# The 6th ISMISS combined with The 16th MISS Summit Forum

*minimally invasive spine surgery*

# Program & Abstracts

2024.3.15(Fri)-3.16(Sat)

Congress Secretariat of MISS Summit Forum
Aichi Spine Hospital
31-1, Kamiike, Goromaru, Inuyama-shi, Aichi, 484-0066, Japan
E-mail: miss@itoortho.or.jp

http://missummit.com

# Welcome Message

We are delighted to announce that The 16th MISS Summit Forum will be held at the Aichi Spine Hospital in Inuyama, Aichi Prefecture, Japan, spanning two days on March 15th and 16th, 2024.

As we strive to overcome the devastating impact of COVID-19, this event marks a long-awaited opportunity for in-person interaction, signifying the dawn of the post-pandemic era.

With the aim of promoting and advancing spinal surgery, particularly the Minimal Invasive Spinal Surgery (MISS) approach, we have invited esteemed professionals from around the world to participate in discussions on cutting-edge technologies. This year's summit will be held in conjunction with the 6th International Society for Minimal Intervention in Spinal Surgery (ISMISS), ensuring that the content is highly relevant to your clinical practice. We have meticulously planned various symposiums, seminars, and surgical video viewings accompanied by interactive discussions.

After a three-year hiatus, we eagerly anticipate the vibrant exchange of ideas and the opportunity for direct personal communication among all attendees. We are dedicated to making this academic conference a truly fulfilling experience for each participant and will work together as a cohesive team to ensure thorough preparations. We kindly request your cooperation and support in this endeavor.

Chairman of the MISS Summit Forum
Zenya Ito, MD. PhD
(Director of Aichi Spine Hospital)

# Congress Outline

**Congress Name**
The6th ISMISS combined with The16th MISS Summit Forum
**Dates**
2024.3.15(Fri)-3.16(Sat)
**Venue**
Aichi Spine Hospital 4F Venue A/B
31-1,Kamiike,Goromaru,Inuyama-shi,Aichi,484-0894,Japan
Tel:+81-568-20-9100
https://www.itoortho.jp/about/access
**Honorary President**
Kai-Uwe Lewandrowski
Akira Dezawa
Munehito Yoshida
**President**
Koichi Sairyo
**Chairman**
Zenya Ito
**Co-Chairman**
Fujio Ito
**Secretariat**
Aichi Spine Hospital
31-1,Kamiike,Goromaru,Inuyama-shi,Aichi,484-0894,Japan
Tel:+81-568-20-9100 / Fax:+81-568-20-9107
E-mail:miss@itoortho.or.jp / URL:http://missummit.com
**Language**
The official language of the congress is English.
**Registration**
Registration desk will be open at the following times at Aichi Spine Hospital Reception desk.
March 15,2023(Fri.)8:00-
**Registration Fees** (Only Cash payment in Japanese Yen is acceptable.)
Delegate: JPY 10,000
Trainee doctor,(exchange)students,nurses,and physiotherapists: JPY 1,000
**Cloakroom**
Cloakroom is located in the hall near the registration desk.
**Mobile phones**
We ask that all mobile phones be turned off or swiched to the manner mode.
**Lunch**
Box lunches will be served at the Luncheon Seminars.
**Speaker Preview**
All speakers are requested to check their presentation data at least 30 minutes before their session beginning. The operating hours start at 8:00(March,15)and 8:00(March,16).
PC which installed PowerPoint 2020 is used in the venue.
**Presentation Time**
The time schedule is tight. Please keep the allotted time.

# Time Schedule

## March 15 (Fri) 2024

**Aichi Spine Hospital**

**Presentation Room**

**4F Meeting Room**

| | Room A | Room B |
|---|---|---|
| 9:00 | 9:00-9:20 **Opening Ceremony** | |
| | 9:20-10:30 **Special Lecture** | |
| 10:00 | **Coffee Break** | |
| 11:00 | 10:50-12:05 **Lecture A1** | 10:50-11:50 **Lecture B1** |
| 12:00 | **Coffee Break** | |
| | 12:30-13:15 **Luncheon Seminar 1** | |
| 13:00 | **Coffee Break** | |
| | 13:40-14:35 **Lecture A2** | 13:20-14:40 **Lecture B2** |
| 14:00 | **Coffee Break** | **Coffee Break** |
| 15:00 | 14:45-16:00 **Lecture A3** | 15:05-15:55 **Lecture B3** |
| 16:00 | **Coffee Break** | |
| | 16:30-17:40 **Lecture A4** | |
| 17:00 | | |
| 18:00 | | |
| | 18:20-19:50 **Banquet Dinner Party** | |
| 19:00 | | |

# Time Schedule

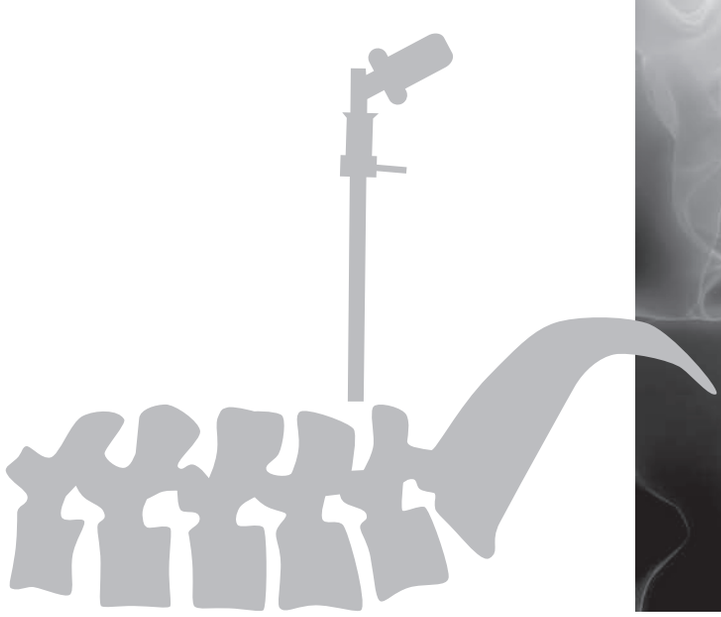
## March 16 (Sat) 2024 Aichi Spine Hospital

**Presentation Room**

**4F Meeting Room**

| | Room A | Room B |
|---|---|---|
| 9:00 | 9:00-10:00 **Lecture C1** | 9:00-9:50 **Lecture D1** |
| 10:00 | **Coffee Break** | **Coffee Break** |
| | 10:20-11:25 **Lecture C2** | 10:10-11:00 **Lecture D2** |
| 11:00 | **Coffee Break** | |
| 12:00 | 12:00-12:45 **Luncheon Seminar 2** | |
| 13:00 | **Coffee Break** | |
| | 13:15-14:40 **Lecture C3** | |
| 14:00 | | |
| 15:00 | 14:50- **Closing Ceremony** | |
| 16:00 | | |
| 17:00 | | |
| 18:00 | | |
| 19:00 | | |

# Program



# PROGRAM March 15 (Fri), 2024

## ROOM A

## 9:00-9:20 Opening Ceremony

## 9:20-10:30 Special Lecture

SL-1 9:20-10:00
**Be professional of the Kinematic Control Rehabilitation after MIS Spine Surgery.**
Koichi Sairyo (Japan)

SL-2 10:00-10:15
**Refining Skills of Full Endoscopic Spine Surgery From point to surface minimally invasive surgery**
Akira Dezawa (Japan)

SL-3 10:15-10:30
**Future of spinal endoscopy**
Kai-Uwe Lewandrowski (USA)

**10:30-10:50 Coffee Break**

## 10:50-12:05 Lecture A1

moderator **:** Chein-Min Chen , Kuniyoshi Tsuchiya

A1-1 10:50-11:05
**Indications for FESS; Is FESS only for typical spinal degenerative diseases?**
Yukoh Ohara (Japan)

A1-2 11:05-11:20
**Translaminar approach for microendoscopic resection of migrated lumbar disc herniation**
Benedikt Burkhardt (Germany)

A1-3 11:20-11:35
**Usefulness of percutaneous endoscopic laminotomy: my own experience of seven surgeries for thoracolumbar extensive spinal canal stenosis**
Fujio Ito (Japan)

A1-4 11:35-11:50
**Contralateral Interlaminar Approach with Unilateral Biportal Endoscopy for Lumbar Upward Migrated Foraminal Disc Herniations**
Cigdem Mumcu (Turkey)

A1-5 11:50-12:05
**Go back to basics: full endoscopic discectomy over a 10-year period**
Chien-Min Chen (Taiwan)

**12:05-12:30 Coffee Break**

## 12:30-13:15 Luncheon Seminar 1

moderator **:** Kenyu Ito

LS-1 12:30-13:15
**VIDEO Surgery Discussion**
Son Sang Kyu (Korea)

**13:15-13:40 Coffee Break**

## 13:40-14:35 Lecture A2

moderator **:** Hidetomi Terai , Malcom Pestonji

A2-1 13:40-13:55
**Improving Surgical Procedures with AFESS: A Customized Approach to Right-Side UBE**
Takeshi Kaneko (Japan)

A2-2 13:55-14:10
**Exploring Para UBE**
Malcolm Pestonji (India)

A2-3 14:10-14:25
**Introduction of UBE/BESS in Osaka Metropolitan University**
Hidetomi Terai (Japan)

A2-4 14:25-14:35
**Comparison between Unilateral Biportal Endoscopic and percutaneous Full-Endoscopic posterior lumbar foraminotomy -Which technique is easier for beginner surgeons?**
Yuichi Kondo (Japan)

**14:35-14:45 Coffee Break**

## 14:45-16:00 Lecture A3

moderator **:** Wataru Narita , Yasushi Fujiwara

A3-1 14:45-15:00
**TBD**
Wataru Narita (Japan)

A3-2 15:00-15:15
**Robotic-assisted minimally invasive repair surgery for progressive spondylolysis**
Kazuta Yamashita (Japan)

A3-3 15:15-15:30
**Microscopic augmented reality (AR) navigation surgery with a mobile flat panel 3D C-arm.**
Yasushi Fujiwara (Japan)

A3-4 15:30-15:40
**Navigation-assisted Full Endoscopic Rhizotomy for Refractory Coccydynia : A case report with literaure review**
Yi-Ping Wu (Taiwan)

A3-5 15:40-15:50
**Navigation assisted full-endoscopic rhizotomy and ablation for sacroilitac joint pain;Comparative study of the clinical outcome between two techniques**
Jae Hwan Lee (Taiwan)

A3-6 15:50-16:00
**Navigation assisted full endoscopic spine surgery: Design, Workflow, and Clinical Application**
Yasushi Shin (Japan)

**16:00-16:30 Coffee Break**

## 16:30-17:40 Lecture A4

moderator **:** Alfonso García Chávez , Byapak Paudel

A4-1 16:30-16:45

**Less invasiveness of total en bloc spondylectomy (TES) by innovative bone graft**

Hideki Murakami (Japan)

A4-2 16:45-17:00

**Choosing the best approach. A single case presentation of a giant right side L45 facet joint cyst**

Alfonso García Chávez (Mexico)

A4-3 17:00-17:15

**Minimal Invasive Spinal (MIS) Techniques for Vertebral Body Compression Fractures**

Farnad Imani (Iran)

A4-4 17:15-17:30

**Epiduroscopic Laser Ablation of Sinuvertebral Nerve & Basivertebral Nerve for Discogenic Back Pain**

Byapak Paudel (Nepal)

A4-5 17:30-17:40

**A comparative study of three surgical methods for the treatment of long-segment OPLL of the cervical spine**

XiFeng Zhang (China)

## ROOM B

### 10:50-11:50 Lecture B1

moderator **:** Aloysius Bambang Darwono , Hiromitsu Toyoda

B1-1 10:50-11:05
**Navigation in Percutaneous Endoscopic Transforaminal Lumbar interbody fusion: How could we do more effectively and safely**
Yi-Hung Huang (Taiwan)

B1-2 11:05-11:20
**Full Endoscopic Interbody fusion**
Girish Datar (India)

B1-3 11:20-11:35
**Endoscopic Extreme Transforaminal Lumbar Interbody Fusion with Large Spacer: A Technical Note and Preliminary Report**
Jin Hwa Eum (Korea)

B1-4 11:35-11:50
**Endoscopic techniques for multilevel spine Degeneration Do we need fusion ?**
Aloysius Bambang Darwono (Indonesia)

### 13:20-14:40 Lecture B2

moderator **:** Tatsushi Inoue , Park Man kyu

B2-1 13:20-13:35
**C1-2 Fusion with C1 Posterior Arch as Bone Graft**
Akira Itoi (Japan)

B2-2 13:35-13:50
**Cervical laminectomy by unilateral biportal endoscopy**
Park Man kyu (Korea)

B2-3 13:50-14:05
**Clinical and radiological outcomes of new surgical technique of cervical pediculotomy**
Nurbyek Baban (mongoria)

B2-4 14:05-14:20
**Endoscopic ventral approach for craniovertebral junction**
Tatsushi Inoue (Japan)

B2-5 14:20-14:30
**Revisit anterior key-hole discectomy for cervical disc herniation**
Motohide Shibayama (Japan)

B2-6 14:30-14:40
**Should cervical endoscopic surgery be the first choice for Cervical Spondylotic Radiculopathy?**
Xiaojian Ye (China)

### 14:40-15:05 Coffee Break

## 15:05-15:55 Lecture B3

moderator : Pornpavit Sriphirom , Motohide Shibayama

B3-1 15:05-15:20

**The Posterior Oblique Lateral Approach for Uniportal Endoscopic Spinal Surgery**

Pornpavit Sriphirom (Thailand)

B3-2 15:20-15:30

**The Evolution of MISS in Thailand**

Wiwat Wajanavisit (Thailand)

B3-3 15:30-15:45

**Myogelosis: Cutaneous Reception and Generation of Static Electricity and Magnetism**

Shoichi Kokubun (Japan)

B3-4 15:45-15:55

**Assistive Devices in Full-Endoscopic Spine Surgery**

Shu Nakamura (Japan)

# PROGRAM March 16 (Sat), 2024

## ROOM A

### 9:00-10:00 Lecture C1

moderator **:** Nobuyuki Shimokawa , Jun Ho Lee

C1-1 9:00-9:15
**Full Endoscopic Interlaminar Treatment for Giant Thoracic Disc Herniations with Myelopathy**
Keng-Chang Liu (Taiwan)

C1-2 9:15-9:30
**Various posterior fixation techniques in craniocervical junction**
Nobuyuki Shimokawa (Japan)

C1-3 9:30-9:45
**Background of Thoracic Disc Herniation and its**
Jun Ho Lee (Korea)

C1-4 9:45-10:00
**Thoracic decompression, full endoscopic technique**
Woraphot Wichan (Thailand)

**10:00-10:20 Coffee Break**

### 10:20-11:25 Lecture C2

moderator **:** Kenyu Ito , Kei Miyamoto

C2-1 10:20-10:35
**Techniques, pearls and pitfalls of expandable cages in lateral lumbar interbody fusion surgery**
Hiromitsu Toyoda (Japan)

C2-2 10:35-10:50
**Application of expandable cage for lateral lumbar interbody fusion (LLIF)**
Kei Miyamoto (Japan)

C2-3 10:50-11:05
**full Endoscopic Lateral Lumbar Interbody Fusion(ELLIF) - Simultaneous anterior and posterior fusion in prone position, intercostal-ELLIF, prone-Navi-ELLIF**
Yoshinori Kyoh (Japan)

C2-4 11:05-11:15
**Experience in the clinical application of spinal endoscopy-assisted ACDF**
Yongjin Li (China)

C2-5 11:15-11:25
**Minimization of lumbar interbody fusion by percutaneous full-endoscopic lumbar interbody fusion (PELIF), and its minimally invasiveness comparison with minimally invasive surgery-transforaminal lumbar interbody fusion (MIS-TLIF)**
Kenyu Ito (Japan)

**11:25-12:00 Coffee Break**

## 12:00-12:45 Luncheon Seminar 2

moderator : Zenya Ito

LS-2 12:00-12:45
**VIDEO Surgery Discussion**
Kangtaek Lim (Korea)

**12:45-13:15 Coffee Break**

## 13:15-14:40 Lecture C3

moderator : Yasushi Miura , Byeong Cheol Rim

C3-1 13:15-13:30
**Percutaneous full-endoscopic lumbar discectomy -Basic & advanced cases-**
Zenya Ito (Japan)

C3-2 13:30-13:45
**Seven Reasons “Why We may/do/should not Perform Interlaminar Surgeries” instead of Transforaminal Endoscopic Approach**
Tolgay Satana (Turkey)

C3-3 13:45-14:00
**Dural Tears in Full Endoscopic Spine Surgery: Risk Factors, Location, Management and Prevention**
Han Ga Wi Nam (Korea)

C3-4 14:00-14:15
**Full-endoscopic decompression for lumbar foraminal lesion: ideal indication and surgical tips**
Kuniyoshi Tsuchiya (Japan)

C3-5 14:15-14:30
**Lateral position Full endoscopic posterior Foraminotomy under Local Anesthesia**
Byeong Cheol Rim (Korea)

C3-6 14:30-14:40
**Full-endoscopic lumbar foraminoplasty for isthmic spondylolisthesis of L5-S1**
Kazuhiko Fujita (Japan)

## 14:50- Closing Ceremony

## ROOM B

### 9:00-9:50 Lecture D1

moderator **:** Christian Morgenstern , Koshi Nambu

D1-1 9:00-9:15
**Ten-year clinical outcomes of endoscope-assisted minimally invasive surgical decompression for lumbar spinal stenosis with degenerative spondylolisthesis and comparison with conservative treatment**
Koshi Nambu (Japan)

D1-2 9:15-9:25
**Basic surgical strategies for preservation of the facet joint in endoscopic decompression for degenerative lumbar canal stenosis**
Kenzo Shimizu (Japan)

D1-3 9:25-9:40
**Development and application of novel endoscopic techniques for challenging revision surgery and complex deformity cases**
Christian Morgenstern (Spain)

D1-4 9:40-9:50
**Minimally invasive decompression alone for lumbar spinal stenosis with degenerative spondylolisthesis: A prospective study to clarify the advantages and disadvantages**
Akira Miyauchi (Japan)

**9:50-10:10 Coffee Break**

### 10:10-11:00 Lecture D2

moderator **:** Kanji Sasaki , Ju Eun Kim

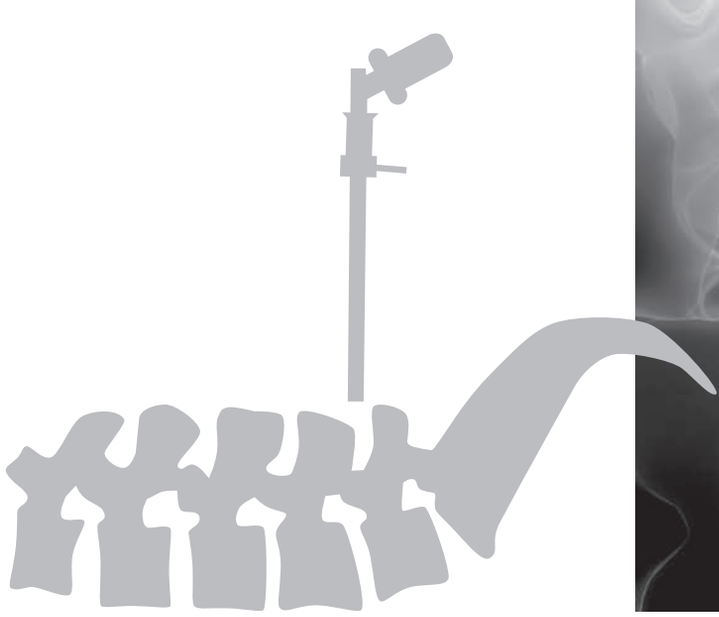
D2-1 10:10-10:25
**Proposed new UBE intervertebral fusion**
Kanji Sasaki (Japan)

D2-2 10:25-10:40
**Technical Feasibility and Early Clinical Outcome of Biportal Endoscopic Transforaminal Lumbar Interbody Fusion Using Larger Cage**
Ju Eun Kim (Korea)

D2-3 10:40-10:50
**Hydro-dissection in unilateral biportal endoscopic surgery**
Kazuhiro Yoshimura (Japan)

D2-4 10:50-11:00
**Unilateral biportal endoscopic keyhole facetectomy for the lumbar foraminal stenosis which is shown too good to fuse**
Dookyung Son (Korea)

# Abstracts



# Special Lecture

# Be professional of the Kinematic Control Rehabilitation after MIS Spine Surgery.

**Koichi Sairyo**

Professor and Chairman,Department of Orthopedics, Tokushima University, Tokushima, Japan

Introduction:
Recently, MIS spine surgery would be gold standard to treat patients with degenerative spine disorders. Especially, in this two decades, full-endoscopic surgery has shown dramatical evolution. What is next for the MIS spine surgeons? The answer is kinematic control rehabilitation (KC-rehab).
Joint by Joint Theory (JBJT):
The JBJT would be the basic strategy of the KC-rehab. According to the JBJT, mobilization and stabilization joint connects each other continuously. For example, hip joint and thoracic spine is the mobility joint, and between them lumbar spine is the stability joint. Thus, the focus of the KC-rehab is stabilization of the lumbar spine and mobilization of hip/ thoracic spine.
Dysfunction and No Pain joint (DN joint):
When someone has low back pain and abdominal muscle weakness, it would be dysfunction and Painful joint. Since this is painful, the disorder is clearly recognized. On the other hand, if there is no pain, the dysfunction cannot be recognized. The dysfunction would be compensated by the lumbar spine, causing lumbar spine disorders. Thus, to completely treat lumbar disorders, it is essential to find out the DN joint and normalized it. It can decrease the lumbar overloading.
Pilates Contrology:
Pilates has almost 100 years history as the contrology rehabilitation. Pilates exercise is the best KC-rehab to stabilize the lumbar spine area as well as mobilize the thoracic spine and hip joint with using elongation-isolation maneuver. DN joint also easily managed by the Pilates.
Conclusion:
The MIS spine surgeon should be familiar with the KC-rehab to improve the clinical outcome following the surgery.

## Education and Professional Work

Professor and Chairman, Department of Orthopedics, Tokushima University, Tokushima, Japan.
1988: MD degree, Tokushima University School of Medicine
1994: PhD degree, Tokushima University Graduate School of Medical Sciences
1995-1997: Post Dr. follow, University of Iowa, Iowa, USA
1998: Assistant Professor, Tokushima University Hospital
1999: Associate Professor, Tokushima University School of Medicine
2003-2005: Post Dr. follow, University of Toledo, Ohio, USA
2010: Associate Professor, Teikyo University Mizonokuchi Hospital
2013- present: Professor and Chairman, Tokushima University
International Society
International Society for Study of the Lumbar Spine: **ISSLS** (active member)
International Society for the advancement of the spine surgery: **ISASS** (member)
International Society of Endoscopic Spine Surgery: **ISESS** (Board member candidate)
International Intradiscal Therapy Society: **IITS** (Congress President 2021)
International Society for Minimal Intervention in Spinal Surgery: **ISMISS** (Asia representative)
Asian Congress Minimally Invasive Spine Surgery :**ACMISST** (Board member, Japan representative)
Pacific Asian Society for Minimally Invasive Spine Surgery: **PASMISS** (Board member)
World Congress Minimally Invasive Spine Surgery :**WCMISST** (Congress President 2021)
Japanese Society
Japanese Orthopaedic Association **JOA** (Board member)
Japanese Society for Spine Surgery and Related Research: **JSSR** (Board member)
Japanese Orthopaedic Society for Sports Medicine: **JOSSM**
(Society vice chairman since 2019, CONGRESS PRESIDENT 2018)
Japanese Society of the Minimally Invasive Spine Surgery: **JASMISS**
(Society chairman since 2020, CONGRESS PRESIDENT 2019)
Japanese Society of the full-endoscopic trans-Kambin lumbar Interbody Fusion: **JEKLIF**
(Society Chairman since 2020, CONGRESS PRESIDENT 2020&2022)
Japan Society for the Study of Low Back Pain: Board member
(CONGRESS PRESIDENT 2023)

# Refining Skills of Full Endoscopic Spine Surgery

From point to surface minimally invasive surgery

**Akira Dezawa**

Akira Dezawa PED Clinic

Full Endoscopic Spine Surgery (FESS) is a minimally invasive procedure for decompressing mechanical compression of a nerve root by an intervertebral disc. FESS has further evolved as a procedure via a posterior approach for intervertebral foramen decompression of nerve -roots and for pinpoint resection medial or lateral to the intervertebral facet joint. The view provided by the ultraminiature endoscope camera is similar to a bug's-eye view, showing the inside of the human body during FESS. As an operator, you should take a bird's-eye view, that is, take a broad perspective and get a general visualization of the pathology based on images. FESS is now performed for laminectomy with decompression of the dura and nerve roots in spinal canal stenosis using DPELscope. The macro- and microanatomy of nerve roots must thus be thoroughly understood for decompression surgery. The use of FESS has expanded about 4-fold compared to MED. Moreover, because of the clean and bloodless surgical field, structures that have previously been difficult to identify can now be observed, including the sinuvertebral nerves and radicular vessels along the nerve roots. During exit out of the intervertebral foramen from the lateral recess, nerve roots change in structure and terminology in 3 stages, as ventral and dorsal roots, spinal nerves, and peripheral nerves. In addition, the microcirculation with the transition from nerve root to the dural canal displays unique characteristics unlike those in other organs. First, veins in the tissues of the spinal canal have no valves. Furthermore, the cauda equina in the lumbar area is a blood flow "watershed" region where blood flows from cephalad to caudal and also from caudal to cephalad. The hemodynamics can thus be greatly affected by standing or other postures. This can lead to the development of intermittent claudication. We want to solve clinical condition to bring about such nonspecific lumbago with new MRI

## Education and Professional Work

**Education:**
1974-1980 University of Chiba Awarded the degree of medical doctor
1982-1986 Department of orthopaedic surgery, University of Chiba Awarded the degree of PhD in spinal cord injury for a thesis entitled "Quantitative analysis of spinal cord injury using the isopotential spinal cord surface mapping ".work supervised by professor Shunichi Inoue.
**Work Experience**
2014-present Visiting professor Teikyo University Chairperson board of directors of medical corporation Meiryukai
2006-2014 Deputy director Teikyo University School of Medicine,Mizonokuchi hospital
2004-2014 professor Department of Orthopaedics ,Teikyo University School of Medicine,Mizonokuchi hospital
1996-2004 Associated professor, Department of Orthopaedics ,Teikyo University School of Medicine,Mizonokuchi hospital
1991-1996 Assistant professor Department of Orthopaedics,Teikyo University
1988-1991 Manager of Chiba Ryoiku center
1987-1988 Head of Orthopaedics National Yokohama Higashi Hospital
**Academic position**
PASMISS(The Pacific Asian Society of the Minimally Invasive Spine Surgeries) 2nd president(2001)
Japan Society for the Study of Spinal Endoscopy 1st President (1999)
Japanese Minimally Invasive Orthopaedic Society 9th President(2006)
Japan PED Society 1st-4th President
7thWCMISST 7th President(2020)
ISMISS Japanese represent
SICOT member
Japan Society Endoscopic Surgery the board of directors
Japanese Spine Research Society the board of directors
Japan Orthopaedic Society surgical skill qualification committee director
Japan Society for Endoscopic Surgery council board member a committeeman of technical terminology
Japan Arthroscopy Association the board of directors
Japanese Orthopaedic Association council board member
Japanese Spinal Association council board member
**Award( International)**
JSES Karl Stort prize 2003
IITS Best poster 2007
ISMISS Turkey Best paper 2010
**Editorial board**
European Spine Journal
Annals of Orthopedics & Rheumatology
ISRN Minimally Invasive Surgery
Journal of Orthopedic Science
Asian Journal of Endoscopic Surgery
Asian Spine Journal
Journal-Arhives of Neuroscience

# Future of spinal endoscopy

**Kai-Uwe Lewandrowski**

Center For Advanced Spine Care of Southern Arizona Surgical Institute of Tucson Deputy Editor of the International Journal of Spine Care

The future of spinal endoscopy stands at the precipice of revolutionizing the management of spinal disorders, offering a minimally invasive yet highly effective alternative to traditional surgical techniques. This keynote presentation reviews the long-term clinical outcomes of contemporary spinal endoscopic approaches, including uniportal transforaminal, biportal, and interlaminar techniques. Through an agnostic effect size analysis, these outcomes will be compared to those of traditional microsurgical decompression and minimally invasive fusion techniques, highlighting the efficacy of endoscopic methods in treating painful spinal pathologies.

Moreover, the presentation will explore the paradigm shift towards new treatment protocols that prioritize identifying and treating validated pain generators, moving away from reliance on image-based medical necessity criteria. This approach underscores the importance of targeting the underlying causes of pain for more effective and personalized patient care that increasingly employs precision medicine strategies.

As the global population continues to grow and age, the burden of spinal diseases is expected to increase, necessitating simplified and more accessible spine care solutions. In this context, advancements in artificial intelligence (AI) and regenerative medicine are poised to enhance spinal care significantly. AI's potential to streamline diagnostic processes, predict outcomes, and personalize treatment plans, combined with the regenerative capabilities of novel therapeutics, holds the promise of transforming spine care delivery.

A comprehensive review of the many contemporary trends in minimally invasive spine care aims to provide attendees with a clear understanding of spinal endoscopy's current state and future potential, emphasizing its role in advancing spinal health and improving patient outcomes in the face of evolving demographic changes and technological advances.

## Education and Professional Work

BOARD STATUS:
The American Board of Orthopaedic Surgery, 2009, recertified 2018
The American Board of Spinal Surgery, 2009
LICENSURE: State of Ohio
State of Arizona
State of New Mexico
Licensed to Practice Medicine in Germany (Approbation als Arzt)
MEMBERSHIP & LEADERSHIP POSITIONS:
American Academy of Orthopaedic Surgeons (AAOS)
Orthopaedic Research Society (ORS)
North American Spine Society (NASS)
International Society for the Advancement of Spine Surgery (ISASS)
President Sociedad Interamericana de Cirugia de Columna Minimamente Invasiva (SICCMI)
International Intradiscal Therapy Society (IITS)
World Congress Minimally Invasive Spine Surgery and Techniques (WCMISST)
Foreign Corresponding Member Brazilian Military Medical Academy
Foreign Corresponding Member Colombian National Academy of Medicine
Deputy Editor International Journal of Spine Surgery
Academic Editor BioMed Research International
Editor Spine Section Archives in Neurosurgery
Editorial Board Member SpineLine
Associate Editor International Journal of Spine Surgery
Editor-in-Chief Current Surgical Endoscopy
Editor-in-Chief Journal of Spine
Editor-in-Chief Current Aging Science
Full Professor, Department of Orthopaedic Surgery, Universidad Colsanitas, Bogota, Colombia
Visiting Professor, Department of Orthopaedic Surgery, UniRio, Universidade do Estado Rio de Janeiro, Brazil

# Lecture A1

# Indications for FESS; Is FESS only for typical spinal degenerative diseases?

**Yukoh Ohara**, Takeshi Hara, Hidetoshi Nojiri, Hiromitsu Takano, Motoshi Gomi, Takashi Majima, Eiji Abe, Takahiro Ushimaki, Arihisa Shimura, Juri Teramoto, Yuta Sugawara, Hirokazu Iwamuro

Spine and spinal cord center, Juntendo university

FESS is now widespread as the most minimally invasive surgical method for spinal degenerative diseases. Usually, FESS is indicated for lumbar disc herniation, lumbar foraminal stenosis, lumbar central stenosis, and cervical radiculopathy. Especially in the lumbar degenerative diseases, FESS is used not only decompression but also fixation surgery. Many researchers reported the merits of FESS which were mainly about the minimally invasiveness and clear view. We totally agree with their opinion. But when we think about the FESS system as tool, FESS system shows other merits. Saline irrigation presents not only clear view but also cooling effect. Even in the deep-seated closed lesion, this cooling effect solves heart injury by drilling and bipolar coagulation. In this paper we'll present other indications of FESS system, such as FESS for odontoidectomy, bony decompression after sacral fracture, Tarlov cyst puncture, and assistance of lumbo-peritoneal shunt. FESS system allows safety pin-point decompression. In these surgery, FESS achieved aimed pin-point decompression around the nerve tissue without heat injury.

## Education and Professional Work

Curriculum vitae
March 1992; Graduated from Hirosaki University
April 1992; Resident, Department of Neurosurgery, Juntendo university
September 1996 – August 1999; Visiting fellow, Naval medical research institute. Guest researcher, National Institute of Health NINDS stroke branch.
November 2003 – January 2005; Spine fellow at Department of Neurosurgery, Aichi medical university
January 2005; Chief of spinal surgery at Department of Neurosurgery, Juntendo university
August 2012; Director, Surgical department of Spine, Spinal cord and Peripheral nerves, Shin-yurigaoka general hospital
September 2018; Associate Professor at Department of Neurosurgery, Juntendo University
February 2019; Vice director of the spine and spinal cord center in Juntendo university hospital
March 2022; Director of the spine and spinal cord center in Juntendo university hospital

# Translaminar approach for microendoscopic resection of migrated lumbar disc herniation

**Benedikt W. Burkhardt**

Partner Wirbelsäulenzentrum / Spine Center – WSC

**Background**: Almost every surgical approach carries the risk of causing some degree of spinal instability, especially in cases of excessive resection of the lamina and facet joint. Up to 10% of lumbar disc herniation (LDH) migrates into the so-called "hidden zone." The intralaminar approach (ILA) has the intention to minimize osseous destruction by preserving the edges of the lamina. In this study the endoscopic ILA was performed for the treatment of cranially and caudally migrated LDH.
**Methods**: A consecutive series of 31 patients who underwent endoscopic ILA for 26 caudally and 5 cranially migrated LDH were identified from a prospectively database. Endoscopic video recording was assessed to identify the osseous diameter of ILA. A final follow-up evaluation was performed including a personal examination and a standardized questionnaire. The evaluation included the Oswestry Disability Index (ODI) and functional outcome according to modified MacNab criteria. In addition, particular reference was given to back pain, leg pain, and repeat procedures.
**Results**: Twenty-nine patients attended (93.5%) for final follow-up examination at a mean of 37.0 months (range, 5-57 months). No leg pain was noted in 95.0%, no back pain in 85.0%, full motor strength in 95.0%, and no sensory deficit in 95.0% of patients. Clinical success was reported by 95.0% of patients and the mean ODI was 9% in patients with TLA. In 10 patients a minor enlargement of ILA to conventional laminotomy has been noted on the endoscopic video recording (32.3%). By comparison of clinical outcome and repeat procedure rate in patients with ILA with patients with enlargement to laminotomy, no significant differences were identified except for higher ODI (i.e., 16%) in patients with enlargement of ILA. The rate of recurrent LDH was 5%. Overall reoperation rate with the first year was 10%.
**Conclusions**: Endoscopic ILA is a safe technique for the treatment of cranially and caudally migrated lumbar disc herniations. Careful procedural planning is recommended to protect soft tissue and osseous structures and to achieve excellent clinical outcome.

## Education and Professional Work

**Education**

| | |
|---|---|
| 04/2004 – 05/2011 | Medical school - Johannes Gutenberg Universität Mainz, Germany |

**Professional Experience**

| | |
|---|---|
| Since 01/2021 | Consultant Wirbelsäulenzentrum / Spine Center – WSC Hirslanden Klinik Zürich, Switzerland PD Dr. med. Benedikt Burkhardt, PD Dr. med. Hansjörg Leu |
| 07/2018 – 12/2020 | Consultant Department of Neurosurgery Universitätsklinikum des Saarlandes, Germany Chairman: Univ.-Prof. Dr. med. Joachim Oertel |
| 10/2018 – 12/2018 | Zentrum für Wirbelsäulenchirurgie, Orthopädie und Traumatologie SRH-Klinikum Karlsbad-Langensteinbach, Germany Prof. Dr. med. Tobias Pitzen, Dr. med. Gregor Ostrowski, PD Dr. med. Michael Ruf |
| 06/2016 – 09/2016 | Department of Neurological Surgery – Section of Spine Neurosurgey Rush University Medical Center, Chicago, USA Professor Richard G. Fessler, MD, PhD |
| 03/2012 – 06/2018 | Residency Neurosurgery Department of Neurosurgery Universitätsklinikum des Saarlandes, Germany Chairman: Univ.-Prof. Dr. med. Joachim Oertel |

**Honors**

| | |
|---|---|
| 04/2018 | Best oral presentation – World Spine 8, Porto, Portugal |
| 06/2018 | Depuy Synthes Spine Grant – DGNC, Münster, Germany |

**Membership**

| | |
|---|---|
| 09/2018 | International Society of Minimal Intervention in Spinal Surgery (ISMISS) National representative Switzerland |
| 11/2019 | International Federation of Neuroendoscopy (IFNE) |
| 12/2017 | Deutsche Wirbelsäulengesellschaft (DWG) |
| 05/2018 | Deutsche Gesellschaft für Neurochirurgie (DGNC) |
| 07/2018 | Saarländische Chirurgenvereinigung |
| 09/2021 | Schweizer Gesellschaft für Neurochirurgie (SGNC) |
| 09/2021 | Schweizer Gesellschaft für Spinale Chirurgie (SGS) |

# Usefulness of percutaneous endoscopic laminotomy: my own experience of seven surgeries for thoracolumbar extensive spinal canal stenosis

**Fujio Ito**

President of Aichi Spine Hospital

Introduction: I underwent transthoracic L1/2 interbody fusion and experienced extensive spinal canal stenosis of T11/12/L1, L1/2, L3/4 and L5/S1 as an adjacent segment disease 30 years later. The spinal cord and cauda equina coexist in the thoracolumbar area, making level diagnosis complicated. We report the application of new percutaneous endoscopic laminoplasty (PEL) adapted to the different figures of the facet joints.
Case report: In 1992, at age 46 years, resection of nucleus pulposus was performed for L1/2 intervertebral disc herniation using a percutaneous nucleotomy. However, severe pain due to interbody instability occurred, and transthoracic interbody fusion for L1/2 was performed 1 month later. Thirty years later, at age 76 years, ossification of ligamentum flavum at T11/12/L1 (epiconus syndrome), spinal canal stenosis at L1/2 of the fusion segment with kyphosis and right rotation deformity (conus medullary syndrome), spinal canal stenosis at L3/4 (cauda equina syndrome) and right lateral recess stenosis at L5/S1 appeared. I experienced weakness in the lower leg muscles, frequent calf cramps, and moderate left lumbar buttock pain released in spine flexion. On December 2022, PEL at L3/4 was conducted. The left-side pain and calf cramps subsided. However, 2 weeks later, severe pain in the right buttocks increased with right flexion and rotation and incontinence appeared. Since the facet joint of T12/L1 had a sagittal plane configuration, and the lamina and inferior articular processes were narrow, if a unilateral approach for bilateral compression (UBD) was selected, the ipsilateral inferior articular process would almost disappear. On January 2023, PEL with a bilateral approach for contralateral decompression (BCD) was conducted. At the same time, on T11/12, PEL with UBD was performed. Although leg muscle weakness and incontinence improved, momentary mild right lumbar buttock radiating pain and mild urinary urgency persisted. On April 2023, PEL of UBD for L1/2 was performed. Finally, because right buttock pain during extension was due to lateral recess stenosis, right interlaminar right side decompression was done on December 2023. The results were satisfactory.
Conclusion: Thoracolumbar junction presents with complicated symptoms, such as upper central (spinal cord) and lower peripheral (cauda equina) nerves appearing mixed. Because the T12/L1 facet joint has a sagittal plane configuration, it is prone to instability after laminectomy, and interbody fusion is recommended. However, we devised a minimally invasive method such as BCD that could sufficiently decompress and avoid interbody fusion.

## Education and Professional Work

Chaiman of 1st ISMISS combined with 10th MISS Summit Forum in 2017
Chaiman of 2nd ISESS (International Society of Endoscopic Spine Surgery)
and 2nd ISMISS (International Society of Minimal Intervention in Spine Surgery)
combined with 11th MISS Summit Forum in 2018
Chaiman of 4th ISMISS combined with 14th MISS Summit Forum in 2021

Secretary-general of the Japan Spine Dock Society
President of MISS Summit Forum at Aichi Spine Hospital (Annual meeting)

BIRTH DATE: June 25th, 1946
Medical School of Nagoya University (1970)
Chubu Labor Accident Hospital, Orthopaedic surgery (1972-1978)
Medical School of Nagoya University (1978-1983): Chief of Physical Medicine and Rehabilitation
Inuyama Central Hospital: Director of Orthopaedic surgery (1983-1987), Vice President of the Hospital (1987-1995)
Director of Aichi Spine institute (1996-present)
Visiting professor of spine surgery, Fujita Health University (2008-2016)
Guest Professor of the First Affiliated Hospital of Zhengzhou University (2017-present)

MEMBERSHIPS
The Japanese Orthopaedic Association
Japanese Society for the Study of Endoscopic & Minimally Invasive Spine Surgery
Japanese Society of Lumbar Spine Disorders
Honorary board member of PASMISS
Board member of ACMISST
CEO of MISS Summit Forum

# Contralateral Interlaminar Approach with Unilateral Biportal Endoscopy for Lumbar Upward Migrated Foraminal Disc Herniations

**Cigdem Mumcu, Sait Naderi**

Sultanbeyli State Hospital in Istanbul, Turkey

**Purpose**: Lumbar foraminal upward migrated disc herniations, also known as Macnab's hidden zone, are extremely rare and technically challenging to operate. In this study, a contralateral interlaminar approach with unilateral biportal endoscopy (CIA-UBE), which has the advantages of structural protection, and efficacy and safety in foraminal disc herniation is presented.
**Material and Method**: Between 2019 and December 2022, four patients with Macnab's hidden one disc herniation were operated with a CIA-UBE approach. The patients were three males and one female, with a mean age of 46.5 years. All patients had severe radicular pain. MR images confirmed a single-level intraforaminal hidden-zone lumbar disc herniation in all patients.
**Result**: The mean preoperative ODI score reduced from 43.75 to 11.75 after surgery. Additionally, the mean preoperative VAS values declined from 8.25 to 1.5 after surgery. No surgical complications or recurrent herniations were observed.
**Conclusion**: Although CIA-UBE approach is not a common surgical technique, it can offer a viable alternative for patients with lumbar disc herniation in MacNab's hidden zone.
**Keywords**: Biportal endoscopic surgery, contralateral interlaminar approach, foraminal disc herniation, lumbar spine, MacNab's hidden zone

## Education and Professional Work

Cigdem Mumcu hails from Sakarya, Turkey, where she spent her formative years. In 1999, she earned her degree from Cerrahpasa Medical Faculty at Istanbul University. Her journey continued as she pursued her residency training in Neurosurgery at Van 100. Year University, culminating in 2007.
During the years 2010 to 2012, Dr. Mumcu embarked on a transformative fellowship journey in Advanced Spine Surgery and Interventional Pain Management. This voyage took her through Umraniye Training and Research Hospital as well as Private American Hospital, both situated in Istanbul.
Dr. Mumcu has garnered specialized expertise in Unilateral Biportal Endoscopy (UBE) under the guidance of Dr. Sang Kyu Son at Busan Park Weon Wook Hospital in Korea. Alongside her proficiency in numerous minimal invasive spinal procedures, she has honed her skills in Sacral Epiduroscopic Laser Decompression (SELD) through instruction from Dr. Kang Taek Lim at Seoul Good Doctor TeunTeun Hospital. Dr. Gun Choi at Pohang Wooridul Hospital in Korea has imparted her with knowledge in Endoscopic Spine Surgery, while in the United States of America, Dr. Atif Malik of the American Spine Center has deepened her insights into Regenerative Medicine, Interventional Pain Management, and Endoscopic Spine Procedures.
Dr. Mumcu's affiliations encompass a wide spectrum of esteemed organizations, including the Turkish Society of Unilateral Biportal Endoscopy, Korean Society of UBE, International Society of UBE (ISUBE), Endoscopic Spine Foundation India (ESFI), Turkish Neurosurgery Society, Turkish Spinal and Peripheral Nerve Surgery Society, Turkish Spine Society (TOD), AOSpine, and the International High-Tech Spine Society (IHTSS).
Balancing her professional pursuits with her personal life, Dr. Mumcu is married and the mother of two daughters. When she isn't engaged in her medical endeavors, she finds joy in spending quality time with her family, exploring new destinations through travel, and practicing yoga.
Presently, Dr. Mumcu's expertise is put to work at Sultanbeyli State Hospital in Istanbul, Turkey. Her dedication to her field and her multifaceted life outside of it exemplify a holistic approach to both her profession and her personal aspirations.

# Go back to basics: full endoscopic discectomy over a 10-year period

**Chien-Min Chen**

Division of Neurosurgery, Department of Surgery,Changhua Christian Hospital, Taiwan

Full endoscopic lumbar discectomy (FELD) for lumbar disc herniation (LDH) has become popular in recent years and indication were expand to many clinical situations. Anyway, we need go back to basics for your skill and young beginner. Previous studies have proven the efficacy, but few have discussed the possible risk factors of poor outcome. In this study, we reviewed patients who underwent FELD at Changhua Christian Hospital in the past 10 years and sought to identify factors associated with poor surgical outcomes and re-operations for basics concept.

**Methods**

We retrospectively reviewed records from mid-2009 to mid-2018. Patients had undergone FELD and follow-up for 1 year were included. Factors included in the outcome evaluations were age, sex, surgical time, body mass index, surgical methods, disc herniation type, extension of herniation, degree of canal compromised, disc degenerative grade, smoking and alcohol use, surgical lumbar level, symptom duration, Oswestry low back disability index, and visual analog scale score. We had evolved from inside-out methods to outside-in methods after 2016, thus, we included this factor in the analysis. The primary outcomes of interest were poor/fair MacNab score and re-operation.

**Results**

From mid-2009 to mid-2018, 521 patients met our criteria and were analyzed. The median follow-up was 1685 days (range, 523–3923 days). Thirty-one (6.0%) patients had poor sur-gical outcomes (fair/poor MacNab score) and 45 (8.6%) patients required re-operation. Pro-lapsed herniated disc ($P < 0.001$), higher disc degenerative grade ($P = 0.047$), higher lumbar level ($P = 0.026$), longer preoperative symptoms ($P < 0.001$), and surgery before 2017 (outside-in technique, $P = 0.020$) were significant factors associated with poor out-comes in univariate analyses. In multivariate analyses, prolapsed herniated disc ($P < 0.001$), higher disc degenerative grade ($P = 0.030$), and higher lumbar level ($P = 0.046$)
were statistically significant. The most common adverse symptom was numbness. Factors possibly associated with higher re-operation rate were older age ($P = 0.045$), alcohol use ($P = 0.073$) and higher lumbar level ($P = 0.069$). Only alcohol use showed statistically signifi-cant re-operation rates in multivariate analyses ($P = 0.035$).

**Conclusions**

For treating LDH by FELD, we concluded that prolapsed disc, higher disc degenerative grade, higher lumbar level, and longer preoperative symptom duration were possibly associ-ated with unsatisfactory surgical outcomes (poor/fair MacNab score). The outside-in tech-nique might be superior to the inside-out technique. Older age and alcohol use might be associated with a higher re-operation rate.

## Education and Professional Work

**Education:**
M.D. Chung-Shan Medical University (1982/9 ~ 1993/6)
PhD candidate in National Taiwan University
Neurosurgery department of Changhua Christian Hospital (2005/4~2006/12)
Clinical Fellow in Neurosurgery, Chang Gung Memorial Hospital (2007/ 1~ 2007/1)
Clinical Fellow in Neurosurgery, National Taiwan University (2007/3~ 2007/4)
Clinical Fellow in Neurosurgery, Taipei Veterans General Hospital (2007/6~ 2007/7)

**Board Certification:**
Board of Surgery, Taiwan Surgical Association.
Board of Surgery, Taiwan Surgical Association.
Board of Neurosurgery, Taiwan Neurosurgical Society.
Board of Taiwan Surgical intensive care
Board of Taiwan neurological intensive care

**Professional Affiliations:** (Medical Organizations or Societies).
Member, Taiwan Surgical Association.
Member, Taiwan Neurosurgical Society.
Member, Taiwan Society of Critical Care Medicine.
Member, Taiwan Society of pediatric neurosurgery
Member, Taiwan Neurospinal Society
Board member, Taiwan Society of skull base
Supervisor, Taiwan Society of Minimally Invasive Spine Surgery.
Executive presidium, International Society of Endoscopic Spine Surgery
Board member, World Congress on Minimally Invasive Spine Surgery and Techniques Association (WCMISST association)
The second President of Taiwan Society of Endoscopic Spine Surgery (TSESS)
Neurosurgery department of Changhua Christian Hospital Director

**Professional specialty:**
Full endoscopic discectomy
Minimally invasive spine surgery
Total navigation in spine surgery
Endoscopic removal of ICH
Ventricular endoscopic surgery
Neuro Oncology
Vascular Neurosurgery
Endoscopic transnasal pituitary surgery
Skull base surgery
Neurotraumatology

# Luncheon Seminar 1

## Video Surgery Discussion

**Son Sang Kyu**

Good Munhwa hospital

## Education and Professional Work

**Education**
1989-1995 Kyungbuk National Medical School
Internship and residency
1995-1996 Kyungbuk National University Hospital (Internship)
1996-1998 Military service
1999-2003 Kyungbuk National University Hospital (Residency)
2004-2008 Kyungbuk National University Hospital(clinical assistant professor)
2009-2010 Gumi hospital chief of spine center
2011-2017 Gumi Gandong hospital spine center
2018 -2021 Park Won wook orthopedic , chief of spine center
2022 – Present Good Munhwa hospital, General director, Spine Center

**License**
Neuro Surgeon, Korean National Board of Neurosurgery

**Membership**
The Korean Neurosurgical Society
The Korean Spinal Neurosurgery Society
International Society for Minimal Intervention in Spinal Surgery (ISMISS)
Korean Society for the Advancement of Spine Surgery (KOSASS)
Korean Musculoskeletal Laser & Radiofrequency Society
International High-Tech Spine Society (HTSS)
Korean Minimally Invasive Spine Surgery Research Society (KOMISS)
Korean Society of Endoscopic Spine Surgery (KOSESS)

**Main Career & Activities**
The First President of UBE Research Society (2017-2018)
The First President of Spine Endoscopy Research Society (2019-2020)
(Present) Director for International Exchange, KOMISS
(Present) Director for International Public Relations, KOSESS
(Present) Honorary chairman of Turkish, Indian and Chinese UBE Society
(Present) UBE Global Master, UBE development/training since 2003
(Present) General Director, International UBE Academy, Good Munhwa Hospital
(Present) Global Reference doctor for EndoSpineMax, UBE Solution Prodvider
(Present) Chairperson, International Society of Unilateral Biportal Endoscopy (ISUBE)

# Lecture A2

# Improving Surgical Procedures with AFESS: A Customized Approach to Right-Side UBE

**Takeshi Kaneko**

Inanami spine and joint hospital

Unilateral Biportal Endoscopy (UBE) represents one of the minimally invasive techniques in spine surgery, demanding specific technical considerations, especially for right-handed surgeons when decompressing the right lateral recess or excising herniations. Typically, in UBE, the right hand manages the working portal while the left hand controls the camera portal. This right side approach may necessitate excessive bone removal during decompression, particularly in the upper lumbar spine. This study introduces an improved technique using the Full Endoscopic Spine Surgery (FESS) scope (Assited FESS: AFESS) to address this issue. AFESS allows for the insertion of drills or excision devices through the camera portal, enhancing field-of-view maintenance and access to the target area, thereby minimizing the extent of decompression required. This approach leverages the advantages of having two portals while improving precision and efficiency in spinal decompression procedures. This abstract discusses the technical comparison between UBE and AFESS, presenting a method and its benefits for resolving unique challenges faced by right-handed surgeons.

## Education and Professional Work

Educational Background:
Graduated from Aich medical university, school of Medicine, 2005
Graduated from Tokyo medical and dental University Graduate School of Medicine, 2014
Employment History:
Shonan-Kamakura general hospital 2007-2013
Iwai orthopedic hosipital, 2015-2017
Inanami spine and joint hospital 2017-

# Exploring Para UBE

**Malcolm Pestonji**

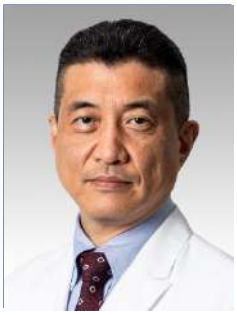
Golden Park Hospital

## Education and Professional Work

Educational Qualification
MBBS year 1983 to 1987 MRMC Gulbarga and TNMC Mumbai,
D-Ortho 1989 College of Physicians and Surgeons Mumbai,
MS Ortho 1997 to 1991 TNMC Medical College Mumbai, Lecturer of orthopaedics TNMC Mumbai 1991 to 1992, Private Practise since 1993 January.

Current Attachments
Orthopedic Endoscopic Spine Surgeon Golden Park Hospital Vasai.
Honorary Professor of Endoscopic Spine Surgery at Bareilly International University & Rohilkand Medical College Hospital,
Honorary Endoscopic Spine Surgeon Holy Spirit Hospital Mahakali Andheri (East) Mumbai.
Ex-Honorary Professor of Endoscopic Spine Surgery MGM University of Health Science, Navi Mumbai, Kamothe.

MY VISION
Endoscopic spine surgery has evolved into a safe result oriented surgery the world over. Today due to changing patient demographics there is a higher incidence of canal stenosis in the spondylotic spine along with many other problems. Endoscopic spine surgery is the answer to all those problems.



# Introduction of UBE/BESS in Osaka Metropolitan University

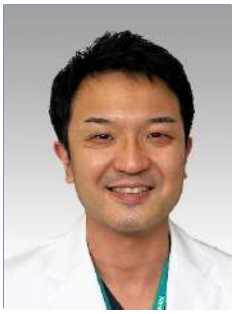
**Hidetomi Terai**

Associate professor, Dept. of Orthopaedic Surgery, Osaka Metropolitan University Graduate School of Medicine

We, Osaka Metropolitan University (formerly Osaka City University) introduced the concept of minimally invasive spine surgery and began using a microscope for lumbar decompression in 1990s, which was established as the bilateral decompression via a unilateral approach (MBDU). This technique was applied to the new minimally invasive technique using the Microendoscopic discectomy (MED) system developed by Foley in 1997. This surgical technique is known as Microendoscopic laminotomy (MEL) and is still the mainstream of minimally invasive decompression technique for lumbar stenosis in Japan.
On the other hand, after Soliman of Egypt published the paper about “Irrigation Endoscopic Discectomy (IED)” in European Spine Journal in 2013, the decompression procedure using a knee arthroscope became popular in South Korea, known as Biportal Endoscopic Spine Surgery (BESS) or Unilateral Biportal Endoscopy (UBE). Due to its advantages, it has become widespread mainly in Asia.
In March 2015, at the 8th MISS Summit Forum, Choon Keun Park of Leon Wiltse Memorial Hospital gave a lecture titled “Unilateral Biportal Endoscopic Surgery for Lumbar Degenerative Diseases”, which may be the first lecture on BESS/UBE in Japan. Inspired by his lecture, the first case of BESS/UBE was performed in our university in 2015 April. After that, it was not performed for a long time, but we have re-started to introduce it recently. The number of surgeries performed is steadily increasing, and we believe that BESS/ UBE will become the mainstream of decompression procedure in the future.
In this presentation, I will talk about how we introduce BESS/UBE technique and the cautious points for beginners.

## Education and Professional Work

EDUCATION/ POST GRADUATE TRAINING
College/ University:
1989-1995 MD, Tohoku University School of medicine
1998-2002 PhD in Orthopedic Surgery, Osaka City University Graduate School of medicine
Residency:
1995-1997 Resident of Anesthesiology in Kinki University Medical School
Fellowship:
1997-1999 Fellow in Orthopedic Surgery, Osaka City University Graduate School of medicine, Japan
PRESENT POSITION OR ACADEMIC RANK
2015- Present Associate Professor of Orthopaedic Surgery,
Osaka Metropolitan University Graduate School of medicine
PREVIOUS PROFESSIONAL POSITIONS AND APPOINTMENTS
Clinical:
2002-2005 Instructor of Orthopaedic Surgery, Osaka City University Graduate School of medicine
2005- 2015 Lecturer of Orthopaedic Surgery, Osaka City University Graduate School of medicine
2015- present Associate Professor of Orthopaedic Surgery, Osaka Metropolitan University Graduate School of medicine (The name of university has changed recently.)
Academic Research:
1999-2001 Research fellow in Surgery (Tissue engineering Lab.),
Massachusetts General Hospital, Harvard medical School, USA
2012 (Jan-Mar) Teaching and clinical staff in Wazir Akbar Khan Hospital, Kabul Medical University (International Medical Corps)
HONORS AND AWARDS
1999 Research award from Nakatomi Health and Wellness Organization
2007 Research award from Chiyoda Health and Wellness Organization
2009 Research award from Japan Foundation for aging and health
2019 Best presentation award in 26th meeting of JPSTSS (Japan Society for the Surgical Technique for Spine and Spinal Nerves)
MEMBERSHIP IN PROFESSIONAL SOCIETIES
JOA, JSSR, JSIS, PASMISS, AO Spine, ISSLS, NASS, Japanese Mucopolysaccaraidosis research, MISS Summit Forum



# Comparison between Unilateral Biportal Endoscopic and percutaneous Full-Endoscopic posterior lumbar foraminotomy - Which technique is easier for beginner surgeons?

**Yuichi Kondo**

Aichi Spine Hospital

Introduction: Both of Unilateral Biportal Endoscopic and percutaneous Full-Endoscopic posterior lumbar foraminotomy are novel minimal invasive surgery for lumbar foraminal stenosis, and good outcomes following each technique were reported. But there is no report about comparison between both procedures as our best knowledge.
Purpose: To compare between Unilateral Biportal Endoscopic posterior lumbar foraminotomy(UBE-PLF) and percutaneous Full-Endoscopic posterior lumbar foraminotomy(FE-PLF).
Methods: Between November 2022 and February 2024, twenty-three patients who underwent UBE-PLF{ten patients(male: eight, female: two), average age: 63.6} or FE-PLF{thirteen patients(male: seven, female: six), average age: 70.9} performed by single surgeon for single-level lumbar foraminal stenosis were investigated retrospectively about operative time(minutes), bleeding, clinical outcomes.
Results: Operative time (UBE-PLF/FE-PLF) were 95.7/117.4, bleeding were little/little and clinical outcomes were similar in each group. One patient of FE-PLF required posterior lumbar interbody fusion after primary operation.
Discussion: Although UBE-PLF and FE-PLF are similar procedures and both can improve patient's symptoms, there are some differences regarding techniques for surgeons. First, FE-PLF is earlier to expose bone of facet than UBE-PLF. Secondly, UBE-PLF is easier for decompression procedures to remove ligament and edge of bone, because surgeons can use surgical instruments at any angle within a field of vision in UBE-PLF. Especially for beginner surgeons, UBE-PLF may have an advantage to perform surgery safely and speedy.
Conclusions: Both procedures improved patient's symptoms. Operative time of UBE-PLF was shorter than FE-PLF. There is a possibility that UBE-PLF is easier for beginner surgeons than FE-PLF.

## Education and Professional Work

Mar. 2003 Graduate from the medical department, Shinshu university
Apr. 2003 Dept. of Orthopaedic Surgery, Gifu University
Jul. 2004 Dept. of Orthopaedic Surgery, Gifu Prefectural Gero Hospital
Jan. 2005 Dept. of Anesthesiology, Gifu University
Jul. 2005 Dept. of Orthopaedic Surgery, Obama Municipal Hospital
Apr. 2007 Dept. of Orthopaedic Surgery, Gifu Prefectural General Medical Center
Apr. 2008 Dept. of Orthopaedic Surgery, Hikone Municipal Hospital
Apr. 2011 Dept. of Orthopaedic Surgery, Kizawa Memorial Hospital
Apr. 2016 Dept. of Orthopaedic Surgery, Spine Center, Gifu Municipal Hospital
Apr. 2019 Hachiya Orthopaedic Hospital
Apr. 2022 Aichi Spine Hospital

# Lecture A3

**Wataru Narita**

Director, Spine Surgery Center, Kameoka City Hospital

## Education and Professional Work

Jichi Medical University (B.S., 2003) Kyoto Prefectural University of Medicine, M.D.
Director of Spine Surgery Center, Kameoka City Hospital
Born in Kyoto in 1977, graduated from Jichi Medical University in 2003, and received his Doctor of Medicine from Kyoto Prefectural University of Medicine in 2017. While engaged in medical care in remote areas, he has been developing new surgical techniques and instruments by applying IT technology, including obtaining patents on surgical instruments and developing smartphone applications. 2017, he started spine treatment using virtual reality (VR) for the first time in Japan. 2018 October, he established the Spine He is planning to be the president of the MIST Society in 2026.

**Qualifications**
Board Certified Orthopedic Surgeon, Japanese Orthopedic Association
Board Certification in Spine and Spinal Cord Surgery by the Japanese Orthopaedic Association
Board Certified Spine Surgeon, Japanese Society for Spine Surgery
Board Certified Clinical Physician, Japanese Society of Rehabilitation Medicine
**Position:** Public Relations Committee Member of the Japanese Society for Spine Surgery
Public Relations Committee Member, Japanese Society for Spine Surgery and Spinal Cord Disease
Director, Councilor, Public Relations Committee Member, and Chairperson of the Medical Instrumentation Committee of the Minimally Invasive Spine Treatment Society (MIST)
Sponsor, Kansai MISt Study Group
Sponsor of the Japan CAOS Study Group
Faculty member, Society for Minimally Invasive Spine Surgery -Asia Pacific (SMISS-AP)
Public Relations Committee Member, Japan Society for Instrumentation Research
Public Relations Committee member and special secretary of the Tohoku Spine Endoscopy Study Group
**work experience**
2003 Resident, Kyoto Prefectural University of Medicine
2005 Member of Orthopedic Surgery Department, Nantan Public Hospital
2007 Medical Director, Kyotango Kumihama Hospital
2009 Medical staff, Kyoto Prefectural Yosanoumi Hospital
2013 Deputy Director, Spine and Spinal Cord Disease Center, Nantan Public Hospital
2015 Chief, Spine and Spinal Cord Surgery Center, Midorigaoka Hospital
2018 Director, Spine Surgery Center, Kameoka City Hospital

# Robotic-assisted minimally invasive repair surgery for progressive spondylolysis

**Kazuta Yamashita**

The University of Tokushima, Tokushima, Japan

In this paper, we describe a technique for minimally invasive percutaneous internal fixation using a robotic arm system to repair lumbar spondylolysis. First, an infrared light ball clip was set at the lamina one level above and the bone structure was input into the navigation system using an intraoperative CT scan. Next, after checking the accuracy of navigation, the screw plan was made and registered in the navigation system. After skin incision, the robotic arm automatically moved and guided to the correct insertion position, and the surgeon drilled and inserted the screw percutaneously. The use of a robotic system enabled an accurate and minimally invasive procedure. Robotic-assisted minimally invasive direct pars repair surgery is useful for young patients with progressive spondylolysis.

## Education and Professional Work

BOARD CERTIFICATION IN JAPAN
2004 National Board of Medical Doctor (physician) (registration No. 441643)
2011 Approved Orthopaedic Surgeon by Japanese Orthopaedic Association (Certificate No. 120259)
2012 Board-certified spine surgeon (approved by Japanese Orthopaedic Association)
2017 Board-certified Spine Surgeon (approved by Japanese Society for Spine Surgery and Related Research)

PROFESSIONAL AND ACADEMIC EMPLOYMENT HISTORY
May.1,2004 Resident, Department of Orthopedic Surgery, Kitakyusyu municipal Hospital, Fukuoka Japan
Apr.1,2006 Clinical orthopedic fellow, Makiyama Central Hospital, Fukuoka Japan
Apl.1,2007 Clinical orthopedic fellow,Fukuoka Shin Mizumaki Hospital
Oct.1,2008 Clinical orthopedic fellow, Department of Orthopedics, University of Occupational and Environmental Health, Fukuoka, Japan
Apl.1,2010 Orthopedic vice-manager, Spine surgeon Department of Orthopedics, Kagawa Rosai Hospital, Kagawa Japan
Apl.1,2013 Orthopedic third-manager, Spine surgeon Department of Orthopedics, Nagasaki Rosai Hospital, Nagasaki Japan
Apl.1,2015 Graduate school Department of Orthopedics, The University of Tokushima,Tokushima, Japan
Aug.1,2017 Clinical fellow University of Iowa Hospital and Clinics,Iowa City, Iowa USA
Nov.1,2017 Assistant Professor Department of Orthopedics, The University of Tokushima,Tokushima, Japan
Apl.1,2022 Associate Professor Department of Orthopedics, The University of Tokushima,Tokushima, Japan

AWARD AND HONOR
May 2014 Best Poster Award, Japanese Orthopedic Research Society
Nov 2015 Best Poster Award, Japanese Society of Minimally Invasive Spine Surgery
April 2016 Best Paper Award, The 127th Central Japan Association of Orthopedic Surgery and Traumatology
May 2016 Best Paper Award, The 45th Japanese Society for Spine surgery and Related Research
Feb 2018 Kouraku Prize, Tokushima University
April 2019 The 14th Asia Travelling Fellow, Japanese Society for Spine surgery and Related Research

GRANT
Dec 2016 Pfizer health research foundation The 25th research grant
Mar 2017 Terumo foundation for life sciences and arts Fiscal subsidy 2016
Aug 2017 Tokushima Shinbun foundation for life sciences The 6th research grant
April 2022 Grants-in-Aid for Scientific Research

PROFESSIONAL SOCIETY
Member
AO spine
Japanese Orthopaedic Associattion
Japanese Society for Spine Surgery and Related Research
Japanese Orthopaedic Society for Sports Medicine
Japanese Society for the Study of Endoscopic & Minimally Invasive Spine Surgery

# Microscopic augmented reality (AR) navigation surgery with a mobile flat panel 3D C-arm.

**Yasushi Fujiwara**

Director, Microscopic Spine and Spinal Cord Urgery Center, Hiroshima City North Medical Center Asa Citizens Hospital

Within conventional 3D navigation methods, surgeons have to alternately watch both the surgical field and the navigation display because the navigation monitor is setup separately from the surgical field during surgery.

However, there are potential risks: accidental neurovascular injury, the inaccuracy and inconvenience of navigation surgery, etc. These are some major difficulties for surgeons during conventional intraoperative 3D navigation.

Recently, the utilization of augmented reality (AR) technology with goggles, which displays additional visual information onto the view of the physical surgical field, is considered to be an effective solution. However, it is cumbersome to wear the AR goggles throughout the entire surgery.

In this presentation, we present a novel technique using a microscopic AR system other than the use of AR goggles.

Until recently, we performed 328 spinal surgeries supported by the microscopic AR system and the flat panel 3D C-arm. Among 328 cases, there were 164 cases with lumbar lateral foraminotomy, 62 cases with Spinal cord tumor resection surgeries (10 cases with intramedullary 39 cases with intradural-extramedullary,1 case with extramedullary, 15 cases with dumbbell), 55 cases with thoracic decompression surgeries, 17 cases with pars defect decompression for lytic spondylolisthesis, etc.

First, intraoperative CT scan is performed using Cios Spin (Siemens, Germany) which is connected to the navigation system (Brainlab Curve, Germany)

Then, the navigation array is attached to the microscope (M530/OH6, Leica, Germany or Kinevo 900, Zeiss, Germany), which enables the navigation system to share the information of position, direction, and focus of the microscope. Then, after connecting the cables between the microscope and navigation system, surgeons and assistants can see specific navigation information which is superimposed on the microscopic view finder: (1) digital color objects of the tumor or important anatomical structures are overlaid to actual tumor or anatomical structures, (2) a picture-in-picture display in the corner of the view finder shows the CT or MR images with the position and angle of the microscopic focus and positions of the registered devices.

Using the AR microscopic navigation system, surgeons can see both the navigation screen and the surgical field nearly simultaneously because the view field of the microscopic optical view finder is narrow.

Therefore, surgeons can rely on real-time information from this navigation system and perform surgeries safely, accurately, and comfortably, which can decrease the risk of surgical complication.

## Education and Professional Work

EDUCATION:
2000-2004 Hiroshima university, Graduate school of medicine
1989-1995 Hiroshima University, School of Medicine
LICENSURE & CERTIFICATION:
National Board of Medicine, Registration No.368920
Board-certificated Orthopedic Surgeon
Board-certified Spine Surgeon approved by the Japanese board of Spine Surgery Certificate No. 11186
FELLOWSHIP OR STUDY ABROAD:
Clinical fellowship 2004/Nov Rush university 2004/Dec Miami university 2005/Jan Emory university
2011 JSSR Asia Travelling fellow in Indonesia and Taiwan
2018 JSSR Visiting Scholar in Malaysia, Thailand, Nepal
ACADEMIC DEGREE:
Philosophical doctor (PhD) of medicine
MEMBERSHIPS:
Council Member, Japanese Society for Spine Surgery and Related Research
Member, JSSR Spinal cord monitoring working group
Member, Japanese Orthopaedic Association
Member, Cervical Spine Research Society Asian Pacific section
International mentor, Indonesian fellowship training in orthopaedic spine surgery
HONORS & AWARDS:
17th Award in The Central Japan Association of Orthopaedic Surgery & Traumatology, 2010
12th Award in Western Japanese research society for Spine 2006
MAJOR RESEARCH INTERESTS:
1, Microscopic spine and spinal cord surgery
2, Degenerative spine disease
3, Spinal cord tumor
4, Intraoperative neuro monitoring

# Navigation-assisted Full Endoscopic Rhizotomy for Refractory Coccydynia : A case report with literaure review

**Yi-Ping Wu**

Division of Neurosurgery, Department of Surgery, Changhua Christian Hospital,

Background:
Coccydynia, a painful condition of the sacrococcygeal region, presents challenges in diagnosis and treatment due to the absence of a gold standard. This report discusses the successful clinical management of patients with refractory coccydynia. Diagnostic imaging plays a crucial role in the evaluation of coccydynia and helps to rule out other potential causes of pain. Treatment strategies included conservative management and surgical intervention. In this case report, we discuss a minimally invasive endoscopic approach to safely perform rhizotomy for the treatment of refractory posttraumatic coccydynia.
Case description:
A 61-year-old man with the past history of ulcerative colitis presented with localized anal pain since after anal fungus infection was curative approximately many years ago. After that he had persistent pain in his coccyx which worsened with prolonged sitting and exacerbated by pressure and it can not bear sitting for more than 30 mins. The pain was sharp and had an intensity of 10/10 on the visual analog scale (VAS). Initial conservative management , including non-steroidal anti-inflammatory drugs (NSAIDs) and physical therapy, can provide temporary relief. Hence, the patient had also received fluoroscopic- and sonographic-guided block of ganglion of impar , radiofrequency ablation of ganglion of impar and caudal epidural steroid injections for coccygeal pain, but he didn't respond to these forms of intervention. Consequently, the patient underwent rhizotomy using a minimally invasive endoscopic approach, which was successful in addressing the refractory pain.
Outcomes:
"In approximately 90% of cases, conservative treatments are effective, and some cases may even resolve without the need for medical intervention. However, for cases that do not respond to conservative approaches, there are several alternative treatments available. it's challenging to establish clear guidelines for determining which intervention is best suited for individual patients. We suggest that in cases of coccydynia when there is no improvement after a short-term application of manual therapy, more invasive procedures such as injections or surgery may be considered. The patient had almost complete resolution of refractory coccydynia after receiving a rhizotomy using a minimally invasive endoscopic approach.

## Education and Professional Work

# Navigation assisted full-endoscopic rhizotomy and ablation for sacroilitac joint pain;Comparative study of the clinical outcome between two techniques

**Jae Hwan Lee**

Changhua Christian Hospital

**Background**: Chronic low back pain (CLBP) with sacroiliac joint (SIJ) involvement is a prevalent issue in healthcare. Surgical intervention, employing an endoscopic technique with a navigation system, targets and ablates nociceptive nerve fibers linked to SIJ pain, although the clinical impact of the lateral branch of S3 remains uncertain.
**Objectives**: This study aimed to compare the clinical outcomes of two full-endoscopic rhizotomy and ablation (FERA) techniques for SIJ pain and determine the impact of omitting rhizotomy of the lateral sacral branch of S3 on patient outcomes.
**Study Design**: Retrospective cohort study
**Setting**: This study took place in a single medical institution by a neurosurgeon.
**Methods**: From January 2018 to March 2021, records of 73 patients undergoing L5-S3 or L5-S2 FERA for SIJ pain associated with CLBP were retrospectively reviewed. Patients were evaluated using Visual Analogue Scale (VAS) for pain, Oswestry Disability Index (ODI) for functional disability, and MacNab criteria for satisfaction. Procedures were guided by 3D robotic C-arm navigation. The L5-S3 FERA group underwent rhizotomy and ablation of L5-S3 lateral branches, while the L5-S2 FERA group omitted the lateral sacral branch of S3 rhizotomy.
**Results**: Both groups showed significant one-year improvements in VAS and ODI scores with similar trends. The L5-S2 FERA group had a shorter operative time, especially bilaterally, with no complications. Although the L5-S3 FERA group initially presented a slightly higher six-month recurrence rate, it equalized with the L5-S2 FERA group at one year. Furthermore, MacNab criteria showed comparable satisfaction rates in both groups.
**Limitation**: Small retrospective study
**Conclusion**: L5-S2 FERA demonstrated clinical outcomes similar to L5-S3 FERA for pain relief, functional improvement, and satisfaction. Omitting S3 lateral branch rhizotomy did not adversely affect outcomes. Surgeons may consider excluding S3 lateral branch rhizotomy for SIJ pain treatment, reducing operative time while maintaining patient benefits.
**Keywords**: Low back pain, Sacroiliac joint, Rhizotomy, Ablation, Surgical Navigation Systems, Robotics, Minimally invasive surgical procedures

## Education and Professional Work

Experience
2013 July–2013 Aug
E-Da Hospital Clearkship, Kaoshiung, TW
2014 July–2015 July
Semmelweis Univeristy, Internship, Budapest, HU
2017 June–2018 May
Mackay Memorial Hospital, Internship, Taipei, TW
2018 Sep–Present
Changhua Christian Hospital, Residency, Changhua, TW
A member of Taiwan Surgical Association
A member of Taiwan Society for Middle Youth Neurosurgery
A semimember of Taiwan Society for Endoscopic Spine Surgery
A participant of IRCAD Skull Base Surgery, TW on 2020 & 2021
Education
Keio Shiki High School (2004~2007)
Keio University, Faculty of Economics, Tokyo, JP (2007~2009)
Semmelweis University, Faculty of Medicine, Budapest, HU (2009~2015)

# Navigation assisted full endoscopic spine surgery: Design, Workflow, and Clinical Application

**Yasushi Shin**

Osaka police Hospital

There are several techniques to increase the effectiveness of endoscopic techniques and prevent complications. Regardless of inside-out or outside-in technique, the exiting nerve root should be protected during the approach. Depending on the pathological condition, we must develop the strategy for adequate trans foraminal window. The important key to achieving success and preventing complications is “the landing”.

We develop the workflow for the adequate entry point, the angle and the landing with the automatic registration system of neuronavigation in the hybrid operation room. In the preoperative simulation, we made the marking point as the bony contact point depending on each pathology.

As the result, the bony contact points are the edge of superior surface of vertebral body, superior facet. It was especially useful to approach to L5/S1, L1/2 and cases with sever degenerative change.

Tailored bony contact method were useful for the trans foraminal approach depending on the patho-anatomy. Automatic registration system in the hybrid operation room is the key technology for full endoscopic spine surgery.

## Education and Professional Work

Employment Record and Neurosurgical Training

1996-2002 the department of Neurosurgery, Nara Medical University
2003 assistant professor, the department of Neurosurgery, Nara Medical University
2004 assistant head physician, the department of Neurosurgery, Osaka Police Hospital
2008 head physician, the department of Neurosurgery, Nara prefectural Nara hospital
2012 assistant director, the department of Neurosurgery, Higashiosaka City General Hospital
2013 Lecturer, the department of Neurosurgery, Nara Medical University
2014 Charité – Universitätsmedizin Berlin ,Neurochirurgische Klinik
2015 Vice director, the department of neurosurgery, Osaka police Hospital

License and Certification

Japanese Board of Neurosurgery,
The Japan Stroke society,
Japanese Society for Neuroendoscopy,
Endoscopic spine surgery
Japanese Society of Spinal Surgery,

# Lecture A4

# Less invasiveness of total en bloc spondylectomy (TES) by innovative bone graft

**Hideki Murakami**

Department of Orthopaedic Surgery, Nagoya City University

We present a novel bone graft technique using frozen tumor-bearing vertebrae in total en bloc spondylectomy (TES) for spinal malignant tumors. Instead of harvesting autograft from the iliac crest, the resected lamina, spinous processes and ribs are frozen in liquid nitrogen for 20 minutes and used as grafted bone inside and around a cage for spinal reconstruction.
Since May 2010, we have performed more than 200 cases of TES using this new bone graft technique. Although we used tumor-bearing spine as grafted bone for spinal anterior reconstruction, tumor cells are totally killed by being placed into liquid nitrogen for 20 minutes. There were not local recurrences from surgical site using this frozen tumor-bearing bone as grafted bone in our series at all.
TES using frozen autograft inside and around a cage affords five benefits: 1) no pain at the bone harvest site; 2) shortening of operation time; 3) decrease of blood loss; 4) obtainment of sufficient amount of grafted bone easily and cheaply; and 5) additional antitumor immune response. Our bone graft technique using frozen tumor-bearing bone is a novel procedure which provides not only less invasiveness but also possibility of antitumor immunity.

## Education and Professional Work

EDUCATION:
2001 Ph.D. (Dr. of Medical Science),
Graduated from Postgraduate School, Kanazawa University School of Medicine
1993 M.D.,
Graduated cum laude, Kanazawa University School of Medicine
1987 Graduated from High School

LICENSURE & CERTIFICATION:
National Board of Medicine, Registration No.354991
Japanese Board of Orthopaedic Surgery, Certificate No.115361
Board-certified Spine Surgeon approved by the Board of the Japanese Society for Spine Surgery and Related Research, Certificate No. 10168

FELLOWSHIP OR STUDY ABROAD:
1999/Jan - 2001/Jan
Research fellow, The Emory Spine Center, Emory University School of Medicine
(by Scholar of Yoshida Scholarship Foundation)
2007/Oct – 2007/Nov
Asia Traveling Fellowship (visited Beijing and Hong Kong)
(Japanese Society for Spine Surgery and Related Research)
2010/Nov
HKOA (Hong Kong Orthopaedic Association) Traveling Fellowship
(Japanese Orthopaedic Association)

ACADEMIC APPOINTMENTS:
2010/Jul. - 2019/Jan.
Associate Professor of Department of Orthopaedic Surgery, Kanazawa University
2019/Feb. - present
Professor and Chairman of Department of Orthopaedic Surgery, Nagoya City University
2015/Mar. - present
Visiting Professor, Khon Kaen University, Thailand
2017/Sep.
Visiting Professor, Chiang Mai University, Thailand

# Choosing the best approach. A single case presentation of a giant right side L45 facet joint cyst

**Alfonso García Chávez**

Hospital Angeles Tijuana,Mexico

It is well accepted that for addressing a large facet joint cyst at the L45 level, an Interlaminar Endoscopic Lateral Recess Decompression (IE-LRD) either ipsilateral or contralateral may be the best choice to solve most cases. In this presentation I share a variant of this interlaminar lateral recess decompression with surgeon standing in the contralateral side of pathology and approaching the interlaminar window at the ipsilateral side of the pathology through an inclinatory laminotomy for a complete exposure and resection of a pathology presented in a 56 yo female patient with a preoperative diagnosis of a giant right side facet joint cyst at L45 level with 70% compression of the lumbar canal.

## Education and Professional Work

**Education**

2015 Pohang Wooridul Spine Hospital, South Korea. Fellowship training. Minimally Invasive & Endoscopic Spine Surgery
2010 Hospital San Juan de Dios, Barcelona España. Medical Rotation.
2006 2008 University of Phoenix, MBA
1997 2001 Instituto Mexicano del Seguro Social, Mexico City “Hospital de Traumatología y Ortopedia Dr. Victorio de la Fuente Narvaez. Postgraduate Orthopedic Surgery
1991 1996 Facultad de Medicina, Universidad Autónoma de Baja California. General Physician

**Experience**

2001-02 Fundación para los Niños de las Californias Continuing Medical Education Coordinator.
2001-10 Fundación para los Niños de las Californias Pediatric Orthopedic Surgeon.
2006-14 Universidad Autónoma de Baja California Anatomy Professor / Orthopedics Professor
2007-14 Fundación Wesitos, A. C. Founder and President
2006-08 Raquis Clínica de Columna Co-owner / Senior Surgeon / General Manager
2010-11 Colegio de Ortopedia y Traumatología de Tijuana Vice-President
2012-12 Colegio de Ortopedia y Traumatología de Tijuana President
2010-14 Florence Health System, Hospital Medical Director
2016-Present MK Spine Health Founder / CEO / President / Spine Surgeon

**Certifications**

2001 -Present Mexican Board Certified in Orthopedics No. 4/1500/13
2014 -2015 Fellowship Training International Spine Surgery Training Center. Wooridul Spine Hospital, Pohang, South Korea.
2015 Special Training in Unilateral Biportal Endoscopic Spine Surgery. International Spine Surgery Training Center. Wooridul Spine Hospital, Pohang, South Korea. Certified by “International UBE Spine Surgery Society”
2017 Active Member “North American Spine Society” ID 420499
2017 NASS Member ID 420499
2017 JOIMAX® Faculty
2019 AOSpine plus member ID 100024980

# Minimal Invasive Spinal (MIS) Techniques for Vertebral Body Compression Fractures

**Farnad Imani**

Professor of Anesthesiology, Chairman of Pain Research Center,
Iran University of Medical Sciences, Tehran, Iran

Osteoporotic vertebral compression fractures (VCFs) are a common cause of acute pain in elderly. Minimally invasive vertebral augmentation procedures such as vertebroplasty and balloon kyphoplasty by injecting cement into the osteoporotic VCFs have been widely used to treat symptomatic and painful osteoporotic VCFs. The primary clinical goal of augmentation is pain reduction, reduced disability, and enhanced quality of life.
The major complications arising from vertebroplasty or kyphoplasty are related to leakage of cement into the epidural space and neural foramina with resultant cord compression and radicular pain. There is also a risk of pulmonary embolism should cement enter the paravertebral venous plexus. Kyphoplasty compare to vertebroplasty provides a better height restoration of the fractured vertebra and a lower risk of severe complications.
In the case of involvement of the posterior edge of the vertebral body, expandable titanium mesh cage has provided an interesting alternative for vertebroplasty and kyphoplasty, due to absence of cement leakage by using this system. Subsequent fractures are a potential complication, possibly due to the relatively high stiffness of cement. Silicone as an augmentation material has biomechanical properties closer to those of bone and might be an alternative to cement into the vertebral body.
Recent technological advances combined with innovative interventional techniques can now offer alternative less invasive treatment options for many patients with VCFs. There are several new implants for OVCFs, including Vertebral Body Stenting, Vesselplasty, Spine Jack, and Kiva. The vertebral body stenting system consists of a balloon and titanium stent, simultaneously delivered into the vertebra and maintains the height of the cavity. Vesselplasty is an effective alternative to BKP, composed of a special polyethylene terephthalate container (Vessel-X) instead of a balloon. A Spine Jack is a retractable titanium expander used to restore compressed vertebrae. The unexpanded Spine Jack is cylindrical to facilitate vertebral implantation. The Kiva system was designed to prevent bone cement leakage by surrounding bone cement. It is composed of a Nitinol guidewire and a spiral PEEK implant to block bone cement.

## Education and Professional Work

Prof Farnad Imani is currently Chair of Pain Research Center in Iran University of Medical Sciences (IUMS), with twenty seven years' experience in academic postgraduate teaching in anesthesiology and pain medicine. He is founder of academic pain fellowship in Iran at 2006. His research interest includes chronic and acute pain managements, and has a special interest in the percutaneous, endoscopic, and minimal invasive procedures for spinal pain. Prof Imani is founder and past Editor in Chief of Anesthesiology and Pain Medicine journal from 2011-2022.

# Epiduroscopic Laser Ablation of Sinuvertebral Nerve & Basivertebral Nerve for Discogenic Back Pain

**Byapak Paudel**

Grande Int. Hospital, Kathmandu, Nepal

Discogenic low back pain is characterized by axial low back pain without radiation, pain not associated with deformity or radiologic instability, pain is worse in the morning, worse with Valsalva (coughing, sneezing) and pain is aggravated by standing in flexion. Normal disc is poorly innervated, supplied only by sensory and sympathetic perivascular nerve fibers. Posterior part of the disc is innervated by sinuvertebral nerve. Endplate is innervated by basivertebral nerve. It is postulated that when internal disc derangement occurs sinuvertebral and basivertebral nerves get stimulated and axial pain discogenic is produced. Ingrowth of vascularized granulation tissue and nerve fibers along the tear deep into the inner annulus and nucleus pulposus are found in painful disc.
There are many traditional treatment for discogenic back pain from conservative to fusion to ADR to intradiscal thermal annular procedures (IDET,Biaculoplasty), Intradiscal PRP, Intradiscal methylene blue injection, Intradiscal　Mesenchymal stem cells, Spinal cord stimulation but result are not encouraging.
Transforaminal epiduroscopic laser ablation of Sinuvertebral nerve (TESLA) & Transforaminal epiduroscopic laser ablation of Basivertebral nerve (TEBLA) are recent Promising percutaneous endoscopic technique with more than 90% good to excellent result as per McNab criteria and follow up more than 15 months.
Here promising percutaneous transforaminal endoscopic technique- Epiduroscopic Laser Ablation of Sinuvertebral Nerve & Basivertebral Nerve for discogenic back pain will be presented.

## Education and Professional Work

Qualification, Post
MD, MS (Ortho), Fellowship Minimally Invasive Endoscopic Spine Surgery
Consultant Orthopedic and Spine Surgeon
Assistant Director Spine Services, Grande International Hospital
One and only
Fellowship trained Endoscopic Spine surgeon in Nepal　Association of Spine Surgeons of Nepal (ASSN)
Vice President 2022-2024
General Secretary 2020-2022
Treasurer 2018-2020
Joint Secretary 2012-2018
Founder
Orthopaedic Associations Executive Committee member Asia Pacific Trauma Society (APTS) 2018-2020
National delegate (Nepal) representing NOA to Asia Pacific Orthopaedic Association (APOA) 2016-2018
General Secretary Nepal Orthopedic Association (NOA) 2014-2016
Editorial Board
International Journal of Recent Surgical and Medical Sciences (IJRSMS)
Grande Int. Hospital Medical Journal (GMJ)
Med Phoenix- An official Journal of National Medical College (JNMC)
And Many More...
Member
IRC (Institutional Review Committee) Grande Int. Hospital- Approved by NHRC
Spine Trauma Registry-Nepal (STR-NP) Subcommittee of Nepal Health Research Council (NHRC)
Speaker, Moderator and Panelist
Navi Endoscopic Spinal Surgery International Web Sympoisum (NEIWS)
Mentor
Fellowship in Spinal Reconstructive Surgery (FSRS) - Grande Int. Hospital
Award
First Quarter 2019 Best Reviewer, Neurospine
NEIWS presentation award 2021, Nanoori Research
And Many More...

# A comparative study of three surgical methods for the treatment of long-segment OPLL of the cervical spine

XiFeng Zhang

**Objective:**
To compare the effectiveness of endoscopic surgery, open-door laminoplasty, and posterior cervical laminectomy and fusion in the treatment of long-segment ossification of the posterior longitudinal ligament (OPLL).
**Methods:**
A total of 58 patients with long-segment OPLL admitted to our hospital from January 2018 to August 2021 were selected, and the general data (including gender, age, etc.) of the selected patients were collected. According to the different surgical methods, the subjects were divided into the spinal endoscopy group, the posterior cervical open-door surgery group, and the posterior cervical laminectomy group. All patients had typical clinical manifestations of cervical spondylotic myelopathy. Preoperative cervical X-ray, CT, and MRI examination showed 3 segments cervical spinal cord compression and 3 segments requiring surgical treatment. The operation time, intraoperative blood loss and hospitalization time were recorded and compared among the three groups. The JOA score, NDI (neck disability index) score, cervical curvature index (CCI), and range of motion (ROM) before and after the operation were recorded. Repeated measures analysis of variance and simple effect test were used to compare the differences of JOA, NDI, CCI, ROM, and other indicators within and between the groups before and after the operation, and to evaluate the postoperative clinical efficacy of the patients.
**Results:**
1. 13 patients in the endoscopic group, aged (62.92±11.59) years old; There were 30 patients in the open-door group, aged (62.17±20.14) years. There were 15 cases in the posterior cervical laminectomy group, aged (63.47±9.82) years. There were no significant differences in age, gender, symptoms, and signs between the two groups ($P > 0.05$).
2. The average operation time of the endoscopic group (233.12±77.82) min was significantly longer than that of the open-door group (127.79±45.18) and the posterior cervical laminectomy group (138.24±31.38). The average blood loss was 66.67±15.17 ml in the endoscopic group. The average hospital stay was (6.17±1.85) days. The average intraoperative blood loss was (170.29 ±80.28) ml and the average hospital stay was (8.71 ± 2.14) days in the open-door group. The average intraoperative blood loss was (220.29 ±105.58) ml and the average hospitalization time was (10.43 ± 3.45) days in the posterior cervical laminectomy group. The comparison of the three groups was as follows: spinal endoscopy group < posterior cervical open-door group < posterior cervical laminectomy group ($P < 0.05$).
3. The preoperative JOA scores were 9.25±3.91, 10.32±2.17, and 10.12±2.30 in the endoscopic group, open-door group, and posterior cervical laminectomy group, respectively. Postoperative JOA scores were 14.77±2.13, 15.23±1.66, and 14.45±0.74, respectively. The preoperative NDI scores were 26.61±12.88, 28.16±6.17 and 27.43 ±4.33, and the postoperative NDI scores were 11.12±10.85, 11.25±11.25 and 11.45, respectively There was no significant difference in JOA and NDI scores among the three groups at the same time ($P > 0.05$), but there were significant differences in a different time. The JOA scores at the last follow-up after the operation were significantly higher than those before the operation, and the NDI scores were significantly lower than those before the operation.
4. The ROM at the last follow-up was lost when compared with that before the operation in the three groups ($P < 0.05$), and the loss degree of the three groups was as follows: endoscopy group < posterior cervical open-door group < posterior cervical laminectomy group ($P < 0.05$). The CCI of the three groups was lower than that before the operation ($P < 0.05$), and there was no significant difference in CCI loss among the three groups ($P > 0.05$).
5. In the endoscopic group, 2 patients had cervical spine joint clicking and upper limb movement-induced posterior neck pain in the early stage after the operation, and the symptoms gradually improved after conservative treatment. One patient in the open-door group had cerebrospinal fluid leakage, one patient had C5-nerve root palsy, one patient in the posterior cervical laminectomy group had the postoperative infection, which was improved after anti-inflammatory treatment, and one patient had C5-nerve root palsy.
**Conclusion:**
The three surgical procedures have some differences in the treatment of long-segment OPLL, but the short - and mid-term clinical outcomes are similar.

# Lecture B1

# Navigation in Percutaneous Endoscopic Transforaminal Lumbar interbody fusion: How could we do more effectively and safely

**Yi-Hung Huang**

Department of Orthopedics Chia Yi Christian Hospital, Chia Yi City Taiwan

**Introduction**
The endoscopic spine surgery (ESS) is rapidly developed and ESS combined with TLIF(endo-TLIF) is the new trend. However, the cons of Endo-TLIF including overdose of radiation, overtime of bony work and steep learning curve become the largest obstacle for development of Endo-TLIF.
**Method**
From Nov 2022 to Jul. 2023, twenty eight cases receiving Endo-TLIF were enrolled and female cases were 22. One, two and three levels of endoTLIF were 18, 14 and 6. Total levels were 44 which TM cages were 15 and PEEK cages were 29. We utilized robotic 3-D con beam CT(Philips Azurion) to obtain intraoperative tomographic images and transferred these images to the navigation computer (Brainlab). We registered not only instruments for insertion of pedicular screws (drill-guide, pointer probe) but also instruments for Endo-TLIF(obturator, trephine, cage holder). These registered instruments did great benefit to endoscopic, disc and fusion procedure.
**Result**
TK endoTLIF levels were 29 and PL endoTLIF were 15. There was no postoperative neurogenic damage. The exposure of radiation was significantly lower than non-navigated Endo-TLIF(>100 shots to 20 shots per level). There was no breech of pedicular screws insertion or malposition of cage implantation. The major benefit of navigated TK endoTLIF is assurance of foraminoplasty and the benefit of PL endoTLIF is easier IPS removal by a registered burr.
**Discussion**
Navigated endoTLIF reduces the radiation dose and operative time consumption. Registered endoscope instruments offer precise endoscopic docking point, effective bony work and disc preparation.
**Conclusions**
Navigated EndoTLIF has excellent clinical results and provides accurate intraoperative real-time guidance and help achieving precise bony works including TK and PL endoTLIF.

## Education and Professional Work

**Education:**
MD: Private Chung Shan Medical University, 1994
MS: Institute of Manufacturing Engineering, national Cheng Kung University NCKU, 2009
**Attending Surgeon:**
Chia Yi Christian Hospital Orthopaedic department, 2000~ now
Chief of spine sub-special department
Chief of center of spine mini-invasive surgery
Director of department of orthopaedic surgery
**Visiting Clinical Fellow:**
Dept. of Orthopaedic Surgery, Showa University, Tokyo, Japan, 2006
Center for Orthopeidcs and Traumatology of the St Elisabeth Group Herner/Dusseldorf Germany 2014
Lugwig Maximilan University, Isar Klinikum Munich Germany 2015
**Medical Association member:**
1. Taiwan society of endoscopic spine surgery (TSESS): founding president
2. Pacific and Asian Society of Minimally invasive Spine Surgery (PASMISS): board member
3. Faulty member of Society for Minimally Invasive Spine Surgery (SMISS)
4. Taiwan society of Mini-invasive Spine Surgery(TSMISS): board member
5. Taiwan Spine Society
6. Taiwan Surgical Association
7. Taiwanese Osteoporosis Association

# Full Endoscopic Interbody fusion

**Girish Datar**

Institute Name

Please write the content of the abstract.(800 words)

## Education and Professional Work

Please keep your CV within 400words.
If it exceeds,we may adjust it.

# Endoscopic Extreme Transforaminal Lumbar Interbody Fusion with Large Spacer: A Technical Note and Preliminary Report

**Jin Hwa Eum**

Ain Al khaleej Hospital ,UAE

This report describes a novel endoscopic fusion technique to be used with unilateral biportal endoscopy (UBE) called extreme transforaminal lumbar interbody fusion (eXTLIF) with a large spacer. We also present short-term results of this procedure. Previous studies reported that minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF) could produce acceptable fusion rate; therefore, it is often used for treating various degenerative lumbar disease. Moreover, MIS-TLIF can be performed via a unilateral approach, and because of this, it is commonly performed with the UBE technique. The biportal endoscopic TLIF procedure is generally used with a single spacer in the interbody space. It is important to insert the maximum amount of graft material into the prep site via an autologous bone marrow transplant or another substance with spacer insertion. Since MIS-TLIF using UBE is performed in water, it may be insufficient environment for excellent fusion. Therefore, a modified method was used to increase the surface contact area and insert the maximum amount of bone material using a larger spacer. However, using a large-size spacer necessitates a larger spacer orifice. For this purpose, eXTLIF was performed, which inserts the spacer more laterally than current TLIF position, we report the surgical method and short-term results, which have been satisfactory thus far.

## Education and Professional Work

**Professional Objective**
To contribute my innovative spinal surgical approach in partnership with a doctor, medical team, or hospital in the world.

**EDUCATION & CREDENTIALS**
**Consultant,** Neurosurgery, UAE 2021
**Exchange Visitor Doctor,** Albert Einstein College of Medicine of Yeshiva University, New York 1994-1995
**Professional License,** Korean National Board of Neurological Surgery 1991
**Internship and Residency,** Maryknoll General Hospital, Busan, South Korea 1986-1991
**Medical Doctor,** Kyeungbuk National Medical School, Daegu, South Korea 1982-1986

**EXPERTISE**
Perform **over 30-50 spinal surgery cases** each month (2003-2021)
Specialization in cases requiring **Biportal Endoscopic Spine Surgery**, in partnership with three fellow neurosurgeons
Successfully performed **over 5,000 cases** between January 2003 and January 2022
**Concentration: HLD 55%, Lumbar Stenosis 30%, Lumbar Fusion (Endoscopic TLIF) 10%, Endoscopic cervical decompression 5%**

**LEADERSHIP**
**Executive Director, KOMISS** (Korea Minimal Invasive Spine Surgery) 2021
**Director of KOSESS** (Korea Research Society of Endoscopic Spine Surgery 2021
**Chairman of KUBE** (Korea Unilateral Biportal Endoscopy Society) 2020-2021
**Course Speaker The 3rd Westlake Symposium on UBE 19-20 November 2022**
**Course director, "Unilateral Biportal Endoscopic Foraminotomy" May 30-31, 2015**
Korea Minimally Invasive Spine Surgery Society Symposium and Cadaver Workshop
**Course director, The 3rd Didactic Course of Endoscopic Spine Procedure Jan 15-17, 2015**
Fresh Cadaver Workshop, Seoul, Korea

**MEMBERSHIP**
**International Chapter, NASS** (North American Spine Society) **2009 - present**
**KNS** (Korean Neurosurgical Society)

# Endoscopic techniques for multilevel spine Degeneration Do we need fusion ?

**Aloysius Bambang Darwono, MD., Ph.D**

Head of Orthopaedic Section of Pluit Hospital , Jl. Raya Pluit Selatan,Jakarta Utara

Endoscopic spinal surgery began as percutaneous discectomy attempted by Hijikata et al. in 70s and Kambin in 80s. Schreiber, Suezawa and Leu were the first to have the idea to perform using endoscope (discoscopy). First generation of Spinal Endoscopic surgery was Transforaminal endoscopic lumbar discectomy introduced by Hal Mathews and Tony Yeung in the second half of 1990s, Schubert and Hoogland (2007). Since the introduction of endoscopic drills by Choi et al. (2008), the second generation was Interlaminar uniportal and biportal lumbar discectomy mainly in L5-S1 disc herniation. Evolution to third generation was Endoscopic decompression and Endoscopic foraminotomy due to rapid development in techniques and equipment to treat stenosis with/without instability. Decompression of central and lateral recess stenosis is now possible by interlaminar approach, and decompression of foraminal or extraforaminal stenosis through foraminotomy. The fourth generation due to recent developments in surgical equipment, supported endoscopic techniques, and now can be used for interbody fusion as a treatment for various lumbar spinal disorders. Newer innovation the endoscopic techniques and concept can be used for treatment the Cervical and Thoracic degeneration.
Where are we now, after endoscopic techniques show many advantages in preserving anatomic structures compare to open surgery in degenerative spine.
The nature of illness of Lumbar degeneration. The description of Lumbar degenerative cascade regarding anterior and middle column by theory of Kirkaldy Willis (1978) should be completed with Baastrup theory (1933) describing posterior column degeneration. Baastrup theory was supported by Bristol study (2010) and Auckland study (2012). Proposed New classification based on 3 columns theory of biomechanic construct degenerative changes (Darwono-Radchenko,2018), describe completely the pathologic changes/deformer of spine degeneration involving three columns and could be used to justified various evidenced based treatment. The nature of illness of degenerative spine deformity is combination of 2 factors:
-stabilizer: disc, facet joint, ligaments, muscles
-Pathologic changes/deformer: osteophyte, facet trophism, spinal canal stenosis, flavum infoldings and degeneration, enlargement of spinous process, Kissing spine and laminae (3 columns theory)
Gold standard is open decompression surgery, but this technique will sacrifice some of the stabilizer and need artificial stabilizer or fusion device to gain the stabilization again.
Reasonable concept of endoscopic techniques for degenerative spine diseases is decompression to remove the deformer only, while preserving the stabilizer through minimally invasive technique. This concept will support the nature of healing, reapplied the spine stabilizer again and the result is correction of the spine deformity without fusion.

## Education and Professional Work

ACADEMIC/PROFESSIONAL QUALIFICATIONS :

- Medical Doctor ( 1975 ) Private University of UNISSULA Semarang
  NB / CMS ( 1976 ) State University of Airlangga Surabaya
- General Surgeon ( 1986 ) State University of Diponegoro Semarang
- Orthopaedic Surgeon ( 1990 ) State University of Indonesia Jakarta
- Ph.D ( 2000 ) State University of Gajah Mada Yogyakarta

TEACHING ASSIGMENTS

1. Lektor Kepala Faculty of Medicine, The Veteran Pembangunan Nasional University 2000 - 2009
2. External Lecturer Faculty of Medicine, The Veteran Pembangunan Nasional University 1996 – 2000
3. External Lecturer Faculty of Medicine, The University of Hasanudin Makasar 2000 – 2006
4. Lektor Kepala Faculty of Medicine, The Tarumanagara University since 2009

SCHOLARLY and ACADEMIC AWARDS

1. The Best Paper of 4th Indonesian Orthopaedic Association National Congress, Jakarta, 1983.
   " Penanganan Patah Lengan Bawah Tertutup dengan Gips Teraan "
2. The Best Paper of 8th Indonesian Surgeon Association National Congress, Ujung Pandang, 1984.
   " Evaluasi Penanganan Patah Lengan Bawah Tertutup dengan Gips Teraan "
3. The Best Paper of 38th Anniversary The Army Central Hospital RSPAD Jakarta, 1988. " Penanganan Patah Tulang Terbuka dengan Eksternal Fiksasi Gips-Wire "
4. The Best Paper of 6th Indonesian Orthopaedic Association National Congress Bandung, 1990.
   " Radiographic Anatomy of Adult Indonesian in Thoraco Lumbar Spine Anthropometry "

# Lecture B2

# C1-2 Fusion with C1 Posterior Arch as Bone Graft

**Akira Itoi**

Assistant Professor Orthopedic Surgery of Juntendo Shizuoka Hospital

Introduction: We developed a technique that uses the C1 posterior arch, resected for decompression, as a bone graft for C1-2 posterior fixation. This eliminated the need for iliac or allogeneic grafts. We report the outcomes of this procedure.
Materials and Methods: A total of consecutive 8 cases were included, from the first of this method. Three cases that could be followed for more than 6 months were included depending on the variable. The average age was 77 years, with 1 male and 2 females, all suffering from retro-odontoid pseudotumor; and two had cervical spondylotic myelopathy, one had cervical spondylotic amyotrophy. Bone grafts were placed in interlaminar and intra-atlantoaxial joint. We evaluated graft placement, operative time, blood loss, screw trajectory, CT-diagnosed bony union duration screw loosening, postoperative occipital pain, pseudotumor reduction on 6-month MRI, and pre- and postoperative 6-month JOA scores (out of 17).
Results: Bone graft placements were unilateral in the inter-laminar space in seven cases and bilateral in one case. For the intra-atlantoaxial joint, graft placements were unilateral in three cases, with no cases of bilateral. Operative time was 187 minutes. Mean blood loss was 82g. Bony fusion was observed in one inter-lamina case (at 3 months) and in all three intra-axial joint cases. The screw trajectory comprised lateral mass screwing for all C1 cases using the Tan method, and for C2, bilateral pedicle screw, inter-lamina screw, and bilateral pedicle screw, respectively. No screw loosening occurred. Postoperative occipital pain was absent in all patients. Pseudotumor shrinkage was observed in all cases, and JOA scores improved from 8.4 preoperatively to 12.0 postoperatively at 6 months.
Discussion: This technique secured significant bone fusion and symptom relief, despite graft bed creation challenges at C1's lateral tuberosity. The Tan procedure and stable graft placement enhance its efficacy in minimally invasive spinal surgeries.

## Education and Professional Work

EDUCATION:
1998 Graduated from Juntendo University, Medical School (Tokyo)
2017 Graduated from Kyoto University, School of Public Health (Kyoto)
LICENSURE and CERTIFICATION:
National Board of Medicine, Registration No. 395814
Japanese Board of Orthopedic Surgery No. 117613
Board-certified Spine Surgeon (approved by the Board of the Japanese Society for Spine Surgery and Related Research) No. 11603
Work Experience:
1998 Orthopedic Surgery of Juntendo University
2000 Orthopedic Surgery of Koshigaya Hospital
2001 Orthopedic Surgery of Kanto Rosai Hospital
2004 Orthopedic Surgery of Juntendo Shizuoka Hospital
2004 Orthopedic Surgery of Izu Hoken Hospital
2005 Orthopedic Surgery of Juntendo Shizuoka Hospital
2005 Orthopedic Surgery of Izu Hoken Hospital
2006 Orthopedic Surgery of Juntendo Shizuoka Hospital
2016 Enrolled in Kyoto University, School of Public Health
2017 Orthopedic Surgery of Juntendo Shizuoka Hospital
MEMBERSHIPS:
Japanese Orthopedic Association
Japanese Society for Spine Surgery and Related Research
Japan Osteoporosis Society
Japan Society for Study of Surgical Technique for Spine and Spinal Nerves
HONORS and AWARDS:
2009 Best Pater Award of the Japan Society for Study of Surgical Technique for Spine and Spinal Nerves
2023 Reviewer of the Month of Journal of Spine Surgery, October 2023.
Development Products:
3D Parallel Adjuster Tanaka Medical Instrument Co.,Ltd.
Medical device manufacturing and sales registration number: 13B1X00274000164
MDN code：70963001
MAJOR RESEARCH INTERESTS:
Spine surgery: Degenerative spine, Spinal trauma, Osteoporotic Vertebral Fracture

# Cervical laminectomy by unilateral biportal endoscopy

**Park Man kyu**

Good Moonhwa Hospital, Busan, South Korea

Posterior cervical foraminotomy (PCF) is a well-known effective surgical technique used to alleviate cervical radiculopathy following nerve compression in the neural foramina secondary to herniated nucleus pulposus (HNP) or stenosis. Also cervical posterior decompression is one of the most common surgical interventions for cervical compression myelopathy. However, following open cervical PCF or decompression, loss of the cervical lordosis, or neck pain due to damage to the facet joint and injury of paraspinal muscle, may occur. Therefore, a minimally invasive cervical procedure is a routinely performed via a tubular retractor or a using full endoscopic techniques. With recent advances in spinal endoscopic surgical techniques, unilateral biportal endoscopic PCF (UBE-PCF) and posterior cervical decompression by UBE are being performed with increasing frequency. UBE relies high resolution magnification and the independent movement of endoscopic instruments. Furthermore, in the absence of subperiosteal dissection, UBE could potentially preserve paraspinal muscle and minimize facet joint violations.
The conventional posterior approach for cervical spondylotic myelopathy has several disadvantages caused by posterior cervical muscle and ligament injury. Compared with the conventional posterior approach, cervical laminectomy by UBE is advantageous because it involves smaller skin incisions, preserved paraspinal muscle and ligamentous complex, and a better high-resolution magnification. Cervical laminectomy by UBE comprises bilateral decompression using the unilateral approach. However, contralateral decompression performed using the sublaminar approach such as lumbar unilateral laminotomy for bilateral decompression is associated with a risk of cord injury in cervical spine. Therefore, bilateral subtotal laminectomy via the interspinous approach is recommended. In this video presentation, I will present a case of cervical myeloradiculopathy due to calcium pyrophosphate dehydrate deposition (CPPD) and foraminal stenosis operated by UBE. I will focus on the surgical technique of performing cervical laminectomy and cervical foraminotomy simultaneously. Moreover, whether the procedure is safe and can prevent cord injury was investigated.

## Education and Professional Work

Qualifications:
Graduated medical school at Kyungpook National University, Daegu, South Korea
Completed internship and residency at Kyungpook National University Hospital, Daegu, South Korea
Completed spine fellowship at Kyungpook National University Hospital, Daegu, South Korea
Working Experience:
(Present) UBE consultant spine surgeon, Good Moonhwa Hospital, Busan, South Korea
Director of research center, Parkweonwook Hospital, Busan, South Korea
UBE consultant spine surgeon, Parkweonwook hospital, Busan, South Korea
Clinical instruction, Kyungpook National University Hospital, Daegu, South Korea (2017-2018)
Awards:
Annual KOSESS conference Best paper award (2019)
The 37th Annual Korean Neurosurgical Society Academic award (2019)
2019 KOMISS advanced spinal endoscopic course symposium Academic award (2019)

# Clinical and radiological outcomes of new surgical technique of cervical pediculotomy

**Nurbyek. B[1], Gonchigsuren.S[1], Shiirevnyamba.A[2]**

[1]Grandmed hospital [2]MNUMS

Introduction
The indications for fully endoscopic cervical pediculotomy are bony foraminal stenosis due to degenerative disease and foraminal and paracentral disc herniation. Posterior approach to the foramen is not without complication, axial neck pain, profuse bleeding, root injury, and dural injury are some of the problems surgeons might encounter during and after the procedure.The aim of this paper is to evaluate foraminal decompression procedure by full endoscopic technique with and without pediculotomy and evaluate the clinical and radiological result after the operation. Such as foraminal decompression procedure with pediculotomy is new method.
Materials and methods
Patients with severe numbness due to cervical foraminal stenosis who underwent cervical spine surgery with and without pediculotomy were selected. Foraminal area and cervical curvature index were measured on cervical computed tomography (CT) scan and numbness was evaluated on physical examination pre- and post-surgery and 1-year follow-up.
Results
Improvement in foraminal area was significantly higher in pediculotomy group compared to non-pediculotomy group while there was no significant difference between groups for cervical curvature index. On post-surgical and 1-year evaluation, prevalence of numbness was significantly decreased in pediculotomy group than non-pediculotomy group.
Conclusion
The cervical spine surgery with and without pediculotomy is associated with improvement in foraminal area and cervical curvature index on post-surgical and 1-year follow-up CT scan. The improvement in foraminal area was significantly higher in pediculotomy group than non-pediculotomy group, while cervical curvature index was comparable between groups at 1-year follow-up. The prevalence of numbness was significantly reduced in pediculotomy group than non-pediculotomy group.

## Education and Professional Work

Educational background
South Korea, Teun Teun Good doctor hospital,
Fellowship program of SELD and PSLD endoscopic spine surgery Dec 2017 – Jan 2018 Certificate
South Korea, Nanoori hospital, 6th visiting Surgeon Program of Spine Surgery Nov 2016-Dec 2016 Certificate
South Korea, Wooridul Spine hospital, Fellowship Program of endoscopic spine procedures Oct 2016 – Nov 2016 Certificate
Mongolian National University of Medical Science, Master of Science 2014-2016 Diploma
South Korea, Cheonan Woori Hospital, Fellowship for Minimal Invasive Spine Surgery August 2012- July 2013 Certificate
Mongolian National University of Medical Science, Postgraduate course of Neurosurgery June 2011 – Dec 2011 Certificate
Mongolian National University of Medical Science, Postgraduate course of Surgery, Surgeon October 2009 – April 2011 Diploma
Mongolian National University of Medical Science, Medical Doctor, Bachelor of Science 2002-2008 Diploma
Bayan –Ulgii, secondary school №1 1992-2002 Certificate
**Professional Interest:** Endoscopic spine surgery
**Employment record:**
June 2008 – April 2008, Primary care doctor at Ulaan-hus soum of Bayan-Ulgii province
May 2009 – September 2009, Surgeon at General Surgical department of Bayan – Ulgii province
October 2009- April 2011, Emergency doctor at Emergency center of Ulaanbaatar
May 2011 – February 2012, Surgeon at "Mon-Mes" general surgical hospital
February 2012 – August 2012 Neurosurgeon at Neurosurgical department of "Achtan-Elite" hospital
July 2013 – August 2019, Spine surgeon at Grandmed hospital
August 2019 till present , Head of department neurosurgery at Grandmed hospital
**Membership:** Member of Mongolian Neurosurgeon's Association
**Language ability:** Kazakh – native Mongolian – excellent English – very good Russian – very good

# Endoscopic ventral approach for craniovertebral junction

**Tatsushi Inoue, MD, PhD**

Department of Neurosurgery, Fujita Health University, Aichi, Japan

The endoscopic approach to ventral craniovertebral junction lesions is a less invasive option. The reachable limit can be extended using a combination of endonasal and transoral routes.
Representative case from my case series: An 80-year-old female had presented with severe neck pain. Magnetic resonance imaging (MRI) revealed an osteolytic dense to C2 body lesion. A microscope was used for dense lesion removal, and an endoscope was used for C2 body lesion removal, followed by posterior O-C4 fixation with a pathological diagnosis of malignant lymphoma. Postoperatively, the neck pain completely resolved, and remission was achieved by the introduction of chemotherapy. Less invasive intervention was achieved compared to the conventional skull base approach.

Key Words: craniovertebral junction; endoscope; trans-oral and -nasal; combined approach

## Education and Professional Work

PRESENT APPOINTMENT:
Associate Professor
Department of Neurosurgery and Department of Spine and Spinal Cord Surgery Fujita Health University

EDUCATION:
Hiroshima University, School of Medicine Hiroshima
1984-1990: M.D.
Hiroshima University, Graduate School of Medicine (Neurosurgery) Hiroshima
1993-1998: Ph.D. in Medicine
Research fellow 1994-1995
Department of Integrative Brain Science, Graduate School of Medicine, Kyoto University
Clinical fellow 2001
Carolina Neuroscience Institute NC, US

ACADEMIC APPOINTMENTS:
1991-1992 Staff Neurosurgeon
Department of Nfeurosurgery Kita-kyusyu General Hospital Kokura, Japan
1998-2001 Assistant Professor Department of Neurosurgery Hiroshima University Hiroshima, Japan
2002-2006 Assistant Professor
Department of Neurological Surgery Aichi Medical University Aichi, Japan
2007-2017 Assistant Professor
Department of Neurological Surgery Fujita Health University Aichi, Japan
2018-present Associate Professor
Department of Neurosurgery and Department of Spine and Spinal Cord Surgery Fujita Health University Aichi, Japan

MEMBERS IN PROFESSIONAL SOCIETIES:
Japan Neurosurgical Society
Japan Congress of Neurological Surgeons
The Japanese Society of Spine Surgery
The Japanese Society of Skull Base Surgery
Japanese Congress on Surgery for Cerebral Stroke
The Japanese Society for Pediatric Neurosurgery
Congress of Neurological Surgeons (US)
American Association of Neurological Surgeons
American Association of Neurological Surgeons Spine Section

MAIN RESEARCH INTEREST:
Minimally Invasive Spinal Surgery
Skull Base Surgery

# Revisit anterior key-hole discectomy for cervical disc herniation

**Motohide Shibayama**

Aichi Spine Hospital

Anterior cervical decompression and fusion (ACDF) is a golden standard for cervical disc herniation. Lately artificial disc replacement (ACR) has become an alternative. Both techniques yield good outcomes, but there are some shortcomings, adjacent disc problem for ACDF and immobilization for CDR.
Anterior key-hole transvertebral discectomy under microscope for cervical disc hernia is theoretically ideal because it can minimize disc damage and preserve disc mobility. Although having a long history it has not been popularized. There are several reasons for unpopularity. The surgical indication is difficult. Cervical radiculopathy has been reported a main target, but hernia located in the foramen is technically difficult and we don't think it a good candidate. Central herniation causing myelopathy has not been considered a good candidate. But we think this type of hernia is the best indication. Another problem is technical difficulty. To know precise orientation and maneuver through a small hole is technically demanding. We developed several tools, a wire guide, a muscle retractor and a bone curette to facilitate the surgery. We experienced 23 cases and the result were favorable and no major complications. The disc mobility preserved in most cases.
In addition, surgically difficult herniation, upper or lower migrated, at C3/4 or C7/Th1 were relatively easy targets. We believe this technique should be used for all types of intra-canal disc herniation. It could produce same or even
better outcomes than ACDF and ACR

## Education and Professional Work

Current position
Vice director
Aichi Spine Hospital
Education
1989 Graduated from Nagoya City University, School of Medicine
Research experience
1994-1997 Dept. of Neurobiology and Anatomy Medical college of Pennsylvania (Drexel University), Philadelphia, USA
Occupation
1989 Orthopedic surgery. Nagoya City University
1991 Orthopedic surgery. Ogaki Municipal hospital
1994 Neurobiology and Anatomy
Medical College of Pennsylvania (Drexel University), Philadelphia, USA 1997 Orthopedic surgery.
Nagoya City University
1999 Orthopedic surgery. Toyokawa City Hospital
2009 Aichi Spine Institute
Interest
Minimally invasive spinal surgery, Spinal Infection

# Should cervical endoscopic surgery be the first choice for Cervical Spondylotic Radiculopathy?

**Xiaojian Ye**

Orthopedic Department ,Tongren Hospital

**Background:** ACDF was regarded as the standard operation for CSR. But ACDF is suspected to cause loss of mobility, adjacent segment disease, pseudarthrosis and approach-related complications. The traditional posterior cervical open surgical approach causes muscle dissection, substantial trauma, more blood loss, longer operation time, axial pain postoperation.
**Objectives**: To make clear if cervical endoscopic surgery should be the first choice for CSR.
**Methods**: Among 1562 patients with cervical spondylosis, 712 cases underwent PPECF/PECD ,850 cases underwent ACDF from January 2013 to December 2022. The follow-up time was 1 month to 10 years postoperation.
**Results**: Clinical effects between PECD and ACDF post operation have no statistical difference. But cervical curvature, disc height index and cervical ROM have statistical difference.
**Conclusions:** Cervical endoscopic surgery could be the first choice for cervical spondylotic radiculopathy

## Education and Professional Work

**Education**:
9/1982-7/1987: B.S in Medicine, Department of Medicine, Second Medical University
9/1991-7/1996: M.D. in Medicine, Department of Orthopaedics, Changzheng Hospital, Second Medical University, Shanghai
2/2002-3/2002: Fellowship, in Faculte de medecine et de pharmacie de Poitiers, France.
6/2003-8/2003: Fellowship, in the Spine Education & Research Institute & the Center for Spinal Disorders, P.C. Denver, Colorado, USA

**Experinence**:
8/1987-8/1991 Resident Doctor, Department of Orthopaedics, Changzheng Hospital.
8/1996-8/1999 Attending doctor, Department of Orthopaedics, Changzheng Hospital.
9/1999-8/2005 Associate Professor, Department of Orthopaedics, Changzheng Hospital.
9/2005- Professor, Department of Orthopaedics, Changzheng Hospital.
6/2020- Professor, Chief of Department of Orthopedics and MISS Rearch Center, Tong Ren Hospital, Shanghai Jiao Tong University School of Medicine

**Academic Position:**
1.Member, Secretary-general of Shanghai Orthopedics Association and Chairman of minimally invasive surgery society.
2.Vice chairman of minimally invasive spine surgery society of the Chinese medical doctor association orthopaedic committee.
3.Member of minimally invasive spine surgery group of orthopedic branch of Chinese medical association.
4.Chairman of digital and navigation research society of the Chinese medical doctor association orthopaedic committee
5.Deputy director of Shanghai spinal branch of Chinese integrated traditional and western medicine association,
6.Vice chairman of Shanghai branch of SICOT,
7.Vice chairman of Chinese MISS branch SICOT,
8.Vice chairman of orthopaedic branch of Shanghai rehabilitation medicine association.
9.Member and secretary-general of Chinese nano-biomedical technology association.
10.Senior member of spinal cord injury society of the Chinese disabled rehabilitation association
11.Member of the Spine Arthoplasty Society
12.Course Faculty of AOSpine Asia Pacific
13.Council member of Chinese speaking orthopaedic society
14.Reviewer of the Journal of Spine
15.Reviewer of the Chinese Journal of Orthopaedics
16.Reviewer of the Orthopedic Journal of China
17.Reviewer of the Journal of Shanghai Medicine
18.Reviewer of the Journal of Spinal surgery

# Lecture B3

# The Posterior Oblique Lateral Approach for Uniportal Endoscopic Spinal Surgery

**Pornpavit Sriphirom**

Rajavithi Hospital

The interlaminar approach is a suitable method for pathology in the spinal canal. The transforaminal approach is ideal for pathology in the foramen and the extraforaminal zone. However, those methods are limited to addressing all pathologies in a single portal.
The new approach, the posterior lateral approach, is the development of those techniques to resolve their problems. Both traditional methods are modified from Wiltse approach to a tiny incision by using a Uniportal endoscope, which can operate without the intra-operative nerve monitoring (IONM). It is a safe procedure that can explore the various pathologies, particularly the nerve roots. It can enter the neural foramina in direct visualization, not a blind method as the original transforaminal approach.
The surgical procedure commences with placing a dilator to the superior articular process (SAP) or transverse process (TP). At the same time, some part of the SAP is cut to widen the neural foramen. The medial branch of the dorsal rami nerve is identified and severed to reduce the postoperative pain. Afterwards, an entrance to the neural foramen is created by cutting part of the TP, which is attached to the intertransverse ligament, and can propagate along the pedicle down to the intervertebral disc.
Once the foramen is reached, the surgical procedure can locate the compressed nerve or nerve root. Disk fragments can be easily removed. In cases that require to expand into the spinal canal, such as up-migration of disc herniation, a part of the pars interarticularis can be cut. In cases of down-migrated disc fragment, the medial border of the pedicle can also be removed.
This new method is more secure than the approach through Kambin's triangle. It provides a wider area to access the foramen and intervertebral disc, and to facilitate the secure insertion of a larger PEEK cage, in the endo-lumbar interbody fusion process.

## Education and Professional Work

Education:
1979 - 1981 High School – Triamudomsuksa School, Bangkok, Thailand Curriculum Vitae
1981 - 1988 M.D. – Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
Post-doctoral Training:
1993 - 1996 Residency Training in Orthopaedics– Rajavithi Hospital, Ministry of Health, Bangkok, Thailand
Licensure:
1988 Thailand
Current Employment:
Job Title:
-Head of Policy and Strategy Development Department, Rajavithi Hospital
-Head of Endoscopic Spine, Center of Excellence
-Head of Arthroplasty Unit, Orthopaedic Surgeon, Department of Orthopaedics, Rajavithi Hospital
-Adjunct Associate Professor of Orthopaedic Surgery, Orthapaedic Department, College of Medicine, Rangsit University, Bangkok, Thailand
- Executive Committee, The Royal College of Orthopaedic Surgeons of Thailand.
- President elected of CAOS international
- Chair of CAOS international meeting 2023
- Co-chair NASS Summer meeting 2023
Memberships:
Thai Medical Association
The Royal College of Surgeons of Thailand
The Royal College of Orthopaedic Surgeons of Thailand
The American Academy of Orthopaedic Surgeons
The CAOS International
The NASS (North American Spine Society)

# The Evolution of MISS in Thailand

**Wiwat Wajanavisit**

Ramathibodi Hospital,Thailand

The Thai Society of Minimally Invasive Spinal Surgery has been established in 2010. There are now 55 active members in the society. We began with the Video Assisted thoracoscopy to access the anterior pathology of thoracic spine. The famous authorities have been invited to share their experiences and demonstrate the techniques of surgical surgery.
In the following year, the ASEAN-MISST was established and all 8 countries were gathered to share their experiences. The meetings have been organized in a regular manner, at least once a year. The hands-on cadaveric workshop was also designed to teach the young spine surgeons who are interested in MISS. There are approximately 60 oversea members in the society.
Furthermore, ThaiSMISST and Rajavitee Excellent Center have conducted live surgical demonstrations in rural hospitals since 2016. The surgical teams of Rajavitee Hospital and ThaiSMISST begin to demonstrate the surgical techniques four times a year, and over 20 rural hospitals have been visited.

## Education and Professional Work

EDUCATION
Orthopaedic Clinical Fellow in Spinal Surgery
1992 Twin Cities Scoliosis and Spine Center, Minneapolis, Minnesota, USA
Orthopaedic Research Fellow in Pediatric Orthopaedic
1992 Alfred I DuPont Institute Wilmington, Delaware,USA
Thai Board of Orthopaedic Surgery
1986 Ramathibodi Hospital Faculty of Medicine, Mahidol University
Diploma of Postgraduate
1984 Faculty of Graduate Medicine Science (surgery) Studies, Mahidol University
Doctor of Medicine
1980 Facutly of Medicine, Ramathibodi Hospital, Mahidol University
PROFESSIONAL EXPERIENCE
Lecturer
1990 - 1993 Department of Orthopaedics Faculty of Medicine, Ramathibodi Hospital, Mahidol University
Assistant Professor
1993 - 1996 Department of Orthopaedics Faculty of Medicine, Ramathibodi Hospital, Mahidol University
Associate Professor
1996 - 2015 Department of Orthopaedics Faculty of Medicine, Ramathibodi Hospital, Mahidol University
Professor
2015 - 2021 Department of Orthopaedics Faculty of Medicine, Ramathibodi Hospital, Mahidol University
Emeritus Professor
2021 - Mahidol University
OFFICIAL APPOINTMENT 24th September 1990
E-mail : wiwatosk@gmail.com

# Myogelosis: Cutaneous Reception and Generation of Static Electricity and Magnetism

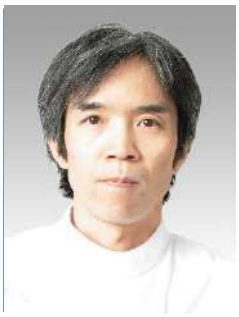
**Shoichi Kokubun**

Professor Emeritus, Tohoku University, Sendai, Japan

Myogelosis, hypertonicity of muscles at rest, causes a variety of pain, which has been thought nonspecific, through hypersensitization of the muscles themselves and their inherent skin areas.
The human body has a muscle tone regulation system comprising the muscle-to-muscle reflex and the skin-to-muscle reflex. Regarding the latter, a stimulant to the skin area causing pain is static electricity held in excitatory substances like polyester and polyethylene in fabrics, or north-pole magnetism emitted from excitatory substances or inhibitory substances like acrylic fiber and polyurethane.
Muscles causing pain are divided into two categories: K Point Group muscles (45 in number), which synchronously become soft by reacting to K Point block under the occiput, and independent muscles (48), which individually react to a block to themselves. K Point Group muscles are in general divided into electro-receptive muscles (25) and magneto-receptive muscles (20). The former are electro-generative and the latter, magneto-generative. All independent muscles are in general electro-receptive and generative of both static electricity and magnetism, i.e., electro-magneto-generative. Among them, however, the sternomastoid head of the sternocleidomastoid, trapezius, obliquus internus abdominis, upper gluteus maximus are magneto-receptive and magneto-generative in ca 15% to ca 30% of patients.
Special rubber sheets two-layered in the same direction remove static electricity over the skin and the fabrics. A 100% acrylic tubular braid with south-pole magnetism reverses the north-pole magnetism to the south-pole magnetism over the magneto-receptive skin area. It is a recommended self-treatment to wear these two kinds of materials as they solve myogelosis.

## Education and Professional Work

Dr. Kokubun is Director of the Research Center for Spine and Spinal Cord Disorders at the NHO Sendai Nishitaga Hospital in Sendai. He stayed at the University of Hong Kong in 1974 and at the University of Oxford in 1992. He was Professor and Chairman of the Department of Orthopaedic Surgery, Tohoku University School of Medicine in Sendai from 1995 to 2006.
His major research and clinical activities before retirement from the Tohoku University were neurology and surgery for cervical myelopathy and spine shortening osteotomy. He first in the world proposed neurological indices for level diagnostic of cervical myelopathy in 1984 and the cartilaginous endplate type of cervical disc herniation in 1996. He first in Japan excised a hemivertebra in 1977 and in the world shortened the spine for a tethered cord due to lipomyelomeningocele in 1995. On the other hand, for the last 16 years after the retirement, he has been concentrating on discovering secrets of pain from muscles as nonspecific pain.
Internationally, the 2nd Triennial Congress of the International Federation of Paediatric Orthopaedic Societies (IFPOS) was a great success under his presidency in Sendai in 2001. He was National Delegate to SICOT (1999-2005), Chief National Delegate to the Asia-Pacific Orthopaedic Association (APOA) (2001-2006), Chairman of the Spine Section, APOA (2005-2008) and President of APOA (2021-2022).
At home, as Congress President, he held the Annual Congress of the Japanese Orthopaedic Association in 2004 and the Annual Meeting of the Japanese Spine Research Society in 2005. In addition, he was President in charge of management of the Japanese Pediatric Orthopaedic Association from 2003 to 2009 and President of Japan Orthopaedics and Traumatology Research Foundation, Inc., Tokyo, Japan from 2007 to 2017.
Therefore, he was given the Award for the Development of the Japanese Orthopaedic Association in 2018.
He has been making every effort to improve spinal surgery, in many Asian countries by visiting there for lectures and demonstration of surgeries or by accepting over 250 fellows to his university department and research center for their training. Because of his achievements, he has been granted an SC Fong Visiting Professorship of the University of Hong Kong in 1996, an honorary professorship of the Jilin University in Changchun, China in 1966, a Ho-Chi-Minh Medal of Ho-Chi-Minh City, Vietnam in 1999, an honorary membership of the Royal College of Orthopaedic Surgeons of Thailand in 2004, a VK Pillay Lectureship of the University of Singapore in 2006, and an AR Hodgson Memorial Lectureship of the University of Hong Kong in 2011. Prof Quazi M Iqbal Memorial Lectureship of the Universiti Kebangsaan Malaysia in 2023.



# Assistive Devices in Full-Endoscopic Spine Surgery

**Shu Nakamura**

Aichi Spine Institute

Spine surgery using full-endoscope is the most minimally invasive and facilitates safe surgery under good visual field. On the other hand, there are limitations in the size and shape of the device that can be used, so some modifications are necessary to compensate for these limitations. In this article, we will review our assistive devices used in the case of a migrated disc herniotomy, posterior cervical disc herniotomy, and lumbar intervertebral fusion, including intraoperative videos.

## Education and Professional Work

Medical School:
Kyoto Prefectural University of Medicine (1988-1994)
Residency:
Kyoto Prefectural University of Medicine (1994-1995)
Kyoto First Red Cross Hospital (1995-1997)
Qualification (in part):
National Board of Medicine
Doctor of Philosophy (approved by Kyoto Prefectural University of Medicine)
Japanese Board of Orthopaedic Surgery
Board-certified Spine Surgeon (approved by the Board of the Japanese Society for Spine Surgery and Related Research)

# Lecture C1

# Full Endoscopic Interlaminar Treatment for Giant Thoracic Disc Herniations with Myelopathy

**Keng-Chang Liu, MD, PhD**

Dalin Tzu Chi Hospital, Chiayi, Taiwan

Thoracic disc herniation (TDH) presents a challenging scenario in spinal pathology due to its rarity and complex treatment landscape. Although rare, thoracic disc herniation (TDH), particularly giant TDH, can cause significant compression of the spinal cord, resulting in debilitating myelopathy. Various surgical strategies, including open, mini-open, or endoscopic approaches, have been suggested to treat this complex condition. This study presents a series of case studies highlighting the management of patients with giant TDH, focusing specifically on utilizing a full endoscopic posterior or posterolateral approach.

In these cases, the surgical intervention involved employing a full endoscopic interlaminar technique, carefully targeting the compressive lesions. Through precise visualization and the use of specialized instruments, the endoscopic approach facilitated thorough decompression of the spinal cord while minimizing tissue trauma. Following the procedure, all patients experienced immediate improvement in presenting symptoms, particularly paraparesis and paresthesia, indicating the effectiveness of the surgical intervention.

This study emphasizes the critical role of careful technique and patient selection in achieving positive outcomes. The successful results observed in this case series underscore the potential of full endoscopic techniques as a minimally invasive surgical approach for managing giant TDH. In conclusion, the utilization of endoscopic interlaminar approaches shows promise as an alternative treatment for this challenging spinal pathology, offering minimized surgical morbidity and improved patient outcomes.

## Education and Professional Work

Current Postition：
1. Chief, Endoscopic and Minimally Invasive Spine Surgery Center, Dalin Tzu Chi Hospital, Taiwan
2. Director, Division of Spine Surgery, Department of Orthopedics, Dalin Tzu Chi Hospital, Taiwan
3. Associate Professor, School of Medicine, Tzu chi University, Taiwan

Educational Background：
Department of Medicine, National Cheng Kung University, Tainan, Taiwan
Department of Orthopedic Surgery, National Cheng Kung University, Taiwan

Work Performance：
1. President of Pacific Asian Society of Minimally Invasive Spine Surgery (PASMISS) 2023
2. President of Taiwan society of endoscopic spine surgery (TSESS) 2023
3. Member of Taiwan Society of Minimally Invasive Spine Surgery (TSMISS)
4. Member of Taiwan Orthopedic Association
5. Member of Taiwan Spine Society
6. Board member of International Society of Endoscopic Spine Surgery (ISESS)

# Various posterior fixation techniques in craniocervical junction

**Nobuyuki Shimokawa*, Hidetoshi Sato, Takafumi Inoue**

＊Department of Neurosurgery, Tsukazaki Hospital, Hyogo, Japan

Various posterior fixation techniques for the craniocervical junction (CCJ) have been developed from all over the world.
When combined with osseous anomaly such as os odontoideum or O-C assimilation, or vertebral artery (VA) anomalies such as persistent first intersegmental artery or fenestration, the location or direction of the anchor screws is difficult to determine. Ensuring a sufficient amount of bone graft is of paramount importance to obtain good bony fusion. In addition, the location of bone grafts is difficult when C1-2 posterior fixation is performed in patients who must undergo C1 laminectomy.
We would like to report the authors' surgical techniques for these cases using a video.

## Education and Professional Work

Education
1991-1997Completed Residency at the Department of Neurosurgery, Osaka City University ( Prof. Hakuba)
1985-1991MD.Collegeof Medicine, Osaka City University, Osaka, Japan
ProfessionalAffiliations
2012-at present Head of Spine Center, TsukazakiHospital, Himeji, Hyogo , Japan
2005-at present Chairman of Department of Neurosurgery, TsukazakiHospital
2003-2005 Chief of Department of Neurosurgery, TsukazakiHospital
1997-2003 Staff of Department of Neurosurgery, TsukazakiHospital
Academic Interests
2016-2021 Member of WFNS Spine committee
2016-at present Member of The Section on Disorders of the Spine and Peripheral Nerves(DSPN)
2016-at present Member of American Association of Neurological Surgeons(AANS)
2015-at present Member of Cervical Spine Research Society Asia Pacific Section(CSRS-AP) & CSRS-Japan
2015-at present Member of Board Trustee of the NeurospinalSociety of Japan (NSJ)
2014 -at present Member of Congress of Neurosurgical Surgeons (CNS)
2013-2015 Inspector of Japanese Society of Spinal Surgery
2012-at present Review Board of *Neurologiamedico-chirurgica*(official journal of the Japan Neurosurgical Society)
2012 at present Editorial Board of the Japan Society of Neurotraumatology
2012-at present Editorial Board of the Japan Society of Neurosurgical Emergency
2012 –at present Editorial Board of the Japan Medical Society of Spinal Cord Lesion
2010-at present Member of Board Trustee of the Japan Society for the Study of Surgical Technique for Spine and Spinal Nerves
2010 Board certification as Senior Member(Instructor) and Review Board *SPINAL SURGERY*(official journal of Japanese Society of Spinal
Surgery) by Japanese Society of Spinal Surgery
2008 Board certification as Technical Specialist by the Japanese Society of Neuroendoscopy
2006 Board certification as Spinal Surgeon by the Japanese Society of Spinal Surgery
2005 Stroke Specialist certified by the Japan Stroke Society
1997 Board certification as Neurosurgeon by Japan Neurosurgical Society

# Background of Thoracic Disc Herniation and its Endoscopic Treatment

**Jun Ho Lee**

Professor Department of Neurosurgery, Spine Section Kyung Hee University Medical Centre

Thoracic disc herniation is rare compared with lumbar disc or cervical disc herniation, accounting for 0.25–0.5% of disc disease. However, the diagnosis of thoracic disc herniation is increasing with the development of diagnostic methods such as magnetic resonance image (MRI).
Percutaneous endoscopic thoracic discectomy (PETD) can minimize the incidence of postoperative spinal instability by minimizing resection of bone and joint tissue. It can be performed under the local anesthesia and has a faster recovery than open surgery. In addition, there is little traction on the nerve, which can reduce nerve edema, and it does not cause excessive nerve tissue exposure, thus minimizing postoperative neural adhesion. Indications for endoscopic discectomy are becoming increasingly widespread due to patient needs and development of endoscopic devices.
Thoracic disc herniation usually occurs in the lower thoracic spine and is uncommon in the upper lumbar spine. Because the thoracic vertebral body has a pear shape, it is possible to remove the extruded disc from the central portion to the foraminal portion. Thoracic disc herniation can be classified as central, centro-lateral, or lateral depending on the location of the herniated disc. Because PETD is characterized by the foramen approach at the posterior lateral side, it can be applied to all soft thoracic disc herniations, regardless of location, from lateral to central herniation. Among them, paramedian or foraminal disc herniation can be removed more easily than central herniation because the target is reached immediately after approach. In the case of central herniation, it is safe to remove the extruded disc by accessing the subarticular zone, separating the dura and posterior longitudinal ligament, entering the disc, and removing the extruded disc.
PETD is not practically applicable to patients with calcified, hard disc or intradural herniation. The hard disc is defined as the disc containing calcification or ossification in the displaced portion of the herniated disc and is often associated with apophyseal osteophyte. Calcified disc is defined as calcification within the disc space, not inclusive of the disc space at the periphery of the disc space, often adherent to surrounding nerve tissue. Intradural herniation often shows severe adhesion between the dura and the posterior longitudinal ligament, often resulting in a dural defect. In these situations, it might be difficult to remove the whole herniated disc by pulling a part of the hernia mass.

## Education and Professional Work

EDUCATION
March 1990 – February 1996: B.A. Seoul National University College of Medicine, Seoul, Korea
March 2000 – February 2002: Master course, Seoul National University, College of Medicine Graduate School, Seoul, Korea
March 2005 – February 2007: Doctorial course, Seoul National University, College of Medicine Graduate School, Seoul, Korea
POSTGRADUATE TRAINING
March 1997 – February 1998: Internship, Seoul National University Hospital, Seoul, Korea
March 1998 – February 2002: Resident, Neurosurgery, Seoul National University Hospital, Seoul, Korea
May 2005 – April 2006: Clinical and Research Fellowship, Neurosurgery, Seoul National University Hospital, Seoul, Korea
HOSPITAL APPOINTMENT
April 2002 – March 2003: Chief of Medical Affairs, Recruit Training Center, 55th Infantry Division, Yong In, Gyeong-Gi Do, Korea
April 2003 - April 2005: Director of Department of Neurosurgery, Armed Forces Seoul Hospital, Seoul, Korea
May 2006- February 2016: Chief Neurosurgeon, Wooridul Spine Hospital
March 2016 – August 2021: Associate Professor, Dept of Neurosurgery, Kyung Hee University Medical Centre
September 2021 – currently: Professor, Dept of Neurosurgery, Kyung Hee University Medical Centre
ACADEMIC INTERESTS
Minimally invasive spine surgery
Endoscopic cervical spine surgery
Image-guided spine surgery
MEMBERSHIP
International member, Tier I, Member's Feedback Committee, North American Spine Society
Member & International Faculty, AOSpine Davos course, Asia-Pacific & North America
Member & Executer, Walter E Dandy Neurosurgical Society
Member, Korean Neurosurgical Society
Member, Korean Spine Neurosurgical Society

# Thoracic decompression, full endoscopic technique

**Woraphot Wichan**

Thabo Crown Prince Hospital

Introduction
At present, minimal invasive spine surgery is more popular among surgeons, especially endoscopic surgery because of good results and patients can return to daily life faster. In thoracic region ,there are many causes of spinal stenosis such as thoracic disc herniation,ossification of the flavum ligament (OYL) ,tumor and etc. The OYL ,most common occur in lower thoracic spine ,more common occur in Asian people, which causes a lot of suffering for patients and treatment often ends with surgical decompression . At present,open or microscopic even though endoscopic decompression surgeries have been used to treat patients.However ,the endoscopic thoracic decompression is not popular used in this area because it requires surgeon experience and expensive equipment .

Patients evaluation and preoperative planning
Almost thoracic OYL cases need decompression surgery, which has different procedures such as open,microscopic and endoscopic procedures. Preoperative planning is crucial,patient's clinical ,MRI and CT scans are needed to evaluate,where the lesions are(single or multiple levels ) or even occur with another disease like OPLL or disc herniation.Finally,how to remove them,every steps should be planned.

Technique
After routine patients set up, in prone position and sterile surgical area, checking landmark will be made under fluoroscopy control ( recommended in AP view by counting ribs), make sure the correct level in lateral view,then skin incision will be made just lateral to midline, then insert the dilator following by cannula and scope ,control by using fluoroscopy.Identify the lower border of the upper lamina after that laminotomy can be performed ,using high speed diamond burr remove lamina(this step ,lamina can be removed like en bloc style),then we can see flavum ligament and part of the SAP(which may be continued to the OYL ). Identified the upper part of the lower lamina , then remove this area until reach epidural space, using diamond burr remove SAP bilaterally until decompression is satisfied.The flavum ligament can be removed along with lamina or the SAP as possible.Stop bleeding and reassess until bony decompression were satisfied.Replace the drain then wound closing as well.

## Education and Professional Work

EDUCATION
Khon Kaen University
1998 Doctor of Medicine, Faculty of Medicine
Khon Kaen University
2004 Diplomat Board of Orthopedics, Faculty of Medicine, Khon Kaen Hosiptal
SPECIAL INTERESTS:
Endoscopic Spinal Surgery
Complex Spinal Surgery
Cervical and Lumbar
Pathologies Spinal Trauma
WORK EXPERIENCE
Largest Regional Hospital, Khon Kaen Hospital
2004-2009
Specialty Doctor for Complex Orthopedics and Spine Surgery
Thabo Crown Prince Hospital
2009-Present
Head of Orthopedics Department

# Lecture C2

# Techniques, pearls and pitfalls of expandable cages in lateral lumbar interbody fusion surgery

**Hiromitsu Toyoda, Hidetomi Terai, Hiroaki Nakamura**

Department of Orthopaedic Surgery, Osaka Metropolitan University

Lateral lumbar interbody fusion (LLIF) has been introduced in Japan in 2013. The lateral approach allows for minimal disruption of the back muscles, spinal canal, and nerve root. The utilization of laterally placed spacers in LLIF enables the placement of larger implant footprints, thereby conferring enhanced structural stability compared to grafts localized to the central endplate. Larger spacers can distribute the load more evenly across the adjacent vertebrae. This can help reduce stress on the implant itself and the surrounding bone, potentially decreasing the risk of implant subsidence or other complications.
In addition to LLIF, expandable interbody spacers represent a noteworthy innovation in spine surgery. This category of cages is designed to be initially inserted into the intervertebral disc space in a collapsed or compact form and subsequently expanded to the desired size once properly positioned. A distinctive advantage of expandable interbody spacers lies in their intraoperative adjustability, allowing surgeons to fine-tune implant placement to achieve optimal fit and stability. Serving as one of the proctor institutions for the introduction of this technique in Japan, our institution conducted the inaugural surgery in 2019. Drawing upon our experiences, this presentation aims to elucidate the intricacies of the technique and highlight potential pitfalls associated with its implementation.

## Education and Professional Work

Education:
1993-1999 MD Osaka City University Graduate School of Medicine, Osaka, Japan
2001-2005 PhD Osaka City University Graduate School of Medicine, Osaka, Japan
Professional Experience:
1999-2001 Residency, Orthopaedic Surgery, Osaka City University Affiliated Hospitals, Osaka, Japan
2005-2006 Fellowship in Spine Surgery, Bibai Rosai Hospital, Bibai, Japan.
2006-2008 Fellowship in Spine Surgery, Osaka City General Hospital, Osaka, Japan.
2008-2009 Fellowship in Spine Surgery, Osaka City University Affiliated Hospitals, Osaka, Japan
2009-2012 Lecturer in Spine Surgery, Osaka City University Affiliated Hospitals, Osaka, Japan
2012-2014 Assistant Professor in Spine Surgery, Osaka City University Affiliated Hospitals, Osaka, Japan
2021-2022 Associate Professor in Medical Education and General Practice, Osaka City University Affiliated Hospitals, Osaka, Japan
2022-today Associate Professor in Medical Education and General Practice, Osaka Metropolitan University Affiliated Hospitals, Osaka, Japan
Membership:
Japanese Orthopaedic Association
Central Japan Association of Orthopaedic Surgery and Traumatology
Japanese Society for Spine Surgery and Related Research
Japanese Society for the Study of Low Back Pain
Japanese Society of Minimally Invasive Spine Surgery
Japanese Scoliosis Society
Japan Osteoporosis Society
Japan Society for Medical Education
Japanese Society of Hospital General Medicine
Japan Association of Motivational Interviewing

Photo

# Application of expandable cage for lateral lumbar interbody fusion (LLIF)

**Kei Miyamoto**

Gifu Municipal Hospital

## Education and Professional Work

# full Endoscopic Lateral Lumbar Interbody Fusion(ELLIF) - Simultaneous anterior and posterior fusion in prone position, intercostal-ELLIF, prone-Navi-ELLIF

**Yoshinori Kyoh**

Director of Kyoh Orthopaedics & Neurosurgery Clinic

Full endoscopic interbody fusion have rapidly become widespread in recent years, but almost all of these involve a posterior approach. Our method represents the only practical lateral approach for full endoscopic interbody fusion, and since its initiation in 2016, it has seen significant development.
LLIF offers advantages such as strong corrective force, robust stability (large cage, preservation of posterior elements), minimally invasive characteristics through indirect decompression, and the ability to perform multi-level fixation in a short time.
In open lumbar surgeries, LLIF has surpassed PLIF and TLIF, leading to its rapid development.
The LLIF to be done endoscopically not only retains these advantages but also generates additional benefits.
The advantages of full Endoscopic Lateral Lumbar Interbody Fusion (ELLIF) method I developed are as follows:
1. Performing ELLIF in the prone position without changing the patient's position allows simultaneous execution with posterior surgery.
2. Performing ELLIF in the prone position reduces the risk of complications such as intestinal injury.
3. The ability to perform ELLIF through the intercostal approach at the thoracolumbar junction.
4. Conducting ELLIF under navigation allows for reduced radiation exposure and improved safety and precision.

ELLIF has been performed in 177 cases (75 males, 102 females, average age 65.3 years) involving 261 segments. Among these, the current prone-position ELLIF has been performed in 41 cases. In this presentation, I will discuss the current practical aspects of ELLIF.

## Education and Professional Work

EDUCATION/POST GRADUATE TRAINING
University: 1988-1994 Mie University, Faculty of Medicine
Residency: 1995-1997 Department of Orthopaedic Surgery, Osaka Rosai Hospital
MEDICAL LICENSURE
Full Medical License (Japan) No.5810
BOARD CERTIFICATION
The Japanese Orthopaedic Association
The Japanese Society for Spine Surgery and Related Research
AWARD
Best Oral Presentation Award -3rd Place-
The 7th ACMISST & 18th KOMISS, 24-25 May, 2019, Seoul, Korea
INTERNATIONAL FACULTY & INVITED LECTURE
The 5th Asia Pacific Cervical Spine Society Meeting, Bari, Indonesia, 23–26 November, 2011
The 2016 Midyear Course of the Minimally Invasive Spine Surgery and Techniques (MISST), Goa, India, 17-19 June, 2016
The Leon Wiltse Spine Symposium, Suwon, Korea, 14 July, 2018
The 2nd ISESS & The 2nd ISMISS Asia-Japan & The 11th MISS Summit Forum, Aichi, Japan, 31 August & 1 September, 2018
The 12th MISS Summit Forum, Aichi, Japan, 23-24 August, 2019
The 3nd ISMISS Asia-Japan & The 13th MISS Summit Forum, Aichi, Japan, 26-27 March, 2021
The 4th ISMISS Asia-Japan & The 14th MISS Summit Forum, Aichi, Japan, 25 March – 24 April, 2022
The 5th ISMISS Asia-Japan & The 15th MISS Summit Forum, Aichi, Japan, 11-31 March, 2023

# Experience in the clinical application of spinal endoscopy-assisted ACDF

**Yongjin Li**

Guangdong Provincial Hospital

## Education and Professional Work

Personal Resume: Yongjin Li, Chief physician, doctoral supervisor, Vice president of Orthopedics Hospital of Guangdong Provincial Hospital of Chinese Medicine, Guangdong Province Outstanding young medical talents. Who chaired two National Natural Science Foundation projects, published nearly 10 SCI papers, and participated in editing Technical Advances in Minimally Invasive Spine Surgery (Springer Publishing House). He specializes in total spinal endoscopic minimally invasive surgery, especially endoscopic spinal fusion surgery.

# Minimization of lumbar interbody fusion by percutaneous full-endoscopic lumbar interbody fusion (PELIF), and its minimally invasiveness comparison with minimally invasive surgery-transforaminal lumbar interbody fusion (MIS-TLIF)

**Kenyu Ito**

Aichi Spine Institute

<Introduction> In fusion surgery, minimization of muscle damage and bone resection is important. To achieve these, we have developed a PELIF. We report the detailed operation procedure, and moreover a comparison of its minimally invasiveness with that of the MIS-TLIF.

<Methods> PELIF is performed using the percutaneous full-endoscope under continuous water irrigation. The working-sheath measures 8.0 × 185 mm. The procedure is performed using instruments <8 mm in diameter except 11 mm percutaneous pedicle screw extender. We performed 126 lumbar fusion cases including 52 PELIF cases (24 males/28 females), aged 62.8 ± 12.5 years, and 74 MIS-TLIF cases (35 males/39 females), aged 63.7 ± 14.4 years managed by three surgeons at our hospital.

<Results> In PELIF, bleeding volume, VAS (back pain), ODI, JOA score, and Macnab's criteria were significantly superior to MIS-TLIF except for VAS (leg symptom).
The MRI cross-sectional area of degenerative spondylolisthesis was significantly improved after PELIF, but that of MIS-TLIF was significantly broader.
PELIF was superior to MIS-TLIF in fat degeneration of multifidus muscle in the cross-sectional MRI under 50 years old.
CT recognized insufficient fusion in one case of PELIF and seven cases of MIS-TLIF, with a tendancy to have more insufficient fusion in MIS-TLIF.

<Conclusion> PELIF is an indirect decompression without canal invasion. PELIF is a less invasive surgery than MIS-TLIF.

## Education and Professional Work

EDUCATION:
April 1998 to March 2004, student of Nagoya University School of Medicine, obtained the M.D. degree
April 2012 to March 2015, Ph.D. student in the Postgraduate Course of Nagoya University School of Medicine
LICENSURE & CERTIFICATION:
・National Board of Medicine, Registration No. 440126
・Board-certified Spine Surgeon approved by the Board of the Japanese Society for Spine Surgery and Related research, Certificate No. 11666
FELLOWSHIP OR STUDY ABROAD:
AO Fellow: Johns Hopkins University. November 11 to 27/ 2015
JSSR Asia Travelling Fellow: Nationa University Hospital (Singapore) 10/16-10/22/2017
Kyung Hee University Hospital (South Korea) 11/13-11/17/2017
International research fellow: San Diego Spine Foundation. Scripps Green Hospital, Rady Children's Hospital. April/2018-Mar/2018
ACADEMIC APPOINTMENTS:
Clinician of orthopedic section in Nagoya University.
HOSPITAL APPOINTMENTS:
2004/Apr-2008/June Okazaki city Hospital
2008/June -2011/Mar Meijo Hospital
2011/Apr -2012/Mar National center for Geriatrics and Gerontology
2012/Apr -2015/Mar Student in the Postgraduate Course of Nagoya University School of Medicine
2014/Apr -2018/Mar Clinician in Nagoya University Hospital
2018/Apr-2019/Mar San Diego Spine Foundation International Fellow, Scripps Green Hospital
2019/Apr-2023/Mar Konan Kosei Hospital
2023/Apr-present. Aichi Spine Hospital
MEMBERSHIPS:
・Japanese Orthopedic Association
・Japanese Spine Research Society
・Japanese Scoliosis Research Society
・Scoliosis Research Society
Etc.

# Luncheon Seminar 2

## Video Surgery Discussion

**Kangtaek Lim**

Seoul Segyero Hospital

## Education and Professional Work

Seoul Segyero Hospital
Department of Neurosurgery.
Director of KOMISS(Korea Minimally Invasive Spine Surgery).
Consultant Physician of Maxmorespine, Germany.
Member of AO spine, NASS, CNS.
Review Board of Asian spine Journal.
5th president of KOSESS.

# Lecture C3

# Percutaneous full-endoscopic lumbar discectomy -Basic & advanced cases-

**Zenya Ito**

Aichi Spine Hospital

**Background:** Percutaneous full-endoscopic lumbar discectomy (PFELD), which originates from a herniated disc, is the least invasive type of hernia surgery and can be applied to almost any type of hernia.

**Purpose:** It is essential to become familiar with the basics of surgery. However, in reality, more advanced technology is required for migrated hernias in various directions. It is important to learn these things from case studies, and I would like to introduce them this time.

**Method:** There were 1. transforaminal approach 3,842 cases (58%), 2. Extraforaminal approach 901 cases (13%), 3. Interlaminar approach 1,894 cases (28%), 4. Others 41 cases (<1%) for a total of 6,678cases. After staining the intervertebral disc under local anesthesia, if necessary, expand the working space with a high-speed drill and remove the hernia.

**Results:** Excellent 70%, Good 21%, Fair 7%, Poor 2%. Recurrence was 3.5%, Dural tear was 1.1%, and conversion to other surgical methods was 0.8%.

**Discussion:** The trick is to secure enough working space, stop the bleeding frequently, and keep the field of vision clean. Once a dural injury occurs, the hole must be immediately blocked with Tachosil®, etc., and the flow of irrigation water into the arachnoid space must be blocked, otherwise, direct water pressure on the conus medullaris will cause severe pain in the sacral region for several hours after surgery, which is dangerous.
PFELD is a method that places minimal strain on the muscles, especially for professional athletes, and it also has the advantage of being able to be completed using local anesthesia, a less invasive method for elderly people.

## Education and Professional Work

**EDUCATION:**
April 1992 to March 1998, student of Nagoya University School of Medicine, obtained the M.D. degree
April 2004 to March 2008, Ph.D. student in the Postgraduate Course of Nagoya University School of Medicine Nagoya University
**LICENSURE & CERTIFICATION:**
・National Board of Medicine, Registration No. 392818
・Board-certified Spine Surgeon approved by the Board of the Japanese Society for Spine Surgery and Related research
**FELLOWSHIP OR STUDY ABROAD:**
・2008/June APOA spine travelling fellowship selected as the only member from Japan.
・2009/Aug-2010/Sep Emory spine center clinical and research fellowship
**ACADEMIC APPOINTMENTS:**
Assistant Professor of orthopedic section in Nagoya University.
**HOSPITAL APPOINTMENTS:**
1998/Apr-2003/Mar Nagoya 1st red cross Hospital
2003/Apr -2004/Sep National center for Geriatrics and Gerontology
2004/Sep -2005/Mar Atsumi Hospital
2005/Apr -2008/Mar Student in the Postgraduate Course of Nagoya University School of Medicine 2008/Apr -2009/Jul Medical staff in Nagoya University Hospital
2009/Aug-2010/Sep International clinical fellowship of Emory Spine Center
2010/Oct-2011/Mar Toyohashi municipal Hospital
2011/Apr-2016/Mar Assistant professor in Nagoya University Hospital
2016/Apr-2017/Mar Aichi Spine Institute vise president
2017/Apr -Present Aichi Spine Hospital Chair
**MEMBERSHIPS:**
・Japanese Orthopedic Association
・Japanese Spine Research Society
・Japanese spinal Instrumentation society
・The Japanese society of oriental medicine
・PASMISS board member
・AO Spine delegates
**HONORS & AWARDS:**
・**2006 Foundation of Orthopedic Department in Nagoya University** (5000$ sponsored by this Foundation)
・**2007 Grants-in-Aid from the Ministry of Education** (20000$ sponsored by this Foundation)
・**2008 Nagoya Spine Group Awards of publications** (2000$ sponsored by this Assosiation)
・**2008 APOA spine travelling fellowship Awards** (selected as the only member from Japan.)
・**2008 Instrumentation Conference Oral Presentation Awards** (5000$ sponsored by this Assosiation)
・**2009 The Uehara Memorial Foundation Awards** (40000$ sponsored by this Foundation)
・**2009 Grants-in-Aid from the Orthopedics association Foundation Awards** (10000$ sponsored by this Foundation)
・**2009 Best Report Awards of Orthopedic department in Nagoya University** (1500$ sponsored by this Department)
・**2011 ISTA(International society for technology in Arthroplasty) best report award** (1500$ sponsored by this Assosiation)
・**2011 Nagoya Spine Group Awards of publications** (1000$ sponsored by this Assosiation)
・**2012 Grants-in-Aid from the Ministry of Education** (33000$ sponsored by this Foundation)
・**2012 JSSR spine travelling fellowship**
・**2015 Grants-in-Aid from the Ministry of Education** (40000$ sponsored by this Foundation)
・**2018 JSSR Best report award**
・**2023.5- Professor of orthopedics of Shandong University**

# Seven Reasons "Why We may/do/should not Perform Interlaminar Surgeries" instead of Transforaminal Endoscopic Approach

**Tolgay Satana**

Avrupa Safak Hospital Istanbul and International Hospital, Turkey

**Aim.**
To evaluate the disadvantages of interlaminar intervention versus transforaminal surgery.
**Introduction:**
Traditional interlaminar surgery, which is more than a century old, is still valid for the surgical solution of pathologies that cause medullary or root compression, whether discogenic or not.It was accepted as the gold standard five decades after interlaminar surgery began to be performed with microscopic assistance with the development of optical systems. As endoscopic surgery became popular in the eighties and became the gold standard in the branches of urology and orthopedics, the treatment of disc diseases through transforaminal surgery initially encountered resistance from traditional surgeons.While transforaminal surgery defined the concept of minimally invasive surgery in spine surgery, the introduction of endoscopy with interlaminar approach attempted to reduce the tendency towards traditional surgery in central disc problems.The long learning curve of transforaminal surgery has led traditional interlaminar surgeons away from this surgery, as they can more easily adapt to unilateral uniportal and unilateral biportal surgical treatments.In fact, the drawbacks of interlaminar surgery continue even though it is performed by endoscopically.
**Material and methods:**
The retrospective single-center study which were included failed back spine surgery patients who had undergone interlaminar surgery at least once and at most seven times. Results before and after treatment using Oswestry disability index and visual analog score. compared
**Results**
All patients underwent transforaminal foraminoplasty and decompression. The result was significant differences($p < 0.05$). There was no significant difference were observed During the up to 6 years follow-up (average 3 years), observed in postoperative VAS and ODI scores
**Conclusion:**
Percutaneous full endoscopic transforaminal lumbar disc surgery is a safe and effective procedure instead of interlaminar approach. Transforaminal endoscopic technique can be performed safely for recurrent and failed back spine.

## Education and Professional Work

Graduated University of Ankara Faculty of Medicine 1991
Orthopedic Surgery Trainning completed in University of Gazi Ankara 1997
Military Service and war surgery experience 1 year 1998
Spinal Fellowship in University of Michigan 1999-2000
Specialised on Deformity spine surgery since 2000 and interested beside Artroscopic surgery
Private practicing since 2003 well known spine surgeon and arthroscopist in Turkey
Executive Member of IMLAS since 2000
Secretary of IMLAS Istanbul 2005
Guest Editor in Turkish Journal of Joint Surgery
Active member of Bone and Joint Turkey Osteoporosis and Osteoarthritis congress responsible of Spine section for 9 years.
Member of Turkish Spine Society
Member of Turkish Ortopedic society
Board member of ISMISS and national representative of Turkey since 2005
Chairman of Turkish Chapter of ISLASS
WALA board member
Founder and President of Turkish MISS
Founder and Coordinator of ISMISS Turkey 2003-14
President of World Federationmiss Congress in Istanbul snd board member
Board member MissSummit since 2009
Tolgay Satana is doing private Practice in Istanbul
He has numeorous lectures' articles, editor of books about MISS.

# Dural Tears in Full Endoscopic Spine Surgery: Risk Factors, Location, Management and Prevention

**Han Ga Wi Nam**

Department of Neurosurgery, Teun Teun Hospital, Hwaseong-si, Korea

The prevalence of Incidental durotomy (ID) during spinal surgery is estimated at 3% to 17%, depending on the complexity of the procedure, the surgeon's experience, whether it is primary surgery or a reoperation, and the patient's age. The incidence of ID during percutaneous endoscopic lumbar decompression has increased along with increased use of endoscopic spinal surgery, with dural tears reported in 0% to 8.6% of procedures, with an overall rate of 2.7%. Compared with open surgery, the management of ID during endoscopic surgery is complicated and difficult. A hemostatic agent, TachoSil (Nycomed, Linz, Austria), is used for control of local bleeding in several types of surgery, but its use in dural repair in endoscopic spinal surgery has not been described. Primary repair of a dural tear is the currently the gold standard for treating ID during conventional spinal surgery. Endoscopic spine surgery, however, has no standard treatment protocol for ID. Common strategies include conversion to open repair with discontinuation of minimally invasive spine surgery or conservative management with a delayed decision depending on the state of sequelae. This presentation is focused on the common causes of ID during full endoscopic lumbar spinal surgeries and reviews the previous literature regarding ID in lumbar spine surgery to suggest a standardized treatment protocol to repair IDT during full endoscopic spine surgery.

## Education and Professional Work

Feb. 2008 M.D. College of Medicine, Kangwon National University, Korea
Mar. 2009 - Feb. 2010 Internship, Hangang Sacred Heart Hospital, Seoul, Korea
Mar. 2010 - Dec. 2012 Residency in Department of Neurosurgery, Hangang Sacred Heart Hospital, Seoul, Korea
Jan. 2013 - Feb. 2014 Residency in Department of Neurosurgery, Dongtan Sacred Heart Hospital, Hwaseong, Gyeonggi,, Korea
Apr. 2014 - Mar. 2015 Army Surgeon, 1st Armored Brigade
Apr. 2015 - Apr. 2017 Army Surgeon , Korea Military Academy Hopsital
May. 2017 - Feb. 2018 Fellow in Department of Neurological Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea
Mar. 2018 - Mar. 2020 Section Chief, Department of Neurosurgery, Good Doctor Teunteun Hospital, Anyang, Korea
Mar. 2020 - Jan. 2021 Section Chief, Department of Neurosurgery, The Leon Wiltse Memorial Hospital, Anyang, Korea
Jan. 2021 - Sep. 2023 Section Chief, Department of Neurosurgery, Sooncheon Chuck Hospital, Sooncheon, Korea
Oct. 2023 – present Section Chief, Department of Neurosurgery, Teun Teun Hospital, Hwaseong-si, Korea

# Full-endoscopic decompression for lumbar foraminal lesion: ideal indication and surgical tips

**Kuniyoshi Tsuchiya**

Dept. Orthopaedics, JCHO Kyushu Hospital

Lumbar extraforaminal lesions are generally considered difficult to treat for two reasons: their diagnosis and their surgical difficulties.
In the diagnosis of lumbar extraforaminal lesion, MRI findings are of great importance and typical findings are previously reported.
On the basis of proper diagnosis, next step is to overcome their surgical difficulties.
Keys of the procedure are identification of nerve roots and proper bleeding control.
For decompression of foraminal stenosis, there are two major pathways to access target nerve roots. One is that from cranial space and identify nerve (nerve first), and the other is that from caudal space (disc first).
Initial distal release and decompression followed by proximal release (hybrid technique) with en-block resection of ligament complex might be ideal for safe and easy nerve root identification and decompression.
En block resection also gives benefit in bleeding control.
Although perfusion used in FESS serves to keep visual field clear with hydrostatic pressure, generally bleeding will put serious effect on the vision, and massive bleeding makes it impossible to continue the procedure.
Tight control of bleeding, especially of small arteries around the foramen is especially important in FESS surgery and en-block resection of ligament complex gives beneficial effect on this point.
All the compressive lesions around single foramen, including far lateral lesion can be treated successfully from monoportal approach using FESS with a single 8mm incision.
There is another advantage. FESS can be inserted into a narrow space between facet and iliac bone, giving more oscillation angle than any other devices including MED system, especially at L5/S1 level. Thus it'll add possibility to preserve facet joint structure, performing effective decompression.
In this talk, general management and tips for single portal surgery for lumbar extraforaminal lesions will be discussed and movies showing those pitfalls will be presented.

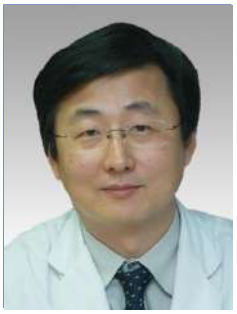
## Education and Professional Work

TRAINING:
1993-1994: Postdocrtoral fellow, Stanford University
2003-2004: Visiting fellow: Spine Deformity Service
Department of Orthopaedics, Washington University School of Medicine, St Louis, MO

LICENSES/CERTIFICATION
2010- : Board certified surgeon of Microendoscopic Spine Surgery
2016- : Board certified surgeon of Full Endoscopic Spine Surgery

Activities:
2012-: Delegate: Japanese Spinal Instrumentation Society
2018-: Delegate: AO spine Japan
2019-: Editorial Committee: guideline for lumbar canal stenosis

Current interests:
Minimally invasive spine surgery



# Lateral position Full endoscopic posterior Foraminotomy under Local Anesthesia

**Byeong Cheol Rim**

Chair man of RIMS Neuro-Clinic, Cheongju-city, South Korea

Radiculopathy is a common condition in the elderly population and can often be treated with endoscopic posterior cervical foraminotomy. However, general anesthesia for this conventional approach presents risks, particularly in patients with multiple comorbidities.
This study discusses a novel technique utilizing subcutaneous bupivacaine and the lateral decubitus position for full endoscopic posterior cervical foraminotomy under local anesthesia. 10 patients with contraindications to general anesthesia underwent the procedure, resulting in significant improvement in cervical radicular pain and no perioperative complications. The findings suggest that this approach is a viable alternative for high-risk patients, broadening the surgical options for radiculopathy treatment.

## Education and Professional Work

**Education**
1994 : M.D., Chungbuk National University College of Medicine, Cheonju, South Korea Postgraduate Training
March, 1994- Feb.1995 : Rotating Internship, Chungbuk National University Hospital, South Korea
March, 1995- Feb 1999 : Residency, Department of Neurosurgery, Chungbuk National University Hospital, Cheongju, South Korea

**Positions Held**
Feb/19/1999 –Apr/16/1999 : Young cheon Army trainy school, South Korea
Apr.1999~ March/2000 : Chief of Neurosurgery Department, Ildong Army General Hospital(rank : captain ), South Korea
April. 2000 – April/19/2002 : Capital protective army division, Republic of Korea
May. 2002 - Jan. 2003 : Director, Department of Neurosurgery, Hankuk General Hospital, Cheongju, South Korea
Feb. 2003- Jun.2005 : Director of Neurosurgery Department,
Hana General Hospital, Cheongju, South Korea
Sep. 2005 –Aug. 2006: Research Fellow of Spine Surgery, Department of Orthopedic surgery SUNY Upstate Hospital, Syracuse, NY, USA
Sep. 2006- May.2008 : Director, Department of Neurosurgery and Spine Center Hana General Hospital, CheongJu city, South Korea
July.2008-Aug.2008 : Cheonan Woori Spine Hospital
Sep.2008 – Dec.2010 : Assistant professor, Department of Neurosurgery ChungBuk Natrional University, College of Medicine
Jan. 2015 ~ : A outpatient professor of ChungBuk National University Hospital
Jan.2011 ~ Feb. 2019 : Director of Spine Center, Sun General Hospital, DaeJeon city, South Korea
March.2019 ~ Oct. 2019 : Clinical Staff, Pohang Wooridul Hospital
Oct. 2019 ~ Apr. 2020 : Director, Department of Neurosurgery, S Seoul Hospital
Apr.20 2020 ~ Aug. 31.2021 : Director, Department of Neurosurgery, MadiSarang Hospital, Cheongju-city, South Korea
Oct.21.2021 ~ Now : Chair man of RIMS Neuro-Clinic, Cheongju-city, South Korea

**Licensure and Certification**
Licensed to Practice Medicine in Korea, 1994
Korean Board of Neurosurgery, 1999
Master of medicine (ChungBuk National University, College of Medicine), 1997
PhD. ChungBuk National University, College of Medicine, 2007

I hereby declare that the above statement is true and correct in everything of my knowledge.
Byeong Cheol Rim MD, PhD

# Full-endoscopic lumbar foraminoplasty for isthmic spondylolisthesis of L5-S1

**Kazuhiko Fujita**

Aichi Spine Institute

Full-endsocopic lumbar foraminoplasty (FELF), using a posterior lateral approach, is one of the less invasive decompression surgeries for lumbar spinal foraminal stenosis. Favorable clinical outcomes in FELF have been reported, whereas few have described about foraminal stenosis with isthmic spondylolisthesis of L5-S1 Lesions associated with isthmic spondylolisthesis of L5-S1 are often accompanied by intraforaminal and extraforaminal stenosis. We performed a three-step procedure for these lesions to decompress the exiting nerve root (L5 nerve root) safely.
First, we performed conventional Endoscopic Lumbar Foraminoplasty (ELF) technique. Then we resected upper posterior edge of the S1 vertebral body, and reamed lumbosacral tunnel (LST) in a dome shape from the opposite position.
Here, we report 2 cases of lumbar foraminal stenosis with isthmic spondylolisthesis of L5-S1 that have been successfully decompressed using these methods by full-endoscopy.

## Education and Professional Work

Education
・Nagoya City University Graduate School of Medical Sciences: Nagoya, Japan (2015 - 2018)
Ph.D. Degree: Doctor of Philosophy (2018)
・Nagoya City University School of Medicine: Nagoya, Japan (2000 - 2006)
M.D. Degree: Medical Doctor (2006)

Professional Training And Employment
Residency: Kasugai City Hospital: Aichi, Japan (2006 -2008)
Hospital Activities:
・Kasugai City Hospital: Aichi, Japan
Medical Staff of Orthopaedic Surgery (2008 - 2010)
・NTT West Japan Tokai Hospital: Nagoya, Japan
Medical Staff of Orthopaedic Surgery (2010 - 2012)
・Toyohashi Medical Center: Aichi, Japan
Medical Staff of Orthopaedic Surgery (2012 - 2015)
・Nagoya City University Hospital: Nagoya, Japan
Medical Staff of Orthopaedic Surgery (2015 - 2018)
・Toyohashi Medical Center: Aichi, Japan
Chief of Spine Surgery (2018 - 2023)
・Aichi Spine Hospital
Medical Staff of Spine Surgery (2023 – present)

Social Activities
The Japanese Orthopaedic Association – Member, Specialist
The Japanese Society For Spine Surgery And Related Reserch – Member, Instructing Doctor

# Lecture D1

# Ten-year clinical outcomes of endoscope-assisted minimally invasive surgical decompression for lumbar spinal stenosis with degenerative spondylolisthesis and comparison with conservative treatment

**Koshi Nambu**

Saiseikai Takaoka Hospital,

Introduction: The aims of this study were to evaluate the 10-year clinical outcomes of endoscope-assisted, minimally invasive surgical (MIS) decompression for lumbar spinal canal stenosis (LSS) with lumbar degenerative spondylolisthesis (DS) and to compare the radiographic changes in patients who underwent this procedure with those who underwent conservative therapy at 10-year follow-up.
Methods: Between April 2007 and April 2010, a total of 347 consecutive patients with DS and evidence of LSS underwent conservative treatment first from 2 to 4 weeks. Then, the 114 patients who failed conservative treatment were treated surgically by endoscope-assisted MIS decompression. Of them, 91 patients were followed for more than 10 years (group S), and 146 of the 233 patients treated conservatively were followed for more than 10 years (group C). Clinical outcomes of endoscope-assisted MIS decompression were assessed using the Short Form Health Survey-36 score (SF-36), the Roland Morris Disability Questionnaire (RDQ), and the neurological leg symptoms of the Japanese Orthopaedic Association Score (JOA score). Radiographic changes of the 2 groups were assessed by %slip, dynamic %slip, range of motion (ROM), and the height of the disc (DH) on plain radiographs.
Results: Significant improvements in clinical outcomes on the SF-36, RDQ, and neurological leg symptoms of the JOA were observed. Radiographic assessment did not show significant differences in the assessed items between the two groups at baseline and after last treatment. Both groups had significantly decreased ROM and DH.
Conclusions: The 10-year clinical outcomes of endoscope-assisted MIS decompression for DS were generally good. Furthermore, on radiographic comparison, the progress of spondylolisthesis after this procedure was virtually the same as in the natural course of the disease at 10-year follow-up.

## Education and Professional Work

EDUCATIONAL HISTORY
1988: Graduated from Takaoka High School (Toyama)
1995: M.D. Toyama Medical and Pharmaceutical University School of Medicine
2004: Ph.D. Kanazawa University School of Medicine
MAJOR RESEARCH INTERESTS
1.Full-endoscopic spine surgery,
2.Minimally invasive spinal surgery
WORKING EXPERIENCE
1995-1996: Resident doctor, Department of Orthopaedic Surgery, Kanazawa University.
1996-1997: Orthopaedic doctor, Department of Orthopaedic Surgery, Kouseiren Takaoka Hospital, Toyama.
1997-1999: Orthopaedic doctor, Department of Orthopaedics Surgery, Saiseikai Fukui Hospital, Fukui.
1999-2000: Orthopaedic doctor, Department of Orthopaedics Surgery, Suzu General Hospital, Ishikawa.
2000-2002: Orthopaedic doctor, Department of Orthopaedics Surgery, Kanazawa University.
2002-2007: Orthopaedic doctor, Department of Orthopaedics Surgery, Kanazawa Municipal Hospital, Ishikawa.
2007- : Orthopaedic doctor, Department of Orthopaedic Surgery, Saiseikai Takaoka Hospital, Toyama.
2009- : Medical director, Department of Orthopaedic Surgery, Saiseikai Takaoka Hospital, Toyama.
Performed operations as surgeon in orthopedics. e.g: spinal disorder and injury, full-endoscopic spine surgery, minimally invasive spinal surgery with the assistance of endoscopic technique
LICENCSE & CERTIFICATION
1995: Japanese Medical License Registration
2002: Orthopaedic Surgery Specialist approved by Japanese Orthopaedic Association
2004: Authorization for Spine Specialist approved by Japanese Orthopaedic Association
2007: Board-certified Spine Surgeon approved by the Board of the Japanese Society for Spine Surgery and Related Research
2008: Authorization for Endoscopic Surgical Spinal Skill Approved by the Japanese Orthopaedic Association (posterior approach)
2022: Authorization for Endoscopic Surgical Spinal Skill Approved by the Japanese Orthopaedic Association (full-endoscopic spinal surgery)

# Basic surgical strategies for preservation of the facet joint in endoscopic decompression for degenerative lumbar canal stenosis

**Kenzo Shimizu**

Aichi Spine Hospital

I perform MEL(MicroEndoscopic Laminectomy) and UBEL(Unilateral Biportal Endoscopic Laminectomy), PSLD(Percutaneous Stenoscopic Lumbar Decompression) technique for posterior lumbar decompression surgery via unilateral laminotomy with bilateral decompression.
Excessive medial facetectomy can induce postoperative segmental instability. UBE is superior to PSLD and MEL in preservation of facet joint. Thus, I prefer to perform UBE for LSCS especially at L3/4 level or above. MEL with normal 16mm tubular retractor tend to result in over-resection of facet joint at L3/4 or above level.
The favorable approach side for right-handed surgeon is right in MEL, and left in UBE in terms of interference of surgical instrument to anatomical structure. If preservation of sufficient facet joint is considered to be difficult via approach from symptomatic side due to the patient's anatomical problem, I choose contralateral approach. In case spinal process is largely tilted, I approach from obtuse angle side of spinal process. In case the angle of facet joint is too steep to preserve, I approach from more obtuse angle facet joint side.
Usage of curved telescoping tube in high speed drill is effective for preservation of facet joint, and largely used in MEL. However, bar shaft can be broken frequently due to structural burden against the straight shaft by bending stress. I experienced dissemination of 0.5mm stainless steel ball of the ball bearing in tip section of telescoping tube to surgical field in 2 case of UBE surgery.
If the outer edge of inferior facet joint exists inside of medial pedicle line in both sides, it is unable to preserve facet joint by normal unilateral laminotomy with bilateral decompression. I use bilateral contralateral approach in such case. At present, I adopt MEL surgical system via one midline skin incision and two fascia incision at both sides of spinal process to perform this procedure. If resection of disc herniation is required in such anatomical case, I adopt 2 stage surgery. Firstly, I usually perform TF PELD (TransForaminal Percutaneous Endoscopic Lumbar Discectomy) to approach via different surgical trajectory. If postoperative residual symptom is significant, I perform additional MEL as one incision - bilateral contralateral approach for posterior decompression.

## Education and Professional Work

PRESENT POSITION
Aichi Spine Hospital
Chief of Neurosurgery Division
PRESENT MAJOR CLINICAL AND RESEARCH INTERESTS:
Endoscopic spine surgery, Minimum invasive spine surgery
LICENSURE and CERTIFICATION:
National Board of Medicine
Japanese Board of Neurosurgery
Neurospinal society of Japan, Board certificated neurosurgeon
The Japan Stroke Society, Board certificated physician
MEMBERSHIPS:
Japan Neurosurgical Society
Neurospinal Society of Japan
The Japan Stroke Society
Japanese Congress of Neurological Surgeons
Japanese Society on Surgery for Cerebral Stroke
The Japanese Association of Rehabilitation Medicine

# Development and application of novel endoscopic techniques for challenging revision surgery and complex deformity cases

**Christian Morgenstern**

Morgenstern Institute of Spine,Spain

We present several cases and examples for which we have developed novel and innovative endoscopic techniques:

- Development and application of a fusion dilator for endoscopic placement of large-footprint lumbar interbody cages (TLIF): a prospective study of 40 cases with 15 months mean follow-up.
- Endoscopic removal of migrated and/or pseudo-arthrotic cages in revision surgery of the lumbar spine
- Combination of endoscopic techniques with other MIS surgery techniques (ALIF, OLIF, etc.) for complex deformity cases
- Endoscopic decompression for leaked PMMA into the neuroforamen
- Endoscopic re-decompression for an epidural lumbar hematoma

## Education and Professional Work

・Head of Spine Surgeon at **Morgenstern Institute of Spine,Barcelona**
・**Head of Spine surgery** at Hospital Nostra Senyora de Meritxell(Andorra)
・**Teaching instructor (faculty)** in international workshops for anterior and lateral approaches, and endoscopic spine surgery
(faculty for AO Spine, Spineart, Signus, Maxmore Spine, etc.)

**Training**
・**Board certified orthopedic surgeon** (German Board, Berlin)
・Residency at **Charité Universitätsmedizin Berlin**, Germany
・**Fellowship** trained MIS and endoscopic spine surgeon

**Education**
・Doctor medicinae (Dr. med.), Germany
・Medical Doctor, University of Barcelona
・PhD in Biomedical engineering, UPC-BarcelonaTECH
・Diplom-Ingenieur, Karlsruhe Institute of Technology
・Thesis at the Massachusetts Institute of Technology (MIT), USA

**Publications / Societies**
・More than 100 abstracts and papers in international peer-reviewed journals and international conferences (NASS, Eurospine, AO Spine GSC, ISMISS, etc.)
・Reviewer for more than 10 international journals
・Member of **NASS, Eurospine, AO Spine,** ISASS, IEEE

# Minimally invasive decompression alone for lumbar spinal stenosis with degenerative spondylolisthesis: A prospective study to clarify the advantages and disadvantages

**Akira Miyauchi**

Saka-Midorii Hospital

INTRODUCTION
Simple decompression for lumbar spinal stenosis (LSS) with degenerative spondylolisthesis (DS) has been characterized by slip progression and secondary instability, leading to negative surgical outcomes. However, can minimally invasive decompression (MID) cause such disadvantages? The purpose of this study was to prospectively evaluate the efficacy of MID for LSS with DS.
METHODS
We conducted a 2-year follow-up. The inclusion criteria were LSS with a slip rate ≥10% at L4-5 in the neutral position on a standing radiograph and disruption of daily activities by radiculopathy or neurogenic claudication.
Microscopic bilateral decompression using a unilateral approach was performed at L4-5 preserving the facet joints and spinous processes. This study enrolled 47 patients with an average age of 70 years. The average slip rate was 17.1% ± 5.7%. Surgical outcomes were evaluated using JOA score, a VAS for low back pain and leg symptoms; in addition, the slip rate and lumbar lordosis (LL) in flexion, neutral position, and extension were used for the static and kinetic radiographic evaluation. These findings were compared annually using the Wilcoxon signed-rank test with Bonferroni correction.
RESULTS
Two patients dropped out of the study. Leg symptoms recurred in six patients; four of them had temporary deterioration and responded well to conservative treatments. The other two patients required reoperation. In 43 patients (excluding the dropouts and reoperated patients), clinical symptoms improved, and LL in the neutral position and extension increased, whereas the other radiographic parameters did not change during follow-up.
DISCUSSION
Preserving facet joints and spinous processes, MID does not cause slip progression or secondary instability, leading to satisfactory outcomes for LSS with DS. Restoring LL and facilitating back extension can also counteract post-decompressive slip progression. Degenerative changes after MID could cause symptom deterioration, many of which are temporary, and the reoperation rate may be lower than expected.

## Education and Professional Work

Biography:
I am working for Saka-Midorii Hospital in Hiroshima, Japan as the head doctor. I earned my MD and PhD at Hiroshima University in 1993 and 2012, respectively. I have over 4000 surgical cases of spine diseases using a microscope, about 200 cases every year. I have performed neural decompression alone for almost all surgical cases even though they have degenerative spondylolisthesis or the so-called unstable spine.

# Lecture D2

# Proposed new UBE intervertebral fusion

**Kanji Sasaki**

Seirei Hamamatsu general Hospital

## Education and Professional Work

**Education:**

Literature Kyoto Univ. dept. of literature Apr. 1993- Mar 1996
Medical School Kagawa Medical University School of Medicine Apr. 1996 - Mar. 2002. M.D. qualified on March, 2002.

**Residency:**

Dept. of Orthopedic Surgery, Kagawa Univ. School of Med. and Affiliated Hospitals May. 2002 ~ Mar. 2004
Kobe Rosai Hosp. Sep 2005- Mar 2007
Niigata Spine Surgery center Sep 2009- Aug. 2012

**Postgraduate:**

Graduate School, Kagawa Univ. Apr. 2007 ~ Mar. 2011
Ph.D. (No.525), qualified on Mar.24, 2011
Research fellow
Washington Univ. of St. Louis Fellow Sep. 2013- Nov.2013

**Special subjects:**

1) Clinical: All spine diseases covering spinal neural elements and bone and joints, from pediatric through adult, from cervical though sacrum, including spinal cord tumors (extra- or intra-medullary tumors), spine tumor (primary or metastatic), all degenerative diseases, osteoporotic spine, idiopathic, congenital or paralytic scoliosis, etc.
2) Basic: Cell and molecular biomechanics and cell signaling of cancer and tumors especially with biomarkers of cancer and tumors on orthopedic pathology

**Academic activities:**

① Japanese Orthopaedic Association, member
② Japanese Spine Research Society, member
③ Japanese Association of Spine Instrumentation, member
④ Japanese Society for UBE and BESS, representative director

# Technical Feasibility and Early Clinical Outcome of Biportal Endoscopic Transforaminal Lumbar Interbody Fusion Using Larger Cage

**JU-EUN KIM**

Baro-seomyeon Hospital, Busan, South korea

**Background:** Transforaminal lumbar interbody fusion with biportal endoscopic guidance (BE-TLIF) has been previously reported with promising clinical results. However, complications such as delayed union or subsidence occurred as with open surgery. We assumed using larger cages would result in less occurrence of such complications. We aimed to analyze the clinical outcome and technical feasibility of BE-TLIF using larger cages, initially designed for oblique lumbar interbody fusion.
**Methods:** We enrolled cases that underwent single-level BE-TLIF between January 2021 and January 2022. Polyetheretherketone cages that were larger than the conventional size were used. Diagnoses were degenerative spondylolisthesis or isthmic spondylolisthesis. Visual analog scale scores of the back and leg and Oswestry Disability Index were collected perioperatively. Modified Macnab criteria were used to evaluate the patients at the final follow-up. Radiologic outcome of interbody fusion rate and perioperative complications were analyzed.
**Results:** A total of 35 cases were included in this study. The mean age was 67.5 ± 8.4 and consisted of 13 male patients, and the mean follow-up duration was 18.3 ± 3.7 months. The majority (32/35, 91.3%) of the index level was located within the lower lumbar region, L4-S1. Oswestry Disability Index scores improved from 65.4 ± 5.4 preoperatively to 15.4 ± 6.1 at the final follow-up ($P < 0.001$). Visual analog scale scores of the leg decreased from 7.9 ± 1.5 to 1.7 ± 1.5 at the final follow-up ($P < 0.001$). Per the modified Macnab criteria on the final follow-up, 94% of the patients reported good/excellent. Most (94.2%) of the patients showed fusion grade I and II at the 1-year follow-up. No patient showed subsidence or other postoperative complication.
**Conclusions:** BE-TLIF using a larger cage was safely performed without risk of subsidence during the 1-year follow-up. A cage with a larger footprint may be advantageous in BE-TLIF in the aspect of interbody fusion and subsidence.
**Keywords:** Degenerative spinal disease; Endoscopy; Spinal stenosis; Transforaminal interbody fusion.

## Education and Professional Work

EMPLOYMENT:
**Chief of Department, Department of Orthopedic surgery 2015~2018**
**Clinical Instructor**, Department of Orthopedic Surgery, Kyungpook National University Hospital, Daegu, South Korea 2014 - 2015
**Physician in Army** (rank: captain grade), Daegu Military Hospital, Daegu, South Korea United Nations Mission in South Sudan 2011 - 2014
EDUCATION
**M.S., Kyungpook National University, College of Medicine, Daegu, South Korea 2009**
**M.D., Kyungpook National University, College of Medicine, Daegu, South Korea 2006**
**PreMedic School, Kyungpook National University, College of Medicine, Daegu, South Korea 2001**
PROFESSIONAL SOCIETIES AND ACTIVITIES
Korean Medical Association 2006
Korean Orthopaedic Association 2011
Daegu-Kyungpook Orthopaedic Society 2011
AOSpine member 2015
Daegu-Kyungpook Spine Society 2015
Korean Society of Spinal Surgery 2016
Korean Worker's Corporation & Welfare Service Consultant 2016
National Pension Service Consultant 2016
Korean Society of Spinal Surgery Minimal Invasive surgery Committee Member 2017
Korean Society of Spinal cord research Committee Member 2017
Korean Society of Spinal cord research Committee Member 2017
**APSS member 2018**
**NASS member 2018**
**PASMISS member 2018**
**ISASS committee 2023**
HONORS AND AWARDS
2017~2020 Marquis Who's who in the world

# Hydro-dissection in unilateral biportal endoscopic surgery

**Kazuhiro Yoshimura[1)], Yoshinori Kyoh[2)]**

1)Yoshimura Brain and Spine Clinic 2)Kyoh Orthopaedics & Neurosurgery Clinic

(Background) Unilateral Biportal Endoscopic Surgery (UBE) is a minimally invasive spinal surgery technique that is performed based on the same concept as arthroscopic surgery, and has the advantage of a bright surgical field and a high degree of freedom in surgical procedures. However, in order to obtain a clear surgical field in spinal surgery, where a space such as a joint cavity does not originally exist, we believe that it is necessary to create and maintain a space for performing surgical operations. For the above purpose, we performed hydro-dissection of the paraspinal muscles from the bone removal starting site under ultrasound guidance in advance. In this presentation, we will present our way of UBE decompression for lumbar spinal canal stenosis (LCS) and examine its usefulness. (Methods) Clinical data of 31 patients of LCS treated between Sep 2022 and Dec 2023 using UBE techniques were reviewed. They were 15 males and 16 females with an average age of 74(57-93). (Results) The mean JOA score was significantly improved from 15.4±4.2 to 21.8±5.1. On average, total surgical time was 84.0 ±13.7 minutes, and time from skin incision to drilling was 11.0 ± 2.5 minutes.
The average JOA improvement rate was 56.1%±30.5%. The average hospital stay was 1.5±0.5 days. Complications included 3 dural tears, and 1 epidural hematoma.
(Conclusions) With UBE techniques, decompression for LCS can be performed safely and effectively. And this procedure can be performed smoothly by adding hydro-dissection technique in advance.

## Education and Professional Work

Academic background
March 2011 Withdrawal from Osaka University Graduate School of Medicine after completing credits
April 2007 Admission to Osaka University Graduate School of Medicine
March 2001 Graduated from Osaka City University School of Medicine

Work history
May 2023 Director of Yoshimura Brain & Spine Clinic
April 2015 Director of Neurospinal Surgery, Osaka Neurosurgical Institute
April 2013 Osaka Neurosurgical Institute
March 2011 Department of Neurosurgery, Iseikai General Hospital
November 2006 Osaka University Hospital, Department of Neurosurgery
December 2005 Department of Neurosurgery, Yukioka Hospital
April 2004 Department of Neurosurgery, Iseikai General Hospital
April 2002 Department of Neurosurgery, Osaka Prefectural Cancer and Cardiovascular Disease Center
May 2001 Department of Neurosurgery, Osaka University Hospital

# Unilateral biportal endoscopic keyhole facetectomy for the lumbar foraminal stenosis which is shown too good to fuse

**Dookyung Son**

Believe Sewoong Hospital, Busan, Korea

Purpose
The interbody fusion and indirect decompression is representative surgical solution for lumbar foraminal stenosis. However, this surgery occasionally accompanies device-related complications, additional hospital stays and costs. Furthermore, the interbody fusion sometimes doesn't appropriate for old age or medically debilitated patients. We introduce alternative surgical technique which is able to avoid interbody fusion and its short term results.

Material and Methods
Total 10 patients who had severe radiating pain due to lumbar foraminal stenosis were operated with alternative surgical technique. After routine prepartion, upper and lower portal were positioned about 1~2 centimeter lateral from lateral pedicle line. The paraspinal muscles were gently split, subsequently facet joint was identified. To keep the solidity of facet joint, minimal facet capsulectomy and keyhole to uppermost area of the facet joint was done. The hypertrophied flavum was identified and gently removed. After flavectomy, exiting nerve root at foraminal zone was identified and decompressed well.

Results
Using this surgical technique, we could approach to the foraminal zone easily and decompress the pinched exiting nerve root compared than standard paraspinal approach. After operation, most of patients showed improvement of symptoms with numerical rating scales. Postoperative CT or MRI scans were undertaken during hospital stays, there were good decompression of pinched nerve root and minimal facet joint violations. All patients have visited outpatient department at least 6 months, their symptoms were gradually improved step by step. Furthermore, there were not any significant complications during follow-up period.

Conclusions
The interbody fusion and indirect decompression is best choice for the lumbar foraminal stenosis. However, biportal keyhole facetectomy is a good and safe alternative surgical options for the lumbar foraminal stenosis.

## Education and Professional Work

2010 Bachelor's degree, School of Medicine, Pusan National University
2014 Master's degree, School of Medicine, Pusan National University

2011 Internship, Pusan National University Hospital
2015 Residency, Pusan National University Yangsan Hospital
2018 Clinical fellow, Pusan National University Yangsan Hospital

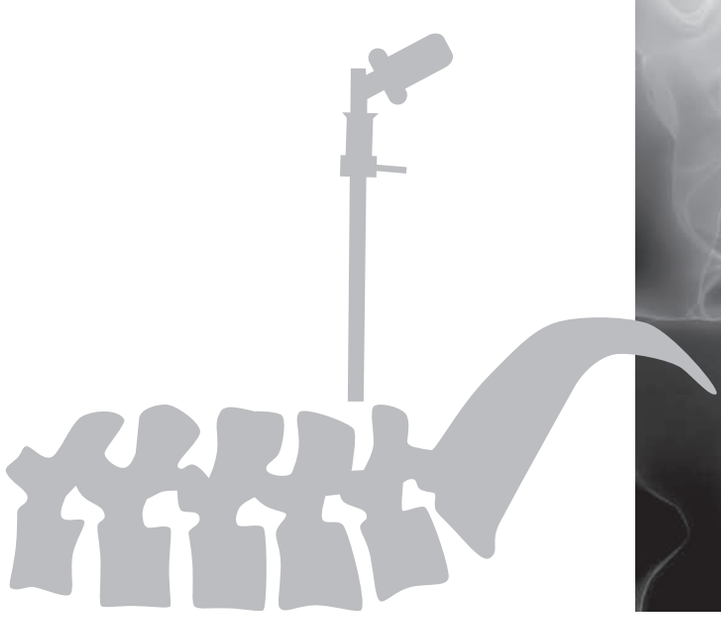
*** Awards**

Nanoori Academic award, 33th ASIA spine
Best paper award, Busan Brain and Spine Society

*** Fields of Interest**

Unilateral Biportal Endoscopy
MIS surgery; Oblique Lumbar Interbody Fusion

# Supporting Company



# 協賛企業・団体一覧

The 16th MISS Summit Forum を開催・運営するにあたり、下記のとおりご支援、ご協力をいただきました。心より感謝申し上げます。

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40年を経た現在、アムジェンは世界最大規模の独立バイオテクノロジー企業へと成長しました。

日本では、循環器疾患、がん、骨疾患、炎症・免疫性疾患、神経疾患の領域に重点を置き、アンメット・メディカルニーズに応える製品開発を進めています。

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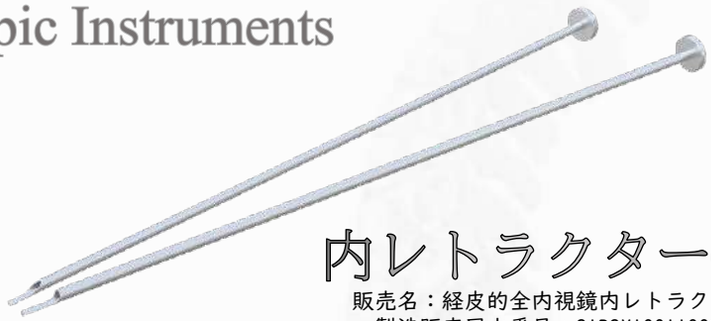

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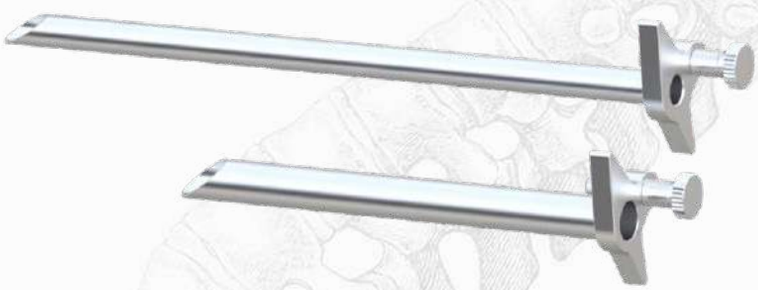

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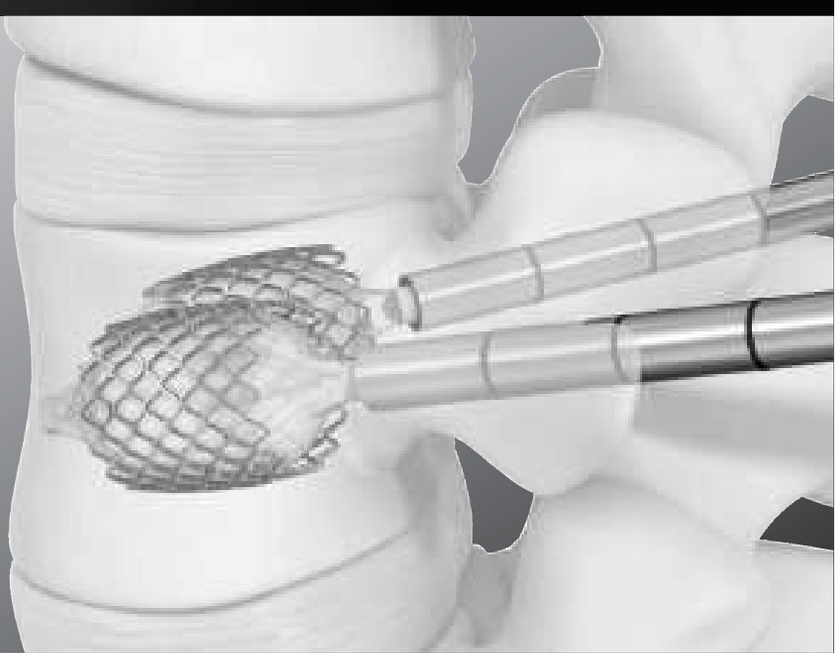

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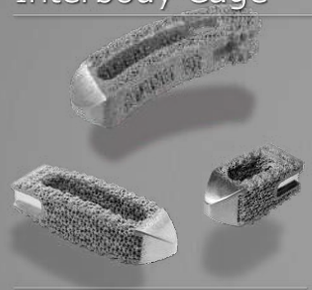

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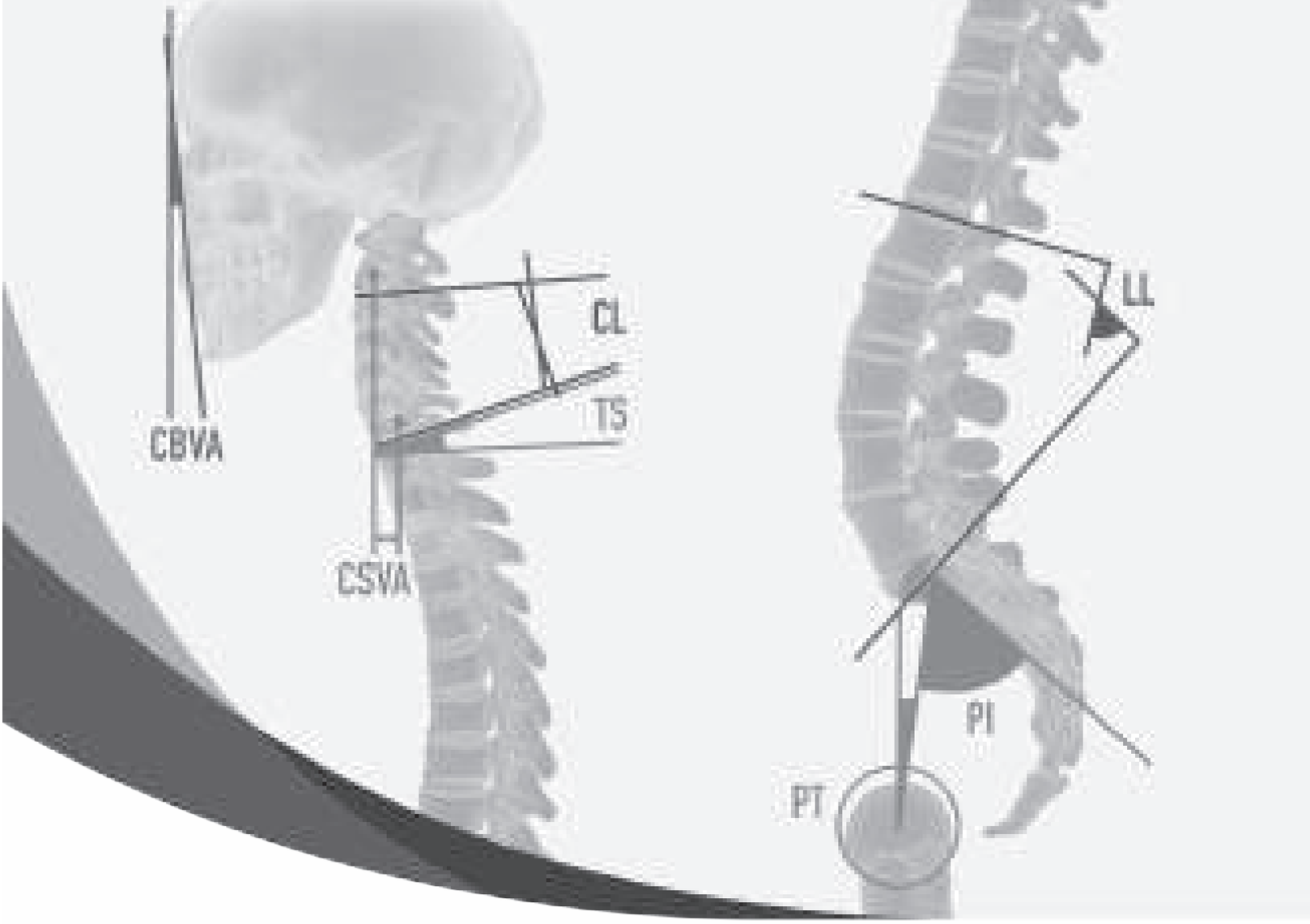


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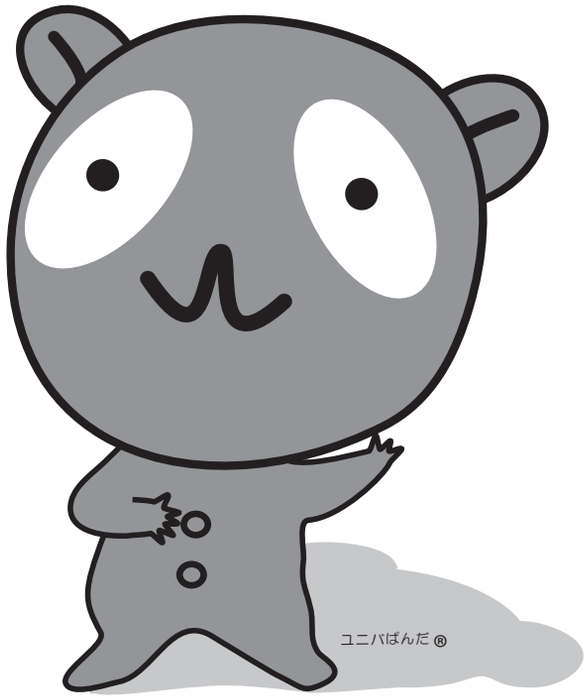


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Congress Secretariat of MISS Summit Forum

Aichi Spine Hospital

31-1, Kamiike, Goromaru, Inuyama-shi, Aichi, 484-0066, Japan

E-mail: miss@itoortho.or.jp