EndoSurg Plus System

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Unintech GmbH is certified according to DIN EN ISO 13485: 2016 and Directive 93/42/EWG. Certification according to MDR (2017/745) is in progress.

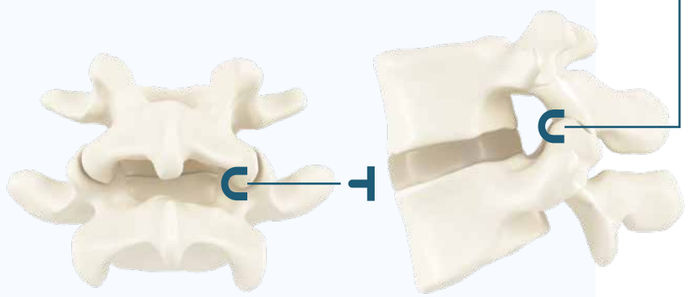
unintech



EndoSurg Plus
full-endoscopic System

MADE IN
GERMANY

EndoSurg Plus System



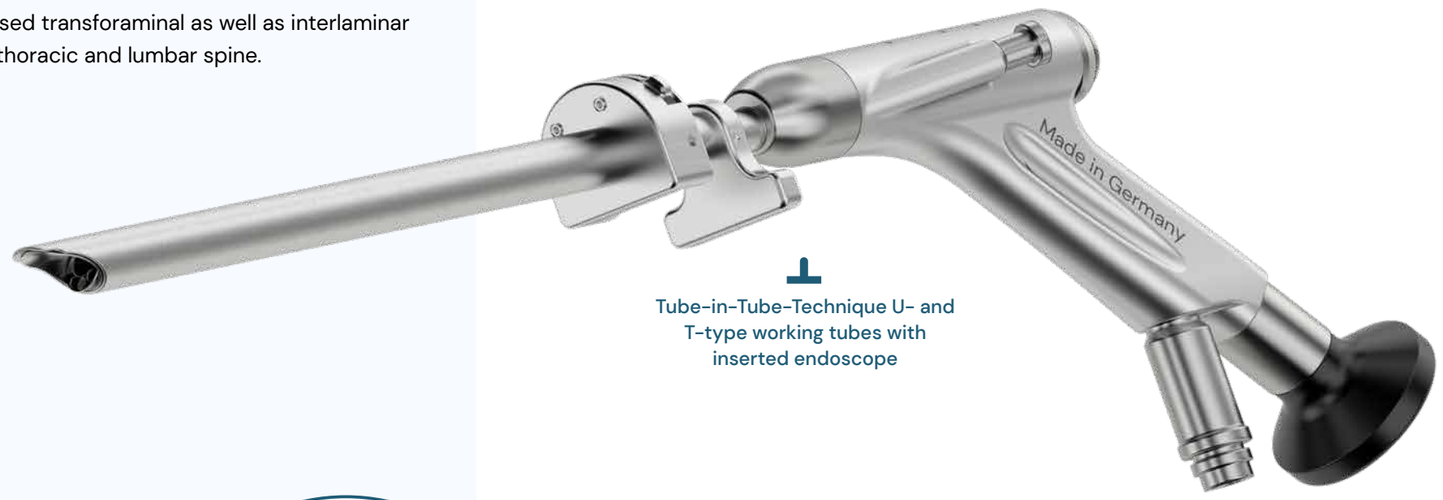
Access
transforaminal and interlaminar

Indications
ventral, lateral and dorsal
pathologies, e.g. herniated discs, foraminal stenoses, facet joint cysts, spondylolistheses

Field of application
Lumbar and thoracic

The EndoSurg Plus System is unintech's most commonly used system for full-endoscopic spinal decompression.

It can be used transforaminal as well as interlaminar mainly on thoracic and lumbar spine.

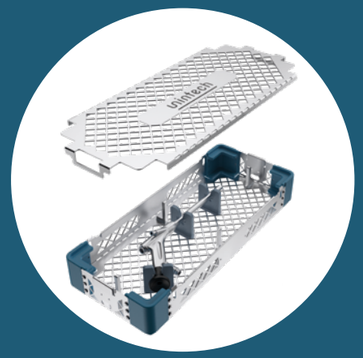


Tube-in-Tube-Technique U- and T-type working tubes with inserted endoscope

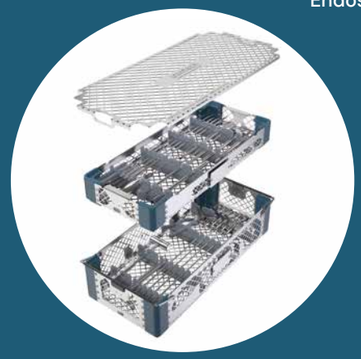
EndoSurg Endoscope 2.0	**Plus**
Working length (WL)	171 mm
Outer diameter shaft (OD)	7.6 mm
Diameter working channel	4.7 mm
Optic angle	30°
U-type working tube	
OD	10.2 mm
U-type working tube with threaded shaft	
OD	11.0 mm

The system includes the EndoSurg Plus instrument set (approx. 25 instruments), the Endoscope 2.0 Plus and trays for instruments and endoscope.

The set contains all instruments that are required as standard for endoscopic surgery, e. g. dilators, working tubes, various forceps, chisels, nerve hook, elevator. They are optimally adapted to the procedure and the endoscope in terms of length, diameter and design.



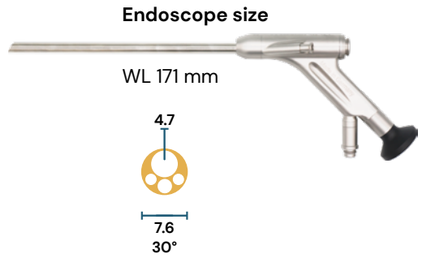
Endoscope tray



Instrument double trays



Endoscope size



Working Channel (WCh), Irritation Channel (IR), Light Fibers (LF), Camara Lens (CA)

unintech techniques are characterized by

- Tube-in-Tube-Technique – based and following on open-surgery techniques
- Anatomical landmarks could be easily found
- The previous experience in open surgery could be perfectly combined with unintech endoscopic technique
- Transforaminal foraminotomy and interlaminar fenestration under endoscopic view and guidance

Detailed information on the instruments and the components are listed in the Data Sheet EndoSurg Plus System.

EndoSurg Plus Concept

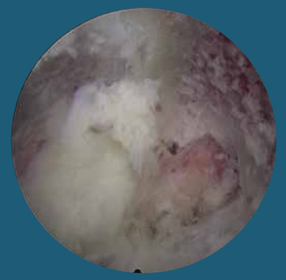
Working from outside to inside transforaminal approach



First endoscopic view - soft tissue outside the foramen



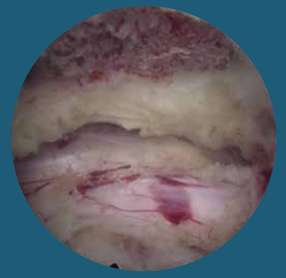
View to free prepared facet joint



Facet joint and Lig. flavum after foraminotomy



Lig. lavum partially removed and view to nerve



End of procedure and view at free spinal nerve

All surgical images (endoscopy and navigation) used in this brochure are provided by Prof. Xuexiao Ma and Prof. Chuanli Zhou (The Affiliated Hospital of Qingdao University)

The unintech Concept

unintech surgical methods follow the Open-Surgery Concept.

- Follow the guidelines
- Work from outside to inside
- Find the bony structures & orient yourself

Benefits of these key points

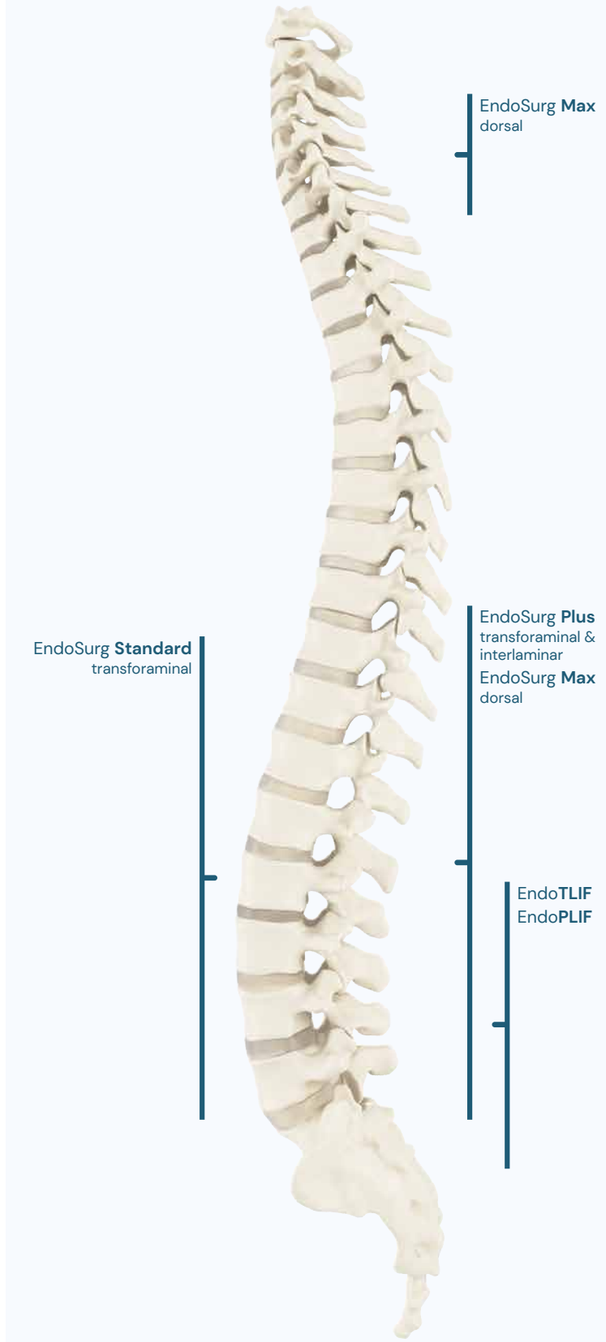
- Less radiation exposure during access
- Less steep learning curve
- Less traumatic for patients
- Reduced surgery time

Field of Application

EndoSurg Plus Sytem	
Approach	
Transforaminal	•
Interlaminar /dorsal	•
Decompression	
Over-the-top	
ipsilateral / contralateral	•
Spine section	
Lumbar	•
Thoracic	•
Pathologies	
Herniation	•
Foraminal stenosis	•
Recess stenosis	•
Central stenosis	•
Facet joint cysts	•
Interbody fusion	
in comibination with instrument set	• EndoTLIF

• applicable

dorsal
cranial caudal
ventral

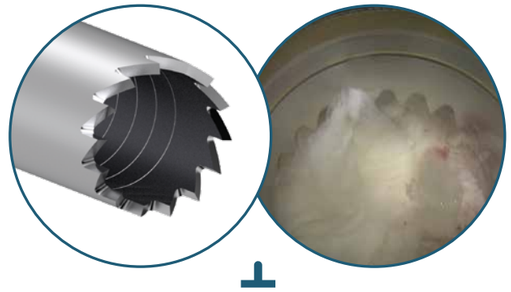


Tube-in-Tube-Technique

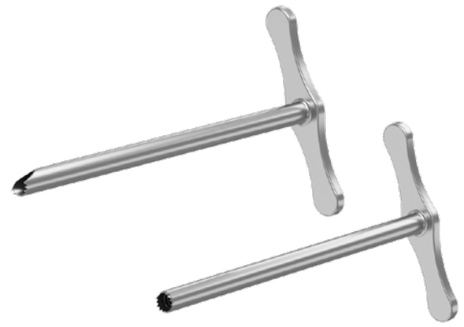
- Endoscopic guided reaming



View to distal end of the instruments:
The endoscope is inserted into the forehead reamer with partial toothing, which is inserted into the U-type working tube.



Rills in the inside of the forehead reamer refer to the depth of penetration.



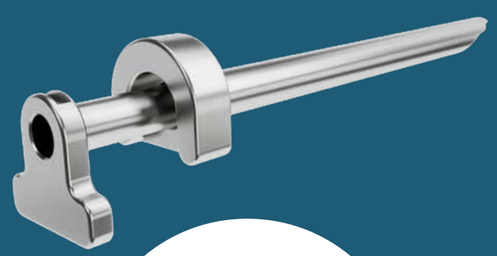
In addition to the forehead reamer with fully toothing, the instrument set includes a partially toothed forehead reamer, which is used for bony decompression close to sidewise sensitive structures.

EndoSurg Plus System

Principal steps of the procedure

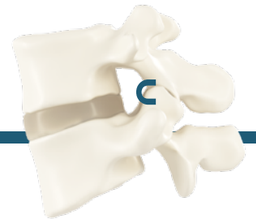
- Access to the target point transforaminal or interlaminar through serial dilation
- Inserting the working tubes U and T, which act as protector and retractor for soft and sensitive tissue
- Cleaning the access area under endoscopic guidance and identifying the original and untreated bony structures.
- Changing the T-type working tube through a forehead reamer
- Transforaminal and interlaminar fenestration under endoscopic guidance
- Endoscopic decompression with various instruments

Core products of EndoSurg Plus are the working tubes and the forehead reamer, with which the unintech concept can be applied.

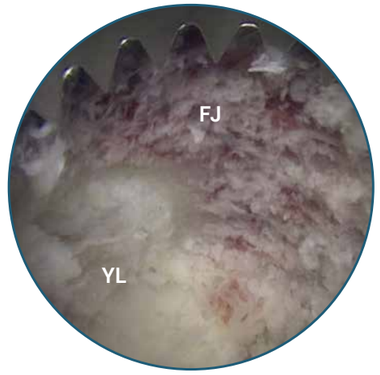


U- and T-type working tubes can be locked

Transforaminal







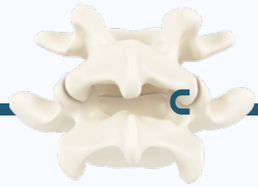
Endoscopic view to intervertebral foramen and forehead reamer

YL yellow ligament
FJ facet joint

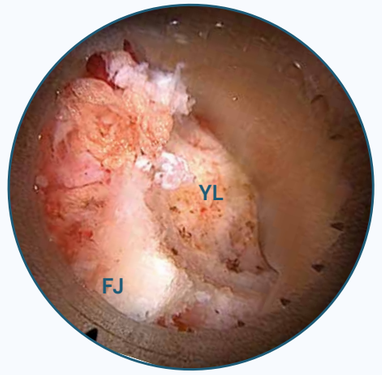
- U- and T-type working tubes, recommended for transforaminal approach



Interlaminar



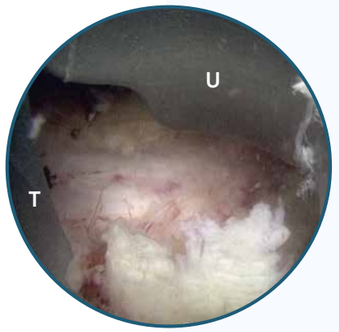




Endoscopic view to interlaminar window and forehead reamer

- U- and T-type working tube, recommended for interlaminar approach
- U-type working tube with outer thread. T-type working tube with slant tip and point of attachement for holding arm.





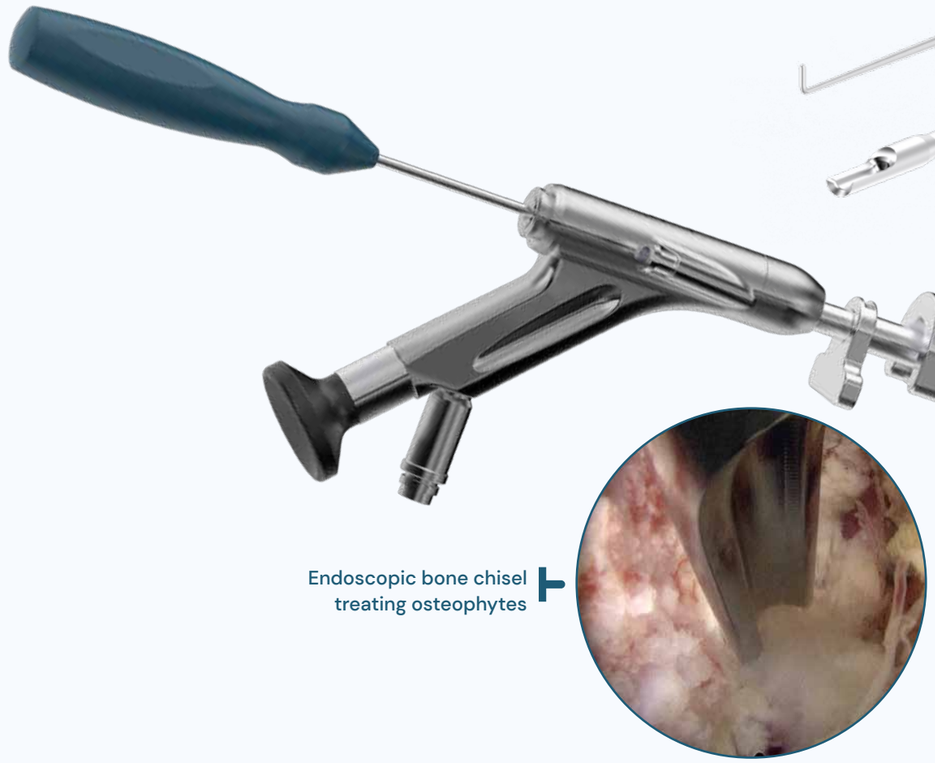
U- and T-type working tubes can be used as retractor

U U-type working tube
T T-type working tube

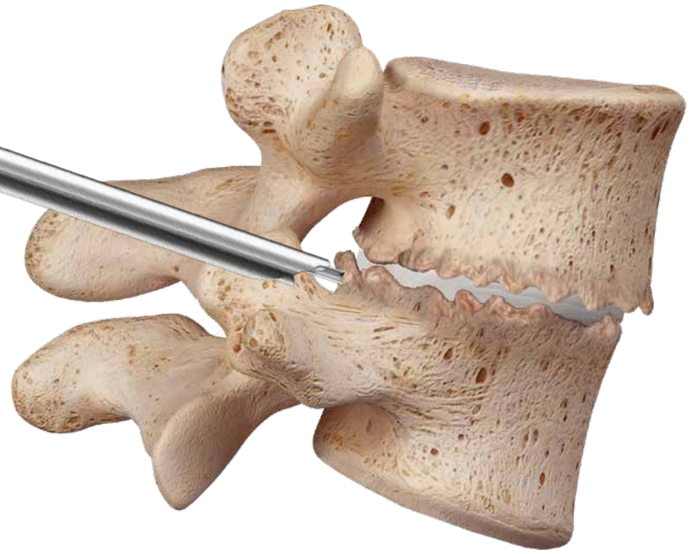
EndoSurg Plus Instruments for decompression

- Special endoscopic instruments
- nerve hook and elevator for palpation
- bone chisel and curette for boney treatment, e. g. osteophytes





Endoscopic bone chisel treating osteophytes



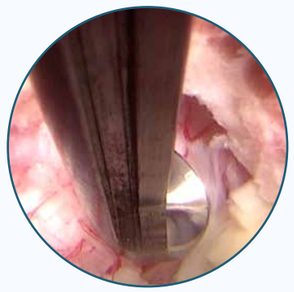




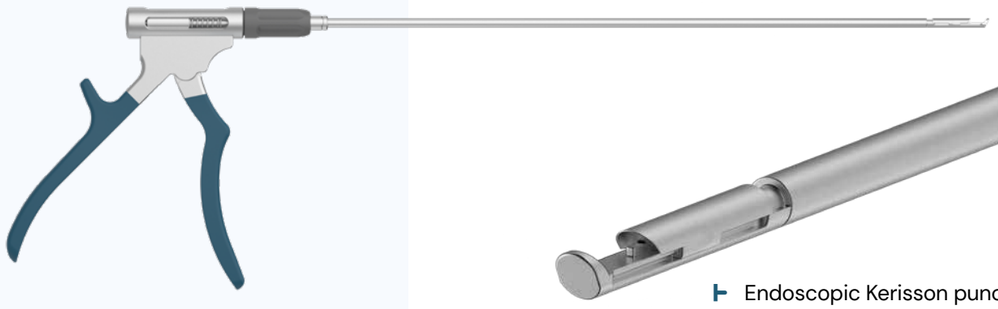
Various tip designs
Smaller shaft diameter at distal end for better view to working area



Kerisson punch cutting Lig. flavum, transforaminal access



Kerisson punch cutting lamina, interlaminar access



- Endoscopic Kerisson punches
- Shaft rotable
- Available with footprint 1.5 / 2.0 / 4.0 mm and 40° angulation

EndoTLIF

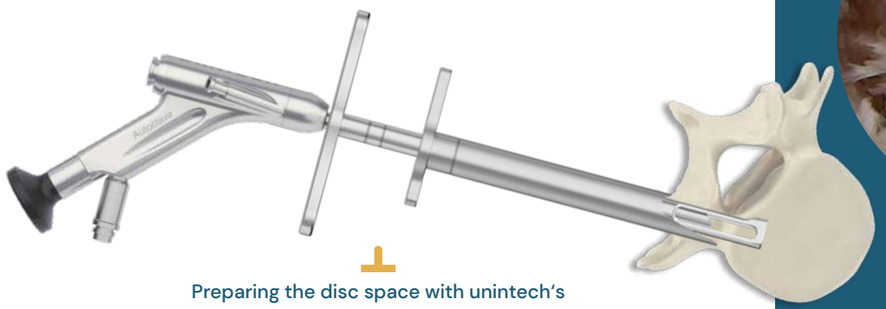
Endoscopic assisted transforaminal interbody fusion

The systems EndoSurg Plus can be used in combination with the EndoTLIF instrument set for endoscopic intervertebral cage placement, regardless of the choice of cage brand. The set is designed and developed for endoscopic lumbar intervertebral body fusion. It contains all instruments for endoscopic monitored disc space preparation, e.g. scrapers, chisels and rasps.

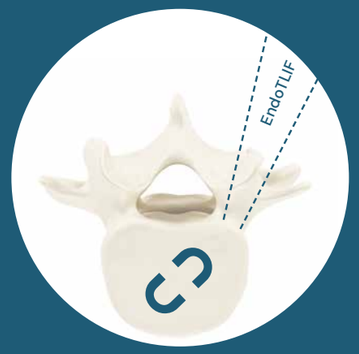
Implants up to a size of 14 mm can be inserted through the working tubes. Measuring the appropriate cage size and inserting the cage is done with the cage manufacturer's instruments. Therefore, the procedure can be done with most implants and the surgeon can use the preferred implant.



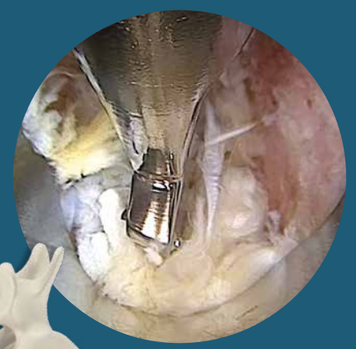
Instrument is inserted
in the endoscope working channel



Preparing the disc space with unintech's
Tube-in-Tube technique



Usage of EndoTLIF Instrument Set Transforaminal lumbar interbody fusion in combination with EndoSurg Plus System





Endoscope is inserted
in the instrument

Literature and additional information

1. Chen C, Ma X, Zhao D, Yang H, Xu B, Wang Z, Yang Q. **Full Endoscopic Lumbar Foraminoplasty with Periendoscopic Visualized Trephine Technique for Lumbar Disc Herniation with Migration and/or Foraminal or Lateral Recess Stenosis.** World Neurosurg. 2021 Apr;148:e658-e666. doi: 10.1016/j.wneu.2021.01.062. Epub 2021 Jan 27. PMID: 33515794.
2. Song QP, Hai B, Zhao WK, Huang X, Liu KX, Zhu B, Liu XG. **Full-Endoscopic Foraminotomy with a Novel Large Endoscopic Trephine for Severe Degenerative Lumbar Foraminal Stenosis at L5 S1 Level: An Advanced Surgical Technique.** Orthop Surg. 2021 Apr;13(2):659-668. doi: 10.1111/os.12924. Epub 2021 Jan 27. PMID: 33506594; PMCID: PMC7957400.
3. Hofstetter CP, Ahn Y, Choi G, Gibson JNA, Ruetten S, Zhou Y, Li ZZ, Siepe CJ, Wagner R, Lee JH, Sairyo K, Choi KC, Chen CM, Telfeian AE, Zhang X, Banhot A, Lokhande PV, Prada N, Shen J, Cortinas FC, Brooks NP, Van Daele P, Kotheeranurak V, Hasan S, Keorochana G, Assous M, Härtl R, Kim JS. **AOSpine Consensus Paper on Nomenclature for Working-Channel Endoscopic Spinal Procedures.** Global Spine J. 2020 Apr;10(2 Suppl):111S-121S. doi: 10.1177/2192568219887364. Epub 2020 May 28. Erratum in: Global Spine J. 2021 Jun;11(5):819. PMID: 32528794; PMCID: PMC7263337.
4. **Atlas of Atlas of Full-Endoscopic Spine Surgery**, Hofstetter/Ruetten/Zhou/Wang; Thieme Publication Date, December 2019, Print ISBN: 9781684200238, E-Book ISBN: 9781684200245
5. Brusko GD, Wang MY. **Endoscopic Lumbar Interbody Fusion.** Neurosurg Clin N Am. 2020 Jan;31(1):17-24. doi: 10.1016/j.nec.2019.08.002. Epub 2019 Oct 15. PMID: 31739925.
6. Keorochana G, Setrkraising K, Woratanarat P, Arirachakaran A, Kongtharvonskul J. **Clinical outcomes after minimally invasive transforaminal lumbar interbody fusion and lateral lumbar interbody fusion for treatment of degenerative lumbar disease: a systematic review and meta-analysis.** Neurosurg Rev. 2018 Jul;41(3):755-770. doi: 10.1007/s10143-016-0806-8. Epub 2016 Dec 24. PMID: 28013419
7. Stone CE, Myers BL, Gupta S, Giles TX, Patel NA, Gendreau JL, Abraham ME, Mammis A. **Surgical Outcomes After Single-Level Endoscopic Transforaminal Lumbar Interbody Fusion: A Systematic Review and Meta-Analysis.** Cureus. 2020 Oct 20;12(10):e11052. doi: 10.7759/cureus.11052. PMID: 33224649; PMCID: PMC7676448.
8. Kim JY, Kim HS, Jeon JB, Lee JH, Park JH, Jang IT. **The Novel Technique of Uniportal Endoscopic Interlaminar Contralateral Approach for Coexisting L5-S1 Lateral Recess, Foraminal, and Extraforaminal Stenosis and Its Clinical Outcomes.** J Clin Med. 2021 Mar 26;10(7):1364. doi: 10.3390/jcm10071364. PMID: 33810404; PMCID: PMC8037803.
9. Yu Y, Jiang Y, Xu F, Mao Y, Yuan L, Li C. **A novel vertebral trench technique (VTT) involving transforaminal endoscopic lumbar foraminotomy (TELF) for very highly up-migrated lumbar disc herniation above L5.** BMC Musculoskelet Disord. 2021 Aug 14;22(1):693. doi: 10.1186/s12891-021-04548-3. PMID: 34391400; PMCID: PMC8364045.
10. Zhao XB, Ma HJ, Geng B, Zhou HG, Xia YY. **Percutaneous Endoscopic Unilateral Laminotomy and Bilateral Decompression for Lumbar Spinal Stenosis.** Orthop Surg. 2021 Apr;13(2):641-650. doi: 10.1111/os.12925. Epub 2021 Feb 9. PMID: 33565271; PMCID: PMC7957412.
11. Sun F, Liang Q, Yan M, Wang H, Liu Z, Li F, Dong J, Liu T. **Unilateral Laminectomy by Endoscopy in Central Lumbar Canal Spinal Stenosis: Technical Note and Early Outcomes.** Spine (Phila Pa 1976). 2020 Jul 15;45(14):E871-E877. doi: 10.1097/BRS.0000000000003478. PMID: 32609470; PMCID: PMC7337115.
12. Zhao XB, Ma HJ, Geng B, Zhou HG, Xia YY. **Early Clinical Evaluation of Percutaneous Full-endoscopic Transforaminal Lumbar Interbody Fusion with Pedicle Screw Insertion for Treating Degenerative Lumbar Spinal Stenosis.** Orthop Surg. 2021 Feb;13(1):328-337. doi: 10.1111/os.12900. Epub 2021 Jan 10. PMID: 33426744; PMCID: PMC7862160