SCIENTIFIC PROGRAM

Morgenstern Institute of Spine

SICOT

CENTRO MÉDICO TEKNON
Grupo quirónsalud

4TH ISMISS/MIS & ENDOSCOPIC SPINE FORUM

March 27th, 2025 - Barcelona

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REGISTRATION DETAILS

Registration will be held from 7:30 AM to 8:00 AM at the entrance of the Auditorium, located in the Main Building of Centro Médico Teknon (Carrer de Vilana 12, 08022 Barcelona).

OPENING CEREMONY

08:00 - 08:05
Welcome by the medical director of Centro Médico Teknon, Monica Isart

08:05 - 08:10
Welcome by the ISMISS Honorary secretary, Hans-Jörg Leu

08:10 - 08:15
Welcome by the ISMISS national representative for Spain, Rudolf Morgenstern

08:15 - 08:20
Welcome by the chairman, Christian Morgenstern

08:20 - 08:40
Keynote speaker: Current concepts in the management of spinal infections
Andrej Trampuz, Queensland University of Technology, Brisbane, Australia

SESSION 1: ENDOSCOPY PAST AND PRESENT

Moderators: HJ Leu, Saqib Hasan, Erik Traupe

08:40 - 08:50
Endoscopic operative approach to the lumbar spine: a personal review end experience since 1985
Hans-Jörg Leu, Wirbelsäulenzentrum Hirslanden Klinik, Zürich, Switzerland

08:50 - 09:00
The World Wide State of Endoscopic Spine Surgery
Saqib Hasan, Golden State Orthopedics and Spine, Oakland, CA, USA

09:10 - 09:20
Endoscopic spine surgery. Is it the standard yet?
Benedikt Burkhardt, Wirbelsäulenzentrum Hirslanden Klinik, Zürich, Switzerland

09:00 - 09:10
High-value procedures techniques in endoscopic spine surgery based on surgeon experience
Kai-Uwe Lewandrowski, Center for Advanced Spine Care of Southern Arizona, Tucson, AZ, USA

09:10 - 09:20
Endoscopic Spine Surgery - an Unexpected Journey
Erik Traupe, Unintech GmbH, Düsseldorf, Germany

SESSION 2: LUMBAR ENDOSCOPY 1
Moderators: M Farshad, Gun Choi, F Hassel

09:20 - 09:30
Randomized Controlled Trial Open Microdiscectomy vs Transforaminal Endoscopy for lumbar disc herniation
B.S. Harhangi, Erasmus Medical Center, Rotterdam, Netherlands

09:30 - 09:40
Access & Approaches for Multifocal pathologies in a single Lumbar spinal motion segment
Girish Datar, MD, Spinescopy lifesciences, India

09:40 - 09:50
Comparison of unilateral laminectomy for bilateral decompression by four surgical methods
Zenya Ito, Aichi spine hospital, Nagoya, Japan

09:50 - 10:00
Motion Preservation Surgery for Adjacent Segment Disease at the Lumbar Spine. Full Endoscopic Decompression IE-LRD / LE-ULBD
Nicolas Prada, Foscal International Clinic, Floridablanca, Colombia

10:00 - 10:10
Selective endoscopic decompression in the senile patient
Heber Humberto Alfaro Pachicano, Hospital Star Medica Veracruz, Mexico

10:10 - 10:20
Discussion

10:20 - 10:35
Coffee break and Industry exhibition

SESSION 3: THORACIC AND CERVICAL ENDOSCOPY
Moderators: JS Bae, Gun Choi, S Konakondla

10:35 - 10:45
Clinical and Cost-Effectiveness Analysis of Transforaminal Endoscopic Thoracic Discectomy versus Microscopic Discectomy for Symptomatic Thoracic Disc Herniation
Jun-Sok Bae, Wooridul Spine Hospital Seoul, South Korea

10:45 - 10:55
TFED for thoracic disc herniation
Gun Choi, Pohang Woori Spine Hospital, South Korea

10:55 - 11:05
Advanced Techniques in Spinal Endoscopy
Sanjay Konakondla, Geisinger Neuroscience Institute, Danville, PA, USA

11:05 - 11:15
Combined paramedian and posterolateral endoscopic approach to calcified central thoracic herniations
Marlon Sudario, Thiago Soares dos Santos, Endocoluna/Hospital Mater dei, Belo Horizonte, Brazil

11:15 - 11:25
360° Endoscopic Approach for Single level Cervical Spondylotic Myelopathy: A Case series study
Kang Taek Lim, AIN Hospital, Incheon, South Korea

11:25 - 11:35
Full-endoscopic anterior cervical discectomy and fusion (eACDF)
Christian Morgenstern, Morgenstern Institute of Spine, Centro Médico Teknon, Barcelona, Spain

11:35 - 11:45
Evidentiary factors for pseudoarthrosis predilection after ACDF
Jun-Ho Lee, Kyung Hee, University Medical Center, Seoul, South Korea

11:45 - 12:00
Discussion

SESSION 4: MIS 1
Moderators: M Konviesczny, G Bodon, N Taboada

12:00 - 12:10
Is the lateral ALIF technique the best way to treat pathologies of the L5-S1 level?
Gergely Bodon, Klinikum Esslingen, Germany

12:10 - 12:20
ALIF in high degree listhesis
Nestor Taboada, Clinica Portoazul, Barranquilla, Colombia

12:20 - 12:30
A rare Complication of ALIF surgery
Wälchli Beat, Spital Zollikerberg, Zurich, Switzerland

12:30 - 12:40
Lateral Decubitus Versus Supine Anterior Lumbar Interbody Fusion: A Bayesian Meta-Analysis of Outcomes and Complications
Anel Dracic, Volmarstein Orthopedic Clinic, Germany

12:40 - 12:50
Tips and tricks Pre anterior Approach
Nestor Taboada, Clinica Portoazul Barranquilla, Colombia

12:50 - 13:00
Discussion

13:00 - 13:30
Lunch and Industry exhibition

SESSION 5: DEFORMITY AND TRAUMA
Moderators: A Baranto, L Ferraris, M Farshad

13:30 - 13:40
AI and Adult Spine Deformity Surgeries
Sameh Abolfotouh, MEDCARE Hospital Dubai, UAE

13:40 - 14:50
Degenerative Scoliosis: Short fusion versus long fusion
Luis Ferraris, German Scoliosis Centre, Werner Wicker Klinik, Germany

14:50 - 14:00
MIS Anterior Column Reconstruction (ACR) for adult spinal deformity
Christian Morgenstern, Morgenstern Institute of Spine, CM Teknon, Barcelona, Spain

14:00 - 14:10
Vasoplegia, bradycardia, asystole without RV impairment after PMMA-augmented pedicle screw instrumentation in complex deformity spine surgery
Carlos Ramírez-Paesano, Centro Médico Teknon, Barcelona, Spain

14:10 - 14:20
Occult thoracic disc – ligamentous chance fracture in computed tomography: case report
Eduardo Nuñez Carrasco, Hospital Nuestra Señora de Meritxell, Andorra

14:20 - 14:30
Unusual Spine Cases: Revision Concepts and Approaches
Nayef Bin Dajim, Rameem Medical Company, Al Khobar, Saudi Arabia

14:30 - 14:40
Discussion

SESSION 6: ENDOSCOPIC FUSION
Moderators: J Yue, A Jhala, KT Lim

14:40 - 14:50
Transkambin Lumbar Interbody Fusion vs. Lateral Lumbar Interbody fusion
Amit Jhala, HCG, Multispecialty Hospital Ahmedabad, India

14:50 - 15:00
Percutaneous Endoscopic Posterior/Transforaminal Lumbar Interbody Fusion
Yongjin Li, Hospital of Guangdong Provincial Hospital of Chinese Medicine, Guangzhou, China

15:00 - 15:10
Lumbar Endoscopic Spine Fusion: Is partial facectomy always necessary?
James J. Yue, Frank H Netter School of Medicine/ CT Orthopaedics, Hamden, CT, USA

15:10 - 15:20
ALIF vs. full-percutaneous/endoscopic TLIF with a large footprint interbody cage: a comparative study
Christian Morgenstern, Morgenstern Institute of Spine, CM Teknon, Barcelona, Spain

15:20 - 15:30
Full Endoscopic Translaminar & Transfacetal Lumbar Interbody Fusion
Girish Datar, MD Spinescopy lifesciences, India

15:30 - 15:40
Discussion

SESSION 7: ENDOSCOPIC EXPANDED INDICATIONS
Moderators: BS Harhangi, T Kaneko, A Krishnan

15:40 - 15:50
Endoscopic approach for Buck's repair of spondylolysis
Adad Baranto, Sahlgrenska University Hospital, Gothenburg, Sweden

15:50 - 16:00
Key Factors in Fluid Irrigation Control: A Comparative Study of Arthroscope and FESS Scope in Biportal Spine Surgery
Takeshi Kaneko, Inanami spine and joint hospital Tokyo, Japan

16:00 - 16:10
Irrigation in Spinal endoscopy - how to deal with it
Mazda Farshad, Balgrist University Hospital, Zurich, Switzerland

16:10 - 16:20
Efficacy of Modified Full Endoscopic Spine Surgery
Jin Hwa Eum, Ain Alkhaleej Hospital Abu-Dhabi, UAE

16:20 - 16:30
Trans iliac approach: A viable alternative for transforaminal endoscopic decompression at L5-S1 level in patients with high iliac crests
Ajay Krishnan, Stavya Spine Hospital & Research Institute, Ahmedabad, India

16:30 - 16:40
Complications on Spine Endoscopy Procedures
Marcos Ishi, Núcleo de Dor e Regeneração, Brazil

16:40 - 16:50
Discussion

16:50 - 17:00
Coffee break and Industry exhibition

SESSION 8: LUMBAR ENDOSCOPY 2

Moderators: Z Ito, N Prada, A Krishnan, M. Sudario

17:00 - 17:10
Classification of complexity of endoscopic procedures: how to adapt endoscopic spine surgery
Mazda Farshad, Balgrist University Hospital, Zurich, Switzerland

17:10 - 17:20
Artificial intelligence-based analysis of associations between learning curve and clinical outcomes in endoscopic and microsurgical lumbar decompression surgery
Frank Hassel, Loretto-Krankenhaus Freiburg, Germany

17:20 - 17:30
Spine AI: companion for spine healthcare
Gun Choi, Pohang Woori Spine Hospital, South Korea

17:30 - 17:40
Avoiding Complications- What to do when you take a wrong turn
James J. Yue, Frank H Netter School of Medicine/ CT Orthopaedics, Hamden, CT, USA

17:40 - 17:50
The Endosurg “tube in tube” technique
Anwar Saab Mazzei, Denial Hospital, Alicante, Spain

17:50 - 18:00
Discussion

SESSION 9: MIS 2

Moderators: B Wälchli, S Abolfotouh, M Konieszny

18:00 - 18:10
Prone VS two position lateral spine surgeries
Sameh Abolfotouh, MEDCARE Hospital Dubai, UAE

18:10 - 18:20
MIS TLIF Technique: Screws first or Cage First, posterior or interbody distraction?
Markus Konieczny, Volmarstein Orthopedic Clinic, Germany

18:20 - 18:30
MIS TLIF: tipps and tricks
Gergely Bodon, Klinikum Esslingen, Germany

18:30 - 18:40
3D CT navigated MIS TLIF
Ajay Krishnan, Stavya Spine Hospital & Research Institute, Ahmedabad, India

18:40 - 18:45
Discussion

END OF SYMPOSYUM

19:30
Bus departure from the **Vilana Hotel**
Calle Vilana 7, 08017, Barcelona,
2 min walking from Centro Médico Teknon

20:00
Social event and dinner with Flamenco show at the **Gallery Hotel** Barcelona
Calle del Rosellón, 249, 08008, Barcelona

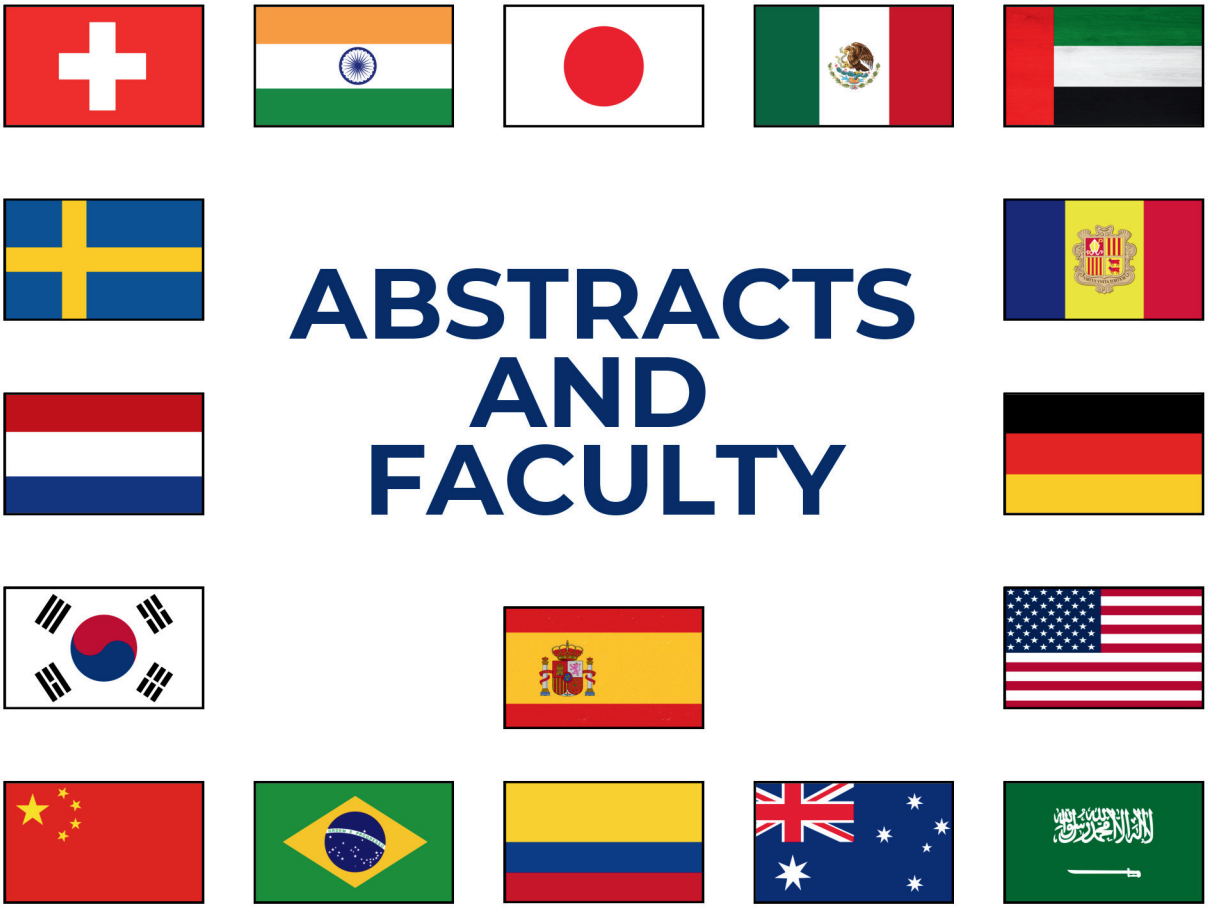
00:00
Bus return from Gallery Hotel to Vilana Hotel

SOCIAL EVENT!

DINNER, COCKTAILS & LIVE FLAMENCO




20:00 AT GALLERY HOTEL



ABSTRACTS AND FACULTY

4TH ISMISS/MIS & ENDOSCOPIC SPINE FORUM

March 27th, 2025 - Barcelona

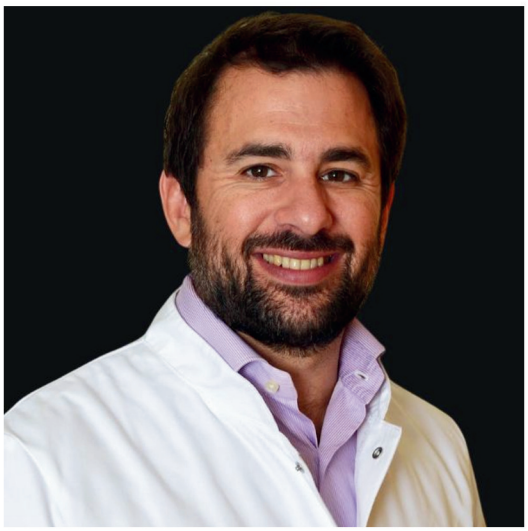
Rudolf Morgenstern

Centro Médico Teknon

Barcelona, Spain

Biography:

- “Medical Doctor (M.D.)
- Doctor in philosophy (Ph.D.) in mechanical engineering and biomechanics
- Board certified orthopedic surgeon
- Board certified in occupational medicine
- Endoscopic Spine Surgeon (YESS method, Phoenix, Arizona, USA)
- National delegate of the “International Society for Minimal Intervention In Spinal Surgery“ (ISMISS), USA
- XXIV President (2010/2011) of the “International Intradiscal Therapy Society” (IITS), USA
- Member of the “North American Spine Society” (NASS), USA
- Member of the Spine Society of Europe (EUROSPINE)
- Member of the “International Society for the Advancement in Spine Surgery” (ISASS), USA
- Member of the Minimally invasive spine surgery (MISS) committee
- Honorary member of the “Société Française des Techniques Endoscopiques du Rachis” (SOFTER), France
- Vice-president of the “International Muskuloskeletal Laser Society“ (IMLAS), UK
- Member of the “Spine Intervention Society“, (SIS), USA
- Member of “The American Academy of Minimally Invasive Spinal Medicine and Surgery“, (AAMIS), USA
- Member of the “Sociedad Española de Cirugía Ortopédica y Traumatología“ (SECOT), Spain”



Christian Morgenstern

Centro Médico Teknon

Barcelona, Spain

Biography:

Dr. Dr. med. Dipl-Ing. Christian Morgenstern is an Orthopedic surgeon from Barcelona and currently serves as head of the Morgenstern Institute of Spine at the Centro Médico Teknon in Barcelona, Spain.
Between 2020 and 2024 he was the head of the spine department of the public health system (SAAS) in Andorra.

Dr. Morgenstern has presented and published more than 100 abstracts and papers in international peer-reviewed journals and conferences, holds several international patents, has been an international faculty for endoscopic spine surgery at the AO courses in Davos (Switzerland), has been appointed the ISMISS national representative for Spain and is a member of several international societies (NASS, AO Spine, ISMISS, ISASS, Eurospine and IEEE).

Abstract:

Full-endoscopic anterior cervical discectomy and fusion (eACDF)

MIS Anterior Column Reconstruction (ACR) for adult spinal deformity

ALIF vs. full-percutaneous/endoscopic TLIF with a large footprint interbody cage: a comparative study

Sameh Abolfotouh

MEDCARE Hospital

Dubai, United Arab Emirates

Biography:

Dr. Abolfotouh is a Harvard Medical School Allumni. He is a board certified consultant orthopedics and spine surgeon at MEDCARE Hospital in Dubai, UAE. He completed his spine fellowship training at the University of Missouri. He currently serves as the AO Spine MENA Educational officer and board member, as well as a board member for PASS. He is also the current spine lead of the AO College Program.

Abstract:

Prone VS two position lateral spine surgeries

The presentations hilights the differences between two position and prone lateral surgeries with the pros and cons of each approach

AI and Adult Spine Deformity Surgeries

The presentations hilights the role of AI in the current era of spine surgeires. It sheds light on it uses in predicting outcomes as well as the uses in surgical planning.

Junseok Bae

Wooridul Spine Hospital

Seoul, South Korea

Biography:

Dr. Junseok Bae is an esteemed spinal neurosurgeon specializing in minimally invasive spine surgery and endoscopic techniques. With notable roles as Honorary President of Wooridul Spine Hospital and an Adjunct Professor at Ulsan University Medical School, Dr. Bae has made significant contributions to spinal endoscopy and deformity correction, earning accolades like the Paviz Kambin Award. His leadership in the development of advanced endoscopic methods continues to shape spine surgery globally.

Abstract:

Clinical and Cost-Effectiveness Analysis of Transforaminal Endoscopic Thoracic Discectomy versus Microscopic Discectomy for Symptomatic Thoracic Disc Herniation

Objective: To analyze costs and cost-effectiveness of transforaminal endoscopic thoracic discectomy (TETD) for the treatment of symptomatic thoracic disc herniation (TDH) and compare it with open microdiscectomy (MD).

Methods: Patients who underwent TETD or MD for symptomatic TDH and had a minimum follow-up of 1 year were included. Cost analysis included direct costs (primary and secondary hospital costs), indirect costs (lost wages due to work absence), total costs (direct + indirect), and cost effectiveness [cost per quality-adjusted life year (QALY) and incremental cost-effectiveness ratio (ICER)]. Clinical outcomes included patient reported outcome measures (PROMs) (Oswestry Disability Index, ODI; Short Form 6 Dimension, SF-6D), QALY gained, and reoperation and readmission rates at 1 year. TETD and MD groups were compared for outcome measures.

Results: 84 patients (43 TETD, 41 MD) were included. The direct ($5765 TETD vs. $6475 MD, p<0.01), indirect costs ($1200 TETD vs. $1400 MD, p<0.01), total costs ($6965 TETD vs. $7875 MD, p<0.01), and cost per QALY ($31,659 TETD vs. $43,750 MD, p<0.01) were significantly lower for the TETD group compared to the MD group. The ICER of TETD was found to be -$22,750. At 1 year, the TETD group showed significantly higher percentage of ODI improvement (45 vs. 35%, p<0.01) and QALY gained (0.22 vs. 0.18, p<0.01) compared to the MD group. No significant difference was found in the reoperation and readmission rates.

Conclusion: TETD was found to have significantly better clinical outcomes, lower overall costs, and better cost-effectiveness than MD in appropriately selected patients of symptomatic TDH.
These findings could play a role in influencing clinical practice and healthcare policy leading to a wider adoption of TETD.

Adad Baranto

Sahlgrenska University Hospital

Gothenburg, Sweden

Biography:

I´m working as Senior Consultant in Spine Surgeon at Sahlgrenska University Hospital and perform all types of spine surgeries. Clinically, I am interested in performing and developing mini-invasive spine surgery and especially endoscopic spine surgery and navigation systems.

I have been an active researcher since 2001 and after my defence I have had my own PhD students and already supervised 8 students that has completed their thesis. Have also been co-supervisor for additional 5 PhD student. I am now supervising 2 PhD students and are co-supervisor for 3. My research filed is clinical spine studies and spinal and hip injuries in young elite athletes.

Abstract:

Endoscopic approach for Buck's repair of spondylolysis

Background:

Spondylolysis is a well-known stress fracture, particularly common in young athletes. Symptomatic spondylolysis that does not heal on non-surgical treatment may be considered for surgical treatment. There are a plethora of methods to facilitate healing of the pars defect including Buck's procedure. Achieved radiologic healing varies between studies and methods, 63% to 95%. Buck's procedure has a healing rate exceeding 90%.
Modification of the procedure to minimize tissue damage and trauma including percutaneous screws without debridement of the defect has been proposed.

With endoscopy and navigation widely available, we propose a novel, truly minimally invasive approach to endoscopically assisted modified Buck's repair.

Methods
Two patients with established spondylolysis were operated through the working sleeve of an endoscope under the guidance of optical navigation. Three 10-12 mm incisions were used, two lateral to the pars for debridement of the defect and one central for screw insertion. No muscle resection was performed. The bone defect was filled with bioglass (Signify, Globus Medical) and the fracture was fixed with cannulated half-threaded 3.5 mm screws, providing both stabilization and compression.

Results
There were no intraoperative complications. Postoperative radiographs showed optimal screw placement. Postoperative back pain was classified as low, and the patients could discharge to home the day after surgery. Three-month follow-up showed improvement in back pain, good range of motion, no radiological implant loosening or miss-placement and normal neurologic function.

Conclusion
Endoscopic navigated spondylolysis repair is both feasible and well tolerated by the patients. It is a true minimally invasive approach that is safe with good access to and good debridement of the pseudarthrosis gap.

Gergely Bodon

Klinikum Esslingen

Esslingen am Neckar, Germany

Biography:

I completed my medical studies in Budapest Hungary, where I became a member of the Clinical and Applied Anatomy Laboratory at the Semmelweis University Budapest. I moved to Germany in 2009 to learn open spine surgery from Prof. Jürgen Harms. Right now I´m working in Klinikum Esslingen with a focus on minimally invasive spine surgery, lateral spine surgery and endoscopy.

Abstract:

Is the lateral ALIF technique the best way to treat pathologies of the L5-S1 level?

The superior clinical, radiological and biomechanical results of the ALIF (anterior lumbar interbody fusion) are well known. The latest development of the ALIF procedure is its application to the lateral position allowing for simultaneous posterior percutaneous screw placement as single position surgery or as a part of a multilevel procedure enabling lateral fusion from L1 to S1 in the lateral position. The lateral ALIF technique was introduced in Deutschland in 2019. We report our results and the modifications of the technique.

Benedikt Burkhardt

WSC Hirslanden Klinik

Zurich, Switzerland

Biography:

2012-2018 Residency Department of Neurosurgery, University Hospital Saarland, Homburg, Germany
2016 Fellowship Department of Neurological Surgery, Rush University, Prof. R. Fessler, Chicago, USA
2018 Fellowship Klinikum Karlsbad Langensteinbach, Prof T. Pitzen, Karlsbad, Germany
2018-2020 Chief Consultant Department of Neurosurgery
Since 2021 Partner Wirbelsäulenzentrum / Spine Center – WSC, Klinik Hirslanden, Zurich, Switzerland
President of the ISMISS

Abstract:

Endoscopic spine surgery. Is it the standard yet?

Background: Minimally invasive lumbar surgeries are becoming more popular and a routine in most neurosurgery departments around the world. We reviewed the literature and technique on fully endoscopic interlaminar lumbar discectomy. AIM: To review latest literature and the technique and provide experience from two centers. Material and Methods: Literature review and give our experience.
Result: Endoscopic procedures are a viable alternate to microscopic procedure and results in similar clinical outcome and decreased morbidity. Conclusion: Endoscopic procedures are safe and effective for the treatment of degenerative lumbar spine diseases

Gun Choi

Pohang Woori Spine Hospital

Pohang, South Korea

Biography:

President and Chief Doctor of Pohang Woori Hospital
Former President of the World Congress of Minimally Invasive Spine Surgery and Techniques (WCMISST)
President of the Asian Congress of Minimally Invasive Spine Surgery and Techniques (ACMISST)

Abstract:

TFED for thoracic disc herniation

Thoracic disc herniation (TDH) is a challenging pathology, given its rarity and complex anatomical considerations. Traditional surgical approaches to TDH, including open laminectomy or thoracotomy, often involve significant morbidity due to their invasiveness, necessitating prolonged recovery times. In recent years, transforaminal endoscopic discectomy has emerged as a minimally invasive alternative, offering promising outcomes for patients with symptomatic thoracic disc herniation. This technique allows for targeted access to the herniated disc with minimal disruption to surrounding musculature and neurovascular structures, thereby reducing postoperative pain, enhancing recovery, and minimizing complications. This presentation will discuss the application of transforaminal endoscopic discectomy for thoracic disc herniation, focusing on surgical indications, technique nuances, and outcome analysis.

We will explore the preoperative planning essential for this procedure, including patient selection criteria and imaging modalities, such as MRI and CT, which aid in visualizing the unique anatomy and pathology of the thoracic spine. Step-by-step procedural details will be provided, including approaches, use of endoscopic instrumentation, and strategies to navigate the challenging thoracic region.
Outcomes from a series of patients undergoing this technique will be reviewed, emphasizing improvements in postoperative pain, functional recovery, and patient satisfaction. Complications and their management, such as dural tears or neurological injury, will be addressed to provide a comprehensive perspective on the risk profile of this technique. Our findings suggest that transforaminal endoscopic discectomy is a viable and effective treatment option for thoracic disc herniation, particularly in well-selected cases, where it offers a minimally invasive solution with favorable clinical outcomes.

Spine AI: companion for spine healthcare

Advancements in artificial intelligence (AI) are transforming spine healthcare by offering new tools for diagnosis, surgical planning, patient monitoring, and outcome prediction. "Spine AI" serves as a companion in spine care, leveraging machine learning and data analysis to improve clinical decision-making, optimize surgical accuracy, and personalize patient management.
This presentation explores the integration of AI into spine healthcare, highlighting its potential in analyzing complex imaging, predicting treatment outcomes, and assisting in minimally invasive surgical planning. Case studies will illustrate AI’s role in enhancing diagnostic precision for conditions like degenerative disc disease, spinal stenosis, and disc herniation. Additionally, we will discuss AI's applications in postoperative monitoring, where real-time data helps refine recovery strategies and minimize complications.
Challenges such as data privacy, algorithm reliability, and ethical considerations will be addressed. As AI continues to evolve, its potential as a reliable and efficient "spine healthcare companion" underscores a promising future for personalized and precise spine care.

Nayef Bin Dajim

Rameem Medical Company

Al Khobar, Saudi Arabia

Biography:

Nayef Bin Dajim is the CEO of Rameem Medical Company and a consultant specializing in spinal surgery, focusing on medical implants for orthopedics and spine care.

Abstract:

Unusual Spine Cases: Revision Concepts and Approaches

The field of spine surgery presents a wide range of complex and unique cases that often challenge standard treatment protocols. Among these, unusual spine cases that necessitate revision surgery form a critical area of study due to their intricate nature and the specialized approach required for successful outcomes. This presentation aims to explore and analyze rare spine cases, focusing on the principles and evolving techniques involved in revision surgeries. Emphasizing revision concepts, this presentation delves into the key factors contributing to the need for reoperation, including complications from prior surgeries, infection, deformities, and instrumentation failure. Each case presented will illustrate the complexities of revision decision making, planning, and execution. Through case studies, we will explore various methodologies, including advanced surgical techniques and innovative treatment options tailored to manage challenging spine pathologies.

Girish Datar

C & MD CESS SHOT, Miraj

Miraj, India

Biography:

Pioneer Full Endoscopic spine surgeon in India with clinical experience in endoscopic spine surgery for 15 years. National & International faculty in Endoscopic spine surgery. Listed in Forbes Magazine as leader in healthcare 2019. Recognized for conducting training courses (Short & long term) in Uniportal Full Endoscopic Spine surgery for more than 10 years.
Orthopedic Surgeon & Minimally Invasive & Endoscopic Spine Specialist

Abstract:

Full Endoscopic Translaminar & Transfacetal Lumbar Interbody Fusion

Chronic spinal conditions, including low back pain and radiculopathy, are a significant burden on both the patient and the healthcare system, with an estimated annual cost of over $100 billion in the United States alone. When conservative management fails, surgical intervention may be necessary to address the underlying pathology and provide pain relief. One such surgical technique is lumbar interbody fusion, which has seen a rise in popularity in recent years. Lumbar interbody fusion involves the placement of a graft material within the intervertebral disc space and augment stability by placing interbody cage & posterior instrumentation to promote fusion between adjacent vertebral bodies. This approach aims to decompress neural elements, stabilise the affected spinal segment, and restore foraminal & Disc height and lordosis.

While traditional open approaches to lumbar interbody fusion have been well-established, there has been a growing interest in minimally invasive techniques, such as translaminar and transfacetal approaches, which seek to reduce surgical morbidity, improve patient outcomes & leaving a very small surgical foot print. Here, I wish to present the concept & technique of full endoscopic lumbar interbody fusion as a least invasive surgical modality for variety of Lumbar spinal pathologies.

Access & Approaches for Multifocal pathologies in a single Lumbar spinal motion segment

The management of spinal pathologies has evolved significantly in recent years, with the development of minimally invasive surgical techniques that aim to reduce tissue trauma and improve patient outcomes. One such approach is the use of full endoscopic access for the treatment of multifocal pathologies in a single lumbar spinal motion segment.
Lumbar spinal pathologies can exist in the central spinal canal, in the paracentral region, in the lateral recess, foramen & extraforaminally in a spinal motion segment. Often, more than one pathologies coexist contributing to symptoms in the patient. Accessing pathologies at different locations in the spinal canal, foramen & extraforaminally pose problems & often leads to sacrificing the facet joint leading to fusions. Full endoscopic techniques, however, allow for targeted treatment of multiple pathologies without the need for extensive tissue disruption or facet resection.
This talk describes the technique to deal with multifocal pathologies without compromising the integrity of the facet joint with Uniportal full endoscopic surgery.

Jin Hwa Eum

Ain Alkhaleej hospital

Abudhabi, UAE

Biography:

Dr. Jinhwa Eum is Consultant Neurosurgery in UAE and Korean board certified neurosurgeon who has performed spine surgeries for over 30 years. Beginning PELD in 1995, he has performed about 5,000 biportal endoscopic spine surgeries for 25 years

Abstract:

Efficacy of Modified Full Endoscopic Spine Surgery

Background: Modified full endoscopic spine surgery (FESS) is a safe and effective alternative to the existing uniportal endoscopic spine surgery. Full endoscopic spine surgery is a good minimally invasive method for various pathologic spine diseases. But we cannot use large or curved standard instruments due to a limited working channel size. To solve this problem, we modified the working channel to allow for FESS with conventional instruments and angled nerve root retractors instead of long specialized tools. In this report, we describe the application of modified FESS for spine surgeries and discuss its advantages and pitfalls.

Methods: We used a modified full endoscopic spine surgery system with standard durableinstruments. The following surgical procedures are conducted: lumbar unilateral laminotomy and bilateral decompression (n=2); lumbar foraminotomy (n=1); lumbar laminotomy and discectomy (n=3) transforaminal lumbar interbody fusion(n=1); and cervical laminotomy and discectomy (n=3).

Results: All surgical operations were successfully completed. None of the procedures had to be stopped due to technical issues.
Conclusion:. There are several advantages with modified FESS such as the capability of using large or curved standard surgical instruments, a more acceptable learning curve, and a reasonable cost. With further refinement of the system, the modified FESS might become the next generation of full endoscopic spine surgery.

Mazda Farshad

Balgrist University Hospital

Zurich, Switzerland

Biography:

Medical Director and Chair of Orthopedics and Spine Surgery at Balgrist University Hospital and a Full Professor of Orthopedics at the University of Zurich. Specialized in complex spinal surgery and endoscpic spine surgery. Founder of the Operating Room X (OR-X), a center dedicated to translational research and training in surgery.

Abstract:

Classification of complexity of endoscopic procedures: how to adapt endoscopic spine surgery

Even experienced spine surgeons face a challenge when starting to incorporate spinal endoscopic as a technique in the treatment of spinal pathologies. Here we outline the principles of surgical learning curves and provide a strategy to adapt spinal endoscopy. Further, we provide a classification of complexity of endoscopic procedures. This supports not only a structured path to master the learning curves but also gives base to scientific and training activities.

Irrigation in Spinal endoscopy- how to deal with it

Spinal endoscopy uses continuous irrigation either gravity-based or pump-based. Even if irrigation is a key component of spinal endoscopy, many aspects have been unanswered, such as safe settings, fluid dynamics and pressures etc. Here we present the evidence-based knowledge on components of irrigation during endoscopy, based on a serial of experiments. Further, we present the strategy to deal with irrigation in case of incidental durotomy.

Luis Ferraris

Werner Wicker Klinik

Bad Wildungen, Germany

Biography:

Orthopedic / Spine Surgeon
Head Surgeon German Scoliosis Centre

Abstract:

Degenerative Scoliosis - Short fusion versus long fusion

With the development of spine-instrumentation through MIS techniques it is possible to minimize the surgical trauma and complications in patients undergoing surgery for stenosis of the spinal canal associated to a degenerative scoliosis. However patient expectations and deformity assessment, including coronal and sagittal alignment should be considered for planing the surgery.

Saqib Hasan

Golden State Orthopedics and Spine

California, USA

Biography:

Dr. Hasan is chief of the Spine Division of Golden State Orthopedics and Spine, the largest private practice in California. He completad residency in Orthopedic surgery in New York City at the NYU Hospital for Joint Diseases and a complex spine fellowship at Cedars Sinai Spine Center in Los Angeles. He was the first spine surgeon in the US to complete a fellowship in full-endoscopic spine surgery at University of Washington with Dr. Christoph Hofstetter.

Abstract:

The World Wide State of Endoscopic Spine Surgery

Describe the global emergence of endoscopic spine surgery and region-specific trends across a variety of different healthcare environments.

Frank Hassel

Loretto-Krankenhaus Freiburg

Freiburg, Germany

Biography:

Orthopedic spine surgeon, Medical Director and Head of Spine Surgery Loretto-Krankenhaus Freiburg, Winner Parviz Kambin Award 2023.
Research: AI, Endoscopy, Navigation

Abstract:

Artificial intelligence-based analysis of associations between learning curve and clinical outcomes in endoscopic and microsurgical lumbar decompression surgery

Purpose: A common spine surgery procedure involves decompression of the lumbar spine. The impact of the surgeon's learning curve on relevant clinical outcomes is currently not well examined in the literature. A variety of machine learning algorithms have been investigated in this study to determine how a surgeon's learning curve and other clinical parameters will influence prolonged lengths of stay (LOS), extended operating times (OT), and complications, as well as whether these clinical parameters can be reliably predicted.

Methods: A retrospective monocentric cohort study of patients with lumbar spinal stenosis treated with microsurgical (MSD) and full-endoscopic (FED) decompression was conducted. The study included 206 patients with lumbar spinal stenosis who underwent FED (63; 30.6%) and MSD (118; 57.3%). Prolonged LOS and OT were defined as those exceeding the 75th percentile of the cohort. Furthermore, complications were assessed as a dependent variable.

Using unsupervised learning, clusters were identified in the data, which helped distinguish between the early learning curve (ELC) and the late learning curve (LLC). From 15 algorithms, the top five algorithms that best fit the data were selected for each prediction task. We calculated the accuracy of prediction (Acc) and the area under the curve (AUC). The most significant predictors were determined using a feature importance analysis.

Results: For the FED group, the median number of surgeries with case surgery type at the time of surgery was 72 in the ELC group and 274 in the LLC group. FED patients did not significantly differ in outcome variables (LOS, OT, complication rate) between the ELC and LLC group. The random forest model demonstrated the highest mean accuracy and AUC across all folds for each classification task. For OT, it achieved an accuracy of 76.08% and an AUC of 0.89. For LOS, the model reached an accuracy of 83.83% and an AUC of 0.91. Lastly, in predicting complications, the random forest model attained the highest accuracy of 89.90% and an AUC of 0.94. Feature importance analysis indicated that LOS, OT, and complications were more significantly affected by patient characteristics than the surgical technique (FED versus MSD) or the surgeon's learning curve.

Conclusions: A median of 72 cases of FED surgeries led to comparable clinical outcomes in the early learning curve phase compared to experienced surgeons. These outcomes seem to be more significantly affected by patient characteristics than the learning curve or the surgical technique. Several study variables, including the learning curve, can be used to predict whether lumbar decompression surgery will result in an increased LOS, OT, or complications. To introduce the provided prediction tools into clinics, the algorithms need to be implemented into open-source software and externally validated
through large-scale randomized controlled trials.

B.S. Harhangi

Erasmus Medical Center
Park Medical Center

Rotterdam, Netherland

Biography:

Dr. B.S. Harhangi was trained as a neurosurgeon at the Erasmus Medical Center having interest in spinal pathology, including spinal cord and craniocervical junction and spine endoscopy.

Abstract:

Randomized Controlled Trial Open Microdiscectomy vs Transforaminal Endoscopy for lumbar disc herniation

This study evaluated whether percutaneous transforaminal endoscopic discectomy (PTED) is non-inferior to conventional open microdiscectomy in reducing leg pain from lumbar disc herniation. The study was conducted as a multicenter, non-inferiority randomized controlled trial across four hospitals in the Netherlands. A total of 613 patients, aged 18-70, experiencing at least six weeks of radiating leg pain from lumbar disc herniation were included. Of these, 125 patients receiving PTED represented the learning curve for surgeons new to the procedure and were excluded from primary analyses. Patients were randomized to PTED (n=179) or open microdiscectomy (n=309).

The primary outcome was self-reported leg pain at 12 months on a 0-100 visual analogue scale (VAS), with a non-inferiority margin set at 5.0. Secondary outcomes included complications, reoperations, functional status (measured by the Oswestry Disability Index), VAS for back pain, health-related quality of life, and recovery. Data were assessed over one year via intention-to-treat analyses.

Results: After 12 months, PTED patients reported significantly lower VAS scores for leg pain (median 7.0, interquartile range 1.0-30.0) compared to open microdiscectomy patients (16.0, 2.0-53.5), with a between-group difference of 7.1 (95% CI 2.8 to 11.3). PTED also had advantages in reduced blood loss, shorter hospital stays, and faster postoperative mobilization. Secondary outcomes, including the Oswestry Disability Index, back pain, quality of life, and recovery, generally favored PTED. Reoperation rates were similar (5% for PTED vs. 6% for microdiscectomy). Per protocol and sensitivity analyses, including learning curve patients, aligned with primary findings.

Conclusions: PTED was non-inferior to open microdiscectomy in leg pain reduction and offered slight benefits in other areas. While these differences were small and may not be clinically significant, PTED is a viable alternative for treating sciatica.

Heber Humberto

Hospital Star Medica Veracruz

Veracruz, México

Biography:

CEO, Centro de Mínima Invasión de Columna vertebral de Veracruz (CEMIVER)
Star Médica Veracruz
Institución
Hospital Alta Especialidad de Veracruz
Jefe de módulo de cirugía de columna vertebral

Abstract:

Descompresión selectiva endoscópica en paciente senil

Introducción. Nuestra sociedad va en incremento en población senil, y por esto un aumento en las enfermedades degenerativas de columna vertebral, a los cuales se le propone realizar tratamiento quirúrgicos mediante descompresión selectiva endoscópica con visión directa con abordajes foraminales e interlaminares con trefinas y/o drill de alta resolución.

Objetivo: Evaluar resultados postquirúrgicos de técnica mínimamente invasiva con descompresion endoscopica con visión directa en el adulto mayor, mediante abordaje transforaminal e interlaminar.

Métodos: Estudio descriptivo, ambispectivo y longitudinal. Se revisarán expedientes clínicos de pacientes después de una descompresion selectiva en el periodo de enero de 2018 a octubre de 2024.

Los criterios de inclusión fueron sujetos de ambos sexos, con edades entre 40 y 89 años con diagnóstico de canal lumbar estrecho mediante radiografías, resonancia magnética, tomografía y evaluación clínica. Se dimensionaron las variables mediante escala EVA, Índice de discapacidad de Oswestry para valoración funcional y criterios de Macnab modificados para graduación clínica transversal retrospectiva

Resultados: Se incluyeron 80 pacientes, 45 mujeres y 35 hombres, con edades comprendidas entre 40 y 89 años, con discapacidad grave (83,8%) y moderada (16,2%) de acuerdo con el índice de discapacidad de Oswestry; se obtuvo un total de 77,3% resultados excelentes, 12% buenos, 8.7% medianos y 2% resultados pobres según los criterios de Macnab; el tiempo quirúrgico medio fue de 84 minutos por procedimiento, el sangrado postquirúrgico medio fue 65 ml, estancia hospitalaria promedio de 36 horas, complicaciones 8 pacientes con disestesia transitoria, 3 pacientes con hematomas, 2 con dolor persistente y un paciente con desgarro del saco dural.

Conclusión: Se comprueba que la técnica de descompresion selectiva endoscópica en pacientes seniles es favorable para esta comunidad, , con clara visualización del campo quirúrgico, mínimo dolor, escaso sangrado, menor tiempo quirúrgico, no causa inestabilidad de estructuras anatómicas y tiene tasa mínima de complicaciones.

Marcos Masayuki Ishi

Núcleo de Dor e Regeneração

Aracaju, Brazil

Biography:

Orthopedic Spine Surgeon
Pain Physician
Regenerative Medicine

Abstract:

Complications on Spine Endoscopy Procedures

In the evolving landscape of spinal surgery, various studies underscore the spectrum of complications associated with different endoscopic techniques. Dural tears, a predominant complication, present variably across studies, followed by identified epidural hematomas, intraoperative epineurium injury and cauda equina syndrome as primary complications.
Where a subset of patients undergoing uniportal procedures experienced complications, some necessitating conversion to open surgery or reoperation, unlike their UBE counterparts.

Zenya Ito

Aichi Spine Hospital

Nagoya, Japan

Biography:

2011/Apr-2016/Mar Assistant professor in Nagoya University Hospital
2016/Apr-2017/MarAichi Spine Institute vise president
2017/Apr -Present Aichi Spine Hospital Chair

Abstract:

Comparison of unilateral laminectomy for bilateral decompression by four surgical methods

Introduction

The unilateral laminectomy for bilateral decompression (ULBD) method for lumbar spinal stenosis has been performed in the order of Microendoscopic laminectomy (MEL), Percutaneous Endoscopic Laminectomy (PFEL), Percutaneous Stenoscopic Lumbar Decompression (PSLD), and Unilateral Biportal Endoscopic Laminectomy (UBEL).
I would like to compare the advantages and disadvantages of four ULBD methods and find useful points for spinal surgery including ULBD in the future.

Methods

139 cases of MEL, 85 PFEL, 91 PSLD and 42 UBEL were operated on.
The operation time, VAS (back & buttock pain, lower leg pain& numbness at preoperative, 1 month later, 3m, 6m and 1 year later), ODI, Macnab's criteria, postoperative bleeding, postoperative hematoma, and dura mater damages were compared. Fatty degeneration of multifidus muscle by Goutallier classification, bone resection area in 3-dimensional computed tomography (3DCT), and advanced side cut angle at L3/4 were analyzed.

Results

The operation time was shorter in the order of MEL, UBEL, PSLD and PFEL, and there was a significant difference between them.

Compared with preoperatively, VAS, ODI, EQ-5D and Macnab's criteria were no significant difference between them.

There were no significant difference in muscle damage between three endoscopic laminectomies, but MEL had significantly more muscle damage than the others.

Endoscopic laminectomies had significantly larger advanced side cut angles than MEL. Moreover, UBEL resulted in significantly more outward cuts than the other two endoscopic laminectomies, which was ideal.

The bone resection area in 3-dimensional computed tomography (3DCT) was measured at L3/4 for each case (the DICOM viewer). UBEL produced significantly smaller areas than MEL.

Conclusions

It is preferable to select UBE for 1-level decompression, MEL for 2-level decompression (not including aboveL2/3), UBE for 2-level decompression (including above L2/3), and MEL for 3-level decompression.

Amit Jhala

HCG, Multispecialty Hospital

Ahmedabad, India

Biography:

Current President, Minimally Invasive Spine Surgeons Association of Bharat (MISSAB) (2022-2024); Past President of Spine Association of Gujarat.
Board of Directors of Society of Minimally Invasive Spine Surgery(USA) Asia Pacific Chapter; EC member and scientific committee member of Association of Spine Surgeon of India ; Pioneer and Founder Secretary of Minimally Invasive Spine Surgeons Association of India).
Twice received Gold Medal for Best Paper in Association of Spine Surgeons of India; More than 500 presentations at National and International Spine conferences; Editor of Two Monographs on Spine Surgery of Association of Spine Surgeons of India; Written book chapters in many reputed books on Spine; Reviewer for many reputed spine journals – National and International
Director and Head, Department of Spine Surgery

Abstract:

Transkambin Lumbar Interbody Fusion vs. Lateral Lumbar Interbody fusion

Introduction: Transkambin Lumbar Interbody Fusion (KLIF) and Oblique Lumbar Interbody Fusion (OLIF) are the current techniques of spinal fusion that rely on the principle of indirect decompression. Both the procedures can restore disc height, segmental lordosis (SL) and lumbar lordosis (LL) in a minimally invasive manner. The aim of this study is to compare the change in disc height, SL and LL in KLIF and OLIF procedures.

Materials and methods: It is a retrospective study. Patients who had undergone KLIF and OLIF were included in our study. Disc height, SL and LL were measured on pre-operative and post-operative X-rays using Surgimap software. Disc height was measured as the average of anterior and posterior disc heights. Clinical evaluation was done using Macnab's grading.

Results: 50 segments each of KLIF (41 patients) and OLIF (35 patients) were included in our study. Average age of patients in KLIF group was 57.3 years whereas in OLIF group was 63.4 years. The average % increase in disc height in KLIF group was 59.2 (+/-49.5) as compared to 103.4 (+/- 88.5) in OLIF group. The change in SL in KLIF group was 3.1 (+/- 2.1) degrees whereas there was 5.3 (+/- 4.5) degrees change in SL in OLIF group. Lumbar lordosis change in KLIF group was 2.7 (+/- 2.2) degrees and in OLIF group was 3.7 (+/- 3.6) degrees. Modified Macnab's grading did not show any significant difference in the outcome scores in both the procedures.

Conclusion: Our study showed that both KLIF and OLIF procedures can effectively help restore disc height, SL and LL. However, the change in disc height is significantly more in OLIF as compared to KLIF due to anterior placement of the cage. Furthermore, there is significantly higher correction of SL and LL in OLIF due to lordotic cage designs and effective compression maneuver of percutaneous fixation due to the anterior fulcrum of the anteriorly position cage. Despite the differences, the clinical outcomes of KLIF and OLIF are comparable and did not show any statistical difference.

Takeshi Kaneko

Inanami Spine and Joint Hospital

Tokyo, Japan

Biography:

I am an orthopedic surgeon specializing in endoscopic spine surgery, exploring the potential of surgeries that can be performed using the monoportal approach.
Deputy Director

Abstract:

Key Factors in Fluid Irrigation Control: A Comparative Study of Arthroscope and FESS Scope in Biportal Spine Surgery

The purpose of this study was to compare clinical outcomes and irrigation fluid usage between arthroscopy-based Biportal-Endoscopic Decompression (A-BED) and Monoportal scope-based biportal decompression, also known as Assisted Full-Endoscopic Spine Surgery (AFESS). A total of 89 patients who underwent either A-BED or AFESS were included. While arthroscopic scopes have traditionally been used in biportal surgeries, the Monoportal scope offers the advantage of self-contained fluid management, allowing for more efficient irrigation. Fluid usage was measured by the number of 2-liter saline bottles used per hour of surgery, and postoperative pain was assessed using a numeric rating scale (NRS). Patient satisfaction at two weeks was similar between the groups and the AFESS group was significantly lower irrigation fluid usage.

The Monoportal scope's efficient fluid evacuation reduced the need for excess irrigation, contributing to reduced medical resource consumption without compromising outcomes. There was no significant influence of patient characteristics such as age, gender, or BMI, suggesting that the difference in fluid usage is primarily attributed to the surgical technique. AFESS thus shows potential for reducing irrigation-related risks while maintaining comparable clinical results to the traditional method.

Sanjay Konakondla

Geisinger Neuroscience Institute

Pennsylvania, USA

Biography:

Sanjay Konakondla, is a board certified, fellowship trained complex spine neurosurgeon and assistant profesor of Neurosurgery at Geisinger Neuroscience Institute. He is Co Founder and President of the International Spinal Endoscopy Research Foundation (ISERF) and is a member of the Endoscopic Spine Research Group (ESRG) where he is heavily involved in several research, education and advocacy initiatives surrounding endoscopic spine surgery and health care innovation to optimize patient experience and outcomes.
Assistant Professor

Abstract:

Advanced Techniques in Spinal Endoscopy

Spinal endoscopy has many applications. In the united states many are making large efforts to learn spinal endoscopy techniques to address common lumbar spine pathologies- mainly lumbar disc herniations.

We have challenged the limits of uniportal techniques to not only treat cervical foraminal discs or soft thoracic discs, but to address- synovial cysts, Gian calcified thoracic disc herniations, spontaneous thoracic CSF leaks, spinal infections, tethered cord, applications in traum and applications in oncology.

We would like to present our experience.

Markus Konieszny

Volmarstein Orthopedic Clinic

Wetter, Germany

Biography:

Head of Spine Department of the Orthopedic Clinic Volmarstein since 2023 after 10 years as Spine Team Leader of the University Hospital of Duesseldorf.
Special focus on pediatric and adult MIS deformity correction, Treatment of degenerative and traumatic diseases and of metastatic lesions of the spine.

Abstract:

MIS TLIF Technique: Screws first or Cage First, posterior or interbody distraction?

MIS TLIF techniques are applied more frequently every year since the first description of Foley et al. In 2003.
In most techniques, distraction is performed by applying interlaminar or interspineous distraction devices or by distraction after placement of contralateral, or less frequent ipsilateral, pedicle screws.
However, some surgeons do perform distraction intervertebral, before screw placement and without distraction of the vertebral arch.
It is not sufficiently analyzed if any of these techniques is superior with regard to radiological or clinical results.
This is why a review of the current evidence and our own results with regard to MIS TLIF correction of sagittal and coronal (degenerative scoliosis) imbalance are presented.

We compared MIS TLIF by distraction of pedicle screws (placed prior to implantation of an interbody cage) with MIS TLIF by intervertebral distraction and implantation of an interbody spacer prior to pedicle screw placement.
Both techniques were compared with regard to radiological outcome (correction of sagittal and coronal parameters) and clinical parameters as blood loss, length of stay, HRQL parameters and rate of complications.
We could show that implantation of the interbody cage prior to implantation of the pedicle screws lead to a better outcome than non – intervertebral distraction.

Ajay Krishnan

Stavya Spine Hospital

BIMS Hospital

Ahmedabad, India

Biography:

Orthopaedic Spine Surgeon & Current President of Spine Association of Gujarat.
He heads the Department of Endoscopy and Deformity Correction at Stavya Spine Hospital.
He has huge broad spectrum of experience with more than 10.000 conventional and minimally invasive surgeries including endoscopy.

Abstract:

Trans iliac approach: A viable alternative for transforaminal endoscopic decompression at L5-S1 level in patients with high iliac crests

Background: Transforaminal endoscopy at the L5- S1 level can be challenging due to high iliac crest and narrowed foraminal area due to hypertrophied facets/ large L5 transverse process. Transiliac endoscopy is considered an alternative approach to the foramen that can circumvent these difficulties.

Methodology: Medical records and perioperative imaging of all patients who underwent Transiliac transforaminal endoscopic ventral decompression at the L5 S1 level from January 2018 to January 2021were reviewed. Preoperative patient details, intraoperative data and postoperative patient reported outcome measures were compiled to assess the efficacy of the transiliac approach.

Results: 93 patients, Intraoperatively, it took a mean of 11.69 +/- 2.38 minutes to reach the foramen. The mean operative time was 76.9 minutes(+/- 12.24 minutes). On an average each procedure required 20.35 (+/- 4.81) shoots on fluoroscopy.
The ODI score , VAS score and patient staisfaction index improvement was statistically significant immediate and at 2 years follow up.1 patient required on table conversion to MLD as adequate decompression could not be achieved by endoscopy. Postoperative MRI revealed an inadequate decompression in 3 of these patients. The two patients had calcified discs causing ventral stenosis and required fusion surgery. Two patients had a recurrent disc after endoscopy, one on the same side and one on the opposite side. Fusion was performed for the patient who had a recurrence on the same side, while the other patient was treated by transiliac endoscopy from the opposite side.

Discussion/Conclusion: Ours is the largest series of patients treated by transiliac transforaminal endoscopy in the literature. Our study reaffirms the utility of the transiliac approach in the L5S1 LDH.

3D CT navigated MIS TLIF

Purpose: Conventionally, PPSF (percutaneous pedicle screw fixation) technique is performed using C-arm. 3D CT based navigation system has been proven to be superior. At the same time the cage can be navigated. The sequence of guide wire, screws and cage insertion are according to preference of surgeon. Surgeons use variable combinations, and each has got to do with the preference of surgeon but either affects the work flow or maximum utilization of navigation is not always done. These all can be best optimized if done in a sequential way to optimize radiation exposure with pre-surgery 3D O Arm spin and each step is navigated.

Methodology: We performed 44 cases of fully navigated MISS TLIF (Minimally Invasive, Transforaminal lumbar interbody fusion). After the 3D O Arm spin, one-inch single skin incision is placed at projected converging screw's locations. Guide wires are inserted. On the side for decompression tubular retractor docking, a separate facial incision through the same skin incision is used for medialized trans-muscular TLIF approach. Exoscopic, Microscopic or loupe microscope assisted TLIF is executed and the cage insertion is also navigated. Finally, the screws are put on the pre-positioned guide pins and after 2D confirmation rod fixation and reconstruction is completed with 3D post operative spin. Patient demographics and surgical variables and radiological variables were analyses. We evaluated the rate of PP (pedicle screw perforation), PFJV (Proximal facet joint violation), Local Disc angle, posterior disc height, and pedicle screw angle.

Results: All 44 patients had statistically significant Outcome improvements. Non significant PFJV (2% with grade 2 and 5% grade 1 breach) were noted.

Conclusion: Fully 3D CT navigated MIS TLIF is a procedure with least workflow obstruction utilizing full capabilities of navigation. It reduces potential complication like pedicle screw perforation and proximal facet joint violation. It is also helpful in better medialization and insertional trajectory.

Jun Ho Lee

Kyung Hee University Medical Center

Seoul, South Korea

Biography:

Professor, Dept. of Neurosurgery Kyung Hee University Medical Center
Candidate Member, CSRS Reviewer, The Spine Journal

Abstract:

Evidentiary factors for pseudoarthrosis predilection afterACDF

The aim of anterior cervical discectomy and fusion (ACDF) surgeryis to provide the patient with adequate decompression and rapidfusionto treat cervical degenerative disease, ultimately reducingsymptoms of neck pain, radiculopathy, and myelopathy.However, pseudoarthrosis are known complications of theprocedure that may lead to persistent symptoms requiring furtherrevisions surgery which is complicated by prolonged hospital stayand increased morbidity.
Pseudarthrosis refers to a failure of fusion after an index procedureintended to obtain spinal arthrodesis. The term suggests thepresence of a false joint, although it is commonly used to describe alack of fusion that occurs after an attempted arthrodesis.The true etiology of pseudoarthrosisis difficult to ascertain, butthere are known risk factors, which include patient factors andsurgical factors such as multilevel fusions, instrumentationchoice and bone grafts used for the case.Thispresentationaimsto review recent literature over the last decade (2008 to 2022) toevaluateand summarizethe findings of risk factors, diagnosis,controversies, and management of cervical pseudarthrosisfromthepast studies, review the advantages and disadvantages offrequently employed diagnostic criteria, and present currentlyrecommended protocol of fusion procedure.

Pseudarthrosis refers to a failure of fusion after an index procedure intended to obtain spinal arthrodesis. The term suggests the presence of a false joint, although it is commonly used to describe a lack of fusion that occurs after an attempted arthrodesis.

The true etiology of pseudoarthrosis is difficult to ascertain, but there are known risk factors, which include patient factors and surgical factors such as multilevel fusions, instrumentation choice and bone grafts used for the case. This presentation aims to review recent literature over the last decade (2008 to 2022) to evaluate and summarize the findings of risk factors, diagnosis, controversies, and management of cervical pseudarthrosis from the past studies, review the advantages and disadvantages of frequently employed diagnostic criteria, and present currently recommended protocol of fusion procedure.

Hansjörg Leu

WSC Klinik Hirslanden

Zurich, Switzerland

Biography:

Education in endoscopic spinal surgery since 1985 at Zürich University Balgrist (Prof.A.Schreiber), biportal endoscopic interbody fusion since 1988, monoportal posterolateral endoscopic approach since 1991. Co-Chairman of the legendary 36 Zurich-Courses since 1987.

Abstract:

Endoscopic operative approach to the lumbar spine : a personal review end experience since 1985

Technical progress in arthroscopy went parallel to aiming for minimal invasive approaches for spinal pathologies. The combination of both allowed first endoscopic lumbar disc surgery at Balgrist in 1982. The biportal approach brought beside decompressive application an option also for interbody fusion. The introduction of uniportal endoscopy with coaxial working channel in 1991 brought first time tissue elaboration in also extradiscal areas as in foramina and interlaminar approach. Crucial remain the correct indications and individually steep learning courves; this beside ambiguous, double-edged economical aspects.

Kai-Uwe Lewandrowski

Center for Advanced Spine Care

Arizona, USA

Biography:

Dr. Kai-Uwe Lewandrowski is the esteemed founder of the Center for Advanced Spine Care of Southern Arizona in Tucson, Arizona, USA. In this role, he leads a minimally invasive spine care program focusing on spinal endoscopy and interventional pain surgery. He has served as a research professor at the University of Arizona and holds the esteemed position of a full-tenured Professor of Orthopaedic Surgery at the prestigious Universidad Sanitas in Bogotá, D.C., Colombia. He is also a doctor honoris causa in the Department of Orthopaedics at the renowned Universidade Federal do Estado do Rio de Janeiro in Rio de Janeiro, Brazil and esteemed member of the Colombian and Brazilian National Academy of Medicine, and the Brazilian Academy of Military Medicine.

Abstract:

High-Value Procedures Techniques in Endoscopic Spine Surgery based on Surgeon Experience

Background: A comprehensive review and integration of insights from four webinars was conducted to arrive at recommendations for best clinical practices for guideline development for endoscopic spine surgery. This perspective article discusses the limitations of traditional surgical trials and amalgamates surgeons' experience and research on various cutting-edge techniques.

Methods: Data were extracted from surveys conducted during each webinar session involving 3,639 surgeons globally. The polytomous Rasch model was employed to analyze responses, ensuring a robust statistical assessment of surgeon endorsements and educational impacts, and focusing on operative nuances and experience-based outcomes. Bias detection was performed with the differential item functioning test.

Results: The webinars provided a dynamic platform for discussing advances in endoscopic spine surgery, identifying a range of high-value procedures from basic discectomies to complex lumbar interbody fusions. Each high-value endoscopic spine surgery was highlighted in separate peer-reviewed publications, which form the basis for this summary document that synthesizes key takeaways from these webinars. High-value clinical applications of endoscopic spine surgery, primarily defined as higher-intensity endorsement transformation from the pre- to the post-webinar survey with a shift to higher mean logit locations of test items both with unbiased and orderly threshold progression, were: a) Percutaneous interlaminar endoscopic decompression for lateral canal stenosis, b) Transforaminal debridement of low-grade degenerative spondylolisthesis, c) Transforaminal full-endoscopic interbody fusion for hard disc herniation, d) Endoscopic standalone lumbar interbody fusion, e) Endoscopic debridement of spondylolytic spondylolisthesis, and f) Posterior cervical foraminotomy for herniated disc and bony stenosis.

Conclusions: The webinar series has significantly impacted surgeons' education and contributed to the identification of high-value endoscopic spine surgery practices that may serve as a cornerstone for surgeon training standards, policy and guidelines development. Ongoing research on technological advancements and expansions of clinical indications combined with systematic review is expected to refine the recommendations on high-value endoscopic spinal surgeries recommended for enhanced reimbursement.

Yongjin Li

Guangdong Provincial Hospital of Chinese Medicine

Guangzhou, China

Biography:

Vice President of Orthopedic Hospital of Guangdong Provincial Hospital of Chinese Medicine
Director of Spine department in Guangdong Provincial Hospital of Chinese Medicine
Standing Committee of the Guangdong Provincial Digital Orthopedic Association of SICOT
Specialized in minimally invasive spine surgery for degenerative diseases, especially on Lumbar and cervical spine
Annual endoscopic spine surgery: over 500 cases
Published papers: over 70 pieces

Abstract:

Percutaneous Endoscopic Posterior/Transforaminal Lumbar Interbody Fusion

To clarify why to choose percutaneous Endoscopic Fusion, what are the advantages and features with this technique.
Why PE-P/TLIF is a relatively safe and effective minimally invasive surgery for the treatment of lumbar degenerative diseases, with satisfactory short-term efficacy and reliable fusion rate.

Kang Taek Lim

AIN Hospital

Incheon, South Korea

Biography:

Director of KOMISS(Korea Minimally Invasive Spine Surgery)
Consultant Physician of Maxmorespine, Germany.
Member of AO spine, NASS, CNS.
Review Board of JMISST, Journal of Minimally Invasive Spine Surgery and Technique.
Review Board of AJP, Asian Journal of Pain.
Review Board of Asian Spine Journal.
International Board of our esteemed journal JOSS (Journal of Spinal Surgery), official journal of NSSA (Neuro Spinal Surgeons Association, India).

Abstract:

360 Endoscopic Approach for Single level Cervical Spondylotic Myelopathy : A Case series study

Introduction : Cervical spondolytic myelopathy (CSM) is a progressive degenerative dysfunction of spinal cord causing significant functional disability in the elderly population. Typically CSM is multisegmental and involves lower cervical spine but a small subgroup of patients present with single level circumferential stenosis (3).

Methods: Endoscopic posterior and anterior decompression with fusion was done in all three cases of pincer stenosis for a single level CSM to achieve 360 decompression. Uniportal endoscopy was done with same set of endoscope for both approach. PEEK cage with DBM was used for fusion.

Results : Improvement in VAS score of neck and arm , mJOA score, Hirabayashi score noted at followup. Disc height was restored with improvement in segmental lordosis.

Conclusion : Endoscopic 360 approach can be a novel technique for addressing single level circumferential stenosis in CSM .

Eduardo Nuñez Carrasco

Hospital Nuestra Señora de Merixtell

Andorra la Vella, Andorra

Biography:

Orthopaedic and Trauma Surgeon.
I am a traumatologist - spinal surgeon, I work at the Hospital Nuestra Señora de Merixtell in Andorra. The residency and specialization were carried out between Spain and England.

Abstract:

Occult thoracic disc – ligamentous chance fracture in computed tomography: case report

I report the case of a 56-year-old male patient who was involved in a traffic accident. Neurological examination showed no neurological deficit on examination, initial CT showed bilateral pneumothorax and hemothorax, rib fractures, fracture of the manubrium sterni. Since her pain status was dorsal to mobility, her worsening on lying in bed did not particularly correspond with what was seen on CT. MRI showed a complete rupture of the posterior ligamentous complex along with the intervertebral disk and posterior longitudinal ligament at the T8-T9 level. The patient underwent posterior fixation with pedicle screws. Incidental fractures of the thoracic spine are rare. To our knowledge, this is the first report of a pure incidental soft tissue fracture located in the thoracic spine. Since the initial CT scan showed no evidence of fracture or vertebral malalignment, a high index of suspicion, based on the mechanism of injury, clinical examination, and/or concomitant injuries, is necessary to identify such an extremely unstable injury.

Nicolas Prada

Foscal International Clinic

Floridablanca, Colombia

Biography:

Orthopedic Surgeon with fellowship in Minimally Invasive and Endoscopic Spine Surgery at Wooridul Spine Hospital, Seoul, South Korea.
Coordinator Spine Surgery, Department of Orthopedics & Traumatology, Foscal International Clinic
Faculty, LESS Invasiva Academy

Abstract:

Motion Preservation Surgery for Adjacent Segment Disease at the Lumbar Spine. Full Endoscopic Decompression IE-LRD / LE-ULBD

Adjacent segment disease (ASD) is a potential mid to long-term complication after lumbar fusion. Endoscopic spine surgery has become as an alternative for pain control and motion preservation. The primary goal of motion preservation surgery in the spine is to maintain normal or near normal motion in an attempt to prevent adverse outcomes commonly seen with conventional spinal fusion.

Carlos Ramírez

Centro Médico Teknon

Barcelona, Spain

Biography:

Anesthesiologist,Cardio-thoracic anesthesiologist, Neuroanesthesiologist, TEE trained, Acute and Chronic Invasive Pain Management specialist, Regional Anesthesia US-Guided specialist.

Abstract:

Vasoplegia, bradycardia, asystole without RV impairment after PMMA-augmented pedicle screw instrumentation in complex deformity spine surgery.

Bone cement implantation syndrome (BCIS) with polymethylmethacrylate (PMMA) during complex spine surgery is relatively uncommon compared to other types of surgery. Here, the case of a 76-year-old female patient, hypertensive, with severe osteoporosis, scoliosis and Parkinson's disease is described. She underwent staged complex anterior and posterior reconstruction spine surgery. Shortly after PMMA augmentation with transpedicular screws at multiple thoraco-lumbar levels, the patient presented with sudden hypotension, bradycardia, pulseless electrical activity, and asystole. Advanced cardiovascular resuscitation in the prone position was required. The presence of PMMA in multiple intravascular locations was confirmed by means of a computed Angio-tomography.
The pathophysiology of BCIS suggests a dual mechanism: embolization of bone material and PMMA, and immunohumoral responses with systemic vasodilation or vasoplegia.

Despite advances in surgical and perioperative care, BCIS remains a challenge. Therefore, preoperative identification of risk factors with planning strategies to manage the occurrence are required in complex spine surgeries with multiple cementation sites. Furthermore, an early diagnostic suspicion, multidisciplinary management of the complication, and rigorous intraoperative follow-up are needed.

Marlon Sudário

Hospital Mater Dei E Hospital Socor-Belo Horizonte

Belo Horizonte, Brazil

Biography:

Ortopaedic and Traumatology / Endoscopic and Minimally Invasive Spine Surgery
Coordinator of the Theoretical and Cadaver Lab Course Endocoluna Brazil since 2019

Abstract:

Combined paramedian and posterolateral endoscopic approach to calcified central thoracic hernia

Marlon Sudario, Thiago Soares

Thoracic endoscopic discectomy is gaining more popularity. Accessing the thoracic spine through a small skin incision rather than the large exposures required for the traditional costotransversectomy approach, the endoscopic technique alleviates pain and neurological symptoms and improves patient outcomes by targeting the compressive pathology directly.
In this chapter, the author reviews the indications for the procedure, the inclusion and exclusion criteria, and its technical caveats by illustrating the application of endoscopic instruments and visualization systems. Preoperative evaluation, including advanced imaging techniques, is crucial for accurate diagnosis and surgical planning. Furthermore, the author demonstrates the procedure's advantages, such as reduced tissue trauma, decreased blood loss, shorter hospital stays, and faster recovery compared to traditional open surgery.
With appropriate patient selection and skilled surgical expertise, thoracic endoscopic discectomy is capable of managing thoracic disc herniation with comparable clinical outcomes to open techniques, without their collateral tissue trauma.

Nestor Taboada Taboada

Clinica Portoazul

Barranquilla, Colombia

Biography:

Neurosurgeon and Spine surgeon 25 years of experience
Chairperson AO Spine LATAM 2023-2026
AO Spine MISS Task Force member

Abstract:

ALIF in high degree listhesis

High grade spondylolisthesis is a rare pathology. However, it represents a high surgical challenge and the rate of pseudoarthrosis for posterior approach is high. ALIF represents a great alternative. However, it is a challenge

Tips and tricks Pre anterior Approach

Preanterior approach was proposed as a techniquethat could replace the transpsoas approach. However , it has its advantages and limitations and should beof a great value as an alternative

Andrej Trampuz

Queensland University of Technology

Brisbane, Australia

Biography:

Professor for Device-Related Infection Management at QUT (Queensland University of Technology) in July 2024 to Present
Chairman of the Executive Board at PRO-IMPLANT Foundation in August 2013 to Present
Infectious Diseases Consultant & Head of Research Group at Charité - Universitätsmedizin Berlin in March 2013 to July 2024
Infectious Diseases Consultant at University Hospital Lausanne (CHUV) in February 2009 to February 2013
Attending Physician and Research Group Leader at University Hospital Basel in February 2004 to January 2009
Physician at UKC Maribor in December 1992 to December 1993

KEYNOTE SPEAKER

Current concepts in the management of spinal infections

Erik Traupe

Unintech GmbH

Düsseldorf, Germany

Biography:

Neurosurgeon for 32 years, specialized in Spine Surgery since 2005, since 2008 Endoscopic Spine Surgery, since 2011 worldwide Faculty for endoscopic Spine Surgery, own practice until 2007, head of department for Spinal Surgery until 2013, CEO of Unintech GmbH since September 2023.

Abstract:

Endoscopic Spine Surgery - an Unexpected Journey

Over the past 20 years, endoscopic spinal surgery has advanced globally, establishing itself as a safe and effective minimally invasive option for treating spinal disorders. This progress is mainly due to improvements in technology and instruments, making it increasingly appealing to both surgeons and patients.

Modern endoscopes are smaller and offer high-quality imaging, enabling precise visualization. Enhanced imaging techniques, such as navigation and real-time imaging, improve surgical accuracy, while specialized minimally invasive tools allow precise cuts and interventions, minimizing tissue damage and complications.

Endoscopic procedures involve smaller incisions, causing minimal disruption to surrounding muscles and tissues. This approach enables faster rehabilitation, allowing patients to mobilize sooner and spend less time in the hospital. The less invasive nature of the surgery also results in reduced postoperative pain and decreased reliance on pain medications.

Endoscopic surgery lowers the risks of infection and bleeding, making it especially beneficial for elderly or high-risk patients. Shortened hospital stays and lower complication rates also contribute to reduced overall healthcare costs.

This method is now used for a variety of spinal disorders, such as herniated discs and stenosis, with high patient acceptance due to its minimally invasive advantages over traditional open surgery.

Endoscopic spinal surgery is increasingly practiced and accepted in Asia, Europe, and the U.S.. Specialized centers and training programs continue to expand, supporting its widespread adoption.

Endoscopic spinal surgery has become a well-established treatment option, valued for its minimal invasiveness, quick recovery, and reduced risks. With ongoing technological advancements, it is expected to continue expanding its Applications globally.

Beat Wälchli

Zollikerberg Hospital

Zollikerberg, Switzerland

Biography:

Head of Spine Surgery Department at Zollikerberg Hospital
Board certified orthopedic spine surgeon specialized in minimal invasive procedures such as endoscopic spine surgery, MIS, ALIF and lateral fusion techniques.

Abstract:

A rare Complication of ALIF surgery

Anterior lumbar interbody fusión, ALIF, is a well accepted technique to treat a variety of spinal disorders. (Degenerative disc disease, revisión surgery, long spinal fusión) Complications to be considered are: incisional heria, retrograde ejaculation in male, deep vein thrombosis (DVT), major blood loss. I report a rare complication after ALIF surgery which led to hydronephrosis and required revisión.

Complications include among others, dural tears, dysesthsia, nerve injury, and infection.

James J. Yue

Frank H Netter School of Medicine/ CT Orthopaedics

Connecticut, USA

Biography:

I am an orthopaedic spinal surgeon. Specialty areas include adult spine arthroplasty, tumor/deformity, trauma and endoscopic decompression and fusion. Former Chief of Spine Surgery at Yale University who is now in private practice in which I am the founding member of the North East Alliance Surgery Center for minimally invasive spine surgery.

Abstract:

Avoiding Complications- What to do when you take a wrong turn & Lumbar Endoscopic Spine Fusion: Is partial facectomy always necessary?

Advancements in both surgical instrumentation and full endoscopic spine techniques have resulted in positive clinical outcomes in the treatment of cervical, thoracic, and lumbar spine pathologies. Endoscopic techniques impart minimal approach related disruption of non-pathologic spinal anatomy and function while concurrently maximizing functional visualization and correction of pathological tissues. An advanced understanding of the applicable functional neuroanatomy, in particular the neuroforamen, is essential for successful outcomes. Additionally, an understanding of the varying types of disc prolapse pathology in relation to the neuroforamen will result in more optimal surgical outcomes. Indications for lumbar endoscopic spine surgery include disc herniations, spinal stenosis, infections, medial branch rhizotomy, and interbody fusion. Limitations are based on both non spine and spine related findings.

Complications include among others, dural tears, dysesthsia, nerve injury, and infection.

NOTES

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