



2º ENDOSCOPIC COMBINED MEETING SBC

SOCIEDADE BRASILEIRA DE COLUNA

20 A 22 DE MARÇO DE 2025
NATAL - RN

HISTORY OF SPINE ENDOSCOPY

MARCH 25, 2025

PIL SUN CHOI

PIL SUN CHOI

- ❖ FOUNDING PRESIDENT OF BRAZILIAN ASSOCIATION FOR THE DEVELOPMENT OF MISS (BRAMISS/ABCMIC) - SINCE 2004
- ❖ FOUNDING PRESIDENT OF BRAZILIAN ASSOCIATION OF MISS (SBC-MISS/**CCMI**) - 2006/08
- ❖ COORDINATOR OF MISS GROUP OF ORTHOPEDIC INSTITUTE OF MEDICINE SCHOOL OF SÃO PAULO UNIVERSITY (2011-13)
- ❖ PRESIDENT OF III WCMISST (BRAZIL) 2012
- ❖ PRESIDENT OF INTERAMERICAN SOCIETY OF MISS (SICCMi) - 2016-17



DISCLOSURE

COMMITTED *(MY DREAM)*:

- PROVIDE THE BEST SPINE CARE TO OUR PATIENTS *(MINIMALLY INVASIVE & MAXIMALLY EFFECTIVE)*
- THE DEVELOPMENT OF SPINE SURGERY *(MINIMALLY INVASIVE SPINE SURGERY & TECHNIQUES)*

PIL SUN CHOI

OVERVIEW

HISTORY OF SPINE ENDOSCOPY IN THE WORLD



CONVENTIONAL TECHNIQUES x ENDOSCOPY TECHNIQUES

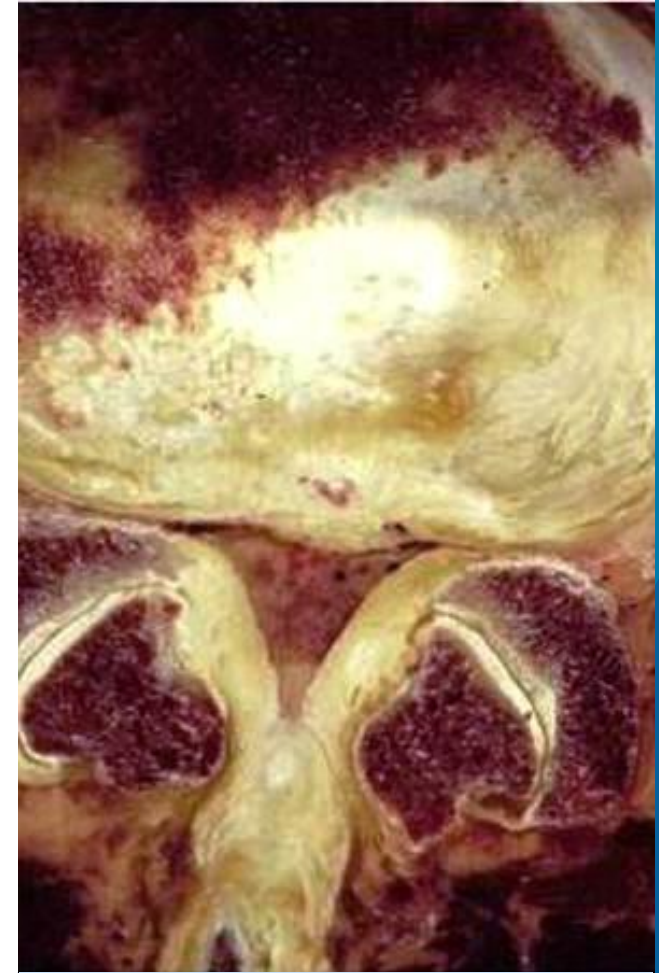
DEGENERATIVE DISEASE OF SPINE (HERNIA & STENOSIS)



DEGENERATIVE DISEASE OF
CERVICAL SPINE (CANAL
STENOSIS)

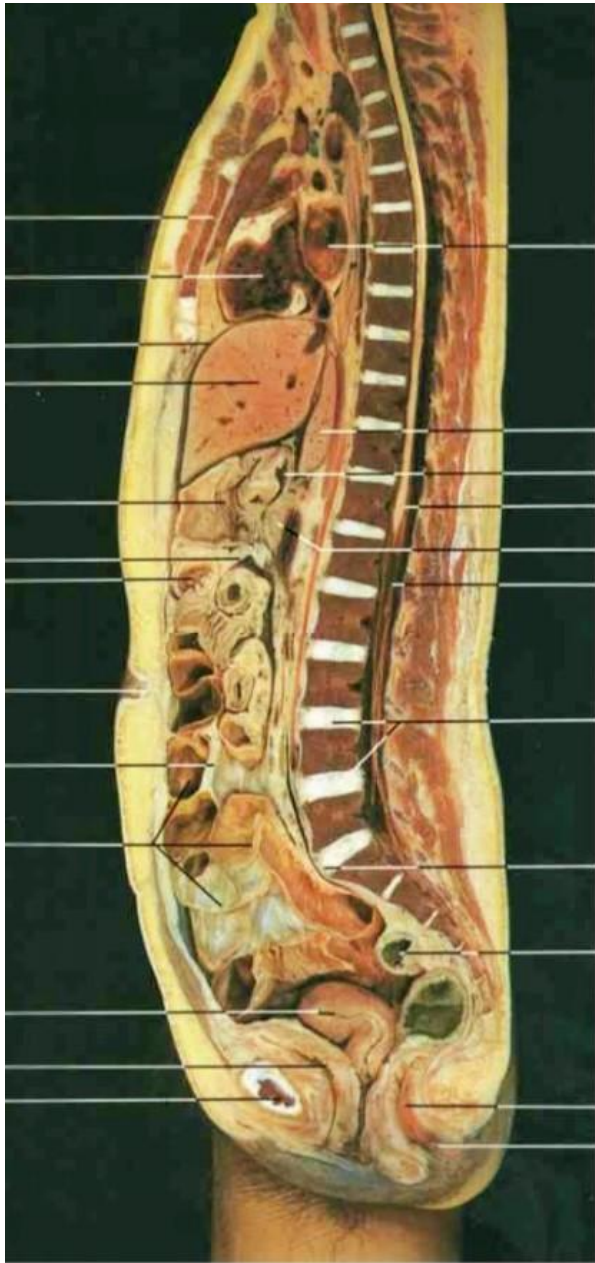


DEGENERATIVE DISEASE OF SPINE
(EXTRUDED DISC HERNIATION)

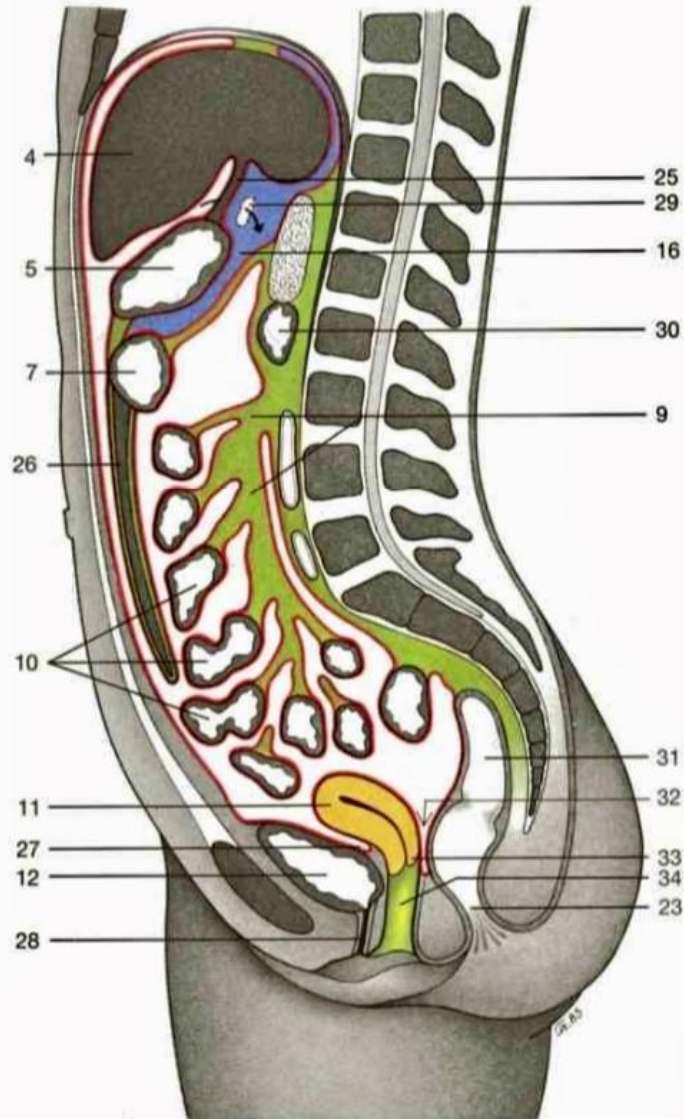


DEGENERATIVE DISEASE OF
LUMBAR SPINE (CANAL STENOSIS)

W. RAUSCHNING



Color Atlas of Anatomy
 A Photographic Study of the Human Body
 Rothen, Yokochi Lutjen-Drecoll



Anatomia Aplicada à Radiologia
 Convencional
 Departamento de Anatomia - ICB
 Universidade Federal de Juiz de Fora



Coluna vertebral

THE CHALLENGE IN THE SPINE SURGERY

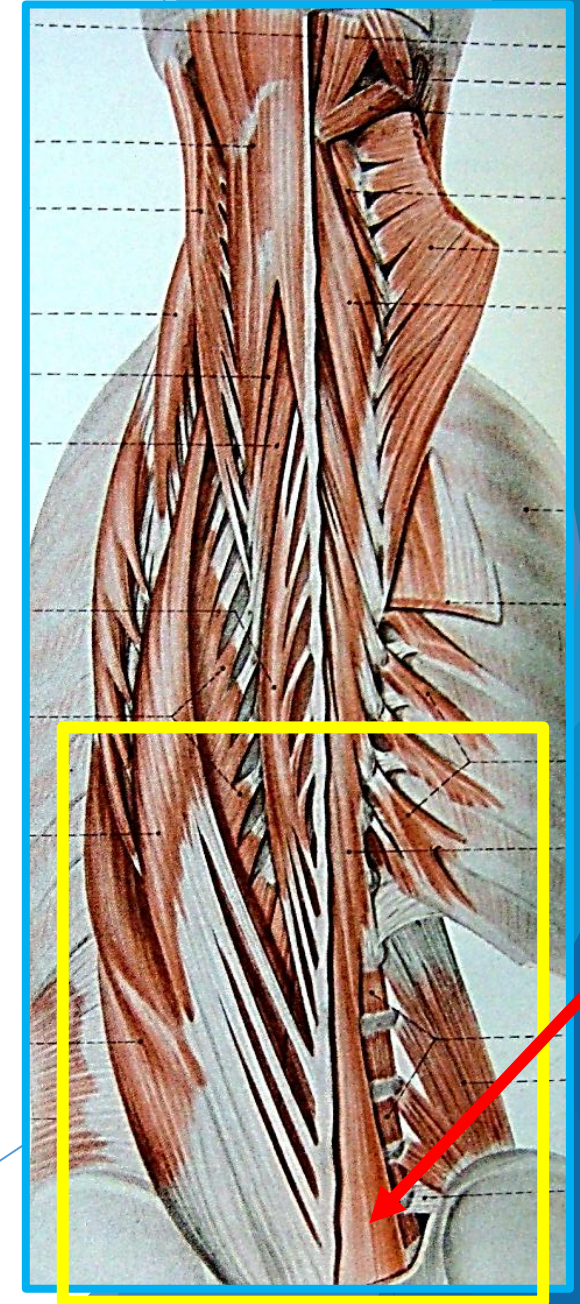
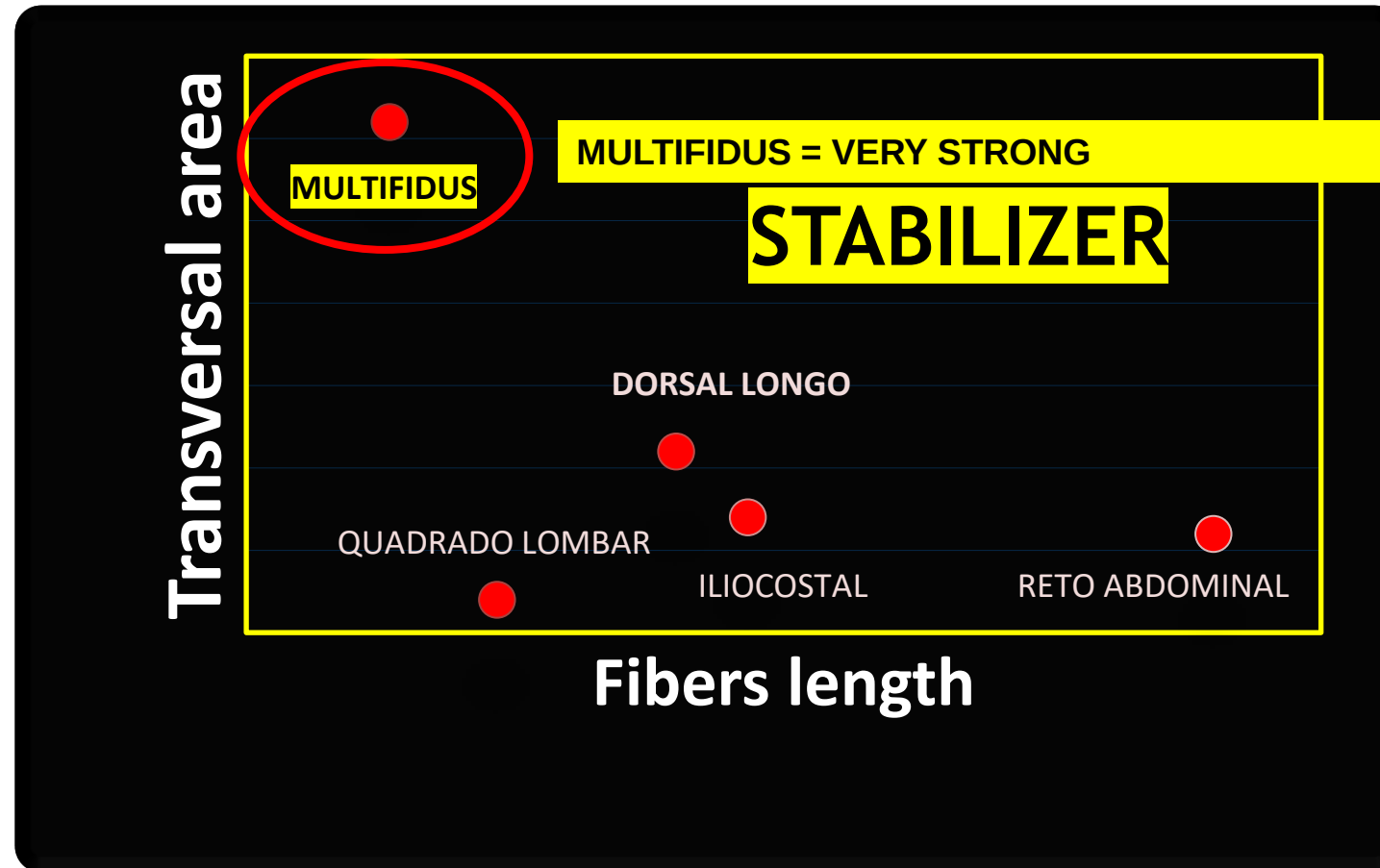


Wolfgang Rauschning
UPPSALA, Sweden

Architectural Analysis and Intraoperative Measurements Demonstrate the Unique Design of the Multifidus Muscle for Lumbar Spine Stability

By Samuel R. Ward, PT, PhD, Choll W. Kim, MD, PhD, Carolyn M. Eng, BS, Lionel J. Gottschalk IV, BS, Akihito Tomiya, MD, PhD, Steven R. Garfin, MD, and Richard L. Lieber, PhD

Investigation performed at the Departments of Orthopaedic Surgery, Radiology, and Bioengineering, University of California at San Diego and Veterans Administration Medical Centers, San Diego, California

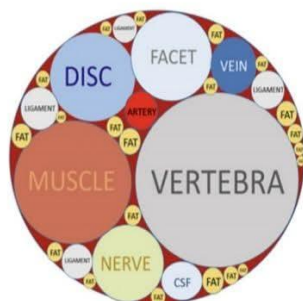


JMISST

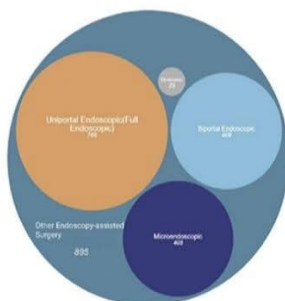
Journal of Minimally Invasive Spine
Surgery and Technique

eISSN 2508-2043
www.jmisst.org

Endoscopic Approach for Low Back Pain and Foraminal Pathologies
supported by KJT ESS Camp



SPINE



SPINOSCOPE

SPINE
ENDOSCOPIC
SURGERY

SPINOSPIC SURGERY
(DECOMPRESSION&FUSION)

TUBULAR SPINOSCOPIC
SURGERY
DESTANDAU SPINOSCOPIC
SURGERY & OTHERS

UNIPORTAL
BIPORTAL

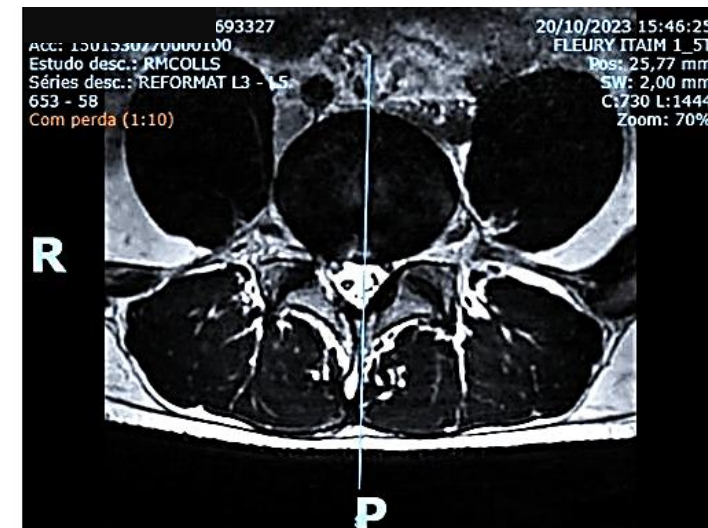
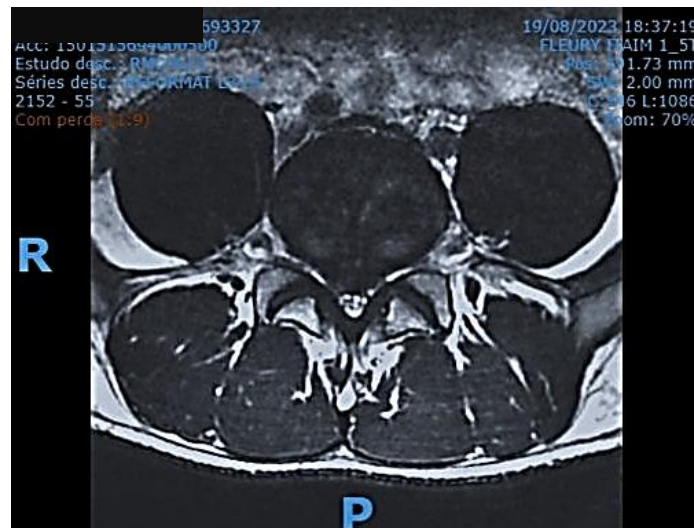
2025

2025

Volume 10 • Supplement 1 • January



CASE 1 - LUMBAR DISC HERNIATION (INTERLAMINAR SPINOSCOPIC SURGERY - uniportal)



CASE 2 - TWO LEVELS LUMBAR CANAL STENOSIS INTERLAMINAR SPINOSCOPIC SURGERY - uniportal

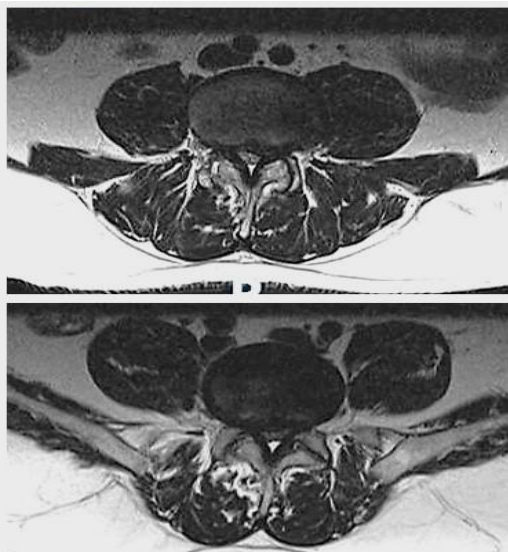
PRÉ



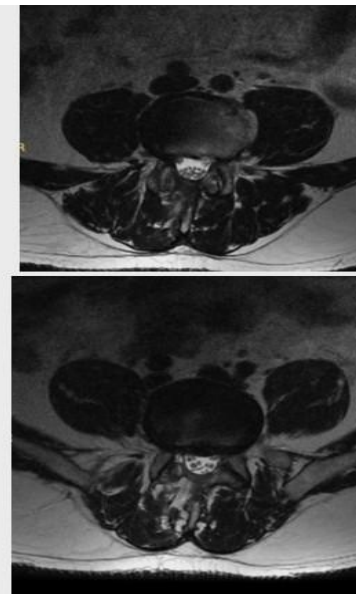
PÓS



PRÉ

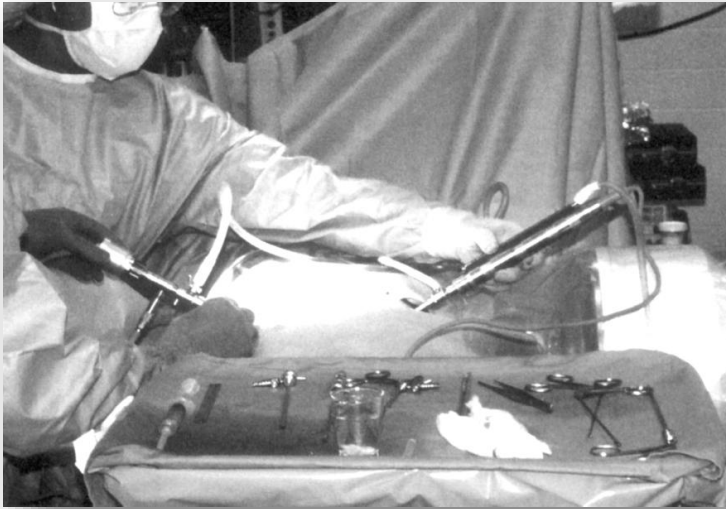


PÓS



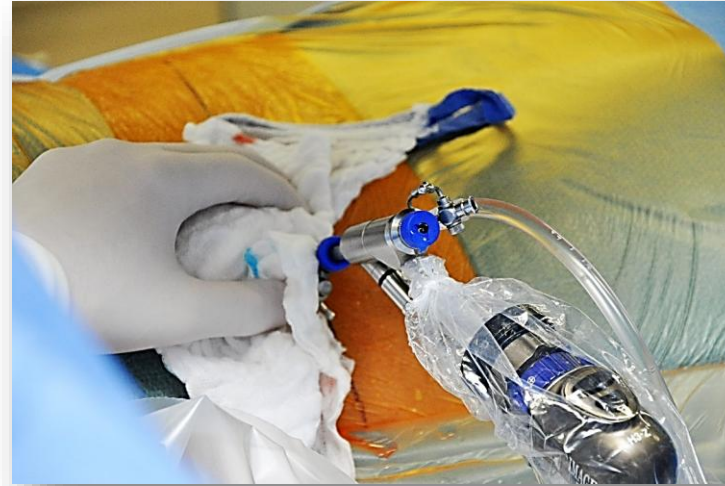
ESTENOSE DE CANAL L3-4 e L4-5

1992



PAVIZ KAMBIN, PENSILVANIA

2012



TRANSFORAMINAL

- PERCUTANEOUS
- **SPINOSCOPIC - uniportal**
- FULL

2002



HOSPITAL AACD, SÃO PAULO

2022



INTERLAMINAR

- PERCUTANEOUS
- **SPINOSCOPIC - uniportal**
- FULL

OPERATING ROOM



2025

HISTORY OF SPINE ENDOSCOPY IN THE WORLD

HISTORY OF LUMBAR SURGICAL DISCECTOMY (INTERLAMINAR)

EXPLORATORY LAMINECTOMY (Elsberg, 1916)

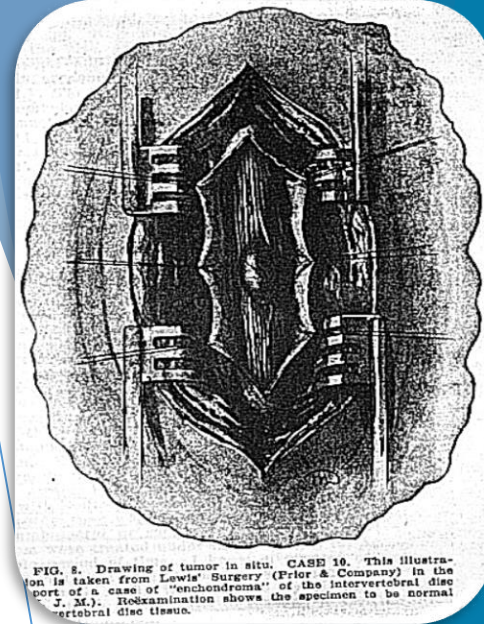
LIMITED LAMINECTOMY (Mixer & Barr, 1934)

ANTERIOR ACCESS (Lane & Moore, 1948)

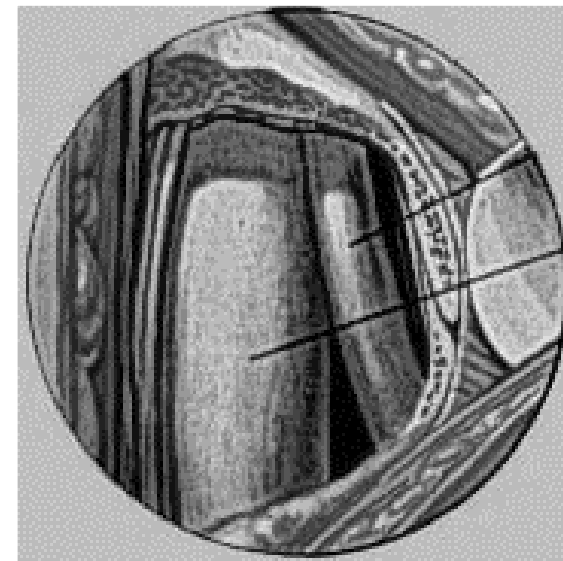
RETROPERITONIAL ANTERIOR ACCESS (Hult, 1951)

MICROSURGICAL (Yasargil, Carpar (1977), Williams (1978))

SPINOSCOPIC (U) & TUBULAR SPINOSCOPIC SURGERY (
Destandau, Ruetten, Gun Choi & Others,
1990/2020)



MIXTER & BARR, 1934



IPSILATERAL LIMITED LAMINECTOMY

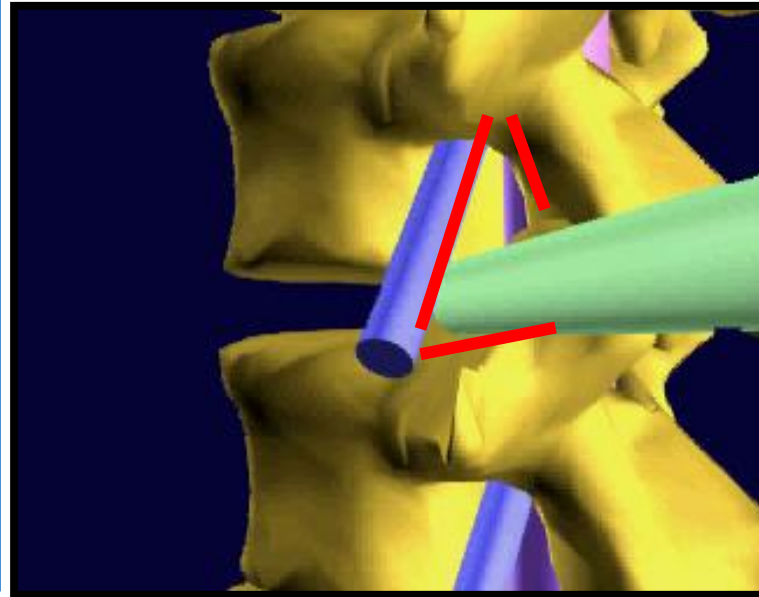
HISTORY OF LUMBAR PERCUTANEOUS DISCECTOMY (TRANSFORAMINAL)

- CHEMONUCLEOLYSIS (Smith & Brown, 1967):chemical
- MECHANICAL NUCLEOTOMY (Hijikata,1975): mechanical
- AUTOMATIC DISCECTOMY(Onik et al.,1985): aspirated
- LASER DISCECTOMY (Asher & Choi,1986): thermic
- **ARTHROSCOPIC MICRODISCECTOMY (Kambin,1992): mechanical**
- **VIDEOENDOSCOPIC MICRODISCECTOMY (2000): mechanical**
- NUCLEOPLASTY™ (2001): thermic
- DEKOMPRESSOR™ (2005): aspirated
- NUCLEOTOME™ (2005): aspirated
- DISC-FX SYSTEM™ (2008): thermic
- SPINEJET™ (2009): aspirated
- DIODE LASER (2010): thermic
- OTHERS

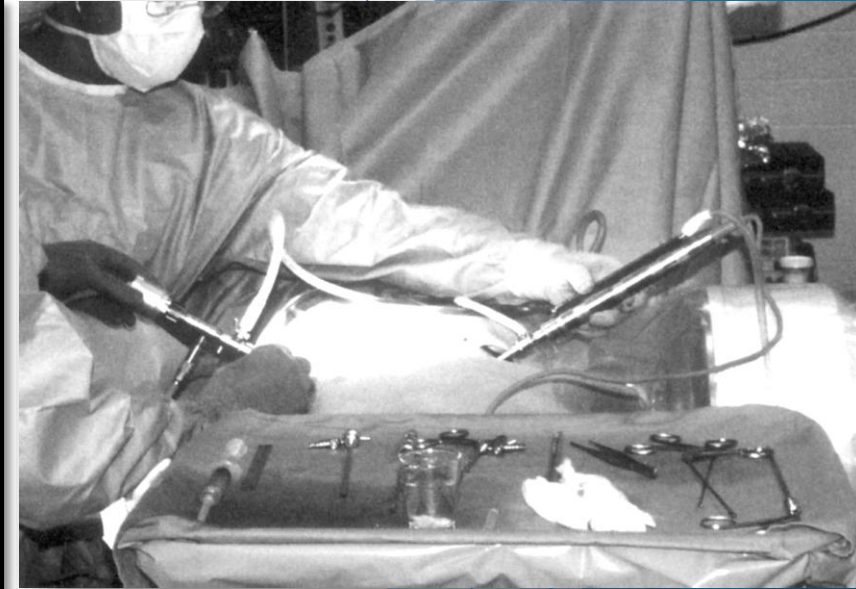
TRIANGULAR SAFE ZONE (KAMBIN'S SAFE ZONE)

TRIANGULAR **ENTRY** SPACE
IN THE FORAMEN
THROUGH WHICH THE
WORKING CANNULA CAN
BE SAFELY INTRODUCED
IN POSTEROLATERAL
PERCUTANEOUS
PROCEDURES

KAMBIN e BRAGER, Clin Orthop, 1987



FORAMINAL PORTAL

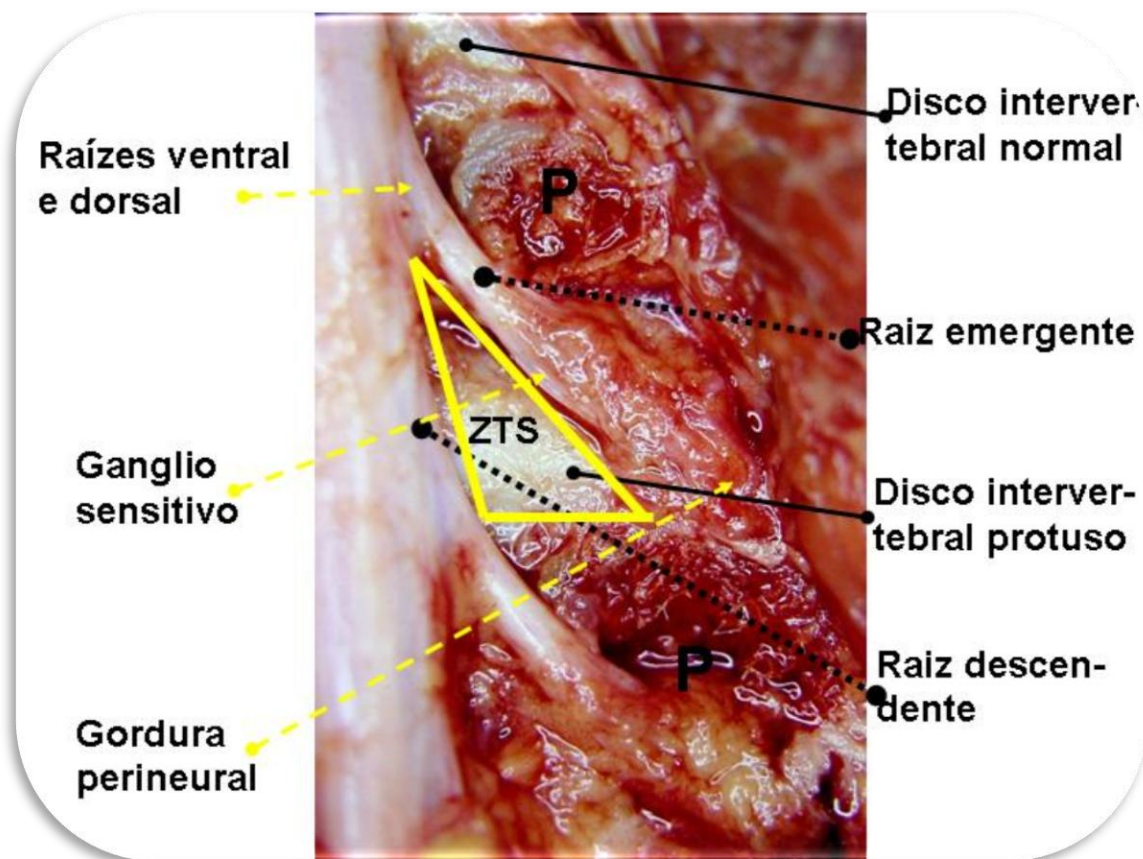
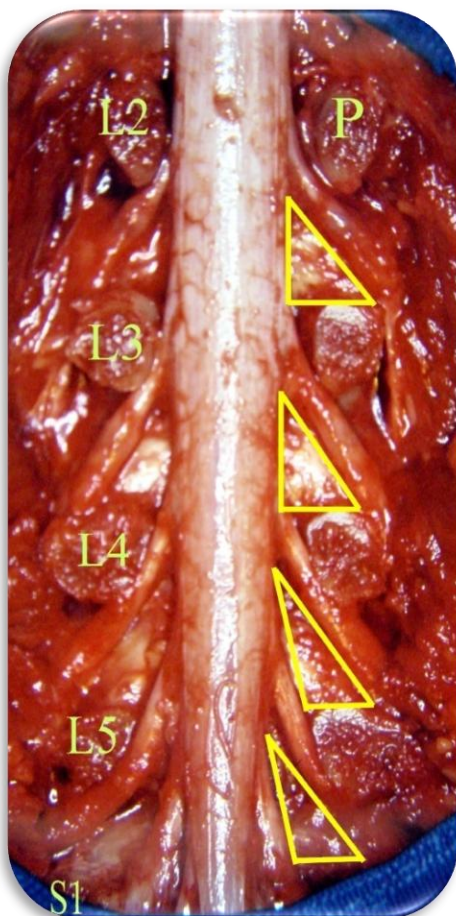


PARVIZ KAMBIN (1990)

TRIANGULAR PROCEDURE ZONE

HISTORY OF SPINE ENDOSCOPY IN BRAZIL

TRIANGULAR SAFE ZONE



Choi, P. S., Estudo anatômico da zona triangular de segurança aplicado aos procedimentos percutâneos pósteros-laterais lombares.
Thesis, Orthopedic Institute – University of São Paulo, 2000

Revista COLUNA; V. 2, N. 1, Abril 2003
<http://www.coluna.com.br/revistacoluna/>

CHOI, P. S. et al. Fundamental anatomic aspect of the lumbar foraminal zone Applied to the transforaminal procedures. In: ARVIND BHAVE, Modern Techniques in spine surgery, P.1-3, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, 2015

2000

LUMBAR SPINOSCOPIC (uniportal) SURGERY



Akira Dezawa, Pil S. Choi,
Parviz Kambim, Anthony Yeung
ISSM 2005



Hospital Abreu Sodré (AACD)
2001

TUBULAR SPINOSCOPIC SURGERY (DESTANDAU)



2002

ABCMIC/SBC-MISS



FOUNDATION: 2004

FOUNDING PRESIDENT: PIL SUN CHOI

FIRST NATIONAL ANNUAL SYMPOSIUM: **SIMINCO - 2004**

VENUE: HOSPITAL ROBERTO A. SODRÉ (AACD) - SÃO PAULO



FOUNDATION: 2005

FOUNDING PRESIDENT: PIL SUN CHOI

FIRST NATIONAL BIENNIAL CONGRESS (**COMINCO - 2008**)

SIMINCO

SIMINCO - INTERNATIONAL SYMPOSIUM OF MINIMALLY INVASIVE SPINE SURGERY

- ✓ **SHOWCASE OF NEW MINIMALLY INVASIVE SPINE SURGERIES AND TECHNIQUES**
- ✓ **MAIN FEATURE: LIVE SURGICAL DEMONSTRATIONS AND BROADCAST TO THE AUDITORIUM**



Jean Destandau 2004



Anthony
Yeung



Stephan Joubert 2006



Sang Ho Lee 2007



Gun Choi 2009



Thomaz Hoogland 2010



Hyeun Sung Kim 2012



Jeffrey Wang 2016



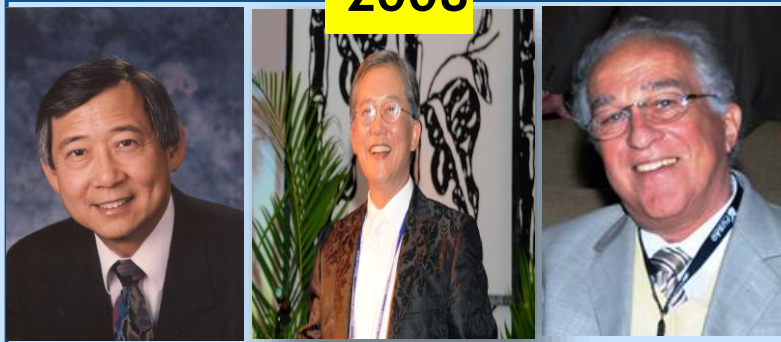
Sang Kyu Son 2018

COMINCO -GLOBAL LEADERS

COMINCO - BRAZILIAN CONGRESS OF MINIMALLY INVASIVE SPINE SURGERY

MAIN CHARACTERISTIC - INTEGRATION OF THE MAIN NATIONAL SPINE ENTITIES: BRAZILIAN PAIN SOCIETY (**SBED**), BRAZILIAN ORTHOPEDICS SOCIETY (**SBOT**) AND BRAZILIAN NEUROSURGERY SOCIETY (**SBN**); AND INTERNATIONAL MISS ENTITIES (**IITS**, **IMLAS**, **ISMISS**, **SICCM**, **SMISS**) ALONG SIDE HIGH SCIENTIFIC LEVEL

2008



ANTHONY YEUNG SANG HO LEE MARIO BROCK

2010



HANSJOERG LEU JEAN DESTANDAU RICHARD FESSLER

2012



GILLES DUBOIS JOHN CHIU KEVIN FOLEY

2014



THOMAZ HOOGLAND PIL SUN CHOI JOSÉ SORIANO

2016



HYEUN SUNG KIM LUIZ PIMENTA JORGE RAMIREZ

Renowned surgeons who, somehow, whether by teaching, researching, assisting or promoting surgeries and minimally invasive spine techniques, have encouraged the development of the specialty worldwide

FELLOWSHIP- CCMI/SBC-MISS

GERMANY (2009-2014)

Service of Prof. Dr. Uwe Vieweg

Location: Leopoldina Krankenhaus, Schweinfurt

Duration: 6 months

Scholarship: AESCULAP

SOUTH KOREA (2008-2013)

Service of Prof. Dr. Sang Ho Lee

Location: Wooridul Spine Hospital (WSH) in Seoul, South Korea (www.wooridul.com)

Duration: 01 year

Scholarship: WSH

UNITED STATES (2014-2018)

NASS President: Jeffrey Wang

Location: several U.S. universities

Duration: 3 months

Scholarship: NASS



2010-



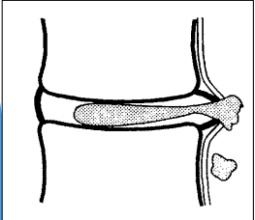
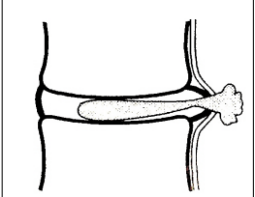
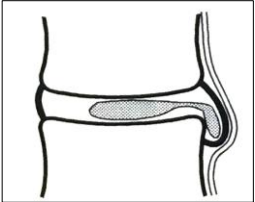
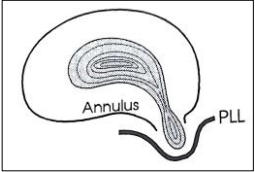
2012

THE STATE OF THE ART

LUMBAR SPINOSCOPIC (uniportal) SURGERY

TRANSFORAMINAL

CONTAINED DISC
EXTRUSION



NON CONTAINED



Lee SH et al. ,Mt Sinai J Med (2006)

✓ LUMBAR
✓ TORACIC

LIMITATIONS: LARGE CENTRAL DISC HERNIATION
AND CENTRAL AND SUBARTICULAR CANAL
STENOSIS

LUMBAR SPINOSCOPIC (uniportal) SURGERY (TRANSFORAMINAL)

- CHALLENGING TECHNIQUE
- SURGEON MUST BE SKILLFUL
- NOT SO EASILY REPRODUCIBLE
- SOME TECHNICAL & CLINICAL LIMITATIONS

GIBSON JNA ET AL., EURO SPINE J MED (2017)
RANDOMIZED CONTROLLED TRIAL TED X MICRODISCECTOMY.
A GREATER REVISION RATE AFTER TED WAS OFFSET BY A MORE RAPID RECOVERY

PUBMED

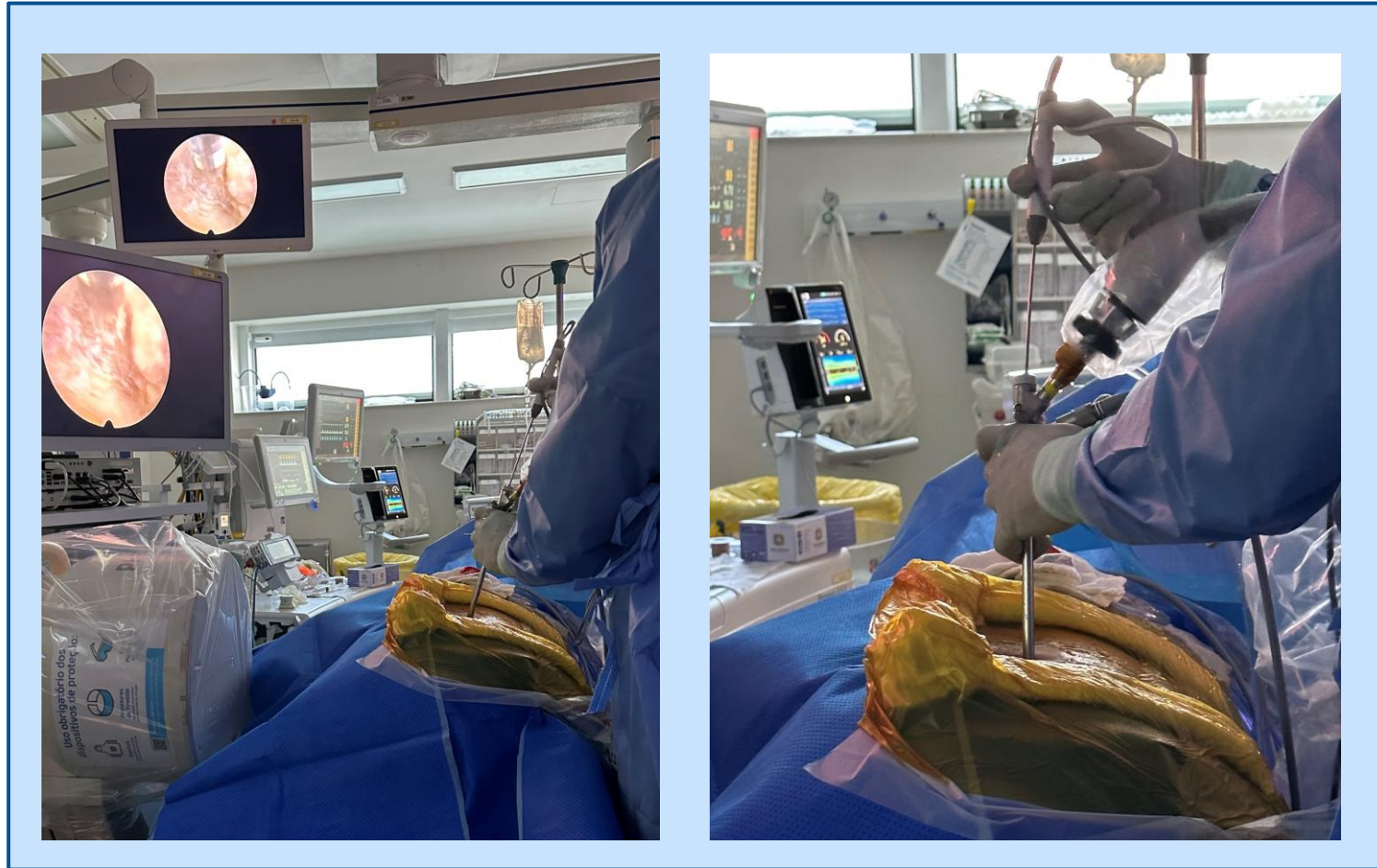
LAST 36 YEARS: 1014 PUBLICATIONS

2018/2019: 100 PUBLICATIONS (85 ASIAN)

CHINA: 57 (67%)/OTHERS (SOUTH KOREA, JAPAN, INDIA, ITALY, BRAZIL, ETC.)

LUMBAR SPINOSCOPIC (uniportal) SURGERY

INTERLAMINAR



- ✓ LUMBAR
- ✓ CERVICAL
- ✓ TORACIC

COMPLETES THE CLINICAL LIMITATIONS OF TRANSFORAMINAL ACCESS & IT IS REPLACING THE MICROSCOPIC TECHNIQUES

Contraindications and Complications of Full Endoscopic Lumbar Decompression for Lumbar Spinal Stenosis: A Systematic Review
Chang-Il Ju, Pius Kim, Sang-Woo Ha, Seok-Won Kim, Seung-Myung Lee World Neurosurg. (2022) 168:398-410.

LUMBAR SPINOSCOPIC (uniportal) SURGERY

(INTERLAMINAR)

- ✓ TECHNICALLY MORE FAMILIAR THAN TRANSFORAMINAL TECHNIQUE
- ✓ SHORTER LEARNING CURVE IF COMPARED TO TRANSFORAMINAL TECHNIQUE
- ✓ TECHNOLOGICAL DEVELOPMENT (INSTRUMENTAL, ENDOSCOPE, TV MONITOR, DRILL, RADIO FREQUENCY, ETC.)
- ✓ COMPLETE THE TRANSFORAMINAL TECHNIQUE
- ✓ LESS INVASIVE OPTION THAN TUBULAR SPINOSCOPIC SURGERY (DESTANDAU, METRIX & MICROSCOPIC TECHNIC)

Cost analysis comparison between conventional microsurgical decompression and full-endoscopic interlaminar decompression for lumbar spinal stenosis surgery
Prudence Wing Hang Cheung¹, Carlos King Ho Wong^{2,3}, Sin Ting Lau¹, Jason Pui Yin Cheung^{1,4}
J Spine Surg 2020;6(4):721-728

Contraindications and Complications of Full Endoscopic Lumbar Decompression for Lumbar Spinal Stenosis: A Systematic Review
Chang-Il Ju, Pius Kim, Sang-Woo Ha, Seok-Won Kim, Seung-Myung Lee; *World Neurosurg.* (2022) 168:398-410.

**HUGE INTEREST AND
INCREASE IN SPINOSCOPIC
SURGERY IN BRAZIL
SINCE 2021**

**ENDOSCOPIC SPINE
SURGERY ENTERED TO
THE LIST OF
PROCEDURES OF
MANDATORY COVERAGE
OF THE BRAZILIAN
NATIONAL HEALTH
AGENCY (ANS) IN
04/01/2021**

**NORMATIVE
RESOLUTION - RN 465, IN
FEBRUARY 24, 2021**

WHEN WE ACCEPT OUR LIMITS, WE CAN GO BEYOND THEM
(ALBERT EINSTEIN)

THANK YOU VERY MUCH