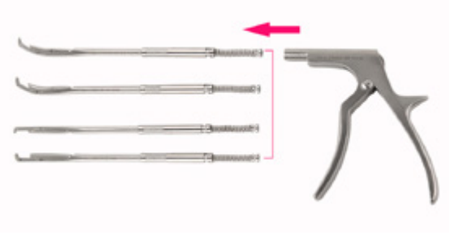

Fig. 6a

- Use a nerve dissector to strip the herniated disc compressing the nerve layer. Use the radiofrequency probe for hemostasis. Remove the herniated nucleus pulposus tissue with pituitary rongeurs (Figure 6a).

- The use of different types of osteotomes and Kerrison rongeurs can simplify the management of the bony canal. Contralateral decompression can be performed if necessary.

Fig. 6b

- After preparation of the intervertebral space is complete, use an irrigation device for final cleaning to remove as much remaining debris from the space as possible (Figure 6b).

Surgical Procedures

【Step 7】 Trial Sizing

- After preparation is complete, bone graft can be inserted if needed (Figure 7a).
- Use trials to determine the appropriate size of the fusion cage (Figure 7b).

Fig.7a

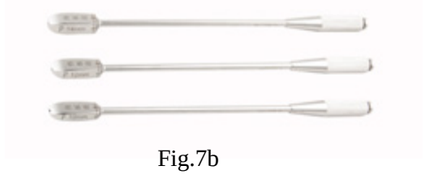

Fig.7b

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Surgical Procedures

【Step 8】 Holding the Cage

- The cage iholder has a hollow design, allowing passage over a guidewire. During insertion, a guidewire can be placed first, and the cage is inserted along the guidewire. Alternatively, the cage can be inserted directly (Figure 8a).

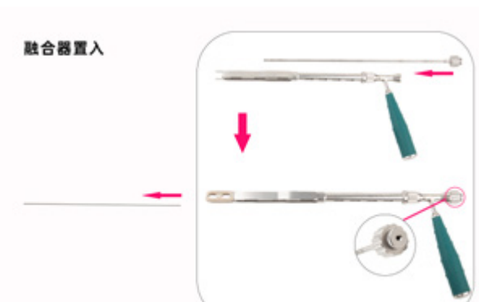


Fig.8a

Surgical Procedures

【Step 9】 Cage Grafting

- The bone grafting method is selected based on the insertion method:

  If inserting directly without guidewire guidance, graft bone directly.

  If guidewire guidance is required, pre-insert a placeholder into the cage before grafting bone, to allow passage of the guidewire.

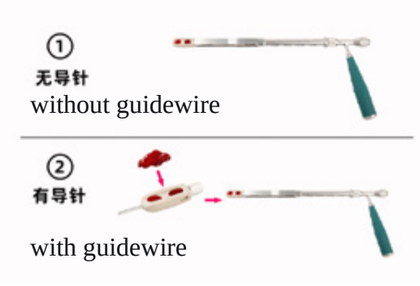


Fig.9a

Surgical Procedures

【Step 10】 Cage Insertion

- After ex vivo bone grafting is completed, use a semi-circular working channel for nerve protection. If inserting directly, the cage can be inserted directly through the working channel.

- If guidewire guidance is required, pre-insert the guidewire, confirm its position under fluoroscopy, then insert the cage along the guidewire (Figure 10a).

Fig. 10a

Surgical Procedures

【Step 11】 Confirming Cage Position

- Check the cage position under fluoroscopy. Adjust using the impactor. If a guide pin is used, remove it before adjustment (Figure 11a).

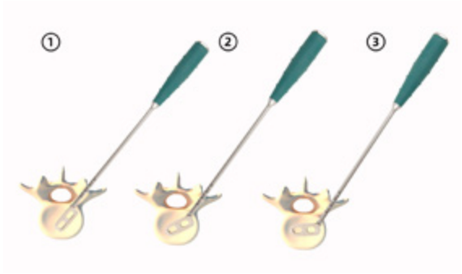


Fig.11a

- After adjusting the cage, confirm under fluoroscopy that the fusion position is satisfactory. The surgical procedure is complete. After fusion verification, subsequent procedures can be performed (Figure 11b).

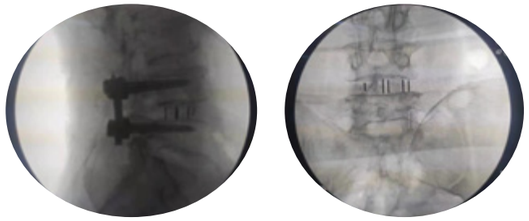


Fig. 11b

- After confirming hemostasis, close the wound (Figure 11c).

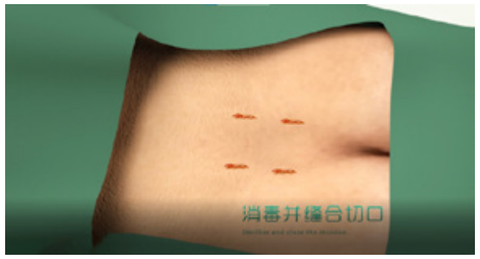


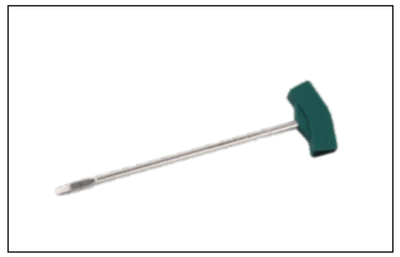
Fig.11c

Product Information

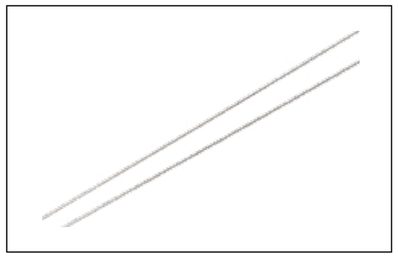
- 【MicrOlif Cage】

Description	Angle
36×14×8	6°
36×16×8	6°
36×14×10	6°
36×16×10	6°
36×14×12	6°
36×16×12	6°
38×14×8	6°
38×16×8	6°
38×14×10	6°
38×16×10	6°
38×14×12	6°
38×16×12	6°
40×14×10	6°
40×14×12	6°
40×14×14	6°
40×16×10	6°
40×16×12	6°
40×16×14	6°

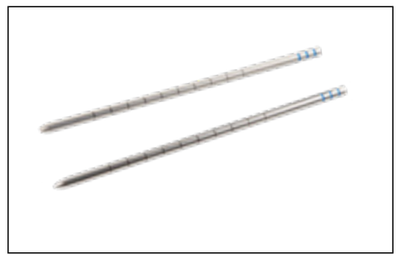
Surgical Instruments



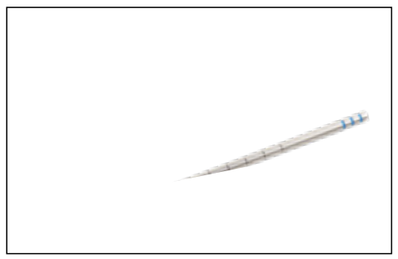
● 305-028
Vertebral Distractor



● 318-430
Guide pin



● 1270140
Positioning Rod (Hollow)



● 1270141
Positioning Rod (Hollow)

● 1270142
Orthopedic Protector ϕ5/ϕ7

● 1270143
Orthopedic Protector ϕ7/ϕ9

● 1270144
Orthopedic Protector ϕ9/ϕ11

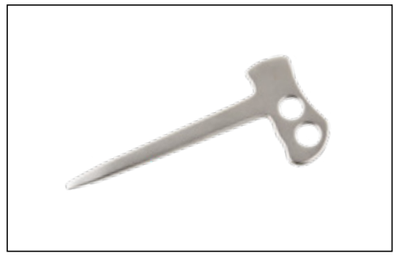
● 1270145
Orthopedic Protector ϕ11/ϕ13

Surgical Instruments

● 1270146
Orthopedic Protector（ϕ13/ϕ15）

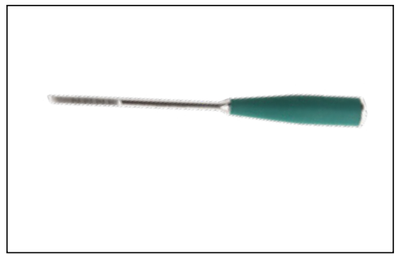
● 1270147
bone retractor（ Ⅱ）4mm

● 1270148
bone retractor（ Ⅱ） 8mm

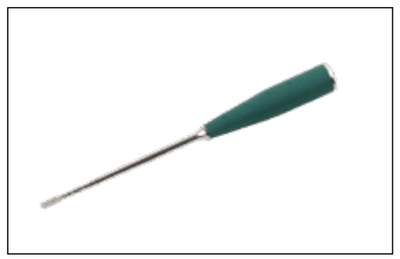


● 1270047
Elevator

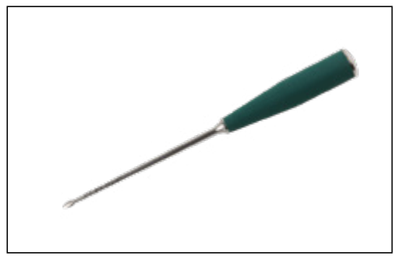
● 1270149
Impactor



● 1270150
Bone Osteotome（6mm）

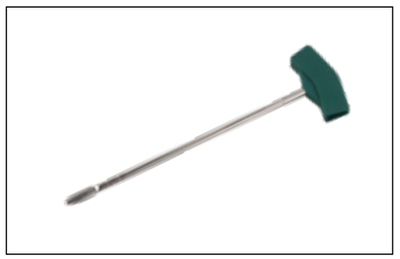


● 1270151
Bone Osteotome（5mm）



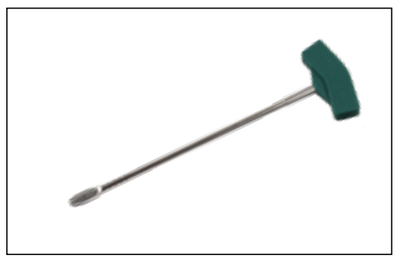
● 1270152
Triangle Bone Curette

Surgical Instruments



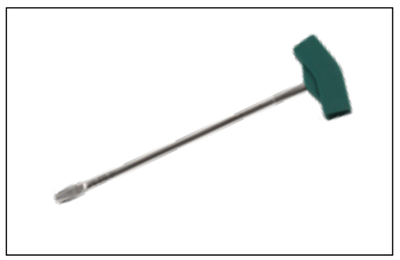
● 1270153

Square Bone Reamer 8mm



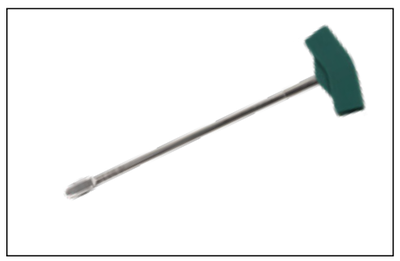
● 1270154

Square Bone Reamer 9mm



● 1270155

Square Bone Reamer 10mm

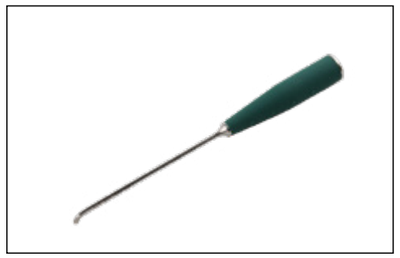


● 1270156

Square Bone Reamer 11mm

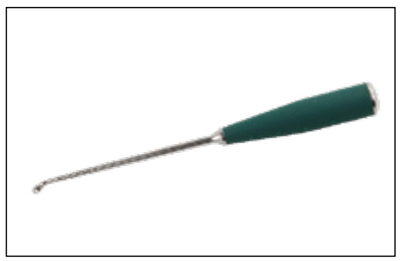
● 1270157

Square Bone Reamer 12mm



● 1270137

Reverse Curette



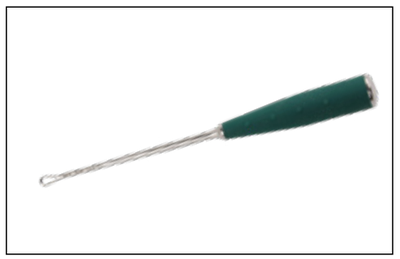
● 1270138

Anterior-Curved Curette

● 1270139

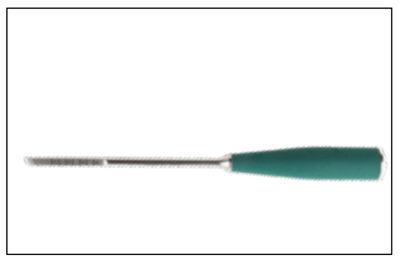
Serrated Curette

Surgical Instruments



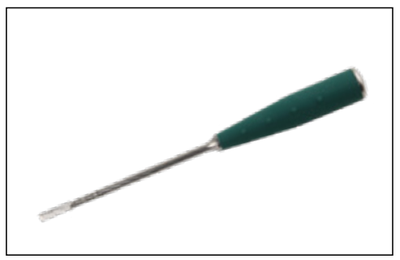
● 1270170

Ring Curette



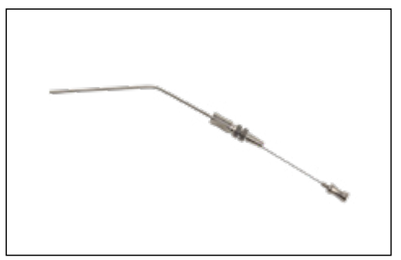
● 1270173

Up-Angled Bone Osteotome



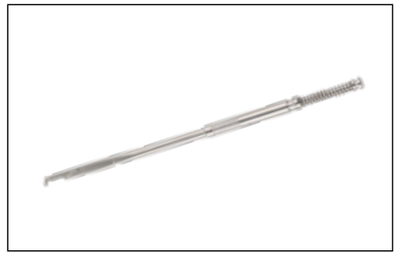
● 1270172

Square-Angle Bone Osteotome



● 1270171

L-Shaped Suction Tube



● 1270158

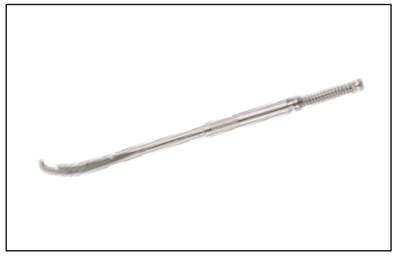
Laminectomy Rongeur, 2× 110° Straight

● 1270159

Laminectomy Rongeur, 4x110° Straight

● 1270160

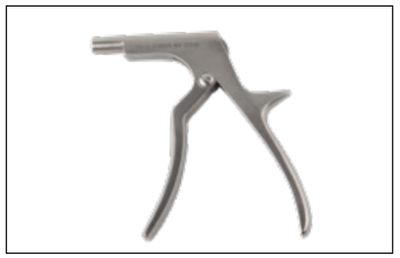
Laminectomy Rongeur, 3 × 130° Curved



● 1270161

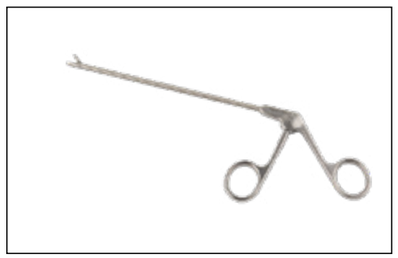
Laminectomy Rongeur, 5× 130° Curved

Surgical Instruments



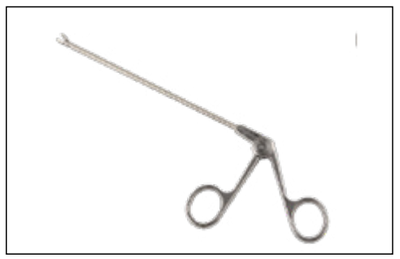
● 1270162

Plate Rongeur Handle



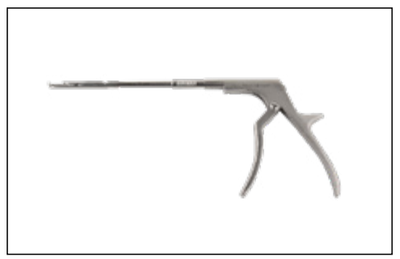
● 1270071

Nucleus Pulposus Rongeur, 4 mm



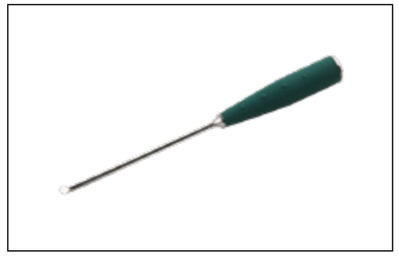
● 1270072

Toothed Nucleus Pulposus Rongeur, 4 mm



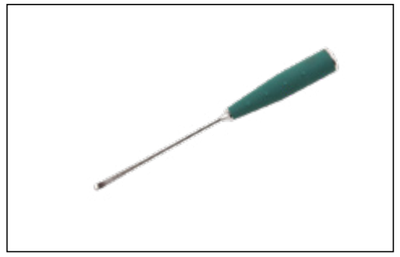
● 318-063

Straight Nucleus Pulposus Rongeur, 5 mm



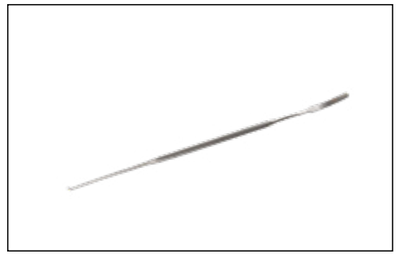
● 1270163

Periosteal Elevator (small) 6mm



● 1270164

Periosteal Elevator (big) 7mm



● 315-101

Periosteal Elevator (small)

● 1270075

Bone Graft Funnel, Φ7

Fule 富乐

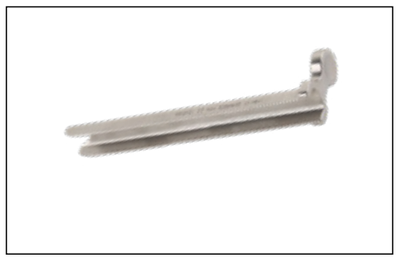
Surgical Instruments

● 1270165

Bone Graft Funnel (Tamping Rod)φ6.3

● 1270166

Retractor(20x40)



● 1270167

Retractor（11mm)