10TH ASEAN MISST

ASEAN Minimally Invasive Spine Surgery and Techniques

Beyond the Gold standard

PROGRAMME BOOKLET

BANGKOK THAILAND

26TH - 28TH FEBRUARY AND 1ST MARCH 2025

Welcome Message

Dear Colleagues and Friends

ThaiSMISST is a pioneer in the field of endoscopic spine surgery and technological advancements. We are excited to announce the 10th ASEAN MISST Conference, a significant event that will commemorate ASEAN MISST's 10th anniversary. It is a collaborative endeavor that unites endoscopic spine surgeons from various countries in ASEAN and around the world. Furthermore, this year is a special year as we are honored by the Taiwan Society of Endoscopic Taiwan Society of Endoscopic Spine Surgery (TSESS), The Royal College of Neurological Surgeons of Thailand (RCNST) and Thai Association for the Study of Pain (TASP) to participate in this important academic event. We would like to thank the Thai Anesthesia Association very much. We cordially invite all physicians and interested parties to participate in this esteemed event. With a backdrop of Thailand's rich culture and natural beauty, state-of-the-art museums, and knowledgeable personnel, it is certain to be a valuable experience for all attending. We would like to thank the International Organizing Committee, invited international speakers, and all the staff who helped push and promote this event. We are eager to collaborate with you.

Woraphot Wichan, M.D.
Chairman of 10th ASEAN MISST 2025

Welcome Message

Dear Colleagues and Friends

The 9th ASEAN MISST 2024 conference held in Danang; Vietnam was a great success. Many orthopedists and spine surgeons showed great interest in the conference. I would like to thank the organizing committee of ASEAN MISST for their full support. In this year,2025. It's a great opportunity to organize the 10th ASEAN MISST conference, which will be held in Bangkok, Thailand. Thailand is a city that is fully equipped committee with knowledge and capabilities in endoscopic spine surgery. It is equipped with personnel, environment, cadaveric workshops, and tourist attractions that will facilitate you to attend the conference. I sincerely hope that this conference will be as great as the last ones. I hope you enjoy the conference in Bangkok.

Lam Nguyen Huu, M.D.
President ASEAN MISST (2024-2025)

Former Presidents

Prof. Wiwat Wajanavisit
Thailand

Assoc Prof. Pornpavit Sriphirom
Thailand

Assoc Prof. Gun Keorochana
Thailand

Dr. Rafael Bundoc
Philippines

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10TH ASEAN MISST

THE 10TH ASSOCIATION OF SOUTH EAST ASIAN NATIONS MINIMALLY INVASIVE SPINE SURGERY AND TECHNIQUES CONFERENCE

Beyond the Gold Standard

Dr Gun Choi
Korea

Dr Son Sang Kyu
Korea

Dr Kang Taek Lim
Korea

Dr Cheol Wung Park
Korea

Dr Chang-il Ju
Korea

Dr Dong Chan Lee
Korea

Dr Dong Hoon Yang
Korea

Dr Satishchandra Gore
India

Dr Malcolm Pestonji
India

Dr Anand Kavi
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Dr Ravi Ranjan
India

Dr Bhupesh Patel
India

Dr Saidileep Viswanadha
India

Dr Jeffery Jung-Hao Hsieh
Taiwan

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Taiwan

Dr Jwo-Luen Pao
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Dr Keng-Chang Liu
Taiwan

Dr Chih-Hui Chang
Taiwan

Dr Se-Yi Chen
Taiwan

Dr Chien-Hua Chen
Taiwan

Dr Cheng-Li Lin
Taiwan

Dr Yi Hung Huang
Taiwan

Dr Kenyu Ito
Japan

Dr Wataru Narita
Japan

Prof Yukihiro Nakagawa
Japan

Dr Wei Zhang
China

Dr Yang Hejun
China

Dr Zhu Chengyue
China

Prof Dr Hyali Aygun
Turkey

Assoc.Prof.Dr Murat Sayin
Turkey

Dr Shomansur Shatursunov
Uzbekistan

A/Prof Ahror Yakubov
Uzbekistan

Dr Nadir Yacine Benmebarek
Algeria

Dr Diego Quillo
Mexico

Dr Ian Bustorff
Brazil

Dr Dakhir Abukov
Russia

Dr V. Daya Thirumala Rao
India

INTERNATIONAL SPEAKERS

- Dr Gun Choi
- Dr Son Sang Kyu
- Dr Kang Taek Lim
- Dr Cheol Wung Park
- Dr Chang-il Ju
- Dr Dong Chan Lee
- Dr Dong Hoon Yang
- Dr Satishchandra Gore
- Dr Malcolm Pestonji
- Dr Anand Kavi
- Dr Ravi Ranjan
- Dr Bhupesh Patel
- Dr Saidileep Viswanadha
- Dr Jeffery Jung-Hao Hsieh
- Dr Chien-min Chen
- Dr Jwo-Luen Pao
- Dr Keng-Chang Liu
- Dr Chih-Hui Chang
- Dr Se-Yi Chen
- Dr Chien-Hua Chen
- Dr Cheng-Li Lin
- Dr Yi Hung Huang
- Dr Kenyu Ito
- Dr Wataru Narita
- Prof Yukihiro Nakagawa
- Dr Wei Zhang
- Dr Yang Hejun
- Prof Dr Hyati Aygun
- Assoc Prof Dr Murat Sayin
- Dr Shomansur Shatursunov
- A/Prof Ahror Yakubov
- Dr Nadir Yacine Benmebarek
- Dr Diego Quillo
- Dr Ian Bustorff
- Dr Dakhir Abukov
- Dr V. Daya Thirumala Rao

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Dr Bambang Darwono
Indonesia

Prof Harmantya Mahadhipta, Sp.OT(K)
Indonesia

Prof Yudha Mathan Sakti
Indonesia

Dr I Gusti Lanang Ngurah Agung Artha Wiguna
Indonesia

Prof Rully Hanafi Dahlan
Indonesia

Dr Adam Moeljono
Indonesia

Dr Rieva Ermawan
Indonesia

Dr Asrafi Rizki Gatam
Indonesia

Dr Farid Yudoyono
Indonesia

Dr Syafrudin Husin
Indonesia

Dr Abdul Kadir Hadar
Indonesia

Dr Pang Hung Wu
Singapore

Dr Jacob Yoong-Leong Oh
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Dr Thomas Tan
Singapore

Dr Dennis Hey
Singapore

Dr Chew Zhihong
Singapore

Dr Ou Yang Youheng
Singapore

Adj Asst Prof Lin Shuxun
Singapore

Dr Elmer Jose Arevalo Meceda
Philippines

Dr Samuel Arsenio Grozman
Philippines

Dr Jomick Lumawig
Philippines

Dr Toh Charng Jeng
Malaysia

Dr Nurul Azwa Mohamad Noor
Malaysia

Dr Zakhiri Rashid
Malaysia

Dr Nguyen Huu Lam
Vietnam

Dr Luong Minh Quang
Vietnam

Dr Nguyen Quang Hung
Vietnam

Dr Nguyen Hoang Huy
Vietnam

Dr Chau Van An
Vietnam

Dr Huoy Phearum
Cambodia

Dr Chor Vannaroth
Cambodia

Dr Channat UN
Cambodia

Dr Sengmany Douangdala
Laos

ASEAN SPEAKERS

- Dr Luthfi Gatam
- Dr Bambang Darwono
- Prof Harmantya Mahadhipta, Sp.OT(K)
- Prof Yudha Mathan Sakti
- Dr I Gusti Lanang Ngurah Agung Artha Wiguna
- Prof Rully Hanafi Dahlan
- Dr Adam Moeljono
- Dr Rieva Ermawan
- Dr Asrafi Rizki Gatam
- Dr Farid Yudoyono
- Dr Syafrudin Husin
- Dr Abdul Kadir Hadar
- Dr Pang Hung Wu
- Dr Jacob Yoong-Leong Oh
- Dr Thomas Tan
- Dr Dennis hey
- Dr Chew Zhihong
- Dr Ou Yang Youheng
- Adj Asst Prof Lin Shuxun
- Dr Elmer Jose Arevalo Meceda
- Dr Samuel Arsenio Grozman
- Dr Jomick Lumawig
- Dr Toh Charng Jeng
- Dr Nurul Azwa Mohamad Noor
- Dr Zakhiri Rashid (Malaysia)
- Dr Nguyen Huu Lam
- Dr Luong Minh Quang
- Dr Nguyen Quang Hung
- Dr Nguyen Hoang Huy
- Dr Chau Van An
- Dr Huoy Phearum
- Dr Chor Vannaroth
- Dr Channat UN
- Dr Sengmany Douangdala

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Thailand

A/Prof. Pornpavit Sriphirom
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Dr. Woraphot Wichan
Thailand

Assoc.Prof. Gun Keorochana
Thailand

Assist.Prof. Suthipas Pongmanee
Thailand

Dr. Thanit Foocharoen
Thailand

Adj.Assist.Prof.Dr. Saran Pairuchvej
Thailand

Assoc.Prof. Akkapong Nitising
Thailand

Assist.Prof Luckchai Phonwijit
Thailand

Dr. Akarawit Asawasaksakul
Thailand

Dr. Chaiyapron Siramanakul
Thailand

Dr. Thippatai Chaichompoo
Thailand

Dr. Phanunan Sasiprapha
Thailand

Dr. Anuchit Vejchaichewa
Thailand

Dr. Nantawat Uttamo
Thailand

Dr. Abhirat Suepsing
Thailand

Dr. Panin Khemaprapa
Thailand

Dr. Pawalee Dowsiriroj
Thailand

Dr. Pawin Gajaseni
Thailand

Assoc.Prof. Kriangkrai Wittayapairoj
Thailand

Assoc.Prof. Permsak Paholpak
Thailand

Dr. Warayos Trathitephun
Thailand

Dr. Warot Ratanavinitkul
Thailand

Dr.Thitikan Wangapakul
Thailand

Dr. Chok-anan Rittipoldech
Thailand

Dr. Phattareeya Pholorajug
Thailand

Dr. Kittinon Songchou
Thailand

Dr. Siravich Suvithayasiri
Thailand

Dr. Songwut Sirivitmaitree
Thailand

Dr. Urawit Piyapromdee
Thailand

Dr. Wacharapong Chana
Thailand

Dr. Pretimon Kimpee
Thailand

Dr. Yanin Kooncharoensuk
Thailand

Dr. Ekasak Chantrapannik
Thailand

Dr. Wanwipha Prueksaritanond
Thailand

THAI SPEAKERS

- Prof. Wiwat Wajanavisit
- A/Prof. Pornpavit Sriphirom
- Dr. Woraphot Wichan
- Assoc Prof. Gun Keorochana
- Assist.Prof. Suthipas Pongmanee
- Dr. Thanit Foocharoen
- Adj.Assist.Prof.Dr. Saran Pairuchvej
- Assoc.Prof. Akkapong Nitising
- Assist.Prof Luckchai phonwijit
- Dr. Akarawit Asawasaksakul
- Dr. Chaiyapron Siramanakul
- Dr. Thippatai Chaichompoo
- Dr. Phanunan Sasiprapha
- Dr. Anuchit Vejchaichewa
- Dr. Nantawat Uttamo
- Dr. Abhirat Suepsing
- Dr. Panin Khemaprapa
- Dr. Pawalee Dowsiriroj
- Dr. Pawin Gajaseni
- Assoc Prof. Kriangkrai Wittayapairoj
- Assoc Prof. Permsak Paholpak
- Dr. Pilan Jaipanya
- Dr. Warayos Trathitephun
- Dr. Warot Ratanavinitkul
- Dr.Thitikan Wangapakul
- Dr. Chok-anan Rittipoldech
- Dr. Phattareeya Pholorajug
- Dr. Kittinon songchou
- Dr. Siravich Suvithayasiri
- Dr. Songwut Sirivitmaitree
- Dr. Urawit Piyapromdee
- Dr. Wacharapong Chana
- Assoc.Prof.Dr. Nuj Tontisirin
- Assoc.Prof.Dr. Rattaphol Seangrung
- Dr. Pretimon Kimpee
- Dr. Yanin Kooncharoensuk
- Dr. Patt Pannangpetch
- Dr. Ekasak Chantrapannik
- Dr. Wanwipha Prueksaritanond

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Assoc.Prof. Kriangsak Sae-Tia
Thailand

Assoc.Prof. Yingyong Torudom
Thailand

Assoc.Prof. Panya Luksanapruksa
Thailand

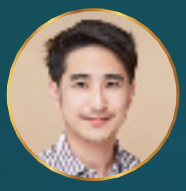
Assoc.Prof. Rattalerk Arunakul
Thailand

Prof. Weerasak Singhatanadgige
Thailand

Dr. Vit Kotheeranurak
Thailand

Assoc.Prof. Rattaphol Seangrung
Thailand

Dr. Patt Pannangpetch
Thailand



Pilan Jaipakdee
Thailand

Assoc.Prof. Nuj Tontisirin
Thailand

Dr. Chaisiri Chaichankul
Thailand

Dr. Chaiyos Chaichankul
Thailand

Dr. Issara Chandrsawang
Thailand

Dr. Kanathip Jitpakdee
Thailand

Dr. Kittipong Dongsang
Thailand

Dr. Komkrich Wattanapaiboon
Thailand

Dr. Panuphol Rajinda
Thailand

Dr. Poom Purksamatanun
Thailand

Dr. Pritsanai Pruttikul
Thailand

Dr. Saran Jindahara
Thailand

Dr. Surat Suttitantayaporn
Thailand

Dr. Kamolporn Noragrai
Thailand

Dr. Wongthawat Liawrungrueang
Thailand

Dr. Wongtong Wangtaphan
Thailand

Dr. Matee Phakawetch
Thailand

Kritsadakorn Kachonkittisak
Thailand

Nantaka Tepaamondej
Thailand

Panyajarn Laohapornsvan
Thailand

Dr. Banyong Vettayawaikoon
Thailand

Dr. Boonserm Pakdeenit
Thailand

Supachoke Nivescharoenpisan
Thailand

Assoc.Prof. Torpong Boonmaprasert
Thailand

Dr. Kittipong Setrkraising
Thailand

Supachoke Nivescharoenpisan
Thailand

Dr. Teerwst Pansrestee
Thailand

Dr. Varisa Wongbhanuwi
Thailand

Jackapol Kamolpak
Thailand

Padungcharn Miv
Thailand

Suppachai Punpichet
Thailand

Thanadol-Tangdamrongtham
Thailand

Dr. Somsak Thattiyakul
Thailand

THAI SPEAKERS

- Dr. Prateep Lertmongkonkul
- Dr. Kamolporn Noragrai
- Assoc.Prof. Kriangsak Sae-Tia
- Assoc.Prof. Yingyong Torudom
- Assoc.Prof. Panya Luksanapruksa
- Assoc.Prof. Rattalerk Arunakul
- Dr. Banyong Vettayawaikoon
- Dr. Boonserm Pakdeenit
- Dr. Chaisiri Chaichankul
- Dr. Chaiyos Chaichankul
- Dr. Issara Chandrsawang
- Dr. Jackapol Kamolpak
- Dr. Kanathip Jitpakdee
- Dr. Kittipong Dongsang
- Dr. Komkrich Wattanapaiboon
- Dr. Panuphol Rajinda
- Dr. Poom Purksamatanun
- Dr. Pritsanai Pruttikul
- Dr. Saran Jindahara
- Dr. Suppachai Punpichet
- Dr. Surat Suttitantayaporn
- Dr. Teerwst Pansrestee
- Dr. Thanadol Tangdamrongtham
- Dr. Varisa Wongbhanuwich
- Dr. Vit Kotheeranurak
- Dr. Wongthawat Liawrungrueang
- Dr. Wongtong wangtaphan
- Dr.Matee Phakawetch
- Kittipong Setrkraising
- Kritsadakorn Kachonkittisak
- Lt.Col.Dr. Padungcharn Nivatpumin
- Nantaka Tepaamondej
- Panyajarn Laohapornsvan
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- Prof. Worawat Limthongkul
- Jackapol Kamolpak
- Supachoke nivescharoenpisan
- Chutinun Assavatanalab
- Theeracha Prakobdee
- Ms Radchameekon Tamma
- Ms Watcharee Phoyeam
- Oraya Putpuang
- Nuchanad Choengchokchai
- Pattarawadee Seeraprom
- Ornanong Panmas
- Ms Napuk Srisuwan
- Ms Oraphan Phanpradit
- Nuttawut Mapame
- Kanokporn Limcharoensuksaku
- Roselaita Bin-awae
- Asma Dodusong
- Kanthida Singha
- Patteera Kantawong
- Teeranone Chenae
- Ms. Watcharaphon Joongtha
- Dr. Torpong Boonmaprasert

Conference Information

CONFERENCE VENUE

Chakri Naruebodindra Medical Institute
Faculty of Medicine
Ramathibodi Hospital
Mahidol University
111 Suvarnabhumi Canal Road, Bang Pla Subdistrict, Bang Phli, Samut Prakan
Bangkok, Thailand

CONFERENCE REGISTRATION

Pain Pre-Conference Workshop (26-27 February 2025)
The Registration Counter is opened from 8:30 – 9:00 hours from 26th February to 27th February 2025, located outside the Room 520 of Queen Sirikit Learning and Research Center.

Cadaveric Pre-Conference Workshop (26-27 February 2025)
The Registration Counter is opened from 7:30 – 8:00 from 26th February to 27th February, located outside the Room 419 of Queen Sirikit Learning and Research Center.

Main Conference (28 February – 1 March 2025)
The Registration Counter is opened from 7:30 – 8:00 on 28th February and from 7:00 – 7:20 hours on 1st March, located outside the Meeting Room, Level 2, Queen Sirikit Learning and Research Center.

Upon registration you will receive your name badge. You are required to wear your name badge to all sessions and events. Should you lose your name badge, please contact the Conference Secretariat for a replacement. Please note that replacement fee applies.

EXHIBITION

A state-of-the-art exhibition on medical equipment and allied applications will be held during the Conference. Exhibition opening times:

Friday, 26 July 2024	0800 – 1630 hours
Saturday 27 July 2024	0800 – 1700 hours

CERTIFICATE OF ATTENDANCE

Certificate of attendance will be sent to participant's registered email address after the meeting upon completion of the post event survey.

Kindly scan the QR code on your name badge to complete the post event survey.

CONFERENCE LANGUAGE

English is the medium of instruction for the Conference.

FACULTY PREPARATION ROOM

The Faculty Preparation Room is at located inside the Meeting room 2 at level 2 on 28 February and 1 March.

POSTER PRESENTATION

Each presenter will be allocated a poster board (one side only) with an area of 1m x 2m. Each poster board will be marked with a poster panel number. Poster should be set up on Friday, 28 February 2025 between 0800 – 0900 and removed on Saturday, 1 Marchh 2025 after 1530 hours.

CATERING

Food and beverage (F&B) will be served during lunches and teabreaks throughout the Conference.
Pre- Conference workshops (26-27 February): F&B will be served at foyer area outside meeting room.
Main Conference (28 February – 1 March): F&B will be served at exhibition area (Opposite meeting room 3).

GROUND TRANSFERS

Please be informed that daily ground transfers will be provided between Eastin Thana City Golf Resort Bangkok and the Conference Venue.

The transportation schedule is as follows:

Date	Route	Bus Departure Time
Wednesday, 26 Feb	Eastin Thana City Golf Resort => Main Conference	0645 hours
	Main Conference => Eastin Thana City Golf Resort	1630 hours
Thursday, 27 Feb	Eastin Thana City Golf Resort => Main Conference	0645 hours
	Main Conference => Eastin Thana City Golf Resort	1630 hours
Friday, 28 Feb and Saturday, 1 Mar	Eastin Thana City Golf Resort => Main Conference	0700 hours
	Main Conference => Eastin Thana City Golf Resort	1700 hours

DISCLAIMER

Whilst every attempt will be made to ensure that all aspects of the Conference will take place as scheduled, the Organising Committee reserves the right to make appropriate changes should the need arises with or without prior notice.

LIABILITY

The Organisers are not liable for any personal accidents, illnesses, loss, or damage to private properties of delegates during the Conference. Delegates are advised to make their own arrangements with respect to personal insurance.

LOST AND FOUND

For lost and found items, please approach the Conference Registration Counter.

CONFERENCE SECRETARIAT

Should you need any assistance, kindly reach out to Conference Secretariat located at Registration Counter located at level 3 during the Conference period.

Programme @ A Glance

Wednesday, 26 Feb 2025	Thursday, 27 Feb 2025
Pre-Conference Workshop: Cadaver	Pre-Conference Workshop: Cadaver
Pre-Conference Workshop: Pain	Pre-Conference Workshop: Pain
	Live Surgery

Friday, 28 Feb 2025	Saturday, 1 Mar 2025
Main Conference Day 1	Main Conference Day 2
Gala Dinner	
Exhibition/Poster	

Programme

Pre-Conference Workshop: Pain

26 – 27 February 2025

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Wednesday, 26 February 2025

Moderator: Kamolporn/Pretimon

Time	Topic	Moderator/Speaker
8.30 - 9.00	Registration	
9.00 - 10.30	C-ESI / C-MBB(flu) c RFA	*Ekasak & Wanwipha*
10.30 - 12.00	C-SNRB / C -MBB (u/s)	*Nuj & Pretimon*
13.00 - 14.30	L-MBB / SI joint injection / caudal ESI (u/s)	*Yanin & Kamolporn*
14.30 - 16.00	Caudal ESI / pulse RF RCE (flu)	*Nuj & Yanin*

Thursday, 27 February 2025

Moderator: Pretimon

Time	Topic	Moderator/Speaker
8.30 - 9.00	Registration	
9.00 - 10.30	Cooled RF SI joint (flu)	*Ekasak & PMK fellow*
10.30 - 12.00	L-MBB (flu) c RFA/Cooled RF	*Rattaphol & Prateep*
13.00 - 14.30	Sacral lateral branch RFA (flu)	*Rattaphol & Prateep*
14.30 - 16.00	SCS implantation (flu)	*Patt & Wanwipha*

Pre-Conference Workshop: Cadaver

26 – 27 February 2025

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Wednesday, 26 February 2025

Time	Topic	Speaker
07.30 - 08.00	Registration	
08.00 - 10.00	Lecture	
	Welcome speech	*Prof Wiwat Wajanavisit*
	Endoscopic tecniques for multilevel spine degenerative deformity. Do we need fusion?	*Bambang Darwono*
	Pathoanatomy of lumbar stenosis in interlaminar endoscopy	*Pornpavit Sriphirom*
	Posterior oblique lateral approach	*Pornpavit Sriphirom*
	Basic anatomy for transforaminal endoscopic surgery	*Issara Chandrsawang*
	Transforaminal PELD (TELD)	*Phattareeya Pholprajug*
	Foraminoplasty TELF	*Warot Ratanavinitkul*
	Interlaminar PELD	*Thanadol Tangdamrongtham*
	Interlaminar decompression	*Khanatip Jitpakdee*
	UBE lumbar disectomy	*Chaisiri Chaichankul*
	UBE lumbar decompression	*Panin Khemaprapa*
10.00 - 12.00	Cadaveric Dissection	
12.00 - 13.00	***Lunch Break***	
13.00 - 16.00	Cadaveric Dissection	

Thursday, 27 February 2025

Time	Topic	Speaker
08.00 - 10.00	Uniportal cervical disectomy	*Suthipas Pongmanee*
	Uniportal cervical decompression	*Surat Suttitantayaporn*
	UBE for cervical disectomy	*Kittinon Songchou*
	UBE for cervical decompression	*Songwut Sirivitmaitree*
	Live Surgery (09.00 - 10.00)	
	UBE management for thoracic lesion	*Warayos Trathitephun*
	Endoscopic uniportal fusion	*Akarawit Asawasaksakul*
	Endoscopic biportal fusion	*Pawalee Daosiriroj*
	Bleeding controlled in endoscopy	*Pilan Jaipanya*
	Complication and management in endoscopy	*Siravich Suvithayasiri*
10.00 - 12.00	Cadaveric Dissection	
12.00 - 13.00	***Lunch Break***	
13.00 - 16.00	Cadaveric Dissection	

Table Instructor

• **BJC1**	Vit Kotheeranurak Khanatip Jitpakdee
• **BJC2**	Dr.Arun Bhanot Chok-anan Rittipoldech
• **Joimax1 (Uni)**	Akarawit Asawasaksakul Paul Narischart
• **Joimax2 (Uni)**	Preutthipan Pragthong Siravich Suvithayasiri
• **Joimax3 (Uni)**	Suthipas Pongmanee Supachai Punpichet
• **Joimax4 (UBE)**	Jacob oh Abhirat Suepsing
• **Maxmore1 (uni)**	Pilan Jaipanya Urawit Piyapromdee
• **Maxmore2 (UBE)**	Phanunan Sasiprapha Wu Pang Hung Chaisiri Chaichankul
• **Eliquence 1**	Gun keorochana Saran Pairuchvej
• **Eliquence 2**	Dr.Dennis Hey Dr.Lin Shu Xun
• **Bonns1**	Dr.Zhang Wei Warayos Trathitephun
• **Bonns 2**	Dr. Yang He Jun Nantawat Uttamo
• **Smith Nephew**	Pawin Gajaseni Thanit Foocharoen

Main Conference

Day 1 (Friday, 28 February 2025)

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Room 1		
Time	**Topic**	**Speaker**
07.30 - 08.00	**Registration**	
08.00 - 08.40	**Presidential Lecture**	*Mod: Woraphot Wichan / Thanit Foocharoen*
08.00 - 08.10	Endoscopic treatment in Chronic low back pain	*Pornpavit Sriphirom*
08.10 - 08.20	Perspectives of minimally invasive spinal surgery	*Wiwat Wajanavisit*
08.20 - 08.30	Uniportal Endoscopic Interlaminar Decompression in Degenerative Lumbar spinal Stenosis	*Lam Nguyen Huu*
08.30 - 08.40	Q&A	
08.40 - 09.10	**Honorary lecture**	*Mod: Wiwat Wajanavisit / Chaiyapron Siramanakul*
08.40 - 08.55	(TBC)	*Max Aebi*
08.55 - 09.10	Improvements to achieve minimally invasive lumbar fusion and alignment-from FESS to UBE/BESS-	*Kenyu Ito*
09.10 - 10.00	**Plenary lecture (Uniportal versus Biportal)**	*Mod: Gun Keorochana/ Akarawit Asawasaksakul*
09.10 - 09.25	Tips and Tricks of UBE En Bloc Flavectomy: Butterfly technique	*Cheol Wung Park*
09.25 - 09.40	Anatomical factor of successful endoscopic transforaminal L5-S1 decompression TBC	*Chang-Il Ju*
09.40 - 09.50	Variety of flavectomy: Uniportal,UBE and Hybrid	*Woraphot Wichan*
09.50 - 10.00	Which is better? Uniportal vs Biportal	*Lee Dong Chan*
10.00 - 10.30	**Opening Ceremony**	
	Speech of The ASEAN MISST Association's Founder	*Pornpavit Sriphirom*
	Speech of The ASEAN MISST Association's President	*Woraphot Wichan*
	MOU Signing Ceremony between ThaiMISST with KOSESS, TSESS	
10.30 - 10.50	***Tea Break (20 mins)***	
10.50 - 12.00	**Lumbar Spine 2**	*Mod: Malcolm Pestonji / Wu Pang Hung*
10.50 - 11.02	How can endoscopic techniques influence the spine pathway disease	*Javier Quillo-Olvera*
11.02 - 11.14	Glucose response after unilateral biportal endoscopic lumbar laminotomy	*Javier Quillo-Olvera*
11.14 - 11.26	No-Punch Decompression Technique for UBE Surgery	*Jwo-Luen Pao*
11.26 - 11.38	UBE lumbar foraminotomy	*Diego Quillo*
11.38 - 11.50	Cervical Corner Approach	*Wei Zhang*
11.50 - 12:00	Q&A	

Time	Topic	Speaker
12.00 - 13.00	*Lunch Symposium (60 mins)*	*Mod: Kittipong Setrkraising / Panyajarn Laohapornsvan*
12.00 - 12.30	TBC	*Thomas Tan / Dr Vit Kotheeranurak*
12.30 - 12.50	Full-endoscopic Spine Surgery – from decompression to fusion	*Arun Bhanot*
12:50 - 13:00	Applied full endoscopic decompression technique for adjacent segment diseases and revision cases	*Jiang Lei*
13.00 - 15.10	**Lumbar Spine 4**	*Mod: Javier Quillo-Olvera / Keng Chang Liu*
13.00 - 13.15	Plenary lecture: Contralateral approach in UBE surgery: When and Why?	*Hayati AYGÜN*
13.15 - 13.30	UBE for Thoracic OLF	*Yang Hejun*
13.30 - 13.45	Plenary lecture: Recent advances in UBE	*Malcolm Pestonji*
13.45 - 14.00	Plenary lecture: Transforaminal Endoscopic Approach for Lumbar stenosis	*Anand Kavi*
14.00 - 14.10	Consecutive UBE Decompression in Lumbar spinal stenosis	*Hayati AYGÜN*
14.10 - 14.20	Role of Full Endoscope Spine surgery in Thoraco-lumbar junction pathologies	*Arun Bhanot*
14.20 - 14.30	Tips and Tricks of Full endoscopic discectomy transforaminal approach	*Dr Yudha Mathan Sakti*
14.30 - 14.40	Challengers in XR Surgical Support Technology Development and Business Continuation: Incorporating AppleVisionPro	*Wataru Narita*
14.40 - 14:50	Role of full endoscope in revision lumbar spine surgery	*Matee Phakawetch*
15.00 - 15.10	Q&A	
15.10 - 15.30	*Tea Break (20 mins)*	
15.30 - 16.10	**Lumbar Spine 5**	*Mod: Mod Harmantya Mahadhipta / Songwut Sirivitmaitreearawit Asawasaksakul*
15.30 - 15.40	Extreme cases and rare indications for full endoscopic spine surgery	*Murat Sayin*
15.40 - 15.50	Approach selection using UBE in the lumbar spine	*Thanit Foocharoen*
15.50 - 16.00	Lumbar foraminoplasty for revision surgery and Bertolotti's disease	*Saran Pairuchvej*
16.00 - 16.10	Q&A	
17.00 - 22.00	**Gala Dinner**	

Main Conference

Day 1 (Friday, 28 February 2025)

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Room 2		
Time	**Topic**	**Speaker**
07.30 - 08.00	Registration	
09.10 - 10.00	**Lumbar Spine 1**	*Mod: Dong Hoon Yang / Thippatai Chaichompoo*
09.10 - 09.20	The Correlation of the Adequacy of Decompression and Clinical Outcomes by UBE technique in Patients with Lumbar Herniated Disc	*Chaisiri Chaichankul*
09.20 - 09.30	Uniportal interlaminar endoscopic approach	*Wongtong wangtaphan*
09.30 - 09.40	Full endoscopic for far out lateral syndrome	*Boonserm Pakdeenit*
09.40- 09.50	Navigation assisted UBE vertebrectomy	*Yingyong Torudom*
09.50 -10.00	Microendoscopic lumbar interbody fusion (MELIF) -surgical techniques and characteristics	*Yukihiro Nakagawa*
Opening Ceremony		
10.50 - 12.00	**Lumbar Spine 3**	*Mod : Hyati Aygun / Rattalerk Arunakul*
10.50 - 11.00	Advantages of coronal MRI-based classification of upward-migrated HLD and addition of cardinal surgical steps to facilitate transforaminal endoscopic approach	*Dong Hoon Yang*
11.00 - 11.10	Uniportal Paraspinal approach in lumbar spine	*Saran Jindahara*
11.10 - 11.20	Full-endoscopic contralateral translaminar approach for decompression in lumbar spinal stenosis	*Wongthawat Liawrungrueang*
11.20 - 11.30	Full endoscopic CLA approach	*Urawit Piyapromdee*
11.30 - 11.40	Benefit of uniportal endoscopic in cauda equina syndrome	*Suppachai Punpichet*
11.40 - 11.45	Q&A	
11.40-12.00	Case discussion 1 (Lumbar disc herniation / Stenosis) Panelist: Dong Hoon Yang, Wongthawat Liawrungrueang, Saran Pairuchvej, Chaisiri Chaichankul	*Kittipong Dongsang*

Time	Topic	Speaker
13.00 - 15.10	**Endoscopic Lumbar Interbody Fusion, Spondylolisthesis**	*Mod: Chang-Il Ju / Ou Yang Youheng*
13.00 - 13.15	Plenary Lecture: POL Endo-Lif	*Pornpavit Sriphirom*
13.15 - 13.25	Biportal endoscopic vs Microtubular TLIF: From my experience to the study.	*Rattalerk Arunakul*
13.25 - 13.35	Transfacet full-endoscopic Lumbar Interbody Fusion through A-are	*Akarawit Asawasaksakul*
13.35 - 13.45	Uniportal Endoscopic fusion technical, pearls and pitfalls	*Vit Kotheeranurak*
13.45 - 13.55	Comparison Full Endo TLIF vs UBE TLIF (in surgical technique)	*Abhirat Suepsing*
13.55 - 14.05	Exoscope assisted MIS TLIF	*Ravi Ranjan Rai*
14.05 - 14.15	Technical consideration for uniportal TLIF	*Poom Purksamatanun*
14.15 - 14.25	Percutaneous endoscopic lumbar discectomy via transforaminal approach in stable low-grade lumbar spondylolisthesis: Less is More?	*Thippatai Chaichompoo*
14.25 - 14.35	High grade listhesis & Transkambin fusion: How do I do it!!!	*Bhupesh Patel*
14.35 - 14.45	UBE fusion: Tips and Tricks	*Pawin Gajaseni*
14.45 - 14.55	Q&A	
14.55 - 15.10	Case discussion 2 (Lumbar spondylolisthesis) Panelist: John Choi, Rattalerk Arunakul, Dr Vit Kotheeranurak, Dr Thippatai Chaichompoo	*Chau Van An*
15.30 - 16.10	**Lumbar (Non-Fusion)**	*Mod: Diego Quillo / Lam Nguyen Huu*
15.30 - 15.40	Full Endoscopic Decompression for Degenerative Lumbar Scoliosis with Spinal Stenosis	*Chaiyapron Siramanakul*
15.40-15.50	UBE in degenerative scoliosis	*Kittinon songchou*
15.50 - 16.00	En bloc flavectomy in Uniportal endoscopic, how to do it safe?	*Wacharapong Chana*
16:00 - 16:10	Q&A	
17.00 - 22.00	**Gala Dinner**	

Main Conference

Day 1 (Friday, 28 February 2025)

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Room 3		
Time	**Topic**	**Speaker**
07.30 - 08.00	Registration	
09.10 - 10.00	**Free Paper Session: Paper Contest**	*Mod: Siravich Suvithayasiri / Wongthawat Liawrungrueang/ Kanathip Jitpakdee*
09.10 -09.17	Extraforaminal Full-Endoscopic Approach for Extraforaminal Lumbar Disc Herniation: Case Report and Literature ReviewJui Chi Chang	*Jui Chi Chang*
09.17 - 09.24	Small Scar, Big Impact: 3-cm Skin incision Open-Door Laminoplasty for cervical Myelopathy-Technique and Initial outcomes.	*Wataru Narita*
09.24 - 09.31	Intradural extramedullary spinal tumors: a case series of 6 surgical cases at nguyen dinh chieu hospital and review of literature	*Hien Ha Huu*
09.31 - 09.38	The Correlation Between the Adequacy of Decompression and Clinical Outcomes by Unilateral Biportal Endoscopic Technique in Patients with Lumbar Herniated Disc	*Raksintham Ratchatapak*
09.38-09.45	Full endoscopic lumbar decompression for lumbar spinal stenosis in patients with and without preoperative spondylolisthesis: clinical outcome, radiographic outcome and reoperation rates	*Chung Yu-Hsuan*
09.45 - 09.52	Basic lumbar canal stenosis decompression by unilateral biportal endoscopy	*Satapathy Sanatan*
09.52 - 10.00	New Perspective on Biportal Endoscopic Posterior Interlaminar Decompression - From Pandora Box to Butterfly	*Kuo Pin Kuo*
Opening Ceremony		

Time	Topic	Speaker
10.50 - 12.00	**Free Paper Session: Paper Contest**	*Mod: Nantaka Tepaamondej / Panin Khemaprapa / Phattareeya Pholorajug*
10.50 - 10.57	Twin-cage lumbar interbody fusion using unilateral biportal endoscopy (UBE)	*Atmaranjan Dash*
10.57 - 11.04	The Uniportal endoscopic lumbar interbody fusion for lumbar spodylolisthesis; Preliminary clinical results of 20 cases	*Phung Tien Dung*
11.04 - 11.11	Emergency Response to Failed Decompression: Recurrent Disc Herniation Managed by Conversion from Transforaminal to "Modified Paramedian" Full-Endoscopic Lumbar Discectomy	*Sheng Jia Huang*
11.11 - 11.18	Preliminary Clinical Outcomes of the Full-Endoscopic Rhizotomy and Coccygeal Ligament Resection under a Navigation System for Post-Traumatic Coccydynia	*Dar Yuan Fang*
11.18 - 11.25	Uniportal Full-Endoscopic Extraforaminal Lumbar Foraminotomy for Far-Out Syndrome: Case Report and Technique Notes	*Yu Jen Liang*
11.25 - 11.32	Minimally invasive surgery for spinal metastases: advances, techniques, and outcomes	*Muhammad Abdulhamid*
11.32 - 11.39	Endoscopy-assisted lumbar interbody fusion versus traditional open surgery for low-grade spondylolisthesis: a systematic review and meta-analysis of clinical and radiological outcomes	*Setiadi Christian*
11.39 - 11.46	Paraspinal Uniportal and Biportal Endoscopic decompression for the Treatment of Bertolotti Syndrome	*Li Yi-Syuan*
11.46 - 11.53	Comparison of Early Clinical and Radiological Outcomes Between Percutaneous Posterolateral Trans-Kambin Lumbar Interbody Fusion (KLIF) and Minimally Invasive Transforaminal Lumbar Interbody Fusion (MIS-TLIF)	*B. Vasavada Niraj*
11.53 - 12.00	Transforaminal Percutaneous Endoscopic Lumbar Discectomy (PELD), Biopsy, and Drainage In An Adult with Tuberculous Spondylodiscitis: A Case Report	*Bienvenido Leo Antonio Caro*

Time	Topic	Speaker
13.00 - 15.10	**Indonesia Society**	*Mod: Jacob Oh / Phearum Huoy*
13.00-13.15	Plenary lecture: Complication in Lumbar disc replacement Surgery: What we should avoid?	*Harmantya Mahadhipta*
13.15-13.30	Plenary lecture: Outcome Following Spine Endoscopy using Smart Wearable Gadget	*Yudha Mathan Sakti*
13.30 - 13.45	Plenary lecture: Learning curve for minimally invasive spine surgery	*Rully Hanafi Dahlan*
13.45 - 14:00	Plenary lecture: Clinical Outcomes of Biportal Endoscopic Spinal Surgery vs. Microdiscectomy in Lumbar Canal Stenosis: Evidence from a Retrospective Analysis	*I Gusti Lanang Ngurah Agung Artha Wiguna*
14:00 - 14:15	Plenary lecture: The use of robotic assisted spine surgery for minimal invasive procedure	*Luthfi Gatam MD*
14:15 - 14.25	Robotic single position lateral surgery for degenerative spondylolisthesis	*Asrafi Rizki Gatum*
14.25 - 14.35	Cervical endoscopy using UBE and uniportal: Personal experience	*Adam Moeljono*
14.35 - 14.45	How do you choose the right patient for endoscopic fusion of just endoscopic decompression?	*Abdul Kadir Hadar*
14.45 - 14.55	Closed System Abscess Evacuation for Lumbosacral Spinal Tuberculosis Abscess	*Rieva Ermawan*
14.55 - 15.05	Full uniportal Endoscopic cervical spine decompression for C1-C2 stenosis	*Farid Yudoyono*
15.05 - 15.10	TBC	*Ichab Husin*
15.30 - 16.10	**Cambodia Society**	*Mod: Rully Hanafi Dahlan / Urawit Piyapromdee*
15.30 - 15.40	Full Endoscopic Posterior Body Fusion with Pin Assisted Retraction	*Phearum Huoy*
15.40 - 15.50	Technical Challenges in UBE: Case study from a Cambodian Neurosurgical Perspective	*Channat UN*
15.50 - 16.00	The application of Uniportal Endoscopic decompression in Treating Spinal Tuberculosis	*Chor Vannaroth*
16.00 - 16.10	Q&A	
17.00 - 22.00	**Gala Dinner**	

Main Conference

Day 2 (Saturday, 1 March 2025)

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Room 1		
Time	**Topic**	**Speaker**
07.20 - 08.00	**Breakfast Seminar: Meet the experts 1 Upmigrate disc + bilateral foraminal stenosis L5/S1**	*Mod: Pornpavit Sriphirom / Malcolm Pestonji Presenter: Supachoke Nivescharoenpisan*
08.00 - 08.30	**Honorary Lecture**	*Mod: Pornpavit Sriphirom / Warot Ratanavinitkul*
08.00 - 08.15	Hidden secrets in transforaminal endoscopy for all symptom generators 2025	*Satishchandra Gore*
08.15 - 08.30	Percutaneous epiduroscopic neuroplasty for cervical and lumbar spine	*Gun Choi*
08.30 - 10.30	**Cervical**	*Mod: Toh Charng Jeng / Abhirat Suepsing*
08.30 - 08.40	Posterior cervical endoscopic spine surgery: Application and technical consideration	*Gun Keorochana*
08.40 - 08.50	Endoscopic trans-oral approach for upper cervical pathology	*Suthipas Pongmanee*
08.50 - 09.00	UBE lateral mass fixation	*Songwut Sirivitmaitree*
09.00 - 09.10	Posterior cervical endoscopic procedure	*Toh Charng Jeng*
09.10 - 09.20	Role of UBE in cervical myelopathy	*Nantawat Uttamo*
09.20 - 09.30	C1-2 Full endoscopic fusion	*Luong Minh Quang*
09.30 - 09.40	Surgical treatment for severe C1-2 subluxation	*Luckchai phonwijit*
09.40 - 09.50	Posterior cervical decompression; UBE vs Microtubular	*Phanunan Sasiprapha*
09.50 - 10.00	Posterior Cervical decompression in CSM	*Chok-anan Rittipoldech*
10.00 - 10.10	Outcome of anterior and posterior cervical endoscopic	*Nurul Azwa Mohamad Noor*
10:10 - 10:15	Q&A	
10.15 - 10.30	Case disccusion 3 (CSR/CSM) Panelist: Panuphol Rajinda, Dr Luong Minh Quang, Assist. Prof. Suthipas Pongmanee, Assist. Prof Luckchai phonwijit	*Dr Phanunan Sasiprapha*
10.30 - 10.50	***Tea Break (20 mins)***	
10.50 - 12.00	**Thoracic**	*Mod: Suthipas Pongmanee / Pilan Jaipanya*
10.50 - 11.05	Plenary lecture: UBE posterior thoracic discectomy	*Son Sang Kyu*
11.05 - 11.20	Plenary lecture: UBE posterior cervical surgeries	*Son Sang Kyu*
11.20 - 11.30	Bilateral decompression for thoracic canal stenosis advantages and risks	*Akhror Yakubov*

Time	Topic	Speaker
11.30 - 11.40	Full endoscopic for thoracic disc herniation	*Phattareeya Pholorajug*
11.40 - 11.45	Q&A	
11.45 - 12.00	Case disccusion 4 (Thoracic) Panelist: Akhror Yakubov, Son Sang Kyu, Dr Yang He Jun, Dr Keng Chang Liu	*Chutinun Assavatanalab / Gun Keorochana*
12.00 - 13.00	***Lunch Symposium (60 mins)***	
12.00 - 12.15	Thoracic Discectomy by UBE	*Wei Zhang*
12.15 - 12.30	Application of Powered Drills in UBE Surgery	*Yang Hejun*
12.30 - 13.00	***Lunch Symposium (TBC)***	
13.00 - 14.10	**Advance Endoscopic Spine Surgery**	*Mod: Chien-Min Chen / Javier Quillo-Olvera*
13.00 - 13.15	Plenary lecture: Percutaneous Stenoscopic lumbar decompression/discectomy (PSLD); How I do it?	*Kang Taek Lim*
13.15 - 13.25	Current Progress and Future Directions of Cervical Endoscopic Spine Surgery	*Kang Taek Lim*
13.25 - 13.35	Complication prevention in UBE	*Nadir Yacine Benmebarek*
13.35 - 13.45	Para spinal approach to foraminal and extraforaminal disc herniations	*Shaturunov Shomansur*
13.45 - 13.55	Comparison of monoportal and biportal endoscopic surgery of lumbar stenosis	*Dakhir Abukov*
13.55 - 14.05	Endoscopic Spine Surgery, Treatment of Facet Cyst	*Wu Pang Hung*
14.05 - 14.10	Q&A	
14.10 - 14.30	Tea Break (20 mins)	
14.30 - 16.20	**MIS 2**	*Mod: Akkapong Nitising*
14.30 - 14.40	Prone transpsoas (PTP) lumbar interbody fusion: A technical consideration and its potential extended application	*Gun Keorochana*
14.40 - 14.50	Role of MIS in spine deformity correction	*Worawat Limthongkul*
14.50 - 15.00	Single position Prone OLIF for degenerative lumbar disease: Is it reasonable to do?	*Weerasak Singhatanadgige*
15.00 - 15.10	Single position OLIF	*Kriangkrai Wittayapairoj*
15.10 - 15.20	Endoscopic-assisted OLIF	*Kanathip Jitpakdee*
15.20 - 15.30	OLIF L5-S1	*Chaiyos Chaichankul*
15.30 - 15.40	TBC	*Torphong Bunmaprasert*
15.40 - 15.50	Percutaneous C1-2 trans-articular screw	*Panuphol Rajinda*
15.50 - 16.00	Q&A	
16.00 - 16.20	Case discussion 5 (MIS) Panelist: Prof Weerasak, Prof Worawat, Prof Akkapong, Assoc Prof. Kriangkrai Wittayapairoj	*Theeracha Prakobdee / Gun Keorochana*
16.30 - 17.00	**Closing Ceremony**	*Woraphot / Jacob Oh*

Main Conference

Day 2 (Saturday, 1 March 2205)

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Room 2		
Time	**Topic**	**Speaker**
07.20 - 08.00	**Breakfast Seminar: Meet the experts 1 Upmigrate disc + bilateral foraminal stenosis L5/S1**	*Mod: Pornpavit Sriphirom / Malcolm Pestonji Presenter: Supachoke Niveschaoenpisan*
08.00 - 08.30	**Honorary Lecture**	*Mod: Pornpavit Sriphirom / Warot Ratanavinitkul*
08.30 - 10.30	**Taiwan Society of Endoscopic Spine Surgery (TSESS)**	*Mod: Pornpavit Sriphirom / Yudha Mathan Sakti*
08.30 - 08.45	Introduction of TSESS and Its Educational System. What could We Contribute to ASEAN MISST?	*Jeffery Jung Hao*
08.45 - 09.00	Current Indications for Spinal Endoscopic Surgery and Potential for Future Expansion	*Chien-Min Chen*
09.00 - 09.30	Alignment Correction in Biportal Endoscopic Transforaminal Lumbar Interbody Fusion Surgery	*Jwo-Luen Pao*
09.15 - 09.30	Full Endoscopic Approach for Thoracic Giant Disc Herniation with Myelopathy	*Keng Chang Liu*
09.30 - 09.40	Sharing Experiences of Using UBE in Spinal Decompression Surgery	*Chih-Hui Chang*
09.40 - 09.50	Revision Surgery with Spinoscope	*Se-Yi Chen*
09.50 - 10.00	Use of Ultrasound to Enhance the Safety and Precision of Endoscopic Spine Surgery	*Chien-Hua Chen*
10.00 - 10.10	Anatomical and Clinical Strategies to Enhance Neurologic Safety in Uniportal Full-Endoscopic Lumbar Fusion Surgery	*Chien-Li Lin*
10.10 - 10.20	Preliminary clinical and radiological outcomes of uniportal endoscopic lumbar interbody fusion for degeneration lumbar scoliosis over 1 year follow-up	*Hong-Yi Huang*
10.20 - 10.30	Q&A	
10.50 - 12.00	**Singapore Society**	*Mod: Jeffery Jung Hao / Nantawat Uttamo*
10.50 - 11.05	Plenary lecture: Dynamic Duo-Robotics and MIS Surgery	*Jacob Oh*
11.05 - 11.15	My approach to dilemmas in disc herniation surgery - Is endoscopy the way to go?	*Dennis Hey*
11.15 - 11.25	Awake spine programme and why not?	*Thomas Tan*

Time	Topic	Speaker
11.25 - 11.35	A beginner's challenges in endoscopic spine surgery: Uniportal vs Biportal	*Chew Zhihong*
11.35 - 11.45	MIS treatmen strategies in osteoporotic thoracolumbar fractures	*Ou Yang Youheng*
11.45 - 11.55	Adjuncts to endoscopic spine surgery	*Lin Shuxun*
11.55 - 12.00	Q&A	
13.00 - 14.10	MIS 1 / Complication	*Nurul Azwa Mohamad Noor / Panya Luksanapruksa*
13.00 - 13.10	Surgical treatment of osteoporotic thoraco-lumbar fractures	*Akkapong Nitising*
13.10 - 13.20	MIS lateral TL Corpectomy	*Padungcharn Nivatpumin*
13.20 - 13.30	Mis fixation in burst fracture	*Thitikan Wangapakul*
13.30 - 13.40	Management of dural tear in uniportal endoscopic spine surgery	*Pilan Jaipanya*
13.40 - 13.50	Face with dural tear in endoscopic surgery different between uni vs biportal	*Warayos Trathitephun*
13.50 - 14.00	Dural repair in spine endoscopy	*Akhror Yakubov*
14.00 - 14.10	Enhanced technique of dural closure using autologous fat graft and Gelfoam for effective management of dural tear following interlaminar endoscopic lumbar spine surgery	*Pritsanai Pruttikul*
14.30 - 16.20	**Spinal Tumor and Other**	*Mod: Luckchai phonwijit / Komkrich Wattanapaiboon*
14.30 - 14.40	Update of MIS in spinal metastasis	*Panya Luksanapruksa*
14.40 - 14.50	Patient Selection Strategies for Minimally invasive endoscopic spine surgery in Spinal Metastasis: Intregration with the current practices	*Siravich Suvithayasiri*
14.50 - 15.00	Utility of Endoscopic Spine Surgery in the management of Spinal Tumors	*Elmer Jose Arevalo Meceda*
15.00 - 15.10	Endoscopic VS Tubular retractor Minimally invasive resection of Spinal Tumors	*Varisa Wongbhanuwich*
15.10 - 15.20	Total enbloc thoracic spondylectomy in Spinal Tumors	*Permsak Paholpak*
15.20 - 15.30	Non degenerative indications of endoscopic spine surgery	*Saidileep Viswanadha*
15.30 - 15.40	Handling Pseudomeningocele After Biportal Endoscopic Spine Surgery	*Dr Pawalee Dowsiriroj*
15.40 - 15.50	Intracranial complications from spinal endoscopy	*Suthipas Pongmanee*
15.50 - 16.00	Q&A	
16.00 - 16.20	Case discussion 6 (Tumor) Panelist Dr Panya Luksanapruksa, Dr Warayos Trathitephun, Assoc Prof. Permsak Paholpak, Dr Elmer Jose Arevalo Meceda	*Jackapol Kamolpak*

Main Conference

Day 2 (Saturday, 1 March 2025)

Chakri Naruebodindra Medical Institute, Faculty of Medicine, Ramathibodi Hospital Mahidol University

Room 3		
Time	**Topic**	**Speaker**
07.20 - 08.00	**Breakfast Seminar: Meet the experts 1 Upmigrate disc + bilateral foraminal stenosis L5/S1**	*Mod: Pornpavit Sriphirom / Malcolm Pestonji Presenter: Supachoke Niveschaoenpisan*
08.00 - 08.30	**Honorary Lecture**	*Mod: Pornpavit Sriphirom / Warot Ratanavinitkul*
08.30 - 10.30	**Vietnam, Philippines, Malaysia, Loa Society and others**	*Mod: Dr Jomick Lumawig / Vit Kotheeranurak*
08.30 - 08.40	Full endoscopic approach for revision spine surgery	*Luong Minh Quang*
08.40 - 08.50	Biportal endoscopic decompression alone for lumbar stenosis with degenerativd spondylolisthesis: preleminary results and how to do degenerative safely and effectively	*Chau Van An*
08.50 - 09.00	Initial steps for doing cervical spine endoscopic surgery at Danang hospital: techniques, Advantages and disadvantages.	*Huy Nguyen*
09.00 - 09.10	Transforaminal and interlaminar approach dilemma	*Zakhiri Rashid*
09.10 - 09.20	Comparative analysis of Filipino Spine surgeons' perceptions and Preferences: MIS-TLIF vs Open TLIF	*Dr Jomick Lumawig*
09.20 - 09.30	Spinal epidural hematoma. Endoscopic approach and literature review	*Nguyen Quang Hung*
09.30 - 09.40	Early result of partial laminectomy with dissectomy HNP	*Dr Teerwst Pansrestee*
09.40 - 09.50	Endoscopic surgery beyond degenerative afflictions	*Dr Samuel Arsenio Grozman*
09.50 - 10.00	Resolved perineural cyst after stenotic canal decompression	*Dr Varisa Wongbhanuwich*
10.00 - 10.10	Tips and tricks for endoscopic central canal decompression	*Assoc Prof Kriangsak Sae-Tia*
10.10 - 10.20	UBE Paraspinal approach in lumbar spine	*Dr Sonsak Thattiyakul*
10.20 - 10.30	Q&A	
10.50 - 12.00	Meet the experts 2	*Adj assoc Pornpavit Sriphirom / Dr Banyong Vettayawaikoon*
10.50 - 11.00	Revision cases with UBE	*Javier Quillo-Olvera*
11.00 - 11.10	Failed open laminectomy with pedicular fixation treated by UBE	*Malcolm Pestonji*

Time	Topic	Speaker
11.10 - 11.20	Cervical long term multiple ube surgeries with adj disc disease and redu at other levels with monoportal ACDF	*Malcolm Pestonji*
11.20 - 11.30	Novel Technique Of Assisted Uniportal Interlaminar Percutaneous Endoscopic Lumbar Discectomy To Increase Versatility For Discectomy: Technical Notes	*Yudha Mathan Sakti*
11.30 - 11.40	TBC	*TBC*
11.40 - 11.50	Cervicothoracic facet cyst with UBE	*Kritsadakorn Kachonkittisak*
11.50 - 12.00	Facet cyst with uniportal approach	*Thomas Tan*
13.00 - 14.10	**Nurse session**	*Mod: Dr Anuchit Vejchaichewa*
13.00 - 13.10	Operation room and instrument setup for UBE surgery	*Nuttawut Mapame*
13.10 - 13.20	Basic general instrument setting and Equipment cleaning and sterilization instrument	*Kanokporn Limcharoensuksakul*
13.20 - 13.30	First step to settle spine unit in Yala Hospital: Is there any ethinicity difference?	*Roselaita Bin-Awae*
13.30 - 13.40	Perioperative management in thoracolumbar injury after MIS Surgery	*Asma Dodusong*
13.40 - 13.50	Fluoroscopically Guided Caudal Epidural Steroid Injection: Operating Room Sep up and Complication Avoidance	*Kanthida Singha*
13.50 - 14.00	Unexpected event during surgery	*Patteera Kantawong*
14.00 - 14.10	How to minimized costs in endoscopic spine surgery in a rural hospital	*Teeranone Chenae*
14.30 - 16.10	**Nurse session**	*Mod: Dr. Anuchit Vejchaichewa/*
14:30 - 14:40	The Development of nursing practice guidelines for prevent complication in general anesthesia of Endoscopic of Lumbar Spinal Surgery, Udonthani Provine	*Mrs Watcharaphon Joongthai*
14:40 - 14:50	TBC	*Rajavithi Hospital*
14:50 - 15:00	TBC	*Rajavithi Hospital*
15:00 - 15:10	Protective of positioning in spine surgery	*Oraya Putpuang*
15:10 - 15:20	Hemostats for spine surgery	*Nuchanad Choengchokchai*
15:20 - 15:30	How to avoid infection	*Pattarawadee Seeraprom*
15:30 - 15:40	Pressure Injury Prevention	*Ornanong Panmas*
15:40 - 15:50	Nurse Performance for Error Prevention	*Pattarawadee Seeraprom*
15.50 - 16.00	Peri operative nursing in endoscopic spine surgery	*Napuk Srisuwan*
16.00 - 16.10	How to set up endoscopic instrument for the smooth running operation	*Oraphan Phanpradit*

Acknowledgment

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Abstract

MAIN CONFERENCE

DAY 1 – FRIDAY, 28 FEBRUARY 2025

Improvements to Achieve Minimally Invasive Lumbar Fusion and Alignment -From FESS to UBE/BESS –

Kenyu Ito

Background and Hypothesis: In recent years, with the development of endoscopes, extraforaminal lumbar interbody fusion (ELIF) has become possible via extraforaminal approach such as Kambin's triangle. ELIF enables indirect decompression and lumbar interbody fusion without direct visualization of the dura, which is anticipated to lower the risk of dural injury and bleeding. Since 2016, percutaneous ELIF (PELIF) has been conducted using a monoportal endoscope in our institute. When performing PELIF at L5/S, the cage was inserted from both sides. Therefore, I started unilateral biportal endoscopic ELIF (UBE-ELIF) with the aim of inserting two lordotic cages from one side and performing the surgery with single surgeon. Furthermore, the use of navigation (NV) not only improves accuracy but also reduces radiation exposure. Method: To demonstrate that endoscopic-ELIF is less invasive, PELIF (52 cases) was compared with MIS-TLIF (74 cases). Then the UBE-ELIF (35cases) was started by improving the PELIF technique.

Results: PELIF had no infection, hematoma, or dural damage and was better than MIS-TLIF, but there was a 3 cases of transient exiting root damage. TheVAS and ODI of PELIF showed statistically significant improvement over MIS-TLIF postoperatively. The MRI cross-sectional area showed less multifidus fat degeneration in PELIF than in MIS-TLIF.

UBE is inserted through the skin incision for percutaneous pedicle screw. The superior articular process is partially resected. The extraforaminal disc is accessed, and a cage is inserted at 45 degrees, guided by the axial image of NV. The procedure was also performed without any exiting nerve root damage.

Conclusion: Indirect decompression using UBE-ELIF was performed without major complications. This procedure is minimally invasive and can also be applied at the L5/S level with lordotic double-cage from one side.

Tips and Tricks of UBE En Bloc Flavectomy: Butterfly Technique

Cheol Wung Park

Unilateral biportal endoscopic (UBE) approach is a relatively new in spine surgery, and it is arguably safer while being less invasive. The technique utilizes two portals – one for viewing with the endoscopy camera and the other portal for surgical instruments. The visualization is superior compared to the other traditional techniques including microscopic approach. Magnification is unparalleled, and the use of constant irrigation provides a clear view without venous bleeding obscuring the view. The constant irrigation also has the benefit of reducing surgical site infection. The use of two portals, as opposed to one portal in uniportal endoscopic spine surgeries, allows for more versatile manipulation of instruments, bone, and delicate neural structures. UBE approach has been developed tremendously in the past decade and is being routinely used to address severe forms of lumbar stenosis due to degeneration.

To decompress lumbar stenosis using UBE approach, we perform en bloc removal of ligamentum flavum since it is safe, efficient, and replicable. Thorough understanding of the anatomy of ligamentum flavum is necessary. Ligamentum flavum is shaped like a butterfly, with the Y-shape at the cranial aspect denoting midline hiatus and its wings attaching to the caudal aspect of the superior lamina superiorly, anterior aspect of superior and inferior articulating processes laterally, and superior aspect of the caudal lamina inferiorly. Understanding the precise locations of its insertions allows for precise bony work to leave the ligamentum flavum intact until the end.

The bony work starts at the midline spinolaminar junction of the cranial lamina (head of the butterfly). Ipsilateral laminotomy of the cranial lamina is undertaken until the midline hiatus (Y-shaped region of the flavum) is seen. Then, the caudal tip of inferior articulating process (IAP) is identified. From there, it is easy to uncover soft tissues overlying superior articulating process (SAP) and the superior aspect of the caudal lamina ipsilaterally. Superior layer of flavum may be removed from the dorsal aspect of inferior lamina for better visualization without exposing dura. The junction between the ipsilateral SAP and caudal lamina is then identified and resected to decompress traversing nerve root until the pedicle is palpable using a probe (L-shaped ipsilateral inferolateral end of the flavum). This is the lateral-most extent of bony decompression. The contralateral aspect is decompressed in sublaminar fashion. Again, the superficial flavum may be removed to gain more working space and for better visualization. Sublaminar drilling is done until the contralateral IAP and SAP tips are visualized. The junction between the contralateral SAP and the caudal lamina is identified (J-shaped contralateral inferolateral end of the flavum) and resected in a similar fashion. At this point, the flavum can be detached easily from its margin using a freer or a small curette for en bloc removal.

After complete removal of the flavum, ipsilateral and contralateral pedicles of the cranial vertebra should be able to be visualized and palpable. The foraminal Kerrison rongeur can then be used to remove contralateral foraminal ligament, residual ligamentum flavum and ventral aspect of the contralateral SAP, yielding adequate decompression of the contralateral exiting nerve root.

Our experience demonstrates that en bloc resection of ligamentum flavum and decompressing contralateral exiting nerve root is a safe, efficient, and replicable technique in decompressing severely stenotic lumbar segments using UBE approach.

Anatomical Factors of successful Full Endoscopic Transforaminal Decompression for L5-S1 Foraminal and Lateral Recess Stenosis

Chang-Il Ju

Purpose: Recently, percutaneous endoscopic lumbar decompression as well as discectomy has been popularized and various advanced techniques have been reported. The transforaminal approach has a history of longer than 50 years and is the most basic endoscopic method. However, this technique has limitations, and anatomical structures are important factor in especially L5-S1. We studied the factors related to anatomical structures of successful endoscopic transforaminal discectomy and the possibility of failure.

Materials and Methods: In this retrospective study, we enrolled 64 patients who underwent full endoscopic lumbar transforaminal decompression for L5-S1. All patients were treated by FELD for the lumbar foraminal stenosis and far out syndrome for L5-S1.

Related factors evaluated with 3 points of A) size of safety zone: (1) Height of disc space (> 10mm, 5~10mm, <5mm, (2) foraminal width (<5mm, 5~9mm, >9mm) (3) size of L5 T-process (>1cm, 0.5~1Cm, <0.5cm), B) Approach angle: type of stenosis (4) far-out syndrome, (5) foraminal stenosis, (6) lateral recess stenosis, C) Anatomical limitations (7) iliac crest (high, middle, low), (8) pelvic index, (9) bony spur(yes, no). We studied statistically significant risk factors related to surgical failure of transforaminal full endoscopic lumbar decompression. After summation of all risk factor scores, we obtained predicting score of failure of transforaminal L5-S1 Foraminal decompression. According to the total score according to the score table, we classified in to 3 groups, A (0 ~ 5 points), B (6 ~ 10 points), C (11 ~ 15 points).

Results: The overall success rate was 83 % (59 of 71), 12 cases were unsatisfied results. 8 of 12 underwent reoperation. Among these surgical failure, incomplete surgery was 66.7% (8 of 12) is the most common and next exiting nerve root injury 25% (3 of 12) and rarely L5 T-process fracture was 1 cases(8.3%).

The incomplete surgery rate based on the (1) disc height was: <5mm: 9.5% (45/475), >5mm: 1.5% (12/761), (2)foraminal width was >9mm: 2.0% (10/495), 5~9mm: 4.4%(19/429), <5mm:9.0% (28/312); (3) scoliosis(convex:0.49%, concave:22.2%) (4) extracanalicular : far lateral :2.6% (2/77), foraminal: 3.7% (3/82);, (5) intracanalicular : central:6.3% (8/127), paracentral: 5.9% (25/425), upward migrated: 8.6% (18/210), downward migrated: : 10.4% (21/201), (6) canal compromised; mild~moderate: 0.5% (4/811), severe: 10.8% (46/425) , (7) iliac crest ; low: 5.1% (14/275), middle: 5.89% (25/590), high: 12.9% (48/371), (8) calcified disc ; Yes: 33.3% (45/135), No: 1.1% (12/1101), (9) bony spur ; Yes: 15.2% (39/257), No: 1.8% (18/979). These factors were statistically significant for failure rates of endoscopic surgery.

According to the above results, after summation of all scores, Among the total 1236 patients, complication rate were 8.8% (9 of 101) in group A , 7.8% (86 of 1101) in group B, and 70% (23 of 33) in group C.
Conclusions: The failure rate of Full endoscopic tranforaminal lumbar decompression is closely related to the size of working zone, endoscopic approaching angle and anatomical structure of the iliac crest , Transverse process size and bony spur. Knowing the predictive factors prior to surgical procedure will allow us to decrease failure rate after PELD.

Keywords: Relapse, Percutaneous endoscopic lumbar discectomy, Posterolateral approach, Anti-adhesive agent

En Bloc Butterfly Flavectomy; All Diamond Burr and Ultrasonic Osteotomy Technique

Woraphot Wichan

Background: Nowadays endoscopic spine surgery is popular among spine surgeons and one of the most disease can be treated with this method is spinal stenosis , with many techniques like uniportal, UBE and hybrid styles, also can use different instruments to comfort surgeons to perform surgery easier,faster and safer.

Content: This presentation will show many techniques for flavectomy and laminotomy .
How to select patients ,preoperative planning and what instruments do we have. The difference of instruments using in Uniportal,UBE and hybrid styles for laminotomy and butterfly flavectomy like many types of burr, punches, chisels and other devices like ultrasonic blade. How to do butterfly flavectomy , hemi-butterfly or piece by piece technique, which one is safer and easier.

Conclusion: Patients selection and preoperative planning is the key to success.
Surgical technique is individual ,depends on surgeon preference ,instrument availability.
New instruments and techniques are important for safer and easier procedures . Ultrasonic osteotomy instruments are available for Uniportal and UBE now.
Butterfly en bloc flavectomy is good option but not matter, it can be hemi-butterfly or piece by piece, depends on situation.

What is better? Uniportal vs Biportal

Dong Chan Lee

Introduction Minimally invasive spine surgery has transformed spinal care, offering patients safer and more effective treatments for various spinal conditions. Among these techniques, uniportal and biportal endoscopic spine surgeries have gained prominence for achieving excellent clinical outcomes with minimal tissue disruption. This provides a comprehensive comparison of the two techniques, focusing on their methodologies, advantages, limitations, and insights from recent comparative studies.

Uniportal Endoscopic Spine Surgery Uniportal endoscopic surgery employs a single working portal that combines both visualization and instrumentation. This method is advantageous for its simplicity and reduced surgical time, making it effective for treating localized conditions such as herniated discs. Despite its benefits, the limited working space and visualization may pose challenges in addressing more complex cases. Some studies indicate that uniportal endoscopy may provide better early postoperative back pain relief compared to biportal techniques.

Biportal Endoscopic Spine Surgery Biportal endoscopic surgery utilizes two separate portals: one for visualization and the other for instrumentation. This approach allows for a wider working area and enhanced visualization of anatomical structures, making it suitable for addressing complex pathologies such as severe stenosis and foraminal decompression. However, the technique requires a steep learning curve and precise coordination between the two portals to avoid complications. Studies have shown that biportal endoscopy results in less intraoperative blood loss compared to uniportal approaches.

Advantages and Limitations Biportal surgery offers superior visualization and flexibility, enabling surgeons to perform more comprehensive decompressions. However, it may involve longer operative times and increased technical demands. Conversely, uniportal surgery provides shorter procedural durations and a more straightforward approach but may be less suitable for complex spinal disorders. Comparative studies suggest that both techniques are safe and effective, with specific advantages depending on the clinical scenario.

Conclusion Both biportal and uniportal endoscopic spine surgeries have distinct advantages and limitations. The choice of technique should be guided by patient-specific factors, the surgeon's expertise, and the complexity of the condition. Continuous advancements in surgical technology and training will further optimize outcomes for patients undergoing these minimally invasive procedures.

Keywords: Biportal endoscopy, Uniportal endoscopy, Minimally invasive spine surgery, Advantages, Limitations, Comparative analysis

No-Punch Decompression Technique for UBE Surgery

Jwo-Luen Pao

Introduction: Unilateral biportal endoscopic (UBE) spine surgery has gained worldwide popularity and extended indications in recent years. To avoid the most frequently encountered complication, the dural tear, we propose the “no Kerrison punch” technique.

Method: This retrospective comparative study included 147 consecutive patients with degenerative lumbar spinal stenosis (DLSS) who received unilateral biportal endoscopic (UBE) decompression between March 2020 and July 2023. These patients were divided into Group A, the former 78 patients having 112 segments of decompression with the conventional technique, and Group B, the latter 69 patients having 111 segments of decompression with the new technique. The operation notes and medical charts were reviewed to evaluate the incidence of incidental dural tears. The pre-operative and post-operative MR images were retrieved to measure the crossed-sectional dural area (CSDA) and the facet width.

Result: There were 4 dural tears in Group A, with an incidence of 5.1%. Most dural tears were less than 2 mm and were treated conservatively. In contrast, there was no dural tear in Group B. The average CSDA increased from 67.4 to 176.9 mm2 (199.4% increment) in Group A and from 61.8 to 163.7 mm2 (232% increment) in Group B. The average preservation rate for ipsilateral and contralateral facet joints was 85.2% and 86.7% in Group A and 86.4% and 84.3% in Group B, respectively. 44.8% and 60.3% of the ipsilateral facet joints were preserved better than the contralateral ones in Groups A and B, respectively. None of the differences reached statistical significance except for the dural tear incidence.

Conclusions: The UBE decompression is safe and effective in treating DLSS. The new “no Kerrison punch” decompression technique effectively reduces the risk of dural tears and makes UBE surgeries much safer. It offers a comparable effect in neural decompression and improved facet joint preservation, especially for the ipsilateral facet joints.

Plenary lecture: Transforaminal Endoscopic Approach for Lumbar stenosis

Anand Kavi

We are aware that the symptomatic degenerative stenosis in lumbar spine starts evolving with internal disc disruption with Annular tear as the main determinant leading to series of changes responsible for the narrowing of the nerve root space, mainly in the foramen compromising the exiting root and the dorsal root ganglion. So the solution to this has to be near the posterior annulus and through the intervertebral foramen. With better understanding of the ligamentum flavum anatomy in relation to its lateral expanse towards the inter transverse membrane and pedicle through the foramen, it is now clear that it is the main culprit compressing the DRG and the exiting root and the posterior flavum is the mute spectator. So inter laminar approach with laminectomy and flavectomy is morbid way of indirectly trying to decompress this narrowing of the DRG. Also reaching the lateral expanse of the flavum around the SAP is difficult and not without ending up removing vital spine stabilisers like facet and pars. TSSULA offers the safe and direct approach around the SAP and we discuss the technical aspects through short video clips about dealing these pathologies relieving the foraminal and lateral recess stenosis by Gore technique.

Challengers in XR Surgical Support Technology Development and Business Continuation: Incorporating AppleVisionPro

Wataru Narita

Objective: This study examines the challenges associated with developing XR technology and maintaining its business viability, with a focus on using AppleVisionPro (released in February 2024) and exploring its potential applications.

Methods: In 2016, we developed the first XR simulator for percutaneous pedicle screw insertion in the lateral decubitus position, in collaboration with a company in which the authors were involved. In 2017, we employed the system as a surgical support device, enabling remote conference capability in a shared virtual space via the internet. For accuracy verification, we performed screw insertion under intraoperative CT synchronization using cadaver specimens. In 2024, we created a prototype XR application compatible with the newly released AppleVisionPro. Leveraging its high-resolution display and voice command features, we aimed to improve operability and enhance the surgeon's view of the surgical field.

Results: The system allows for overlaying patient-specific anatomy and preoperative screw or cage trajectories onto the surgical field. In 2020, the XR system obtained medical device certification, and advances in hardware improved the user interface. However, device-only solutions did not achieve sufficient accuracy for safe clinical application. Meanwhile, compatibility with AppleVisionPro, which offers enhanced display quality and sensor capabilities, showed promise for better adaptation to hand movements and gaze shifts. Preliminary prototypes indicated more intuitive operation and improved perception of 3D information in the surgical field.

Conclusion: Current XR technology is useful for surgical support, education, and communication, yet challenges remain in terms of accuracy and practical application. The introduction of high-performance devices like AppleVisionPro, released in 2024, could further improve headset operability, field of view, and display accuracy. Moving forward, leveraging these new devices' features to their fullest will require dedicated software development, strategies to reduce physical strain on surgeons, and improvements in spatial awareness. For ensuring safety and accuracy, combinations with intraoperative navigation and AI-driven image analysis are imperative. Addressing these technical issues will lead to higher-precision, more versatile XR surgical support technologies, contributing to long-term business sustainability.

Microendoscopic Lumbar Interbody Fusion (MELIF) -Surgical Techniques And Characteristics

Yukihiro Nakagawa

Microendoscopic lumbar interbody fusion (MELIF) is minimally invasive lumbar fusion technique which use a tubular retractor with spinal endoscopy. This technique involves cage insertion via enlarged Kambin's triangle, so there is no possibility of serious complications like those seen in lateral procedures. Additionally, this procedure does not require a change in body position, and similar to lateral procedures, indirect decompression effects can be expected. The learning curve of MELIF is not steep if the surgeon is familiar with MED or tubular surgery. This procedure is similar to fullendo KLIF(PETLIF). However, MELIF differs from KLIF in that it can place a large boomerang-type expandable cage anteriorly, which contributes to lordosis formation.

MELIF has many advantages in terms of simple surgical technique, quicker operative time, less blood loss, and fewer complications.

However, MELIF may be inferior to LLIF in terms of bony union because endoplate preparation is more difficult. There are several ways to perform the MELIF surgical procedure.

Our MELIF is characterized by indirect decompression, anterior placement of a large boomerang-type expandable cage to enlarge the disc space and create lordosis, and no compression from posterior via PPS.

In this presentation, I will focus on our surgical techniques, clinical results, advantages, disadvantages, and future prospects.

Advantages of Coronal MRI-Based Classification of Upward-Migrated Herniated Lumbar Discs and Addition of Cardinal Surgical Steps to Facilitate the Transforaminal Endoscopic Approach

Dong Hoon Yang

Purpose: Upward-migrated herniated lumbar discs (HLD) are commonly localized laterally and often involve foraminal rupture. While the transforaminal approach provides the least invasive surgical option, the technical difficulty increases sharply depending on the location of the ruptured disc. Precise descriptions and classifications of the ruptured disc, along with the addition of cardinal surgical steps, are necessary to reduce the surgical technical burden and improve operative outcomes.

Method: Sixty-six patients who underwent transforaminal endoscopic lumbar discectomy for upward-migrated HLD were included from January 2020 to September 2024. The classification system was modified based on coronal MRI findings, focusing on two key determinants: the height of the upward migration and medial violation of the inner pedicle line. Cases were further divided into moderate and severe groups according to surgical difficulty. The severe rupture group included cases where the ruptured disc was located higher than the midpoint between the upper endplate and the inferior pedicle margin, and medical to the inner pedicle line; all other cases were classified as moderate. Two cardinal surgical steps were added to reduce surgical difficulty: flattening the lateral protuberance and the anterior tip of the superior articular process (SAP), along with a 90-degree cranial rotation and tilting of the endoscope to achieve a better horizontal view of ventral epidural space.

Result: In 83.4% of cases (55 cases), the ruptured disc was located higher than the midpoint between the upper endplate and the inferior pedicle margin, while medial violation of inner pedicle line was observed in 56.1% (37 cases). The severe rupture group accounted for 53.0% (35 cases). Two cardinal surgical steps were applied in all cases. In severe rupture group, further flattening of the SAP and detachment of the inferior extraforaminal ligament were performed until the high axillar space was opened. No differences were observed in outcome scales between the moderate and severe rupture group, and postoperative MRI showed no remnant or missing fragments of rupture disc in either group, indicating that the severe rupture group could be effectively treated by these maneuvers.

Conclusion: The coronal MRI-based classification offers an advantage in visualizing the entire shape and location of the upper tip of ruptured disc, outperforming sagittal-based classifications. The technical learning curve can be reduced effectively by incorporating two cardinal surgical steps into the transforaminal approach.

Percutaneous Endoscopic Lumbar Discectomy Via Transforaminal Approach in Stable Low-Grade Lumbar Spondylolisthesis; Less is More ?

Thippatai Chaichompoo

- Common spinal condition: lumbar spondylolisthesis (LS)
- Gold standard: Fusion surgery (TLIF)
- At present, percutaneous endoscopic lumbar discectomy (PELD)
  - Less invasive
  - Good results
  - Can do with LA (medical problem Pt)

  Many studies of PELD in spondylolisthesis

- In stable spondylolisthesis, there are studies that perform transforaminal PELD and maintained satisfactory clinical outcomes for the treatment of stable low grade spondylolisthesis after a minimum 5-year follow-up

- The operation did not cause further progression of spondylolisthesis
- Studies have been conducted to perform endoscopic foraminotomy in stable low-grade spondylolisthesis.
- Both of the studies that were mentioned showed relatively good outcomes
- In case of interlaminar decompression surgery, there is a study by Professor Pornpavit that has been studied in stable degenerative spondy who underwent full endoscopic decompression via interlaminar approach
- It's concluded that interlaminar decompression has good outcomes in stable degenerative spondy

Indications for endoscopic treatment in spondylolisthesis , patients who had

- Stable Low-grade spondylolisthesis by Meyerding grade
- And without dynamic instability by dynamic film > Neurogenic claudication with unilateral or bilateral leg symptoms
- And failed conservative treatments much more threes months

Good candidate for endoscopic surgery in spondylolisthesis

- For transforaminal approach (inside – out) technique, we will select it in case of
- Central / Paracentral disc or disc problem only
- Soft disc and no more decompression

For transforaminal approach (outside - in) technique, we will select it in case of

- Central / Paracentral / foraminal or extra foraminal disc
- Soft disc
- Foraminal stenosis or unilateral stenosis

For interlaminar, we will select it in patients who had

- Clinical stenosis / neurogenic claudication (Esp. both leg)
- Calcified disc and severe narrowing disc space
- Contraindications were as follows:
- High grade spondy and segmental instability by dynamic film

Patients' selection

- Pathology point
- Specific symptoms
- Adequate decompression
- Less traumatization
- Preserve facet joint
- Prevent iatrogenic instability

Conclusion

- PELD via transforaminal approach is an effective in short term for patients with stable low-grade single level lumbar spondylolisthesis
- Less traumatization, blood loss, LOS
- No significant difference in radiographic measurement
- However, the efficacy and overall cost effectiveness require to be further evaluated by a long-term follow-up study and larger number of cases
- Case selection is the key success!!

High grade listhesis & Transkambin fusion: How do I do it!!!

Bhupesh Patel

- Least invasive in all Endofusion techniques
- Ideally indicated in lytic listhesis or foraminal stenosis patients
- Can extend to the patients who need indirect decompression
- Careful preoperative planning is very important for ideal cage placement
- For beginners only lysis with ot without grade 1 listhesis should try f/b collapse disc f/b high grade listhesis
- Endoscopic visualisation is important to see complete endplate preparations but can do without using endoscope
- In this presentation we will management of discuss high grade listhsesis with transkambin fusion

The Application of Robotic Navigation in Single Position Lateral Spine Surgery. Technical Note and Surgical Experience

Asrafi Rizki Gatum

Introduction: Lateral spine surgery in the form of oblique lumbar interbody fusion (olif) is one of the surgical technique that is benefited by the robotic navigation technology. There are three potential benefit from robotic navigation, first it enable the surgeon to insert pedicle screw much more easily in the lateral position without the need to flip to prone. Second, the use of the navigation could also be used with robotic instrument for endplate preparation and interbody cage implantation. Robotic arm could serve as a retractor holder which is very rigid compare to table mounted retractor.

Aim: The aim of this research was to evaluate the result of olif and percutaneous robotic navigation pedicle screw insertion and to introduce the technique of surgery

Patients and Methods: This is a retrospective cohort study of 55 patients underwent olif with robotic navigation percutaneous screw fixation, the patients diagnosis varied from grade 1 or 2 degenerative spondylolisthesis and degenerative disc disease who failed conservative treatment. We evaluate clinical outcome directly after surgery in the form of visual analog scale (VAS) back pain and leg pain, the screw accuracy, skin to skin operating room time, estimated blood loss, post operative length of stay and complication after surgery. Insertion of percutaneous posterior screw were done with robotic navigation, using excelsius GPS from Globus. We used pre-operative workflow in which we registered the pre op CT-scan into the Excelcius GPS and merged the intraoperative C-arm image into the CT-Scan.

Results: Total of 55 patients underwent olif single position with robotic navigation percutaneous screw placement. The diagnosis were grade 1 spondylolisthesis (20 patients), grade 2 spondylolisthesis (17 patients) and degenerative disc disease (18 patients), they were treated due to back pain, lumbar radiculopathy or neurogenic claudication. Their mean age was 62.2 years old (range 43-82 years). The VAS of back pain and leg pain were decrease from mean of 5.4 to 1.4 after surgery, most of the patients mobilized on the first day after operation and discharge on the third day after the surgery. All pedicle screws were 100% accurately placed according to the planned screw position and trajectory. Mean estimated blood loss were 124.5 ml, there was 1 patient with traumatic tear of common iliac vein which lead profuse bleeding until 800 ml. Operating time for both olif and pedicle screw insertion were around 2.3 hours. We had 5 patients with psoas weakness and anterior thigh pain after the surgery, it was resolved after 3 weeks.

Conclusion: Robotic navigation spine surgery was very helpful in single position lateral spine surgery, it eliminates the need for flipping the patient to prone position. The accuracy of robotic navigation was very high and continuous high radiation image intensifier was no longer needed for percutaneous screw insertion.

Closed System Abscess Evacuation for Lumbosacral Spinal Tuberculosis Abscess

Rieva Ermawan

Introduction: Paravertebral abscess is a common complication of spondylitis tuberculosis which has high prevalence in Indonesia. Spinal tuberculosis usually affects the thoracolumbar spine, with only 2–3% involving the lumbosacral region. Lumbosacral tuberculosis can lead to the formation of a presacral abscess. For drainage of the spinal abscess, the presacral region is one of the problematic regions to perform. Surgical intervention such as open surgery or endoscopic debridement is needed to remove and drainage the abscess in addition to chemotherapy. Minimally invasive surgery is an essential clinical technique for the debridement of the spinal abscess in order to decrease the morbidity acquired by the patient.

Discussion: Closed-system evacuation involves the use of minimally invasive techniques, such as percutaneous catheter placement or endoscopic methods, to evacuate the abscess while minimizing disruption to surrounding tissues. In contrast, open debridement entails a more invasive surgical approach, requiring a larger incision and extensive tissue dissection to access and clear the abscess.

Closed-system evacuation offers several potential benefits, including reduced surgical trauma, shorter hospital stays, quicker recovery times, and lower complication rates. Additionally, it is associated with better patient satisfaction due to minimal scarring and less postoperative pain. However, the technique may have limitations in cases of extensive abscesses or severe spinal instability, where open debridement may be required for adequate management.

Conclusion: The closed system is a micro-invasive procedure result in minimal soft tissue injury and faster recovery. It successfully remove paravertebral abscess followed by direct antibiotic eradication on spinal infection. The success of this approach depends on the time of surgery. When surgery is delayed, the granulation tissue has been formed, making minimally invasive techniques for surgical evacuation much more difficult.

The application of Uniportal Endoscopic decompression in Treating Spinal Tuberculosis

Chor Vannaroth

Spinal tuberculosis (TB), also known as Pott's disease, is a global health challenge, particularly in developing countries. It often can lead to spinal deformity, abscess formation, neurological deficits, and functional impairment. While anti-tuberculosis therapy remains the cornerstone of treatment, surgical intervention becomes necessary in cases involving neurological compromise, significant spinal instability, or persistent abscess formation. Uniportal endoscopic decompression has emerged as a minimally invasive alternative to conventional open surgery, offering reduced morbidity and faster recovery. This technique provides direct visualization of the affected spinal structures, enabling precise decompression, abscess drainage, and biopsy collection through a single small incision. Clinical evidence indicates that uniportal endoscopic decompression effectively alleviates neurological symptoms, restores spinal stability, and promotes early mobilization, while minimizing surgical trauma and associated complications. This study investigates the initial experiences, outcomes, and benefits of uniportal endoscopic decompression in treating spinal tuberculosis, emphasizing its significance as an innovative technique in the field of minimally invasive spine surgery.

Keywords: Spinal tuberculosis, Uniportal endoscopic decompression

DAY 2 – SATURDAY, 1 MARCH 2025

C1-C2 Posterior Full Endoscopic Fusion

Luong Minh Quang

This report presents a C1-C2 left facet infective erosion case managed with a full-endoscopic approach. The patient experienced neck pain and neurological impairments due to atlantoaxial rotational subluxation, prompting full-endoscopic C1-C2 inter-facet bone grafting and trans-articular fixation. The procedures were completed without complications, leading to substantial pain relief and neurological improvement. These cases highlight that, with appropriate indications and refined techniques, Full-endoscopic surgery is a feasible and practical approach for C1-C2 lesions, offering precise visualization and a secure operative field. Further experience and research may solidify the role of this procedure in treating upper cervical spine lesions.

Current progress and Future Directions of Cervical Endoscopic Spine Surgery

Kang Taek Lim

With the advancement of endoscopic spine surgical instruments and surgical methods, most cervical spine surgeries can be performed with endoscopic decompression or endoscopic fusion, allowing patients to reduce the risk of incisional surgery and return to their daily activities as soon as possible after surgery. Depending on the location of the lesion, transit anterior or posterior transit surgery is performed, and I want to explain the diagnostic method, the location of the surgery, the surgical method, and how to avoid the risks during the operation.

Complication prevention in UBE

Nadir Yacine Benmebarek

Unilateral Biportal Endoscopy (UBE) has emerged as a powerful tool in minimally invasive spine surgery, offering advantages in visualization, decompression, and reduced soft tissue trauma.

However, its technical demands and steep learning curve necessitate a structured approach to complication prevention.

This presentation outlines a 10-point strategy designed to mitigate a broad spectrum of complications in UBE, encompassing technical precision, anatomical safety, sqline irrigation management, hemostasis control and neurological protection.

Each critical item is grounded in evidence-based practice and real-world surgical experience, providing attendees with a systematic framework to enhance patient safety and optimize surgical outcomes.

By adhering to these principles, spine surgeons can significantly reduce intraoperative and postoperative risks, ensuring the safe and effective application of UBE in daily practice.

Introduction of TSESS and Its Educational System. What could We Contribute to ASEAN MISST?

Jeffery Jung Hao

Introduction: TSESS (Taiwan Society of Endoscopic Spine Surgery) was officially established in 2018 with government approval as the result of hard work and dedication from spine specialists across Taiwan, gradually gaining form and influence in the past decade. It has now become well-recognized in certain areas of spine surgery, backed by clinical evidence and increasingly accepted.

We are pleased and honored here to share our educational systems and possible contributions to the ASEANMISST family.

Educational Activities and Highlights: TSESS has been instrumental in organizing various educational activities aimed at enhancing the skills and knowledge of spine surgeons. These activities include:
1. Annual Conferences and seasonal meeting
2. Cadaver Workshops & realistic spine model surgery workshops
3. Online Courses/CME
4. International Collaborations

Contributions to ASEAN Spine Surgery Development: TSESS is honored to participate the ASEANMISST family and is willing to make significant contributions. By sharing our expertise and providing training opportunities, TSESS's commitment to education and collaboration has not only advanced the field of endoscopic spine surgery in Taiwan but has also had a positive impact on the broader world's community. Through its various initiatives, TSESS continues to play a vital role in shaping the future of spine surgery in the region.

Current Indications for Spinal Endoscopic Surgery and Potential for Future Expansion

Chien-Min Chen

Background: Endoscopic spine surgery (ESS) has emerged as a safe, effective, and efficient alternative to traditional minimally invasive spine surgery (MISS). Recent advancements in full-endoscopic systems have enabled definitive decompression surgeries through various approaches, which can be tailored based on the target lesion's location, characteristics, or surgeon preference.

Purpose: This review aims to summarize the current indications for ESS and explore its potential for future expansion in the treatment of spinal diseases.

Methods: A comprehensive review of the literature was conducted, focusing on advancements in ESS techniques, indications, and technologies, including its application in different spinal regions and emerging innovations.

Results: Over the past two decades, the indications for ESS have expanded beyond lumbar regions to include the cervical spine. In addition to decompression, endoscopy-assisted fusion surgery is evolving, although ESS remains technically demanding with a steep learning curve. Emerging technologies, such as computer-assisted navigation systems and augmented reality, have enhanced imaging quality and procedural accuracy. Furthermore, endoscopic rhizotomy techniques provide a promising solution for managing chronic low back pain, offering new avenues for MISS applications.

Conclusion: ESS continues to evolve with advancements in technology and surgical techniques, enabling broader applications in spinal disease management. The integration of innovative tools and techniques will further enhance the practicality and outcomes of ESS, paving the way for its future expansion.

Alignment Correction in Biportal Endoscopic Transforaminal Lumbar Interbody Fusion Surgery

Jwo-Luen Pao

Biportal endoscopic lumbar interbody fusion (biportal endo-LIF) is a novel minimally invasive spine fusion technique performed via two minor skin incisions. The surgical wounds are about 2.5 cm for a one-segment fusion and 4 cm for a two-segment fusion. With the hydrostatic pressure of the saline and high-resolution endoscope, we can perform very delicate surgery in a crystal clear and magnified surgical field with almost no bleeding. Adequate neural decompression can be safely accomplished with a low risk of dural or nerve root injury. The diameter of the endoscope is only 6 mm, so we can advance it into the disc space to visualize radical resection of the degenerative disc and cartilage endplate while preserving the bony endplate. The sturdy endplate reduces the incidence of cage subsidence and provides robust initial stability. Our double-cage technique uses two interbody fusion cages to effectively increase the cage footprint and a large amount of bone graft to promote fusion. Reduction of the spondylolisthesis can also be achieved using the modern pedicle screws system.

From 2019 to 2024, we performed more than 350 biportal endo-LIF cases. The clinical data, including ODI, JOA, and VAS scores, showed significant improvement with a very low incidence of complications. In our computed tomography (CT) study 1 year after the surgery, the successful fusion rate was as high as 93.3%, with a cage subsidence rate of only 5.5%.

Biportal endo-LIF is a safe, effective, and revolutionary MIS solution for spinal fusion. Its advantages include magnificent surgical fields, direct decompression, minimum blood loss, radical discectomy and endplate preparation under direct visual, bone grafts and cage insertion under direct visual, excellent treatment results with a fantastic fusion rate, and few complications.

This presentation will demonstrate how we use the double-cage biportal endo-LIF technique to correct the sagittal and coronal plane malalignment, focusing on pre-operative planning, intra-operative adjustment, and unique surgical techniques for sequential insertion of the double cages.

Full Endoscopic Approach for Managing Giant Thoracic Disc Herniation with Myelopathy

Keng Chang Liu

Introduction: Giant thoracic disc herniations, especially centrally located ones, present considerable risks of neurological deterioration during surgical resection. While traditional transthoracic approaches are effective, they often result in postoperative complications such as pain and bronchopulmonary issues due to spinal cord manipulation. This report introduces a full endoscopic posterolateral approach, incorporating laminoarthrectomy, to safely excise large disc herniations from a posterior perspective.

Methods: Utilizing a full endoscopic technique combined with unilateral laminoarthrectomy, we achieved access to the disc space adjacent to the dura mater with minimal invasion. This method enabled the resection of herniated disc material from both anterior and posterior viewpoints while making efforts to avoid violation of the spinal cord. The procedure involved precise maneuvers to remove disc material extending to the contralateral side, all performed under direct visual guidance.

Results: The technique successfully facilitated the safe removal of giant herniated discs under endoscopic visualization, ensuring complete decompression of the spinal cord. Postoperative assessments indicated rapid neurological recovery, with no surgery-related complications.

Discussion: The endoscope-assisted posterolateral approach enables the resection of giant thoracic disc herniations, including centrally located ones that are typically more difficult and riskier to manage. This technique minimizes spinal cord violation and associated risks, offering a safer alternative to traditional methods.

Conclusion: This technique provides a highly effective alternative approaches for managing giant thoracic disc herniations, especially in challenging cases where conventional methods are often preferred. Significantly, the absence of required instrumentation enhances the procedure's feasibility and safety, contributing to faster recovery times and improved patient outcomes. This approach represents a valuable advancement in thoracic disc surgery.

Sharing Experiences of Using UBE in Spinal Decompression Surgery

Chih-Hui Chang

Unilateral biportal endoscopic (UBE) spinal decompression has emerged as a minimally invasive technique offering enhanced visualization, precise decompression, and improved patient outcomes. This abstract share practical insights and clinical experiences with UBE, emphasizing its benefits, challenges, and outcomes in managing degenerative spinal conditions.

The UBE technique combines the advantages of endoscopic and minimally invasive surgery, offering precision and reduced trauma. Key learning points include the importance of proper portal placement, maintaining clear visualization, and handling steep anatomical variations. While initial setup and technical expertise are demanding, the outcomes justify its adoption in suitable cases.

The UBE technique for spinal decompression surgery is a valuable, minimally invasive option with proven clinical benefits. Sharing experiences helps refine the technique, address challenges, and enhance its broader adoption among spine surgeons.

Revision Surgery with Spinoscopy

Se-Yi Chen

Endoscopic spine surgery (ESS), also known as spinoscopy, is an adaptable and highly effective technique for managing a wide range of spinal conditions, whether in primary or revision cases. In particular, ESS demonstrates significant advantages in revision surgeries, where its ability to provide superior tissue discrimination, navigate around problematic scar tissue, and enable alternative surgical trajectories becomes invaluable. These features make it a powerful option even in the most challenging scenarios. Furthermore, these benefits are not exclusive to the uniportal endoscopic approach; biportal endoscopic spine surgery also shares similar strengths, broadening its applicability.

In this discussion, I aim to present my decision-making algorithm for revision spine surgeries, emphasizing the role of ESS in diverse clinical situations. I will also share my personal experiences and insights into utilizing ESS as a tool for managing complex revision cases. Scenarios include instances where ESS is used to rescue prior ESS procedures, address complications or limitations of previous open surgeries, salvage outcomes of anterior cervical spine operations, and facilitate endoscopic exploration in uncertain cases. By delving into these examples, I hope to illustrate the versatility of ESS and provide practical guidance for its application in contemporary spinal surgery practices.

Keywords: Ensocopic Spine Surgery (ESS), Spinosopy, Revision

Use of Ultrasound to Enhance the Safety And Precision Of Endoscopic Spine Surgery

Chien-Hua Chen

Endoscopic spine surgery is becoming increasingly popular. The correct positioning of instrument is of paramount importance for the safety and precision of endoscopic surgery. The placement of the guiding cannula and related instruments is mostly guided by X-ray fluoroscopy. However, soft tissues, including blood vessels, nerve roots, esophagus, lung, and bowels are not well visualized by X-ray. It thus carries certain risk of critical structure injury with only X-ray guidance. Hereby, we present the use of ultrasound to enhance the safety and the precision of endoscopic spine surgery.

In cervical spine, esophagus, nerve roots, and blood vessels like vertebral artery and carotid artery can be well visualized under ultrasound. In this way, injuries of these critical structures can be avoided during anterior approach. In posterior approach, cervical facet and V point can be visualized to enhance safety sheath placement. In thoracic spine, pleura movement can be seen under ultrasound to prevent the risk of lung puncture during transforaminal approach. In lumbar spine, SAP base and the caudal part of neuroforamen can be well-located under ultrasound to avoid puncture of exiting root. It is especially useful in the patients with prominent scoliosis because lateral X-ray is not reliable in such condition. Bowel movement and kidney can be well seen under ultrasound to prevent inadvertent puncture of instrument into peritoneal cavity.

X-ray visualizes bony structure while ultrasound visualizes soft tissue. They complement each other. Ultrasound has the advantage of real-time guidance. It helps to locate soft tissue target like nerve roots directly and helps to prevent the injury of critical soft tissue organs like esophagus and vertebral artery. However, ultrasound is highly operator-dependent and delicate training is needed. In good hands, ultrasound can help to enhance the safety and precision of endoscopic spine surgery.

Anatomical and Clinical Strategies to Enhance Neurological Safety in Uniportal Full-Endoscopic Lumbar Fusion Surgery

Chien-Li Lin

The increasing adoption of uniportal full-endoscopic transforaminal lumbar interbody fusion (FE TLIF) underscores the need for advanced strategies to minimize the risk of nerve root injury associated with both facet-sparing (FE fs-TLIF) and facet-resecting (FE fr-TLIF) techniques. This presentation aims to clarify the anatomical relationships between surgical instruments and nerve roots and to evaluate the efficacy of innovative protective strategies, including the GUARD technique and delayed ligamentum flavectomy.

A cadaveric study was conducted involving eight experienced surgeons performing 16 FE TLIF procedures on lumbar spines. Postoperative dissections revealed critical spatial differences: the mean distance between the cage entry point and the traversing nerve root was significantly shorter in FE fr-TLIF than in FE fs-TLIF (3.30 ± 1.35 mm vs. 8.58 ± 2.47 mm; $p < 0.0001$). Conversely, the distance to the exiting nerve root was shorter in FE fs-TLIF compared to FE fr-TLIF (3.73 ± 1.97 mm vs. 6.90 ± 1.36 mm; $p < 0.0001$). These findings guided the development of tailored instrumentation strategies: a two-bevel tip cage glider is recommended for protecting the traversing nerve in FE fr-TLIF, while a caudally positioned single-bevel tip cage glider is suggested for safeguarding the exiting nerve in FE fs-TLIF.

In addition to the anatomical analysis, a retrospective clinical study assessed outcomes in 45 patients who underwent either FE fs-TLIF or FE fr-TLIF. Patients were divided into two groups: the Sentinel group, which utilized traditional sentinel pin techniques, and the GUARD group, which employed the GUARD technique with delayed ligamentum flavectomy. The GUARD group demonstrated significantly lower postoperative radicular pain at six weeks (VAS: 2.201 vs. 3.267, $p = 0.021$) and a reduced incidence of neurapraxia (0% vs. 19%, $p = 0.047$). Radiographic outcomes, including disc height, segmental lordosis, and fusion rates, were comparable between the groups, with no significant differences in endplate injury.

These findings offer valuable anatomical and clinical insights into improving nerve root safety during FE TLIF, presenting actionable recommendations for surgical techniques and instrument design to reduce complications and enhance patient outcomes.

Preliminary Clinical and Radiological Outcomes of Uniportal Endoscopic Lumbar Interbody Fusion for Degeneration Lumbar Scoliosis over 1 Year Follow-Up

Hong-Yi Huang

Background: The endoscopic spine surgery (ESS) is rapidly developed in recent three decades and uniportal ESS combined with TLIF (endoTLIF) is the new trend due to the least traumatization. The drawback of uniportal endoTLIF is time consumption. The adult degeneration scoliosis is relatively complicated lumbar lesions and is highly challenged for uniportal endoTLIF due to longer segmental correction and fusion. The purposes of this article are to explore the efficacy and feasibility of uniportal endoTLIF in the treatment of patients with degeneration scoliosis.

Methods: From Oct 2021 to Oct 2023, a retrospectively enrolled 19 patients with deg. Scoliosis treated with uniportal endoTLIF was followed up at least 14 months. Female cases were 16 and average age was 75.26 y/o. All patients were treated 2 levels by endoTLIF at least. The clinical and radiological outcomes were evaluated preoperatively and 3, 6 and 12 months postoperatively. CT was performed for final fusion evaluation at the time of 1-year follow-up.

Results: The mean visual analog scale (VAS) back pain and leg pain scores improved significantly. The Oswestry Disability Index score improved from 65.6 ± 8.1% preoperatively to 15.6 ± 7.3% at 1-year follow-up ($P < 0.05$). The scoliosis Cobb' s angle changed from 18.5° ± 7.6° to 5.6° ± 2.6° at 1-year follow-up ($P < 0.05$). Solid fusion of interbody fusion was achieved in all patients. The facet fusion was achieved up to 80%. There was no dural and neurological damage during operation. The complicated heterotopic ossification causing excising root compression at foraminal site was found in one patient and the patient received endoscopic transforaminal decompression at the 1 year follow up.

Conclusion: The technique of Uniportal endoTLIF can be well treat for the patients with degeneration scoliosis needing 2 levels decompression and correction at least, achieving favorable clinical outcomes and good fusion.

Awake Spine Programme and Why Not?

Thomas Tan

Spine surgery is often performed under general anesthesia with or without neuromonitoring. The effect of general anesthesia (GA) should not be neglected in view of possible severe complications such as cardiovascular risk or death. Furthermore, the post-operative GA effect may delay recovery and increase hospital stays. Hence the feasibility of endoscopic spine surgery under local anesthesia should be considered strongly to enhance patients' experience and recovery. Awake spine surgery would also allow ongoing intra-operative monitoring of neurological improvement on top of ensuring safety. It can be performed safely using full endoscopic interlaminar or transforaminal approach for up to 1 or 2 thoraco-lumbar degenerations. With the advantages of awake endoscopic spine surgery, this could certainly benefit the greying population with spinal degeneration. There were many awake techniques reported, we hereby would like to report on the awake spine programme in our spine centre.

Full-endoscopic Approach For Revision Spine Surgery

Luong Minh Quang

Introduction: Patients with radiculopathy due to a fail-spine surgery caused by restenosis, regenerated bony spurs, or inadequate decompression had high risks for morbidity or disability for massive revision operations and scar tissue. This report aimed to review the clinical outcome and safety of full-endoscopic approaches for revision spine surgery.

Methods: We conducted a retrospective review of 42 revision-spine patients (mean age 61.2 years old, male/female: 14/28, with 12 transforaminal and 30 interlaminar cases. Patients' responses to Oswestry Disability Index (ODI) and Visual Analogue Scale for spinal pain, leg and arm pain. Macnab's criteria were recorded after surgery and during following-up. T-tests were utilized to compare pre- and postoperative group variables.

Results: The average operation time was 73 minutes. The difference in the level of pre and post operative leg pain at the last follow-up was statistically significant (Pre-operative leg pain VAS 7.1, Last follow-up leg pain VAS 0.8, $p<0.01$). The difference in ODI scores before surgery and at the final examination was statistically significant (Pre-operative ODI: 57.8, last follow-up: 21.2, $p<0.01$). According to the improved Macnab score, the percentage of patients who achieve good and excellent results after surgery is 79%.

Conclusion: Revision major open spine surgery has many potential risks during and after operation. Full endoscopic spine surgery can be a safe and effective option for seclected cases with lower risks.

Keywords: full endoscopy, restenosis, foraminoplasty, revision.

Biportal Endoscopic Decompression Alone for Lumbar Stenosis with Degenerative Spondylolisthesis: Preliminary Results and How To Do Decompression Safely and Effectively

Chau Van An

Objective: Decompression with or without fusion in patients suffering from lumbar stenosis combined with degenerative spondylolisthesis remains controversial. In the past, the damage to the posterior supporting structures was unavoidable in the open procedure, which could lead to the development of postoperative instability. Endoscopic spine surgery (ESS) is becoming popular and has developed in recent years, with limited injuries to posterior structures. Therefore, ESS brings efficiency when applied to decompression alone for lumbar stenosis with degenerative spondylolisthesis. Our report aimed to describe the clinical result of patients with lumbar stenosis combined with degenerative spondylolisthesis treated by biportal endoscopic decompression alone at Danang Orthopedics and Rehabilitation in Vietnam.

Method: We retrospectively reviewed 23 patients with lumbar stenosis and degenerative spondylolisthesis who were treated with interlaminar biportal endoscopic decompression alone, with an average follow-up period of 6 months. Patients with segmental instability were excluded from the study.

Results: We included 23 patients (11 male and 14 female) with a mean follow-up of 6 months. All patients were treated by biportal endoscopic decompression alone via the interlaminar approach. The outcomes regarding MacNab criteria (excellence and good: 86.9%) and the mean VAS score improved significantly from the preoperative period to the last follow-up. One case with postoperative instability was treated by fusion surgery. Additionally, one case experienced insufficient decompression due to proximal sublaminar stenosis.

Conclusion: Biportal endoscopic decompression alone is safe and effective for treating lumbar stenosis with degenerative spondylolisthesis. The undercutting techniques used in biportal endoscopy help to preserve the facet joint and prevent postoperative instability.
Key words: Biportal endoscopic spine surgery, decompression alone, lumbar stenosis, degenerative spondylolisthesis.

Transforaminal and Interlaminar Approach Dilemma

Zakhiri Rashid

Transforaminal and interlaminar approaches are the two main approaches in endoscopic spine surgery. Both approaches has its advantages and complications. Over the years, both approaches and techniques has been refined to cover more indications. The aim of the presentation is to highlight the indications for each approaches and to address the dilemma in choosing the right approach for the right indications. By choosing the right approach, we as surgeons can minimize the collateral spinal structural damage and provide optimal surgical outcome for our patients.

Perceptions of Filipino Spine Surgeons on Open Transforaminal Lumbar Interbody Fusion (TLIF) vs. Minimally Invasive TLIF (MIS-TLIF)

Dr Jomick Lumawig

This study looked at the perceptions of Filipino spine surgeons regarding Open Transforaminal Lumbar Interbody fusion (TLIF) and Minimally Invasive TLIF (MIS-TLIF) given the advancements that have come to light in recent years. The research engaged members of the Philippine Spine Society through a survey that assessed preferences, barriers, and the impact of these techniques on patient care.

An 88% response rate was achieved, mostly representing male surgeons in urban private hospitals.

Amongst the respondents, there was neutral preference for either technique which was largely attributed to the lack of surgeon training affecting their familiarity and mastery. MIS-TLIF was recognized for its benefits, including quicker patient recovery, reduced soft-tissue trauma but was also associated with other challenges like high costs, and increased exposure to radiation. Other barriers identified were related to technical difficulties and limited access to training and resources. These suggest that addressing these barriers through enhanced training for the surgeons, as well as, cost mitigation could promote more widespread practice of MIS-TLIF, ultimately improving its accessibility and service delivery in the Philippines.

Spinal Epidural Hematoma. Endoscopic Approach and Literature Review

Nguyen Quang Hung

Background: Spontaneous spinal epidural hematoma (SSEH) is rare and the cause is not clearly understood. Most cases will required an emergency surgery to prevent irreversible neurological deficits and make the recovery likely better. We report about our nine cases and discuss about available treatments from the literature which help to change into endoscopic option for SSEH.

Methods: We have 9 cases from Feb 2021 to Dec 2024. They were 4 female and 5 male cases. In our series, the cervical region (n=8) is the most area affected, only one case is in lumbar regions. The first case was operated microscopically by 18mm tubular retractor, the next two cases by biportal technique, and the last three cases were done by uniportal technique. There are only 2 cases were sucessfully conservative treament. The last patient has match the surgical indication but was denied because of the unwilling of the family.

Results: Cervical spine cases experienced severe neck or shoulder pain while lumbar region had back pain and leg pain. Cervical region also combined with progressive motor weakness. On the MRI, epidural hematoma had compressed the spinal cord posterolateraly which responsible for myelopathy symptom. Anticoagulants may make the hematoma expanding and compress the spinal cord more than normal. In the operative group, 5 cervical cases all have hemiparelysis which improved immidiately postop and all have favourable motor outcome at 3m follow up. Sensory disturbance is the most affected symptom which need more time to decrease after the cord was decompressed.

Conclusions: Conservative treatment for SSEH may be the first choice. Although traditional laminectomy is the mainstream treatment in those with neurologic deficits developted. Applying MIS concept in the first case sucessfully help us to make the shift paradigm to endoscopic approach for short or multilevel SSEHs.

Novel Technique of Assisted Uniportal Interlaminar Percutaneous Endoscopic Lumbar Discectomy to Increase Versatility for Discectomy: Technical Notes

Yudha Mathan Sakti

Introduction: Discectomy was initially performed using a microsurgical interlaminar approach, which later evolved into microendoscopic discectomy, enabling a more minimally invasive technique. The current standard of percutaneous endoscopic lumbar discectomy (PELD) technique is widely accepted. However, it requires a single operator to perform both visualization and discectomy. The limitations persist in treating contained disc herniations, where more aggressive disc removal and annulotomy are often necessary and requires a stable visualization. To address these challenges, we proposed a novel approach to increase technique's versatility by introducing assisted uniportal interlaminar PELD (IPELD).

Materials and Methods: The technique begins with the insertion of a spinal needle using interlaminar approach under fluoroscopic guidance to target the affected disc space. A working cannula is then positioned to create a stable endoscopic access to the intervertebral disc. Primary operator focused on discectomy, while the working channel was stabilized by a secondary operator. The secondary operator performed annular docking by medialization of the dural sac for better visualization of the herniated disc. Discectomy was then performed by the primary operator. This particular technique is indicated in contained disc herniations, where annulus still remained intact. Patients were then evaluated for postoperative VAS, ODI, and complication rates.

Results: We observed similar improvements in VAS and ODI scores in our patients compared to those undergoing traditional PELD. Minor complications were reported, predominantly paresthesia. Semi-quantitative measurements showed a more effective learning process of this technique by the assistants. The technique offered several advantages, such as enhancing visualization for contained herniated discs, improving safety while increasing operator focus, and addressing the learning curve of uniportal IPELD, making it a more user-friendly approach for surgeons in any level of expertise.

Conclusion: Assisted uniportal IPELD is a safe and valuable option to enhance versatility for discectomy and reduce the learning curve of PELD.

Keywords: assisted uniportal IPELD, patient outcome

Facet Cyst Removal with Uniportal Approach

Thomas Tan

Lumbar Facet cysts often cause compression of nerve root leading to radiculopathy or even cauda equina syndrome. It can be treated symptomatically with analgesia, physiotherapy, epidural steroid injection or surgical intervention. However, facet cysts could be adhesive to the dura and often lead to higher risk of dural tear and subsequent CSF leak. Open or tubular microsurgical excision of facet cysts remain a challenge. Segmental fusion of the involved levels may also be considered to decrease the risks of cyst recurrence and radiculopathy. We would like to report on the technical details of uniportal endoscopic resection of the lumbar facet cyst.

Mitigating the Learning Curve in Endoscopic Spine Surgery

Ian Bustorff

Endoscopic spine surgery has emerged as a groundbreaking approach in managing various spinal pathologies. This minimally invasive technique offers patients numerous benefits, such as reduced postoperative back pain, shorter hospital stays, decreased paraspinal muscle trauma, lower intraoperative bleeding, and quicker overall recovery. Despite these advantages, both uniportal and biportal endoscopic procedures present a steep learning curve for surgeons. This complexity stems from the need to master advanced visualization techniques, navigate intricate anatomical landscapes, and operate specialized instruments in a constrained workspace.

Factors Contributing to the Learning Curve

1. Magnified Anatomical Perspectives:
Endoscopic surgery provides a highly magnified, yet two-dimensional view of complex spinal structures. Surgeons must reinterpret traditional anatomical landmarks, which requires developing an enhanced spatial awareness. The shift from a direct, three-dimensional view to a magnified, screen-based perspective can initially obscure depth perception, making it challenging to accurately assess tissue planes and relationships.

2. Triangulation and Instrument Handling:
Effective triangulation is pivotal for both uniportal and biportal techniques. Surgeons need to coordinate the movements of the endoscope and surgical instruments meticulously within a limited operative field. This demands not only refined hand-eye coordination but also an understanding of how instrument angles affect tissue manipulation, resection accuracy, and overall procedure safety.

3. Instrument Quality and Ergonomics:
The precision of endoscopic procedures heavily relies on the quality of the instruments used. High-definition scopes, ergonomic handpieces, and specially designed endoscopic tools facilitate better maneuverability and tactile feedback. Inadequate instrumentation can lead to technical challenges, increased procedural time, and a higher risk of complications, thereby intensifying the learning curve.

4. Healthcare Infrastructure and Insurance Considerations:
The adoption of endoscopic spine surgery is also influenced by external factors, such as healthcare policies and insurance reimbursements. Variability in coverage and institutional support may affect a surgeon's ability to access state-of-the-art equipment and advanced training programs, further complicating the integration of these techniques into routine practice.

Comprehensive Strategies to Overcome the Learning Curve

To navigate these challenges effectively, a structured, multi-tiered training approach is recommended. This strategy should combine theoretical knowledge with hands-on practice to build both technical proficiency and clinical judgment.

A. Immersive Training in Specialized Centers

- **High-Volume Centers:**
  Training in centers dedicated to endoscopic spine surgery exposes surgeons to a high volume of diverse cases. The frequent exposure to complex scenarios allows trainees to observe nuanced decision-making processes and adapt rapidly to evolving surgical situations.

- **Mentorship and Proctoring:**
Direct mentorship by master surgeons who specialize in both uniportal and biportal techniques is invaluable. Mentors can provide real-time feedback, demonstrate advanced techniques, and guide trainees through the intricacies of case selection and intraoperative adjustments. Proctoring sessions also offer opportunities to discuss complications and refine strategies in a controlled environment.

- **Surgical Video Libraries:**
Regular review of high-quality surgical videos from experts can help reinforce the procedural steps, enhance understanding of dynamic anatomy, and illustrate subtle variations in technique. Annotated videos and case discussions further enrich this learning resource.

B. Advanced Instrumentation and Technological Support

- **State-of-the-Art Equipment:**
Investing in high-definition, ergonomically designed endoscopes and instruments is critical. Innovations such as 3D imaging and enhanced lighting can significantly improve visualization and reduce operator fatigue, thereby facilitating smoother surgical performance.

- **Integration of Digital Technologies:**
The use of augmented reality (AR) and image-guidance systems can further aid in anatomical localization and navigation. These tools are particularly useful in complex cases where traditional landmarks are distorted or obscured.

C. Hands-On Simulation and Cadaveric Training

- **Cadaver Labs:**
Cadaveric dissection provides a realistic, hands-on experience that is essential for understanding the three-dimensional relationships of spinal structures. Such labs allow surgeons to practice instrument handling, develop tactile feedback, and perform complete procedures in a risk-free setting.

- **Model-Based Simulations:**
High-fidelity simulation models offer a repetitive, controlled environment for skill refinement. Advanced simulators equipped with haptic feedback enable surgeons to practice delicate maneuvers, simulate potential complications, and develop the muscle memory necessary for successful endoscopic interventions.

- **Virtual Reality Modules:**
VR-based training can simulate a wide range of scenarios, from routine cases to complex, high-risk procedures. These modules provide instant feedback and allow for performance assessment, helping trainees to identify areas for improvement.

D. Gradual Clinical Exposure and Progressive Responsibility

- **Structured Case Progression:**
A systematic approach to patient exposure, starting with less complex cases and gradually progressing to more challenging scenarios, is essential. Initially, procedures should be performed under direct supervision with a mentor present. As competence increases, the level of autonomy can be incrementally expanded.

- **Continuous Outcome Monitoring:**
Regular evaluation of surgical outcomes and complication rates is necessary to ensure that skill acquisition does not compromise patient safety. Establishing a framework for feedback and peer review helps to maintain high standards of practice and fosters continuous improvement.

Hayati Aygun

1/ Contralateral approach in UBE
Contralateral approach can be obligatory in UBE surgery. Upper migrated disc herniations, revisions and other many exeptional pathologies can be difficult in standard UBE technics. The presentation is aimed to shed light on this topic.

2/ Consecutive decompression in lumbar spinal stenosis.
Even though considerable amount of surgery has been performed, surgical procedures for lumbar spinal stenosis. The pronciples of decompression have not been fully clarified.

This presentation will attempt to clarify the principles of surgical decompression to achieve a successful outcome.

LEARNING CURVE ON HOW TO START PERCUTANEOUS ENDOSCOPIC LUMBAR DISCECTOMY IN MOEWARDI GENERAL HOSPITAL SURAKARTA: A 3 MONTH RETROSPECTIVE STUDY

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Background:

Percutaneous Endoscopic Lumbar Discectomy (PELD) is an effective and safe treatment for lumbar disc herniation. As a minimally invasive spinal procedure, PELD has gained increasing recognition due to its small incision and clinical outcomes comparable to open surgery. To achieve satisfactory clinical efficacy, adequate consideration must be given to the implementation of PELD. This study aims to describe the implementation of PELD during the first three months at Dr. Moewardi General Hospital Surakarta.

Methods:

This study is an observational study describing the implementation of PELD from October to December 2024 at Dr. Moewardi General Hospital Surakarta. The study sample consisted of 53 patients diagnosed with lumbar HNP who underwent PELD procedures at the hospital. The parameters of this study included preparation time, surgical time, and clinical outcomes.

Results:

The average preparation time for surgery improved from 45 minutes in October to 35 minutes in December, while the PELD procedure time decreased from 135 minutes to 100 minutes over three months. It was influenced by the excellent skills of doctors and nurses, as well as good teamwork. Of 53 patients, 37 had an ASIA score of E, and 16 improved from D to E within two weeks post-surgery. Preoperative ODI scores showed 30 patients with minimal disability and 23 with moderate disability, but all achieved minimal disability after two weeks, with a significant reduction in disability percentages. This is due to the minimally invasive procedure, adherence to SOPs, and effective post-operative education.

Conclusions:

The relatively new PELD procedure implemented at Dr. Moewardi General Hospital Surakarta during the first three months, showed a positive development trend, marked by a reduction in preparation and procedure times. Additionally, patient clinical outcomes after two weeks post-operation demonstrated optimal recovery.

Keywords:

PELD, Preparation Time, Surgery Time, ASIA Score, ODI Score

THE CORRELATION BETWEEN THE ADEQUACY OF DECOMPRESSION AND CLINICAL OUTCOMES BY UNILATERAL BIPORTAL ENDOSCOPIC TECHNIQUE IN PATIENTS WITH LUMBAR HERNIATED DISC

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Background and Hypothesis:
Unilateral biportal endoscopic decompression (UBE) for patients with lumbar herniated nucleus pulposus (HNP) relieves neural compression, expands nerve root space, and preserves spinal motion and integrity. This study aimed to investigate the adequacy of neural decompression in stenosis grading changes, measured in three zones according to magnetic resonance imaging (MRI) images, and to correlate these changes with clinical outcomes in patients with lumbar herniated discs after UBE.

Methods:
Fifty-eight patients diagnosed with HNP underwent UBE by a single experienced surgeon. The operation would be accepted after reaching the criteria at which there is adequate neural decompression. The visual analogue scale (VAS), oswestry disability index (ODI) scores, and MRI were recorded and evaluated at pre-operative and three months post-operative follow-up. Statistical analysis was performed to determine the percent changes in stenosis grading and their correlations with clinical outcomes.
Results: The mean patient age was 38.95 ± 10.46 years with a male-to-female ratio of 2:8. The most common disc herniation level was L5-S1. There was a statistically significant clinical improvement at 3 months after surgery determined by ODI (41.14 ± 17.45), VAS leg (6.62 ± 1.5), VAS back (2.57 ± 3.17) and the stenosis grading improvement at the area of central canal (0.76 ± 0.62), foraminal zone (0.52 ± 0.75), and especially at the lateral recess (1.71 ± 1.19). Interestingly, there was a statistically significant correlation between the lateral recess stenosis grading change and the clinical outcome (ODI) at the final follow-up.

Conclusion:
UBE is effective for lumbar spinal stenosis associated with HNP, showing significant back and leg pain reduction and improved clinical outcomes. Adequate decompression, particularly in the lateral recess, strongly correlates with better outcomes, suggesting its importance in managing lumbar HNP. Larger clinical trials are needed to confirm these findings.

Keywords:
Unilateral biportal endoscopic, spinal decompression, lumbar herniated disc

FULL ENDOSCOPIC LUMBAR DECOMPRESSION FOR LUMBAR SPINAL STENOSIS IN PATIENTS WITH AND WITHOUT PREOPERATIVE SPONDYLOLISTHESIS: CLINICAL OUTCOME, RADIOGRAPHIC OUTCOME AND REOPERATION RATES

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Background and Hypothesis:
Surgical decompression is the preferred intervention for lumbar spinal stenosis (LSS) in cases where nonoperative management proves ineffective. While standard open laminectomy is a well-established approach, full endoscopic lumbar decompression with "over-the-top" technique offers a viable alternative. This retrospective case series aims to assess the clinical and radiographic outcomes of this full endoscopic technique in patients with LSS and to compare outcomes between those with and without preoperative spondylolisthesis.

Methods:
This analysis included patients with lumbar spinal stenosis (LSS) without spondylolisthesis and those with Grade I spondylolisthesis who underwent full endoscopic lumbar decompression with over-the-top technique between 2022 and 2024. Demographic, perioperative, and radiographic data were collected. Clinical outcomes were assessed using the Oswestry Disability Index (ODI), visual analog scale (VAS) scores, and Macnab's criteria.

Results:
Among the 85 patients analyzed, 42.5% had preoperative spondylolisthesis at the level of spinal stenosis. There was a significant improvement on the Oswestry Disability Index (ODI), visual analog scale (VAS) for back pain, and the VAS for leg pain, compared to preoperative baseline values ($p < 0.0001$). Radiographic outcome showed no significant difference after operation in patients with or without spondylolisthesis. None of the patient either with or without spondylolisthesis require fusion at the operated level. No significant differences were observed in clinical outcomes or reoperation rates between patients with and without preoperative spondylolisthesis.

Conclusion:
Full endoscopic lumbar decompression with over-the-top technique is an effective treatment option for lumbar spinal stenosis (LSS), offering lower reoperation rates and fusion rates for instability compared to open laminectomy. Functional improvements and radiographic outcomes are comparable between patients with and without preoperative spondylolisthesis. This technique represents a viable alternative to open laminectomy, and routine fusion may not be necessary for all patients with LSS and spondylolisthesis.

BASIC LUMBAR CANAL STENOSIS DECOMPRESSION BY UNILATERAL BIPORTAL ENDOSCOPY

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Degenerative Lumbar canal stenosis (DLCS)now being the common ailment faced by our elderly population leading to restricted mobility and diminished quality of life.Traditional treatment is Either open or microscopic decompression.

Unilateral biportal endoscopy (UBE),an ultra minimally invasive endoscopic technique,now emerging as the least invasive and most effective technique for DLCS decompression with least damage to paraspinal muscles and bony or ligamentous elements.

However every UBE decompression technique needs adherence to stepwise process to achieve best results, enhance structural safety and reduce surgical time.

This study aims to describe Stepwise surgical techniques of UBE decompression of DLCS which would benefit emerging Spine endoscopy enthusiasts in a big way.

NEW PERSPECTIVE ON BIPORTAL ENDOSCOPIC POSTERIOR INTERLAMINAR DECOMPRESSION - FROM PANDORA BOX TO BUTTERFLY

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Background and Hypothesis:
Biportal Endoscopic Posterior Interlaminar decompression had been viewed as a solid approach for treating intra-canalicular stenosis or other related lesion compromising the patency of spinal canal. There had been many related technical notes on how to be flattening the learning curve, enhance the efficiency and safety of posterior interlaminar decompression procedure. This article had presented the author last 6 years experiences on how the following of ipsilateral (Umbrella type) or ULBD (Butterfly type) pathways, postulated how the modifications of techniques on the improvements of the efficiency, safeties, and surgical outcome results of this approach.

Methods:
We had collected total 313 cases, uni-segments spinal ailments registered for biportal posterior interlaminar decompression procedure from April,2018 to October 2024. The techniques evolvement 1) including moving the portal upward according to the cranial segment pedicle line, 2) pre-injection of surgical site with large volume of low dose Xylocaine-Epinephrine mixture solution, 3) emphasis on creation of supra-laminar, sub-spinous window, 4) V-point decompression, 5) judicious usage of high-speed bone burr, 6) late ligamentum flavectomy. The pathways of ipsilateral decompression (Umbrella type), pathway of ULBD (Butterfly type) were delineated.

Results:
We had found significant improvement of surgical time from 133.3 ± 27.9 minutes (2018) to 64.4 ± 25.8 minutes (2024). The hospitalization date: 4.0 ± 2.3 days to 3.0 ± 2.2, all cases showed overall improvement of pre-Op ODI scale of 40.3 to three months post-op ODI score: 7.3 ± 2.6. However, the intra-operative irrigational saline usage increase from 0.209 ± 0.12 liter/minutes (2018) to 0.278 ± 0.165 liter/minute (2024).

Conclusion:
We concluded the combination of above techniques modification significantly improved surgical efficiency and safety and overall patient hospital stay and satisfactory outcome.

ABSTRACT: TWIN-CAGE LUMBAR INTERBODY FUSION USING UNILATERAL BIOPORTAL ENDOSCOPY (UBE)

Background:
Traditional transforaminal lumbar interbody fusion (TLIF) with a single cage and pedicle screw fixation has limitations in stability and fusion area. Inspired by outcomes from Oblique Lumbar Interbody Fusion (OLIF), we implemented a twin bullet cage technique using Unilateral Biportal Endoscopy (UBE).

Methodology:
A bilateral approach was employed with two small incisions. The Kambin's Triangle was exposed, and a larger annulotomy was created, spanning from the exiting nerve root to the traversing nerve root. Bone graft material was placed, and the first cage was inserted and medialized. The second cage was then placed and rotated for optimal positioning. Both cages were introduced through the same annulotomy, ensuring precise placement and minimal invasiveness.

Results:
This technique increased the interbody surface area compared to single-cage methods, leveraging UBE's superior visualization and precise endplate preparation. The twin-cage approach is anticipated to provide enhanced stability and improved fusion outcomes.

Conclusion:
The twin-cage lumbar interbody fusion technique using UBE is a promising advancement, offering a larger fusion surface area and potentially better outcomes compared to the single-cage approach. This minimally invasive method combines the benefits of UBE with improved biomechanical stability, warranting further clinical studies for validation.

THE UNIPORTAL ENDOSCOPIC LUMBAR INTERBODY FUSION FOR LUMBAR SPONDYLOLISTHESIS: PRELIMINARY CLINICAL RESULTS OF 20 CASES

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Background:
As a new techique in minimally invasive spine surgery (MISS) in recent years, endoscopic lumbar interbody fusion (Endo-LIF) has become an increasingly popular procedure in many countries of the world. The aim of this study is to share our initial clinical experience and preliminary results in the treatment of lumbar spondylolisthesis by this procedure.

Methods:
20 patients (13 men and 7 women; mean age 51.05 ± 16.52 years) with lumbar spondylolisthesis who underwent Endo-LIF in our hospital were enrolled. The surgical time, volume of intraoperative blood loss, postoperative hospitalization time and postoperative drainage were recorded. Clinical outcomes were evaluated by visual analog scale (VAS) scores, Oswestry Disability Index (ODI) scores, and modified MacNab criteria. Bone fusion was identified through computerized tomography (CT) scans or X-ray during the follow-up period.

Result:
All patients were followed up for at least 6 months, the average follow-up time 10.24 ± 3.56 months. The mean operative time was 114.52 ± 24.14 minutes. The mean intraoperative blood loss was 98.72 ± 27.56 ml. At the final follow-up, VAS scores of low back pain and leg pain were 1.66 ± 0.30 and 1.73 ± 0.46, ($P < 0.05$). The preoperative ODI score (51.07 ± 4.62) also improved significantly at the final ODI score was 9.04 ± 4.67 ($P < 0.05$). This study was conducted on LS: grade I in 12 patients (60%), grade II in 8 patients (40%). No serious complications, including srew problems, infection or nerve root injury.

Conclusions:
The present study demonstrated satisfactory clinical and radiologic results among patients with Endo-LIF treatment from our institution, which is efficient and safe for select patients. This is a complex technique that requires a long learning curve. Further studies with larger sample sizes and comparison with other methods are needed.

EMERGENCY RESPONSE TO FAILED DECOMPRESSION: RECURRENT DISC HERNIATION MANAGED BY CONVERSION FROM TRANSFORAMINAL TO "MODIFIED PARAMEDIAN" FULL-ENDOSCOPIC LUMBAR DISCECTOMY

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Background and Hypothesis:
We present a novel technique as full endoscopic lumbar discectomy (FELD) utilizing "modified paramedian" approach for recurrent lumbar foraminal stenosis with upward disc herniation after failed attempt via transforaminal approach intraoperatively.

Methods:
A 71-year-old male presented with low back pain resulting from recurrent lumbar foraminal stenosis and upward extruded disc migration at L4-5 right foramen. He had previously undergone FELD through transforaminal approach 4 months ago. This time, under local anesthesia, we attempted the same procedure with similar trajectory tract. However, severe adhesions and inflammation surrounding the nerve root were encountered, leading to intraoperative intolerance by the patient gradually. Consequently, we ceased the initial approach with conversion to "modified paramedian" approach.

New entry point was established 4 cm lateral from the midline at suprapedicular level, with the working sheath inserted at a slight cranial inclination, landing on the posterolateral aspect of right L4/5 facet. (Fig.1) This alternative trajectory allowed for an extended foraminotomy without encountering adhesions, facilitating the identification and removal of extruded discs. Postoperatively, the patient reported significant pain relief and was able to ambulate independently on postoperative day 1.

Results:
"Modified paramedian" approach may be an effective alternative technique for cases where FELD through transforaminal approach fails under local anesthesia. Recurrent disc herniation often results in significant adhesions along the previous surgical trajectory, complicating further manipulation. By adopting "modified paramedian" approach, which offers an alternative trajectory to circumvent adhesions, minimize nerve root manipulation, and achieve successful decompression within same surgical session under local anesthesia.

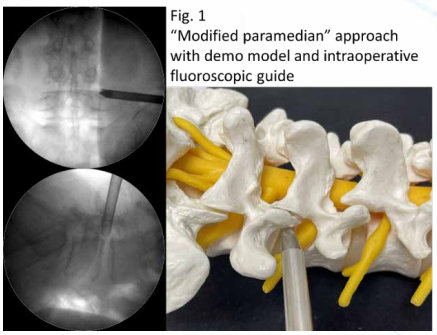
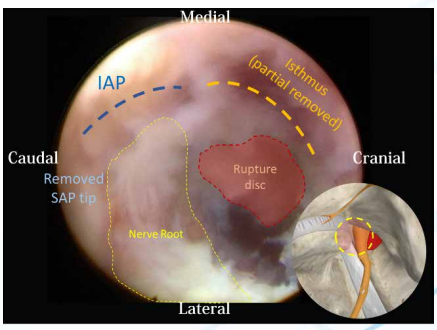


Fig. 1
"Modified paramedian" approach with demo model and intraoperative fluoroscopic guide

Conclusions:
FELD through "modified paramedian" approach offers a viable solution in cases of intraoperative failure during transforaminal decompression for recurrent lumbar foraminal stenosis. This approach, rather than necessitating a second revision surgery, provides an effective means of avoiding adhesions and managing challenging nerve root manipulations, thus ensuring successful decompression under local anesthesia.



"Modified paramedian" approach with rupture disc identified

PRELIMINARY CLINICAL OUTCOMES OF THE FULL-ENDOSCOPIC RHIZOTOMY AND COCCYGEAL LIGAMENT RESECTION UNDER A NAVIGATION SYSTEM FOR POST-TRAUMATIC COCCYDYNIA

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Background and Hypothesis:
Coccydynia, marked by pain and tenderness in the coccyx region, often requires interventions such as radiofrequency therapies when conservative measures fail, though high-quality evidence for efficacy of radiofrequency ablation remains insufficient. This study aimed to evaluate the clinical efficacy and feasibility of full endoscopic rhizotomy and coccygeal ligament resection (FER) for post-traumatic coccydynia.

Methods:
A retrospective analysis was performed on 13 patients who underwent FER for coccydynia between September 2019 and August 2023. Inclusion criteria included chronic coccydynia (≥3 months) unresponsive to conservative treatments and significant pain relief following ultrasound-guided coccygeal nerve block. Primary outcomes were assessed using Visual Analog Scale (VAS) and Oswestry Disability Index (ODI) scores up to 12 months postoperatively. FER was performed under local anesthesia with 3D robotic C-arm navigation. The entry point was determined above the midline at Co1 level, with the tip of the obturator landing on the base of sacral hiatus. Under the endoscopic view, paired coccygeal nerves were identified and resected with bipolar radiofrequency electro-coagulator and endoscopic punch forceps. The procedure endpoint was defined as the alleviation of pressing tenderness, as reported by the patient.

Results:
Ten patients (2 males, 8 females, mean age 50.6 years) completed the follow-up. The mean operation time was 56 ± 28.85 minutes. All patients were discharged the next day without complications. VAS scores decreased significantly from 7.8 ± 1.69 preoperatively to 1.00 ± 1.33 at 12 months. ODI scores also showed significant improvement from 23.90 ± 5.97 preoperatively to 3.10 ± 4.93 at 12 months. The patient satisfaction rate was 100%.

Conclusions:
The FER technique, utilizing 3D robotic C-arm navigation, demonstrated significant pain relief and improved functionality, proved to be an effective intervention for patients with post-traumatic coccydynia.

UNIPORTAL FULL-ENDOSCOPIC EXTRAFORAMINAL LUMBAR FORAMINOTOMY FOR FAR-OUT SYNDROME : CASE REPORT AND TECHNIQUE NOTES

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Background and Hypothesis:
Far-out syndrome (FOS) is a rare disease in which the L5 nerve root is compressed in the far-lateral region, often due to hypertrophic bony structures. Treating Far-out syndrome with using endoscope proves to be challenging and biportal endoscopic approach for Far-out syndrome has been reported. We present an alternative procedure as uniportal full endoscopic lumbar foraminotomy through extraforaminal approach for Far-out syndrome.

Methods:
A 62-year-old male experienced severe lower back pain, radiated to left leg and left calf numbness for 2 months. Radiographic studies revealed compression of the L5 nerve root in the extraforaminal zone at the L5/S1 level, caused by hypertrophic bony structures. Under local anesthesia, the patient underwent uniportal full-endoscopic lumbar foraminotomy through extraforaminal approach. The entry point was determined between facet and iliac crest about 8 cm, lateral from the midline at L5/S1 level, landing around the pedicle of L5, achieving precise nerve decompression through partial removal of transverse processes and sacral ala . After surgery, patient's visual analog scale score for leg pain decreased from 9 to 0 and the Oswestry disability index improved from 52% to 3% with ambulation immediately.

Results:
Full-endoscopic lumbar foraminotomy via the extraforaminal approach offers the advantages of minimally invasive surgery, including reduced trauma to the posterior muscles and ligaments, lower postoperative pain, and faster recovery. Compared to biportal techniques, the uniportal approach further reduces soft tissue dissection and blood loss. Additionally, the use of local anesthesia enables intraoperative patient feedback, which helps minimize the risk of significant nerve root injury.

Conclusions:
Uniportal full-endoscopic extraforaminal foraminotomy under local anesthesia is a safe and effective treatment for L5/S1 far-out syndrome. This case demonstrates its benefits, including precise decompression, reduced surgical morbidity, and rapid recovery, making it a viable option for managing this rare condition.

MINIMALLY INVASIVE SURGERY FOR SPINAL METASTASES: ADVANCES, TECHNIQUES, AND OUTCOMES

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Background and Hypothesis:
Spinal metastases are common in advanced cancer, leading to pain, neurological deficits, and instability, significantly impacting quality of life. Traditional open spinal surgery, while effective, is associated with high morbidity, prolonged recovery, and delayed resumption of systemic cancer therapies. Minimally invasive spine surgery (MISS) has emerged as a promising alternative, offering reduced surgical trauma and expedited recovery. However, gaps remain in understanding its long-term efficacy and optimal patient selection. This study hypothesizes that MISS provides comparable oncological and functional outcomes to open surgery while minimizing perioperative morbidity and facilitating faster recovery.

Methods:
A comprehensive review of 20 peer-reviewed journal articles was conducted to evaluate MISS techniques for spinal metastases. The review focused on percutaneous stabilization, minimally invasive decompression, and tumour ablation. Primary outcomes included pain relief, neurological improvement, and stability, while secondary outcomes examined perioperative morbidity, hospital stay, and time to systemic therapy resumption.

Results:
MISS demonstrated significant pain relief (>80%), neurological improvement (>70%), and reduced perioperative morbidity, including 40-60% lower blood loss compared to open surgery. Hospital stays averaged 2-4 days, with patients resuming systemic therapies within two weeks. Ablative techniques provided effective local tumour control in 85% of cases.

Conclusions:
MISS offers a transformative approach to managing spinal metastases, aligning with palliative care goals by reducing morbidity and improving recovery. Further research should address its limitations, such as technical complexity and accessibility, and establish standardized guidelines to enhance its integration into oncology care.

ENDOSCOPY-ASSISTED LUMBAR INTERBODY FUSION VERSUS TRADITIONAL OPEN SURGERY FOR LOW-GRADE SPONDYLOLISTHESIS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF CLINICAL AND RADIOLOGICAL OUTCOMES

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Background and Hypothesis:
Spondylolisthesis, a condition characterized by vertebral displacement, often requires surgical intervention when conservative treatments fail. Lumbar interbody fusion (LIF) is a common approach, with endoscopic-assisted techniques gaining attention for their minimally invasive advantages. This study hypothesizes that endoscopic-assisted LIF offers superior clinical and radiological outcomes compared to traditional open surgery for low-grade spondylolisthesis.

Methods:
A systematic review and meta-analysis were conducted, including studies comparing endoscopic-assisted LIF with open LIF for Meyerding grade I-II spondylolisthesis. Databases searched included PubMed, Scopus, and Taylor-Francis up to January 2025. Primary outcomes assessed included visual analog scale (VAS), Oswestry Disability Index (ODI), lumbar lordotic angle, and vertebral disc height. Meta-analyses were performed using a random-effects model.

Results:
Three cohort studies comprising 168 patients were included. Endoscopic-assisted LIF showed a statistically significant reduction in back pain (VAS) at 1 and 6 months postoperatively and a higher postoperative lumbar lordotic angle (MD = -2.64, p = 0.0002). ODI results showed a statistically significant reduction in ODI at 6 months compared to baseline (MD = -1.52, p = 0.0131) with negligible heterogeneity. However, no significant differences were observed in changes from baseline in lumbar lordotic angle (MD = 0.41, p = 0.9745) or vertebral disc height.

Conclusions:
Endoscopic-assisted LIF demonstrated comparable or superior outcomes to open LIF, particularly in reducing postoperative pain, ODI improvement, and improving lumbar lordotic angle. These findings support the potential for wider clinical adoption of endoscopic techniques. Further randomized controlled trials are necessary to confirm these benefits.

EXTRAFORAMINAL FULL-ENDOSCOPIC APPROACH FOR EXTRAFORAMINAL LUMBAR DISC HERNIATION: A CASE REPORT AND LITERATURE REVIEW

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Background and Hypothesis:
Extraforaminal lumbar disk herniation (E-LDH) constitutes a challenging subset of lumbar disk herniations. Minimally invasive methods like full-endoscopic lumbar discectomy (FELD), which provides direct access to the disc herniation by inserting an 8-mm working sheath with an endoscope without dissecting surrounding structures, but carries risks of complications, such as postoperative dysesthesia (POD) and nerve root injury. Conventional surgical techniques, such as using a midline or paramedian approach with medial facetectomy, and total facetectomy can effectively remove E-LDH but frequently result in spinal instability, necessitating additional spinal fusion procedures.

Methods:
The following case report describes a challenging case, a 62-year-old male, who could not lie prone before the endoscopic procedure, experiencing severe lower extremity pain on the left side due to left L3/4 E-LDH. An L3 nerve block, guided by fluoroscopy, was performed with the patient in a right decubitus position. After alleviating the pain, the patient was placed in a prone position to undergo the extraforaminal full-endoscopic procedure under local anesthesia.

Results:
The extraforaminal full-endoscopic approach for E-LDH yielded immediate relief (VAS score reduced from 10 to 0). There was no leg pain or associated back pain at the 6-month follow-up.

Conclusions:
This approach demonstrates the feasibility of an extraforaminal full-endoscopic technique for E-LDH, overcoming challenges associated with the uncooperative patient due to the severe leg pain. Additionally, this procedure minimizes the complication of nerve root injury and POD, maximizes satisfaction of the patient, and preserves the stability of the spine. However, the technique demands technical proficiency and warrants further research to establish its broader applicability.

PARASPINAL UNIPORTAL AND BIPORTAL ENDOSCOPIC DECOMPRESSION FOR THE TREATMENT OF BERTOLOTTI SYNDROME

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Background and Hypothesis:
Bertolotti syndrome is a condition caused by the abnormal enlargement of the transverse process of the most caudal lumbar vertebra, which may lead to low back pain and radiculopathy due to foraminal or extraforaminal stenosis. While various surgical techniques have been explored, there is no consensus on the optimal approach. Full-endoscopic and biportal endoscopic techniques have emerged as minimally invasive alternatives, but reports on their clinical outcomes remain limited. This study aims to assess the feasibility, safety, and efficacy of percutaneous full-endoscopic and biportal endoscopic decompression in the treatment of symptomatic Bertolotti syndrome.

Methods:
Six patients with symptomatic Bertolotti syndrome were treated using percutaneous endoscopic decompression techniques. Three patients underwent a uniportal endoscopic procedure, while the remaining three underwent a biportal endoscopic approach. Clinical outcomes, including pain relief and postoperative recovery, were evaluated to determine the effectiveness of these techniques.

Results:
Both uniportal and biportal endoscopic decompression techniques demonstrated favorable clinical outcomes, effectively alleviating low back pain and L5 radiculopathy. The minimally invasive approach provided advantages such as reduced morbidity, preservation of the iliolumbar ligament, and faster recovery. No major complications were observed in any of the cases.

Conclusions:
Percutaneous full-endoscopic and biportal endoscopic decompression are safe and effective alternatives to traditional open surgery for L5 nerve decompression in Bertolotti syndrome. These minimally invasive techniques offer significant clinical benefits, including reduced tissue trauma and improved postoperative outcomes, making them viable options for patients with refractory symptoms.

CHALLENGES IN XR SURGICAL SUPPORT TECHNOLOGY DEVELOPMENT AND BUSINESS CONTINUATION: INCORPORATING APPLEVISIONPRO

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Objective:
This study examines the challenges associated with developing XR technology and maintaining its business viability, with a focus on using AppleVisionPro (released in February 2024) and exploring its potential applications.

Methods:
In 2016, we developed the first XR simulator for percutaneous pedicle screw insertion in the lateral decubitus position, in collaboration with a company in which the authors were involved. In 2017, we employed the system as a surgical support device, enabling remote conference capability in a shared virtual space via the internet. For accuracy verification, we performed screw insertion under intraoperative CT synchronization using cadaver specimens. In 2024, we created a prototype XR application compatible with the newly released AppleVisionPro. Leveraging its high-resolution display and voice command features, we aimed to improve operability and enhance the surgeon's view of the surgical field.

Results:
The system allows for overlaying patient-specific anatomy and preoperative screw or cage trajectories onto the surgical field. In 2020, the XR system obtained medical device certification, and advances in hardware improved the user interface. However, device-only solutions did not achieve sufficient accuracy for safe clinical application. Meanwhile, compatibility with AppleVisionPro, which offers enhanced display quality and sensor capabilities, showed promise for better adaptation to hand movements and gaze shifts. Preliminary prototypes indicated more intuitive operation and improved perception of 3D information in the surgical field.

Conclusion:
Current XR technology is useful for surgical support, education, and communication, yet challenges remain in terms of accuracy and practical application. The introduction of high-performance devices like AppleVisionPro, released in 2024, could further improve headset operability, field of view, and display accuracy. Moving forward, leveraging these new devices' features to their fullest will require dedicated software development, strategies to reduce physical strain on surgeons, and improvements in spatial awareness. For ensuring safety and accuracy, combinations with intraoperative navigation and AI-driven image analysis are imperative. Addressing these technical issues will lead to higher-precision, more versatile XR surgical support technologies, contributing to long-term business sustainability.

A NOVEL MINIMALLY INVASIVE TUBULAR TRANS-ISTHMUS OBLIQUE DISCECTOMY FOR UPPER LUMBAR DISC HERNIATION: A PILOT STUDY ON SAFETY AND EFFICACY

Aim:
To evaluate the efficacy and safety of a modified minimally invasive tubular surgical approach for upper lumbar intracanal paracentral disc herniation.

Background:
Upper lumbar disc herniations (L1-2, L2-3) present unique challenges due to their higher location relative to the inter-laminar window and the narrow space between the spinous process and facet joint. These factors necessitate extensive bone removal, risking facet fractures and iatrogenic instability. Additionally, excessive retraction of the root or dura can lead to neurological deficits. Our tubular trans-Isthmus extraforaminal oblique approach aims to address these challenges in a minimally invasive manner.

Method:
This pilot study included patients who underwent minimally invasive tubular trans-Isthmus oblique discectomy for upper lumbar disc herniation (L1-2, L2-3) between January 2022 and January 2024. Inclusion criteria comprised: a diagnosis of intracanal, paracentral upper lumbar disc herniation confirmed by imaging, significant unilateral leg pain or radiculopathy correlating with the herniated disc that is resistant to conservative treatment and without neurological deficits. Pre-operative assessments included ODI and VAS scores for leg pain. Post-operative evaluations were conducted at 1, 3, and 12 months. ODI was compared pre-operatively and at 3 months. VAS scores were compared pre-operatively and at follow-up intervals. Modified Macnab's criteria were assessed at 12 months. Dynamic lateral and loading anteroposterior X-rays were used to check for instability. Statistical analyses included Shapiro-Wilk test, skewness, kurtosis, Wilcoxon Signed Rank Test, Friedman test, and Conover post hoc analysis. Statistical analysis was performed using JASP version 0.18.

Results:
Twenty patients met the inclusion criteria, comprising 7 females and 13 males with a mean age of 50.8 years (range 29-72 years). Of these, 6 had L1-2 and 14 had L2-3 disc herniations. Eleven patients had right-sided intracanal paracentral disc herniations, and 9 had left-sided. The median pre-operative ODI was 83% (range 78-92. The median VAS score for leg pain was 8 (range 6-10). Post-operatively, the ODI significantly improved at 3 months to a median of 5% (range 0-21%, $p < 0.001$). VAS scores for leg pain also showed significant improvement at 1, 3, and 12 months, with median of 1, 0, and 0, respectively ($p < 0.01$). Improvement in leg pain was significant across all follow-up periods up to 1 year, as per the Friedman test. No significant difference was noted between the 3-month and 12-month follow-ups. There were no major complications; however, 1 patient experienced a dural injury, and 1 developed post-operative burning symptoms in the L2 dermatome. No instability was observed on dynamic and loading X-rays. There were no recurrent disc herniations.

Conclusion:
The minimally invasive tubular trans-Isthmus oblique discectomy for upper lumbar disc herniation (L1-2, L2-3) appears to be a feasible and safe alternative to conventional and tubular microdiscectomy, potentially avoiding the need for fusion. However, further studies with larger sample sizes and longer follow-up are required to confirm these findings.

MINIMALLY INVASIVE SHORT-SEGMENT CEMENT-AUGMENTED PEDICLE SCREW FIXATION WITHOUT FUSION IN OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURE WITH INTRA-VERTEBRAL INSTABILITY: A RETROSPECTIVE ANALYSIS

Aim:
The primary aim of this study was to evaluate the feasibility of minimally invasive short-segment cement-augmented percutaneous pedicle screw fixation without fusion for osteoporotic vertebral compression fractures (OVCF) with intra-vertebral instability.

Methods:
We retrospectively analysed patients who underwent surgery between November 2017 and December 2022 by a single surgeon for OVCF with intra-vertebral instability. The procedure involved minimally invasive short-segment cement-augmented pedicle screw fixation without fusion. Preoperative Oswestry Disability Index (ODI) scores were compared with those at 24 months post-surgery. Additionally, we analysed Visual Analog Scale (VAS) scores preoperatively and at 1, 6, and 24 months postoperatively. The Shapiro-Wilk test, along with skewness and kurtosis analysis, were used to determine whether the data were parametric or non-parametric. The Wilcoxon Signed Rank Test compared preoperative ODI scores with those at 24 months, while the Friedman test was used to assess changes in VAS over time. The Conover test was employed in post hoc analysis to compare changes across each time period. Statistical analysis was conducted using JASP version 0.18, University of Amsterdam.

Results:
A total of 50 patients were operated between November 2017 and December 2022, with complete follow-up of 24 months, available for 30 patients (11 died of causes unrelated to surgery & 9 were with incomplete follow-up) . The median age was 66.5 years, with 21 females and 9 males. The most common level of OVCF was D12, followed by L1. Median preoperative ODI and postoperative ODI at 24 months were 91 and 18, respectively, indicating a significant improvement ($p < 0.01$). The median preoperative VAS score was 8, with postoperative median VAS scores at 1, 6, and 24 months being 3, 2, and 1, respectively. The postoperative VAS score improved significantly at all time points ($p < 0.01$), with the maximum improvement observed at 1 month, which was sustained at 24 months. 2 patients (6.6%) sustained additional fractures requiring surgical intervention.

Conclusion:
Minimally invasive short-segment cement-augmented percutaneous pedicle screw fixation without fusion results in significant improvements in postoperative ODI and VAS scores, with maximum improvement observed at 1 month postoperatively and sustained at the last follow-up. This minimally invasive technique provides clinically satisfactory outcomes that are sustained for up to 24 months in elderly patients.

FEASIBILITY AND SAFETY OF PERCUTANEOUS TRANS-KAMBIN POSTEROLATERAL LUMBAR INTERBODY FUSION (KLIF) WITH INDIRECT DECOMPRESSION: EARLY POSTOPERATIVE OUTCOMES.

Aim:
To evaluate the feasibility and safety of percutaneous Trans-Kambin posterolateral lumbar interbody fusion (KLIF) with indirect decompression during the early postoperative period (3 months).

Materials and Methods:
This prospective study analyzed patients undergoing KLIF between April and August 2024. Inclusion criteria involved symptomatic Schizas grade B or C lumbar canal stenosis with instability, degenerative deformity, or lytic listhesis, unresponsive to conservative treatment. Radiological parameters assessed included disc height (DH), foraminal height (FH), segmental lordosis (SL), and global lordosis (GL). Clinical parameters, including Visual Analog Scale (VAS) scores for back and leg pain, were recorded preoperatively and postoperatively at 2 hours, 4 hours, 15 days, 1 month, and 3 months. The Oswestry Disability Index (ODI) was also assessed preoperatively and postoperatively at 15 days, 1 month, and 3 months. Intraoperative metrics, such as surgical duration and estimated blood loss (EBL), were recorded. A 3-month timeframe was chosen to assess early outcomes. Statistical analysis was done using JASP 0.18 (University of Amsterdam).

Results:
Twenty-five patients (45 levels) underwent KLIF, with age 30-80 years (median 65) (18 females, 7 males). Bone mineral density (BMD) T-score was -3.30 - +2.2 (median -0.3) for spine and -3.1 - +1.4 (median -1.2) for hips. The surgeries included 12 single-level, 9 two-level, 3 three-level, and 1 five-level KLIF. The surgical duration was 80-270 minutes (median 120min) , with EBL of 50-200 mL (median 100mL). The cage height was 10-14 mm (median 12mm) , with a standard length of 30 mm. Leg symptoms with VAS 1-9 (median 8) from pre op resolved immediately postoperatively and pain relief was maintained at 3 months. Pre op VAS for back pain 2-9 (median 7) improved significantly ($p=0.036$, median post op 1). Median DH increased from 7.5 mm preoperatively to 14.2 mm postoperatively, reflecting an 85% improvement ($p < 0.001$). Median FH increased from 13.4 mm to 18 mm, representing a 35.7% improvement ($p < 0.001$). Median SL improved from 15.6° to 23.9°, and\ median GL increased from 36° to 43° (both $p < 0.001$). Pre op median ODI 85 improved significantly ($p= 0.014$) with a 3-month postoperative median of 22. One case of radiological cage back-out occurred without clinical impact, and one case was converted to MIS-TLIF due to narrow pelvic anatomy. No significant adverse events were noted.

Conclusion:
The KLIF technique is a safe and effective method for achieving indirect decompression, with significant clinical and radiological improvements during the early postoperative period. KLIF presents a viable alternative while providing the advantage of indirect decompression, making it an attractive option for managing lumbar canal stenosis with instability. Further studies with larger sample sizes and longer follow-up are needed to validate these findings.

COMPARISON OF EARLY CLINICAL AND RADIOLOGICAL OUTCOMES BETWEEN PERCUTANEOUS POSTEROLATERAL TRANS-KAMBIN LUMBAR INTERBODY FUSION (KLIF) AND MINIMALLY INVASIVE TRANSFORAMINAL LUMBAR INTERBODY FUSION (MIS-TLIF)

Aim:
To compare early (3-month) clinical and radiological outcomes between percutaneous posterolateral trans-Kambin lumbar interbody fusion (KLIF) and minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF).

Materials and Methods:
We prospectively evaluated all patients who underwent KLIF or MIS-TLIF between April 2024 and August 2024. The cohort included patients with symptomatic Schizas grade B and C lumbar canal stenosis with instability, degenerative deformity, or lytic listhesis who had failed adequate conservative management. Radiological parameters assessed included pre- and post-operative disc height, foraminal height, segmental lordosis, and global lumbar lordosis, with each fusion level analyzed individually in multi-level procedures. Clinical parameters included pre- and post-operative Visual Analog Scale (VAS) scores for back and leg pain at 2 hours, 4 hours, 15 days, 1 month, and 3 months, as well as Oswestry Disability Index (ODI) scores at 15 days, 1 month, and 3 months. Subgroup comparisons were performed for single-level versus multi-level fusions. All patients followed a standardized mobilization protocol starting 4 hours post-surgery. Additional intra-operative metrics, such as estimated blood loss and surgical duration, and any adverse events were recorded. A 3-month timeframe was chosen to assess early outcomes.

Statistical Analysis:
Categorical variables were analyzed using the chi-squared test. Continuous variables were assessed using Student's t-test for parametric data and the Mann-Whitney U test for non-parametric data. Data normality was evaluated through skewness, kurtosis, and the Shapiro-Wilk test. Statistical analysis was performed using JASP 0.18 (University of Amsterdam).

Results:
Forty-five patients (median age: 62 years; 26 females, 19 males) underwent surgery: 20 patients (16 females, 4 males) underwent KLIF (45 levels), while 25 patients (15 females, 10 males) underwent MIS-TLIF (31 levels). There was no significant difference in age ($p = 0.557$), although the KLIF group had a significantly higher proportion of females ($p = 0.036$). Intra-operative parameters, including estimated blood loss ($p = 0.870$), mobilization time post-surgery ($p = 0.557$), and surgical duration ($p = 0.772$), were comparable between groups. No significant differences were observed in VAS scores for back or leg pain at any time point ($p = 0.533$, 0.333, 0.198, 0.544, and 0.188, respectively) or ODI scores at 15 days, 1 month, and 3 months ($p = 0.468$, 0.076, and 0.298). Radiological parameters, including changes in disc height, foraminal height, segmental lordosis, and global lordosis, were also comparable ($p = 0.453$, 0.400, 0.464, and 0.568). No significant intra-operative or early post-operative adverse even was recorded in either groups.

Conclusion:
Early post-surgical outcomes for KLIF were comparable to those of MIS-TLIF in terms of clinical and radiological parameters, with both techniques demonstrating safety. Longer follow-up and larger sample sizes are required to validate these early findings.

TRANSFORAMINAL PERCUTANEOUS ENDOSCOPIC LUMBAR DISCECTOMY (PELD), BIOPSY, AND DRAINAGE IN AN ADULT WITH TUBERCULOUS SPONDYLODISCITIS: A CASE REPORT

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Background:
Tuberculosis (TB) is a global disease entity that affects the pulmonary system and despite the rise in detection and treatment rates, a fraction still progresses to Extra-Pulmonary TB. With spinal involvement, patients commonly seek consult for complaints of debilitating pain and neurologic deficits. And for those who present atypically and with involvement of the least common areas such as the lumbar spine, there is a diagnostic and therapeutic dilemma. But with the advent of endoscopic spinal surgery, this can be addressed. The procedure is considered safe and effective.

Case Summary:
Patient is an adult female in her 30s who presented with severe, debilitating back pain. Location was midline and above the level of the iliac crests. Along with this, she also had intermittent febrile episodes. With no improvement in symptoms despite pharmacologic treatment and physical therapy, work up was done including appropriate imaging studies. Laboratory results pointed to an infectious pathology but findings on imaging studies presented with involvement of the vertebral bodies and intervertebral discs. With the atypical presentation of the patient, there was difficulty in proceeding with treatment.

Patient underwent transforaminal percutaneous endoscopic lumbar discectomy with biopsy and drainage under conscious sedation. Patient tolerated procedure well without complications and histopathologic diagnosis revealed tuberculosis prompting treatment with anti-koch's medications. Patient revovered and followed up serially with no complications. She was able to return to her previous occupation and with no recurrence of symptoms.

Conclusion:
Percutaneous transforaminal endoscopic spine surgery is a safe and effective for patients who present with an infectious pathology with diagnostic and therapeutic dilemma . Little to no complications can be expected intraoperatively and post-operatively while significantly decreasing the complication rate, the size of the incision, the length of stay, as well as accelerating the recovery rate from surgery.

Keywords: spondylodiscitis, lumbar spine, endoscopic, transforaminal