

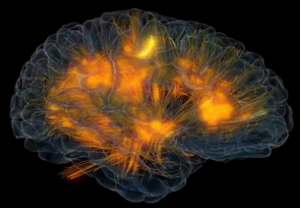




LUMBAR DISC HERNIA IN PEDIATRIC POPULATION

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- The presentation is original in its entirety and has never been published before.















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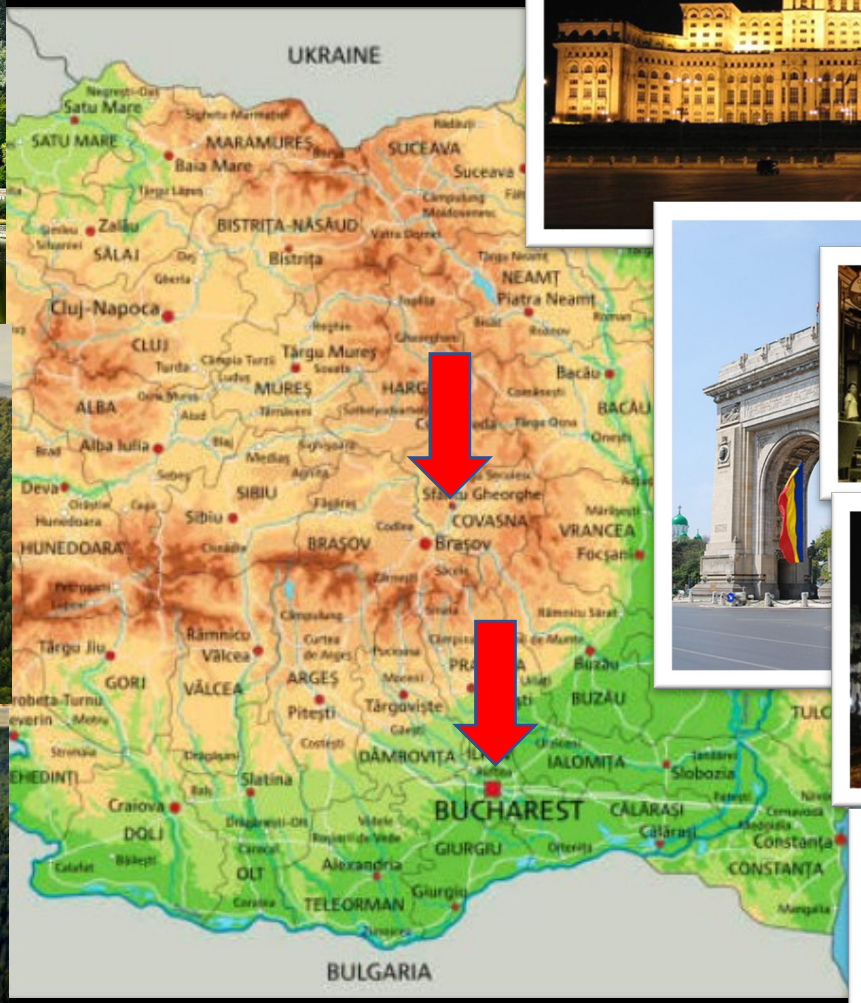
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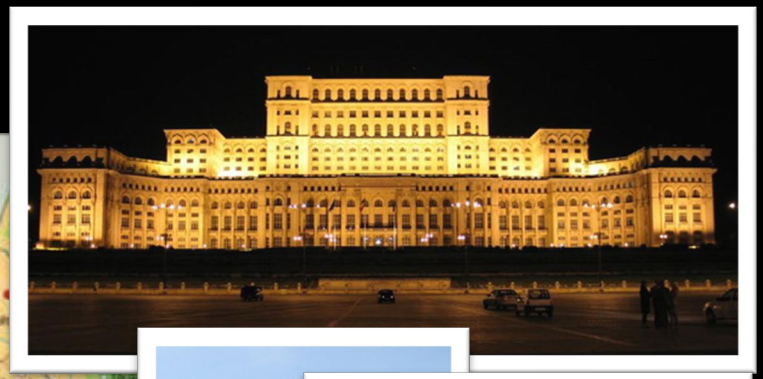
GEOGRAPHIC DATA

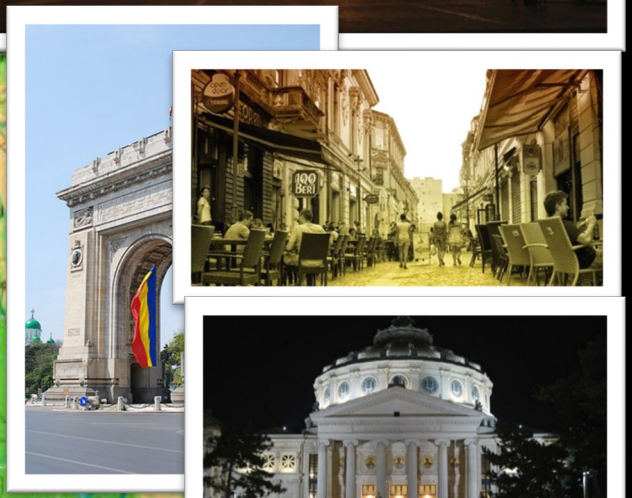














SUMMARY

1. Lumbar Back Pain in Children (LBP)

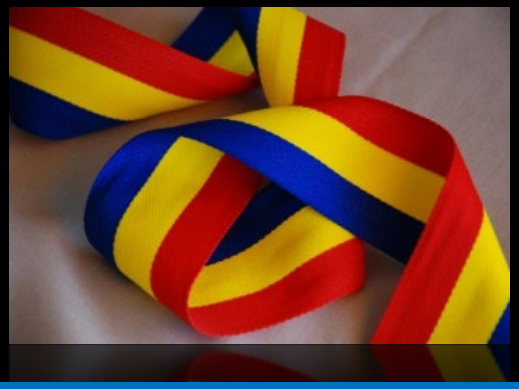
2. Lumbar Disc Hernia in Children (LDH)

   - General Data
   - Study Group
   - Neuroimaging
   - Operatory Management
     a) Microdiscectomy
     b) Nucleoplasty
     c) Endoscopic
   - Complications

3. Follow-up & Conclusions







LOW BACK PAIN

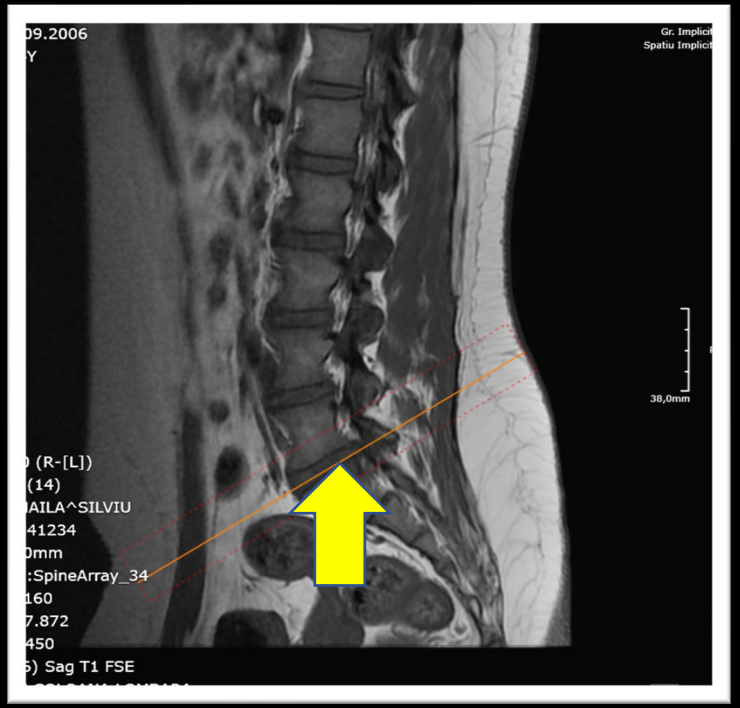


- ✓LOW BACK PAIN - "HIGH - PROFILE SYMPTOM" IN DEVELOPED SOCIETIES
- ✓15 - 45% / YEAR PREVALENCE
  - About 70% of population will have an episode of low back pain over a lifetime
- ✓5 % EVERY YEAR INCIDENCE
- ✓35 – 55 YEARS - AGES MOST AFFECTED

LBP - DIFFERENTIAL DIAGNOSIS OF LOMBOSCIATICA

INTRASPINAL CAUSES

- **Proximal to disc-conus and cauda equina lesions (neurofibroma, ependimoma)**
- **Disc & vertebral level:**
  - **Herniated nucleus pulposus**
  - **Stenosis (canal or recess)**
  - **Infection-osteomyelitis or discitis**
  - **Inflamation-arachnoiditis**
  - **Neoplasm-benign or malignant.**



LDH – BACKGROUND

- **First pediatric lumbar disc herniation:** reported in 1946

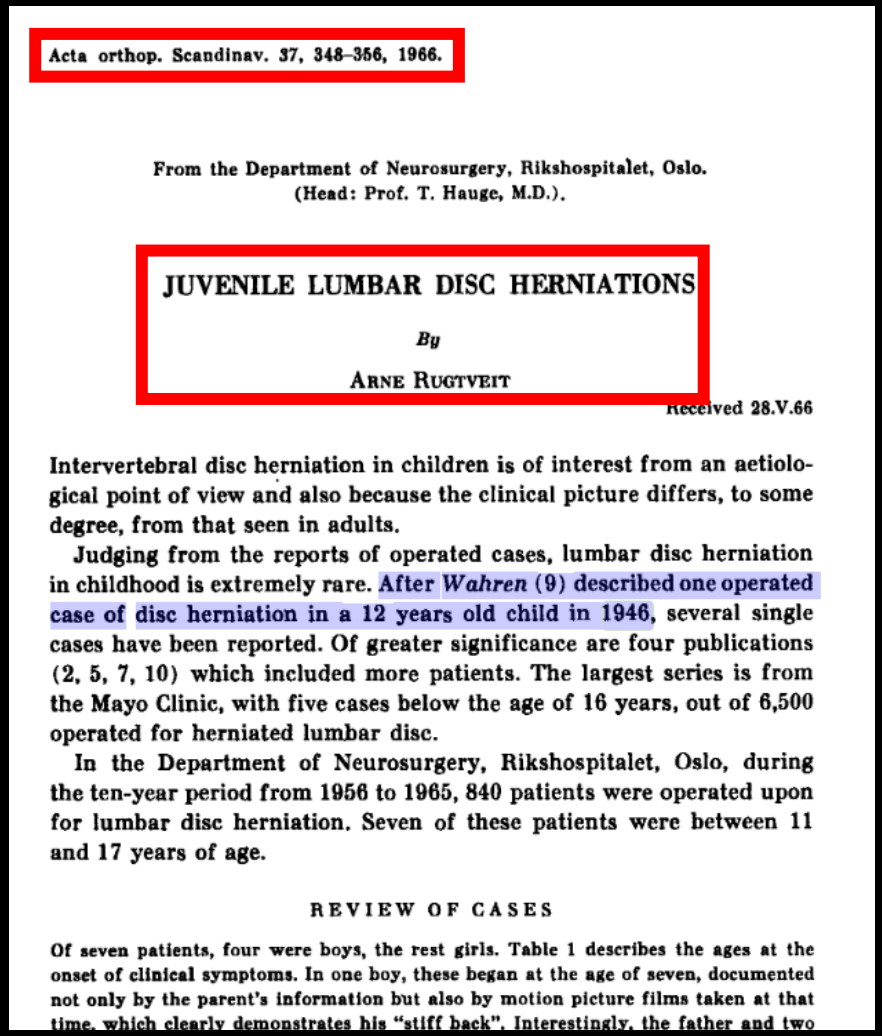
- **Current literature:** limited publications on the subject

- **Possible explanations:**

Few pediatric neurosurgeons

Large case series are rare

Epidemiological data in Romania is unknown



Acta orthop. Scandinav. 37, 348–356, 1966.

From the Department of Neurosurgery, Rikshospitalet, Oslo.
(Head: Prof. T. Hauge, M.D.).

JUVENILE LUMBAR DISC HERNIATIONS

By

ARNE RUGTVEIT

Received 28.V.66

Intervertebral disc herniation in children is of interest from an aetiological point of view and also because the clinical picture differs, to some degree, from that seen in adults.

Judging from the reports of operated cases, lumbar disc herniation in childhood is extremely rare. After *Wahren* (9) described one operated case of disc herniation in a 12 years old child in 1946, several single cases have been reported. Of greater significance are four publications (2, 5, 7, 10) which included more patients. The largest series is from the Mayo Clinic, with five cases below the age of 16 years, out of 6,500 operated for herniated lumbar disc.

In the Department of Neurosurgery, Rikshospitalet, Oslo, during the ten-year period from 1956 to 1965, 840 patients were operated upon for lumbar disc herniation. Seven of these patients were between 11 and 17 years of age.

REVIEW OF CASES

Of seven patients, four were boys, the rest girls. Table 1 describes the ages at the onset of clinical symptoms. In one boy, these began at the age of seven, documented not only by the parent's information but also by motion picture films taken at that time, which clearly demonstrates his "stiff back". Interestingly, the father and two

Ciurea et al. 2026

SPINE SURGERY – GENERAL DATA

Spinal Sugery, made classic/minim invasive, means frequent, demanding high risks procedures, performed on many patients (for old people), as a condition:

- **To improve the patients status.**
- **Avoiding neurologic threatening of neurologic spine function.**
- **Performed for: trauma, degenerative, infectious, vascular, instability, functional procedures – especially for pain.**



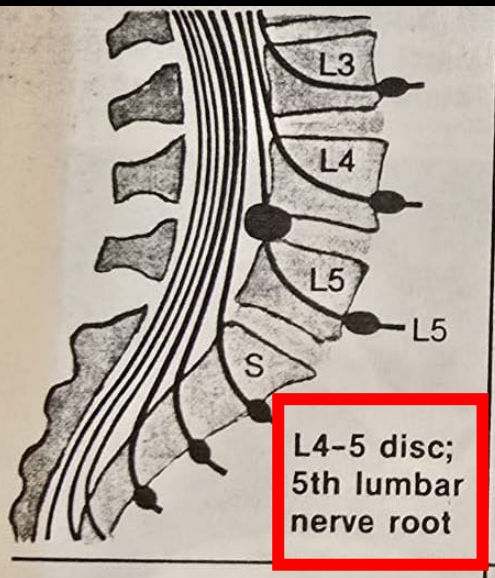
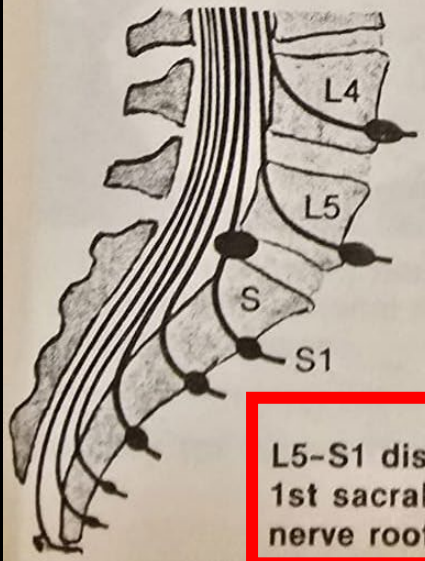
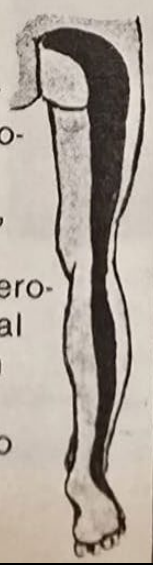
LUMBAR DISK HERNIATION IN CHILDREN - OLD DATA

TABLA I. Proporción de hernias discales en niños/adultos

Autor, año	Niños	Adultos	%
DeOrio y cols., 1982	50	1.368	3,6%
Ebersold, 1987	74	2.467	3%
O'Connell, 1960	38	1.200	3,2%
Zucker y cols., 1987	102	12.721	0,8%
Martínez-Lage y cols., 1997	17	1.243	1,2%

J.F. Martinez-Lage, F. Lopez Hernandez,
"Hernia discal en ninos y adolescents" 2001

LUMBAR DISK HERNIATION – CLINICAL FEATURES

 **L4–5 disc; 5th lumbar nerve root**	 Over sacro-iliac joint, hip, lateral thigh and leg	 Lateral leg, web of great toe	 Dorsifexion of great toe and foot; difficulty walking on heels; foot drop may occur	Minor	Changes uncommon (absent or diminished posterior tibial reflex)
 **L5–S1 disc; 1st sacral nerve root**	 Over sacro-iliac joint, hip, postero-lateral thigh and leg to heel	 Back of calf; lateral heel, foot and toe	Plantar flexion of foot and great toe may be affected; difficulty walking on toes	 Gastrocne-mius and soleus	 Ankle jerk diminished or absent

SUMMARY

1. Lumbar Back Pain in Children (LBP)

2. Lumbar Disc Hernia in Children(LDH)

   - General Data
   - Study Group
   - Neuroimaging
   - Operatory Management
     a) Microdiscectomy
     b) Nucleoplasty
     c) Endoscopic
   - Complications

3. Follow-up & Conclusions



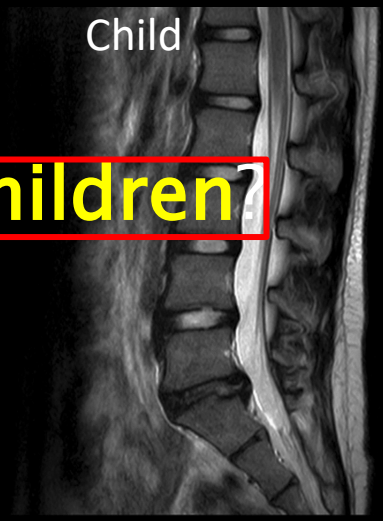




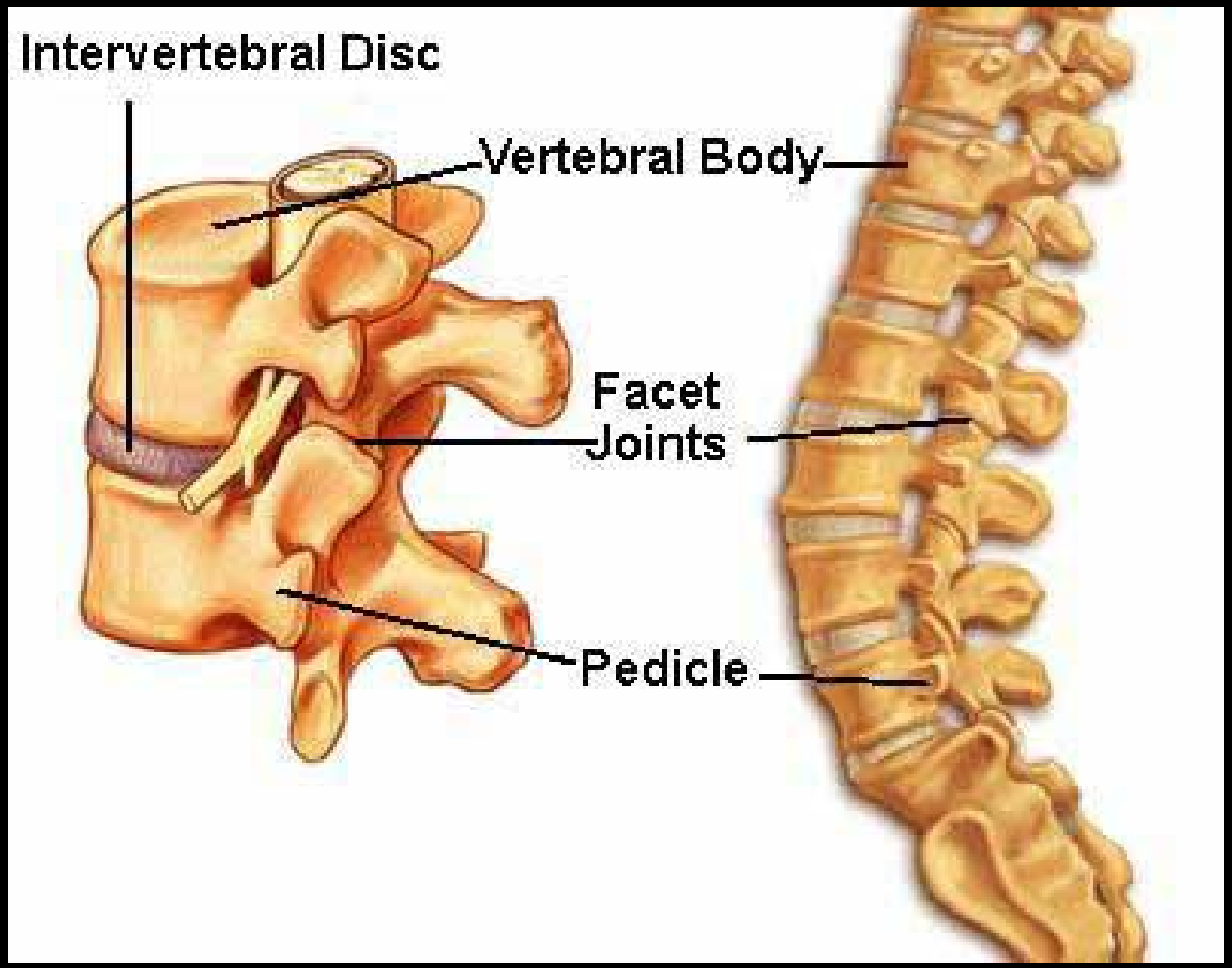
LOMBAR DISC HERNIATION - QUESTIONS



- **Low Back Pain** – incidence & diagnosis?
- Complete & best neuroimaging?
- LDH **operative timing & approach in children**?
- Guide-lines in LDH?
- Macro or **microdiscectomy**?
- What means **nucleoplasty** and **disc coblation**?
- Value of **endoscopic** microdiscectomy?

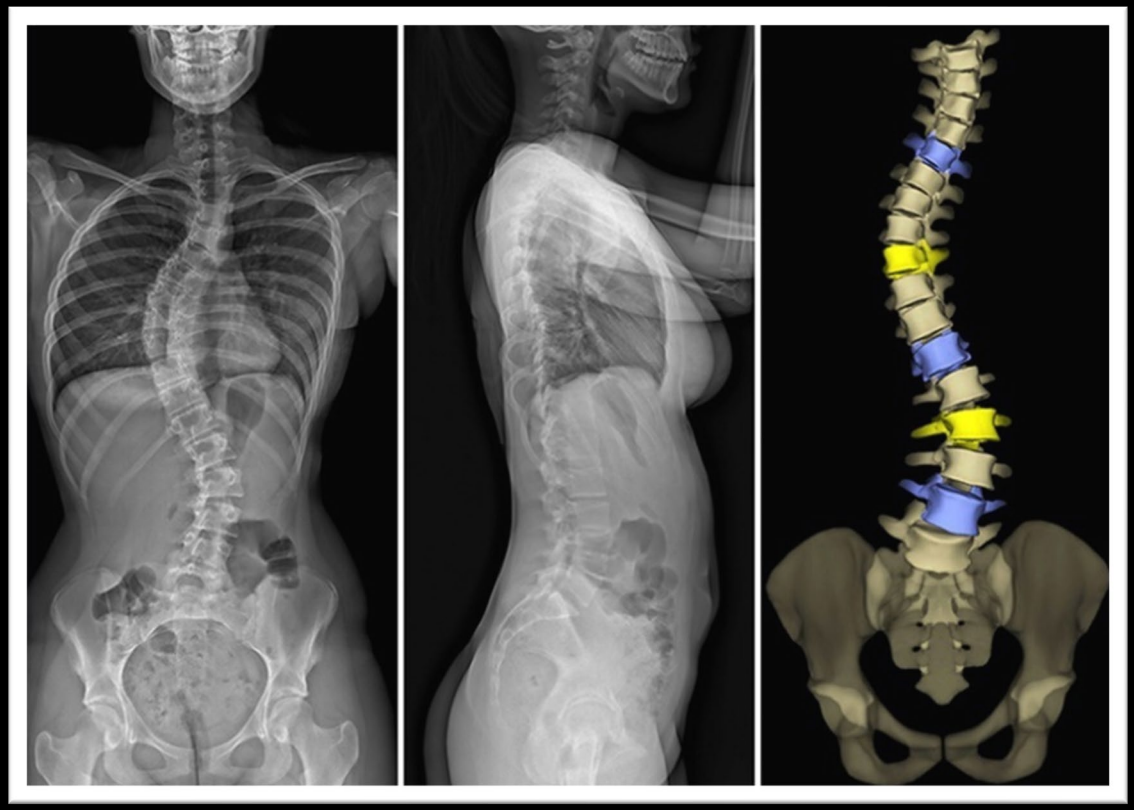


NORMAL SPINE ANATOMY



CONGENITAL SCOLIOSIS

ORTHOPEDIC SPECIALITY



IMPORTANT PROBLEM IN CHILDREN!!!

LDH – CLINICAL STAGES



STAGE 1: Less irritative

STAGE 2: More irritative, less compressive

STAGE 3: Compressive component

STAGE 4: Neurological deficit

OPERATORY STAGE

LDH - CLASSIFICATION



Key Clinical Classifications

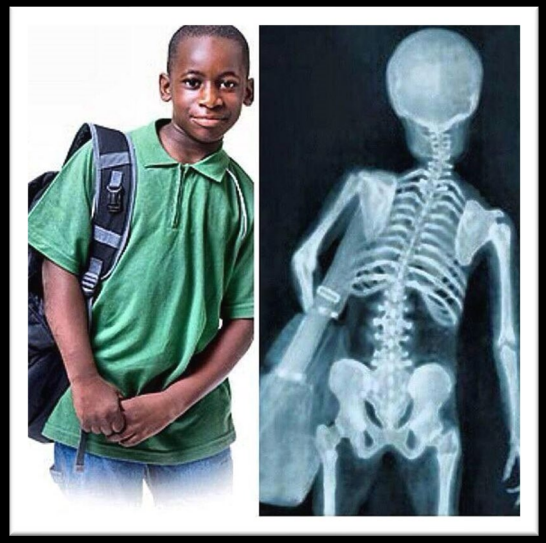
1. Medical Research Council (MRC) Scale – Muscle Strength (1943)
2. De Seze (1957) – 4 Phase
3. ASIA Classification (1982) – Impairment Scale (AIS)
4. MSU Classification (Michigan State University Classification) (2010)

IMPORTANT ETHIOLOGY
LOW BACK PAIN/LDH-PEDIATRIC POPULATION











LDH - CLASSIFICATION

Medical Research Council (MRC) Scale – Muscle Strength (1943)
Scale used to assess muscle strength.



De Seze (1957) – 4 phase
Four-phase clinical classification system.

ASIA Classification – Impairment Scale
Scale used to assess neurological impairment in spinal cord injury.

MSU (Michigan State University Classification)
Classification used to describe lumbar disc herniation.

LDH - CLASSIFICATION

Medical Research Council (MRC) Scale – Muscle Strength (1943)

MRC Muscle Power Scale

Score	Description
0	No contraction
1	Flicker or trace of contraction
2	Active movement, with gravity eliminated
3	Active movement against gravity
4	Active movement against gravity and resistance
5	Normal power

Medical Research Council. *Aids to the Examination of the Peripheral Nervous System.* London: Medical Research Council; **1943–1945**.

LDH - CLASSIFICATION



De Seze (1957) – 4 phase:

- Phase I: disorganization of nucleus pulposus
- Phase II: fragments posterior migration
- **Phase III: fragments herniation in vertebral channel**
  - Std. I: radicular iritative state
  - Std. II: radicular partial compression
  - Std. III: radicular total compression
- Phase IV: degeneration vertebro-discal

> Sem Hop. 1957 May 10;33(28):1773-96.

[Paralytic sciatica; clinical pathogenic & therapeutic study based on 100 cases]

[Article in French]

S DE SEZE, J GUILLAUME, R DESPROGES-GOTTERON, S H JURMAND

PMID: 13442706

LDH - CLASSIFICATION

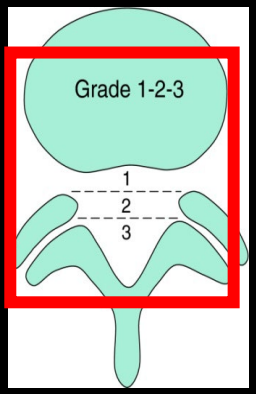
ASIA CLASSIFICATION – IMPAIRMENT SCALE

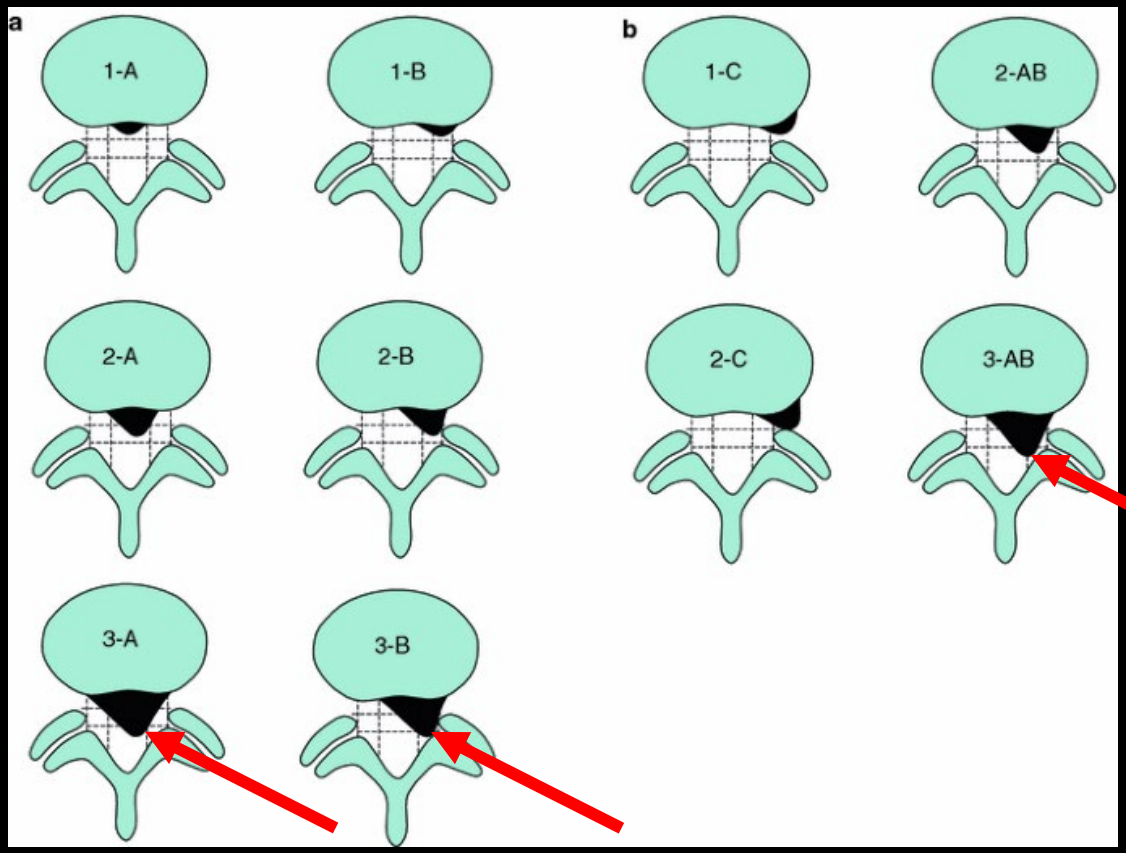
ASIA Impairment Scale		
A	Complete	No motor, no sensory, no sacral sparing
B	Incomplete	No motor, sensory only
C	Incomplete	50% of muscles LESS than grade 3 (can't raise arms or legs off bed)
D	Incomplete	50% of muscles MORE than grade 3 (can raise arms or legs off bed)
E	Normal	Motor and sensory function are normal

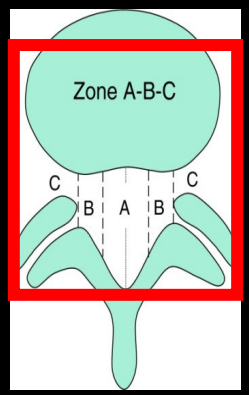
American Spinal Injury Association. *Standards for Neurological Classification of Spinal Cord Injury Patients.* Chicago, IL: American Spinal Injury Association **1982**.

LDH - CLASSIFICATION

MSU (MICHIGAN STATE UNIVERSITY CLASSIFICATION)







Mysliwiec L.W. et al., MSU Classification for herniated lumbar discs on MRI: toward developing objective criteria for surgical selection. Eur Spine J. 19(7): 1087-1093 2010

LDH - CLASSIFICATION

MSU (MICHIGAN STATE UNIVERSITY CLASSIFICATION)

INTERNATIONAL JOURNAL of SPINE SURGERY

this article ISASS the Journal submit

Int J Spine Surg. 2021 Jun 1;15(3):466–470. doi: 10.14444/8068

Prognostic Value of Michigan State University (MSU) Classification for Lumbar Disc Herniation: Is It Suitable for Surgical Selection?

Manuela D'Ercole [1,✉], Gualtiero Innocenzi [2], Francesco Ricciardi [2], Simona Bistazzoni [3]

Author information Article notes Copyright and License information

PMCID: PMC8176838 PMID: 33963037

INTERNATIONAL VALIDATED SCALE

SUMMARY

1. Lumbar Back Pain in Children (LBP)

2. Lumbar Disc Hernia in Children (LDH)

   - General Data
   - Study Group
   - Neuroimaging
   - Operatory Management
     a) Microdiscectomy
     b) Nucleoplasty
     c) Endoscopic
   - Complications

3. Follow-up & Conclusions







LDH - STUDY GROUP

I.

LDH – PEDIATRIC CASE SERIES

IMPORTANT LITERATURE DATA IN PEDIATRIC PATIENTS

Study / Year	Pediatric Cases (LDH)	Study Period	Notes
Mayo Clinic – 1966	5	—	6500 total LDH operated cases
Hauge et al. – 1966	7	—	840 operated LDH patients
Garrido et al. – 1993	38	20 years	—
Shilito et al. – 1996	60	37 years	20 patients <15 years
Kumar et al. – 2007	25	11 years	—
Cahill et al. – 2009	87	10 years	—
Nica; Ciurea et al. – 2025	18	9 years	90 low-back pain

LDH - STUDY GROUP

Nica; Ciurea et al. – 2025

Grigore Alexandrescu Children's Emergency Clinical Hospital Bucharest



Study period: 9 years

- Total hospitalized patients: 90 low back pain
- Surgical cases: 18 (20%)
- Non-surgical cases: 72 (80%)

- Sex distribution:
- Girls: 60
- Boys: 30
- F/M ratio: 2:1

- Localization
- L5/S1 LOW BACK PAIN – 26 cases (29%)

Level of protrusion	Number of cases	Surgery recommended (prolapse and defficit)
T11-T12	1	0
L1-L2	2	0
L3-L4	1	0
L4-L5	14	4 cases
L5-S1	26	10 cases (1 case was operated elsewhere)
S1-S2	1	0
Multiple levels	2	0
Nonspecific images	31	0

LDH - STUDY GROUP

Nica; Ciurea et al. – 2025



Total hospitalized patients: 90 low back pain

IMAGISTIC DISCOVERY: MRI

Grigore Alexandrescu Children's Emergency Clinical Hospital Bucharest

Diagnosis	Number of cases	Percentage (of all cases)
Degenerative spondylolisthesis	2 cases	2.5% (of all cases)
Lumbar canal stenosis	4 cases	5%
Foraminal stenosis	3 cases	3.8%
Spondilodiscitis	2 cases	2.5%
Lumbar hyperlordosis	1 case	1.2%
Scoliosis	4 cases	5%
Spina bifida occulta	2 cases	2.5%

LDH - STUDY GROUP

Nica; Ciurea et al. – 2025

Study period: 9 years
Number cases: 18

- Age range: 6–17 years
- Mean age: 14.71 years

- Follow-up:
- 4 months – 4 years

- Clinical presentation:
- Lumbar pain with radicular irradiation

- Imaging:
- MRI

- Residence:
- Urban: 52 patients

Grigore Alexandrescu Children's Emergency Clinical Hospital Bucharest





LDH - STUDY GROUP

II.

LDH - STUDY GROUP II

Musa et. al (2025)

Review > J Craniovertebr Junction Spine. 2025 Jan-Mar;16(1):34-40. doi: 10.4103/jcvjs.jcvjs_3_25. Epub 2025 Apr 1.

Pediatric lumbar disc herniation: A systematic review of the state of management strategies and outcomes (2010–2024)

Gerald Musa [1] [2], Wila Namonje [3], Keith Simfukwe [4] [5], Karina Marisel Familia [2], Bupe Mumba Mwela [1] [6], Dimitri T K Ndandja [2], Manuel De Jesus Encarnacion Ramirez [2], Samuel Chilawa [7], Kachinga Agrippa Sichizya [8], Laston Chikoya [9], Gennady E Chmutin [2], Andreas K Demetriades [10] [11]

Affiliations + expand

PMID: 40292162 PMCID: PMC12029382 DOI: 10.4103/jcvjs.jcvjs_3_25

Gerald Musa[1,2], Wila Namonje[3], Keith Simfukwe[4,5], Karina Marisel Familia[2], Bupe Mumba Mwela[1,6], Dimitri T. K. Ndandja[2], Manuel De Jesus Encarnacion Ramirez[2], Samuel Chilawa[7], Kachinga Agrippa Sichizya[8], Laston Chikoya[9], Gennady E. Chmutin[2], Andreas K. Demetriades[10,11]

[1]Department Surgery, Neurosurgery Unit, Livingstone Teaching Hospital, Livingstone, [4]Department of Surgery, Neurosurgery Unit, Mainasoko Medical Center Hospital, [5]Department of Surgery, School of Medicine and Health Sciences, University of Lusaka, [8]Department of Surgery, Neurosurgery Unit, University Teaching Hospital, [9]Department of Neurosurgery, Levy Mwanawasa Medical University, Lusaka, [7]Departement of Surgery, Michael Chilufya Sata Medical University, Ndola, Zambia, [2]Department of Neurological Disease and Neurosurgery, Peoples Friendship University of Russia Named After Patrice Lumumba (RUDN), [3]Medical Institute, Peoples Friendship University of Russia Named After Patrice Lumumba (RUDN), [6]Department of Pediatrics and Child Health, Morozovskaya Children's City Clinical Hospital, Moscow, Russia, [10]Edinburgh Spinal Surgery Outcome Studies Group, Department of Neurosurgery, Royal Infirmary Edinburgh, UK, [11]Leiden University Medical Center, Leiden, The Netherland

LDH - STUDY GROUP

SYSTEMATIC REVIEW DATA IN PEDIATRIC PATIENTS

- **Important studies:** 14 (0-18 y.o)
- **Total patients:** 861 pediatric patients
- **Mean age:** 14.88 years
- **Sex distribution:** 59.6% boy predominance
- **Affected levels:**
  - L5/S1: 53%
  - L4/L5: 43.8%
  - Other levels: 3.2%





Musa G, Namonje W, Simfukwe K, Familia KM, Mwela BM, Ndandja DTK, Ramirez MJE, Chilawa S, Sichizya KA, Chikoya L, Chmutin GE, Demetriades AK. Pediatric lumbar disc herniation: A systematic review of the state of management strategies and outcomes (2010-2024). J Craniovertebr Junction Spine. 2025 Jan-Mar;16(1):34-40.

Pediatric lumbar disc herniation: A systematic review of the state of management strategies and outcomes (2010–2024)

Demographic data

Author	Patients (*n*)	Mean age (years)	Female	Male	Symptom duration (months)
Thomas *et al.*, 2011[12]	6	16	4	2	11.5
Cahill *et al.*, 2010[9]	87	16.6	52	35	N/A
Wang *et al.*, 2022[10]	2	11.5	1	1	3
Alexiou *et al.*, 2014[13]	1	8	0	1	N/A
Karademir *et al.*, 2017[14]	70	17.14±2.15	35	35	7.21±1.69
Obeidat *et al.*, 2023[8]	4	13.75	3	1	N/A
Çelik *et al.*, 2011[7]	32	15±3.2	18	14	N/A
Lagerbäck *et al.*, 2015[11]	151	17.85	76	75	3
Dang *et al.*, 2015[6]	63	16.9	26	37	N/A
Gulati *et al.*, 2017[15]	97	17.5±1.6	48	49	N/A
Li *et al.*, 2018[16]	78	19.40±1.50	18	60	N/A
Yu *et al.*, 2021[17]	257	18.68±2.36	64	193	6
Balafif *et al.*, 2022[5]	1	15	1	0	48
Abd Elsamea *et al.*, 2018[1]	12	15	2	10	11
Total	861	14.88±3.10	348	513	12.82±14.74

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Pediatric lumbar disc herniation: A systematic review of the state of management strategies and outcomes (2010–2024)

Table 2.

Affected levels and surgical techniques

	MD	Fusion	ED	Conservative treatment	LOS	Recurrence
Thomas JG *et al.*, 2011	6	0	0	0	1.3	0
Cahill KS *et al.*, 2010	86	1	0	0	1	5
Yi W *et al.*, 2022	0	0	0	2	N/A	0
George AA *et al.*, 2014	1	0	0	0	N/A	0
Mustafa K *et al.*, 2016	6	0	0	64	N/A	28
Bader O *et al.*, 2023	2	0	2	0	N/A	N/A
Servinc C *et al.*, 2012	32	0	0	0	N/A	0
Tobias L *et al.*, 2015	0	0	0	0	N/A	N/A
Dan L *et al.*, 2015	36	27	0	0	N/A	2
Sasha G *et al.*, 2016	97	0	0	0	1.9	N/A
Haiyin L *et al.*, 2018	38	0	40	0	4.8±1.57	N/A
Haijiang Y *et al.*, 2021	43	0	174	0	3 (2–9)	3
Farichy B *et al.*, 2022	1	0	0	0	2	0
Mostafa A *et al.*, 2019	12	0	0	0	N/A	N/A
Total	360	28	216	66	2.33±1.27	38

N/A - Not available; MD - Microdiscectomy; ED - Endoscopic discectomy; LOS - Length of stay

Review. J Craniovertebr Junction Spine. 2025 Jan-Mar;16(1):34-40. doi: 10.4103/jcvjs.jcvjs_3_25. Epub 2025 Apr 1.

Pediatric lumbar disc herniation: A systematic review of the state of management strategies and outcomes (2010–2024)

Gerald Musa [1,2], Wila Namonje [3], Keith Simfukwe [4,5], Karina Marisel Familia [2], Bupe Mumba Mwela [1,6], Dimitri T K Ndandja [2], Manuel De Jesus Encarnacion Ramirez [2], Samuel Chilawa [7], Kachinga Agrippa Sichizya [8], Laston Chikoya [9], Gennady E Chmutin [2], Andreas K Demetriades [10,11]

Affiliations + expand

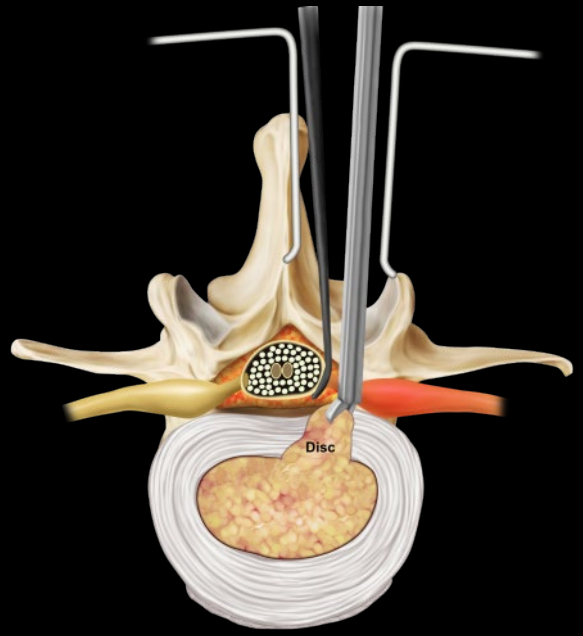
PMID: 40292162 PMCID: PMC12029382 DOI: 10.4103/jcvjs.jcvjs_3_25

Gerald Musa[1,2], Wila Namonje[3], Keith Simfukwe[4,5], Karina Marisel Familia[2], Bupe Mumba Mwela[1,6], Dimitri T. K. Ndandja[2], Manuel De Jesus Encarnacion Ramirez[2], Samuel Chilawa[7], Kachinga Agrippa Sichizya[8], Laston Chikoya[9], Gennady E. Chmutin[2], Andreas K. Demetriades[10,11]

LDH - STUDY GROUP

SYSTEMATIC REVIEW DATA IN PEDIATRIC PATIENTS

Treatment modalities: 670 cases



- Conservative treatment: 9.9% (n = 66)

  Surgical treatment: 90.1% (n = 604)

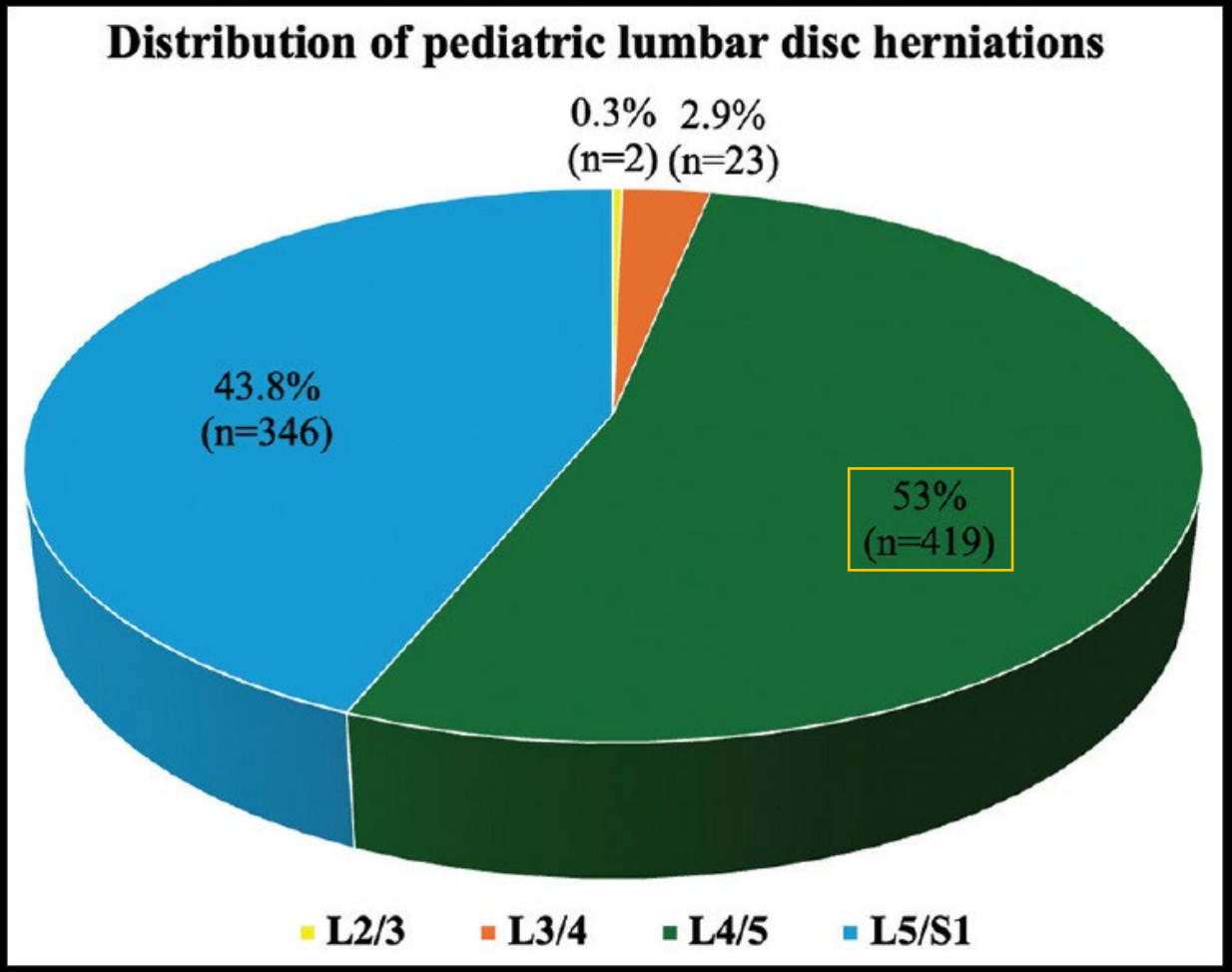
- Microdiscectomy: 53.7% (n = 360)

- Endoscopic discectomy: 32.2% (n = 216)

- Fusion: 4.2% (n = 28)







Gerald Musa[1,2], Wila Namonje[3], Keith Simfukwe[4,5], Karina Marisel Familia[2], Bupe Mumba Mwela[1,6], Dimitri T. K. Ndandja[2], Manuel De Jesus Encarnacion Ramirez[2], Samuel Chilawa[7], Kachinga Agrippa Sichizya[8], Laston Chikoya[9], Gennady E. Chmutin[2], Andreas K. Demetriades[10,11]

LDH - STUDY GROUP

SYSTEMATIC REVIEW DATA IN PEDIATRIC PATIENTS OUTCOME

- **TOTAL OP: 576 (85,9%)**

- **Outcomes postop:**
- Pain improvement (VAS-Visual Analogue Scale): 6.15 → 1.33
- Disability improvement (ODI-Oswestry Disability Index): 42.09 → 7.01

- **Recurrence rate:**
  - Postoperative: 1.7%
  - Following conservative management: 42.4%

GOOD RESULTS

- **Average follow-up:** 23.78 months

- **Complication rate:** 3%





Ciurea et al. 2026

LDH – CASE PRESENTATION
(Dr. Nica Dan cases)

LDH – CASE PRESENTATION

PATIENT 1

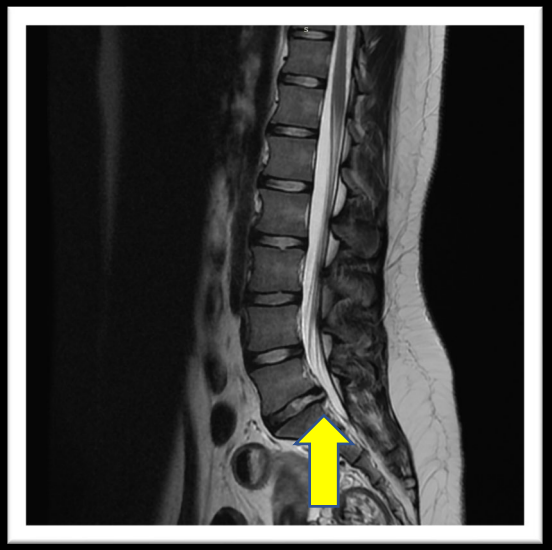
- Patient: **Girl, 14 years**

- **Comorbidity:**
Grade II obesity

- **Clinical presentation:**
Left S1 lumbosciatica
Motor deficit: ASIA 3 in left S1
Hypoesthesia in left S1 dermatome
Diminished left Achilles reflex

- **Surgery:**
Left L5–S1 discectomy

- **Outcome: NO COMPLICATION**





LDH – CASE PRESENTATION

PATIENT 2

- **Patient:** Girl, **14 years**

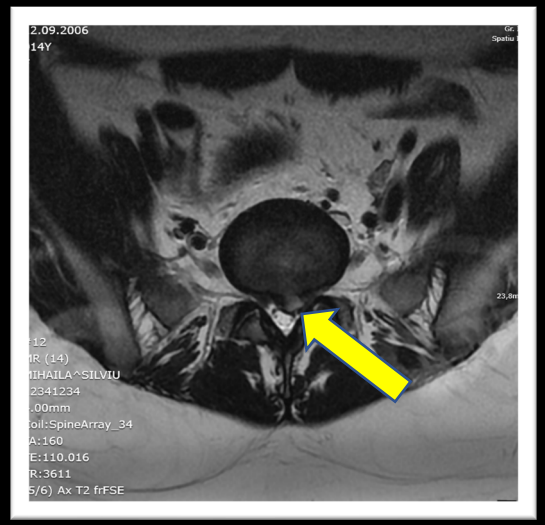
- **Comorbidity:**
None reported

- **Clinical presentation:**
Left S1 lumbosciatica with radicular pain
Paresthesias in left L5 and S1 dermatomes
Symptom duration: 1 year, no improvement with conservative treatment

- **Surgery:**
Left L5–S1 discectomy

- **Outcome: NO COMPLICATION**





LDH – CASE PRESENTATION

PATIENT 3

- **Patient:** Girl, 16 years
- **Comorbidity:**

None reported

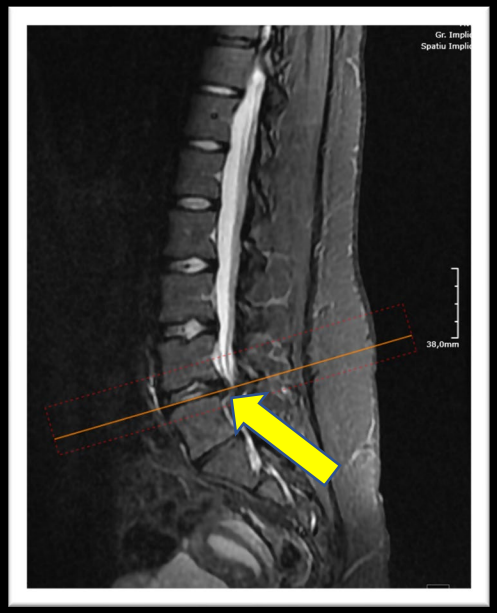
- **Clinical presentation:**

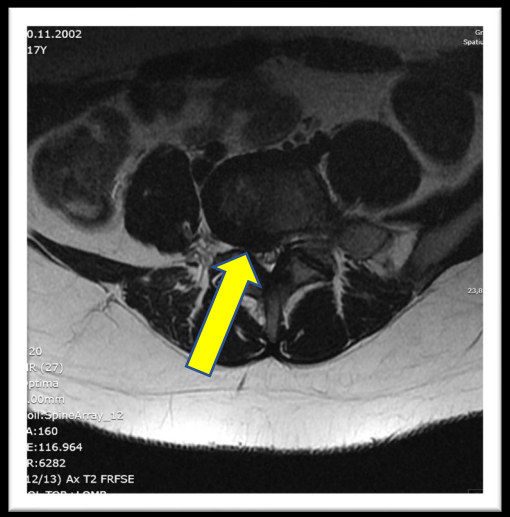
Right L5 lumbosciatica with radicular pain
Paresthesias in right L5 and S1 dermatomes
Hypoesthesia in right L5 and S1 dermatomes
Motor deficit: ASIA IV in right L5 and S1
Gait disturbances due to chronic motor deficit (~6 months)
Symptoms not improved with conservative treatment

- **Surgery:**

Right L4–L5 foraminotomy

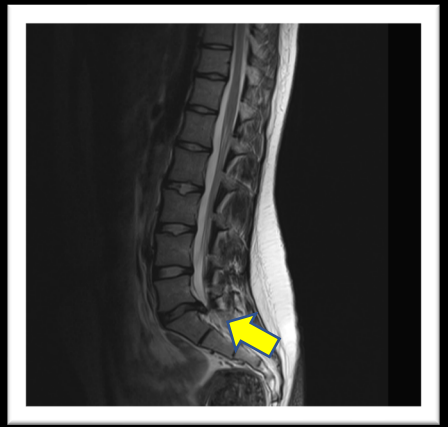
Outcome: NO COMPLICATION





LDH SURGICAL TREATMENT AIMS:

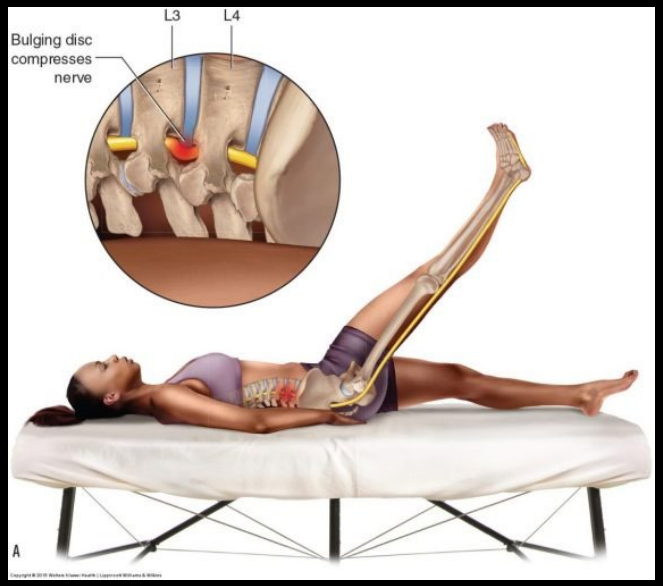
1. ***Removal*** **of herniated disc fragment**
2. ***Neural Decompression*** **(nerve root & dural sac)**
3. ***Discectomy*** **(moderate or radical disc removal)**
4. ***Reduced Pressure*** ***within the disc***
5. ***Prevention of LDH recurrences***



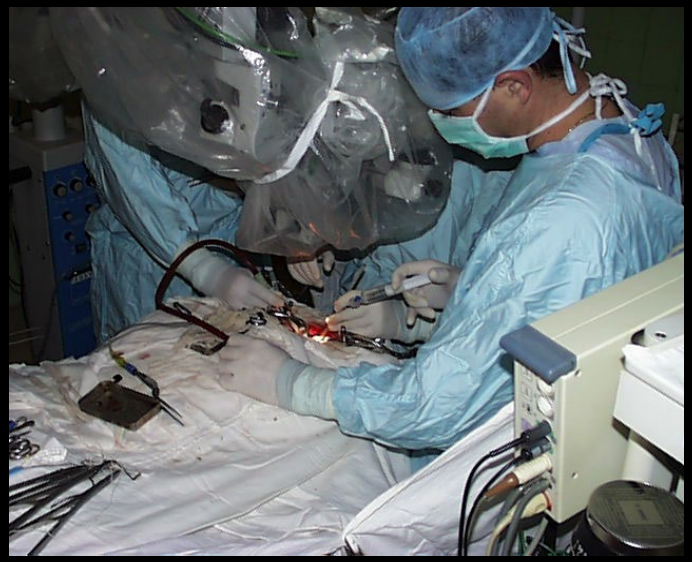


LDH SURGICAL TREATMENT INDICATIONS

Lasegue sign



- recurrent sciatica
- significant neurological deficit
- recurrent neurological deficit
- cauda equina syndrome
- failure of conservative treatment



SUMMARY

1. Lumbar Back Pain in Children (LBP)

2. Lumbar Disc Hernia in Children (LDH)

   - General Data
   - Study Group
   - Neuroimaging
   - Operatory Management
     a) Microdiscectomy
     b) Nucleoplasty
     c) Endoscopic
   - Complications

3. Follow-up & Conclusions

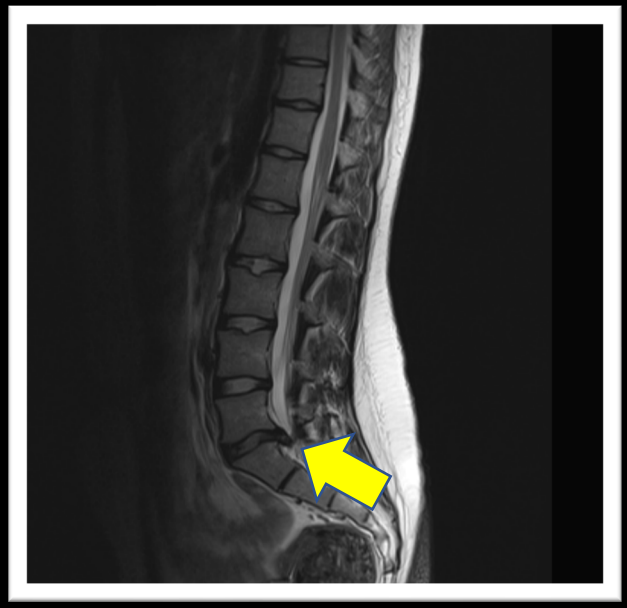


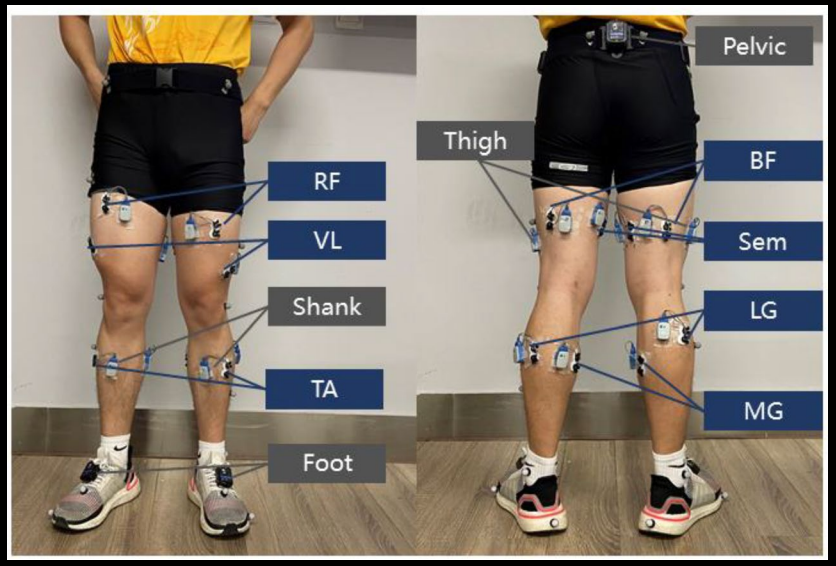




NEUROINVESTIGATION

- **Neuroimaging**
  - **Standard Radiography**
    - Back Flexion
    - Back Extension
    - Antero-Posterior position
    - Sagital position
  - CT Scan
    - Native
    - 3D
  - MRI native/3Tesla
- **EMG – electromiography**





SUMMARY

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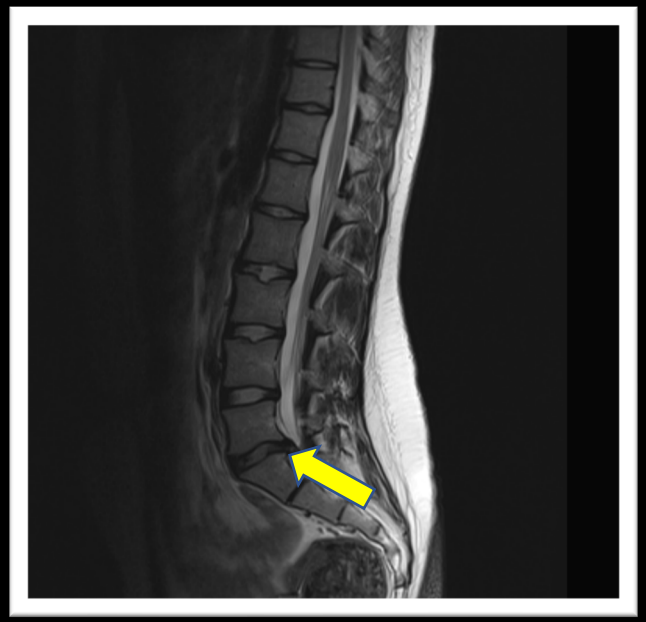


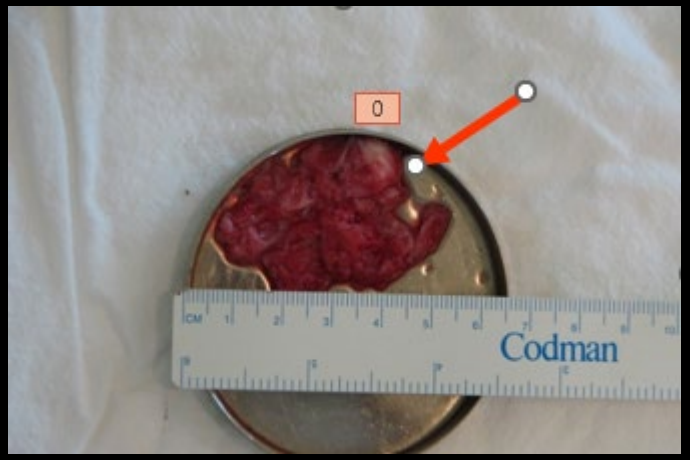




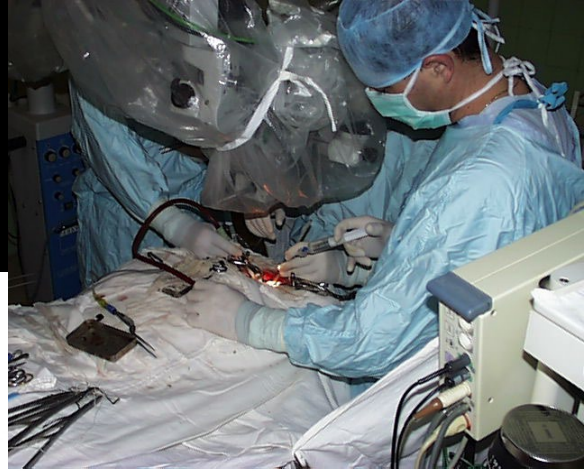
LDH SURGICAL TREATMENT

I. MICRODISCECTOMY





OPERATIVE POSITIONING



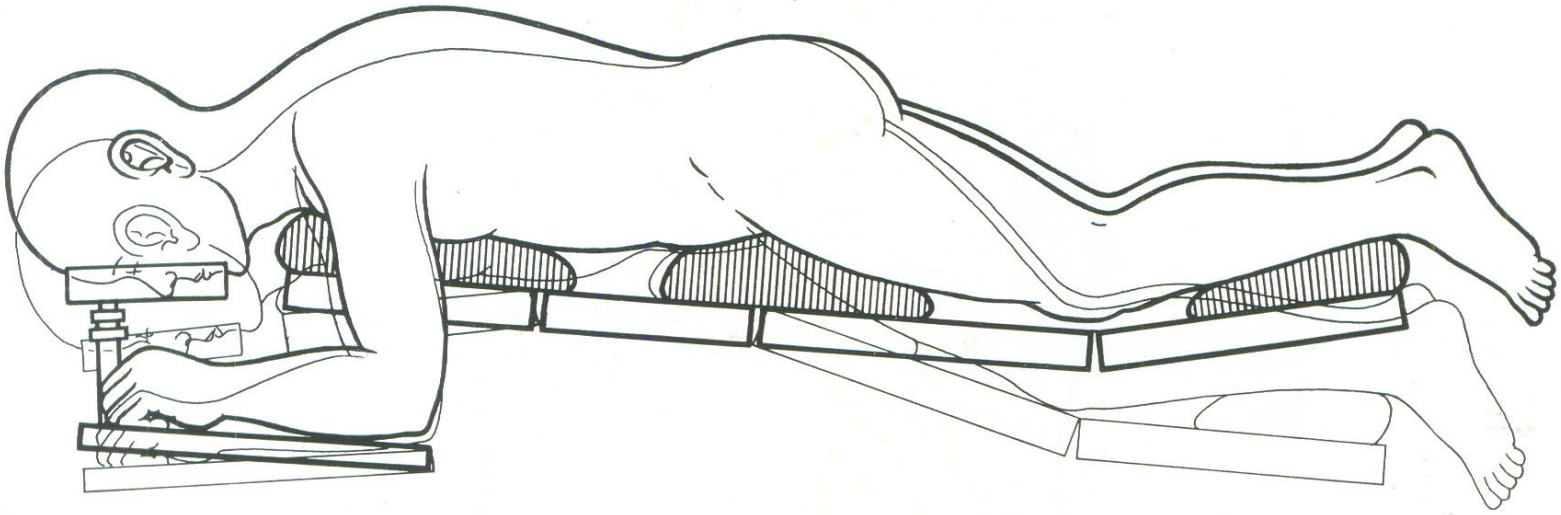


Fig. 282. Lumbar disc: Operative position.

Observe: 1. Prone jacknife position. 2. Placement of pillows beneath patient (compare with Fig. 283).

LDH NEUROSURGICAL EQUIPMENT

ROUTINE EQUIPMENT

- ✓ Spinal neurosurgical tray
- ✓ High speed drill
- ✓ Operator microscope
- ✓ Bipolar cautery
- ✓ No laser, no CUSA



LOMBAR DISC HERNIATION RESULTS I – STANDARD OP, MICRODISCECTOMY







SANADOR OP THEATER

POSTOP LDH NEUROMOTOR REHABILITATION









PHYSICAL AND REHABILITATION CENTERS



CENTRUL NATIONAL CLINIC DE RECUPERARE NEUROPSIHOMOTORIE PEDIATRICA "DR. NICOLAE ROBANESCU"

PHYSICAL AND REHABILITATION CENTERS



INSTITUTUL NAŢIONAL DE RECUPERARE MEDICINĂ FIZICĂ ŞI BALNEOCLIMATOLOGIE



SPITALUL CLINIC DE RECUPERARE MEDICALA BAILE FELIX

SUMMARY

1. Lumbar Back Pain in Children (LBP)

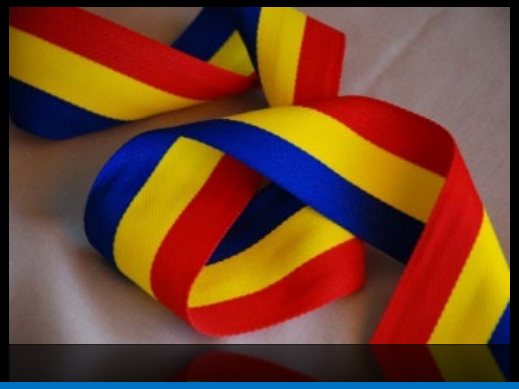
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   - Study Group
   - Neuroimaging
   - Operatory Management
     a) Microdiscectomy
     b) Nucleoplasty
     c) Endoscopic
   - Complications

3. Follow-up & Conclusions







LDH SURGICAL TREATMENT

II. NUCLEOPLASTY & LASER

NO INDICATION!!!

SUMMARY

1. Lumbar Back Pain in Children (LBP)

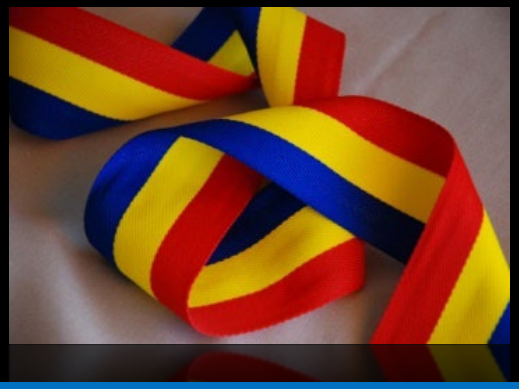
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3. Follow-up & Conclusions







LDH SURGICAL TREATMENT

III. ENDOSCOPIC TECHNIQUES

MINIMALLY INVASIVE

LOMBAR DISC HERNATION SURGICAL TREATMENT M.I.S.S



ADVANTAGES:

- safe technique
- small incision, small blood loss
- short hospitalization period
- very good recovery



DISADVANTAGES:

- Long & difficult “Learning curve”
- not allows radical discectomy
- expensive, most devices are single-use

WHAT ARE THE ADVANTAGES OF THE M.I.S.S SURGERY?



- Small incisions – more esthetic, appealing.
- Less blood loss, less infection.



- Faster recovery – functional ability to return to normal activity.

WHEN WE INDICATE M.I.S.S? (MINIMAL INVASIVE SPINAL SURGERY)

Degenerative disc disease – herniated disc

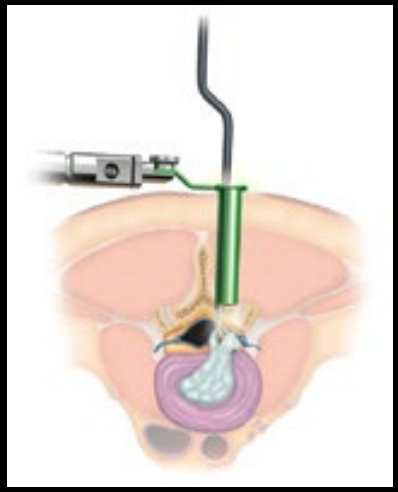


LDH SURGICAL TREATMENT
III. ENDOSCOPIC TECHNIQUE

It combines advantage of endoscope with a percutaneous technique

Technique:

- insertion of cannula (2,5 cm. from midline)
- dilators insertion
- working channel (cannula) insertion
- perform laminotomy
- identify the disc & nerve root

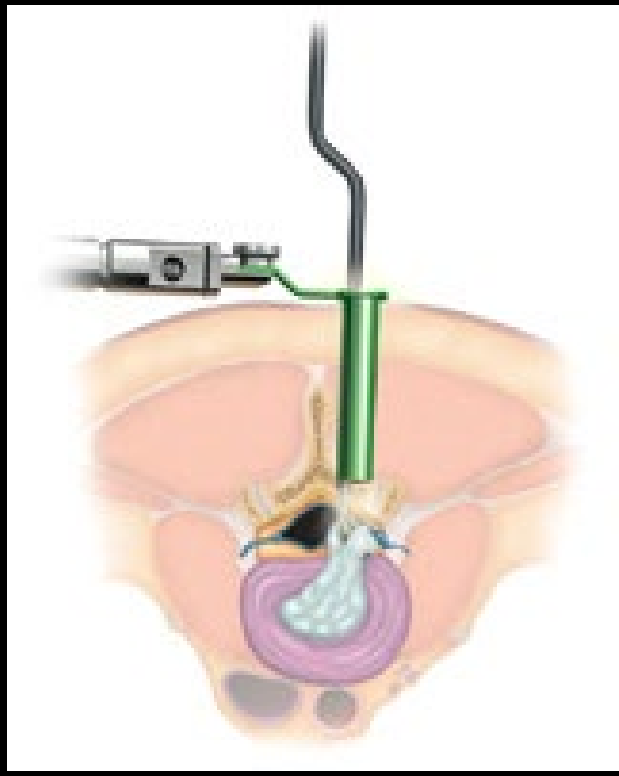


Described by Poole, 1988

LDH SURGICAL TREATMENT
ENDOSCOPIC TECHNIQUE

ADVANTAGES:

- safe technique
- small incision, small blood loss
- short hospitalization period
- very good recovery, mostly in children



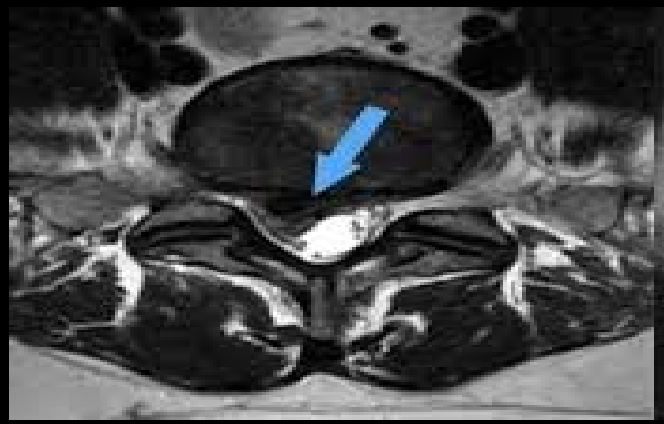
DISADVANTAGES:

- Long & difficult “Learning curve”
- not allows radical discectomy
- expensive, most devices are single-use

ACTUAL STATUS IN LDH ENDOSCOPIC MICRODISCECTOMY







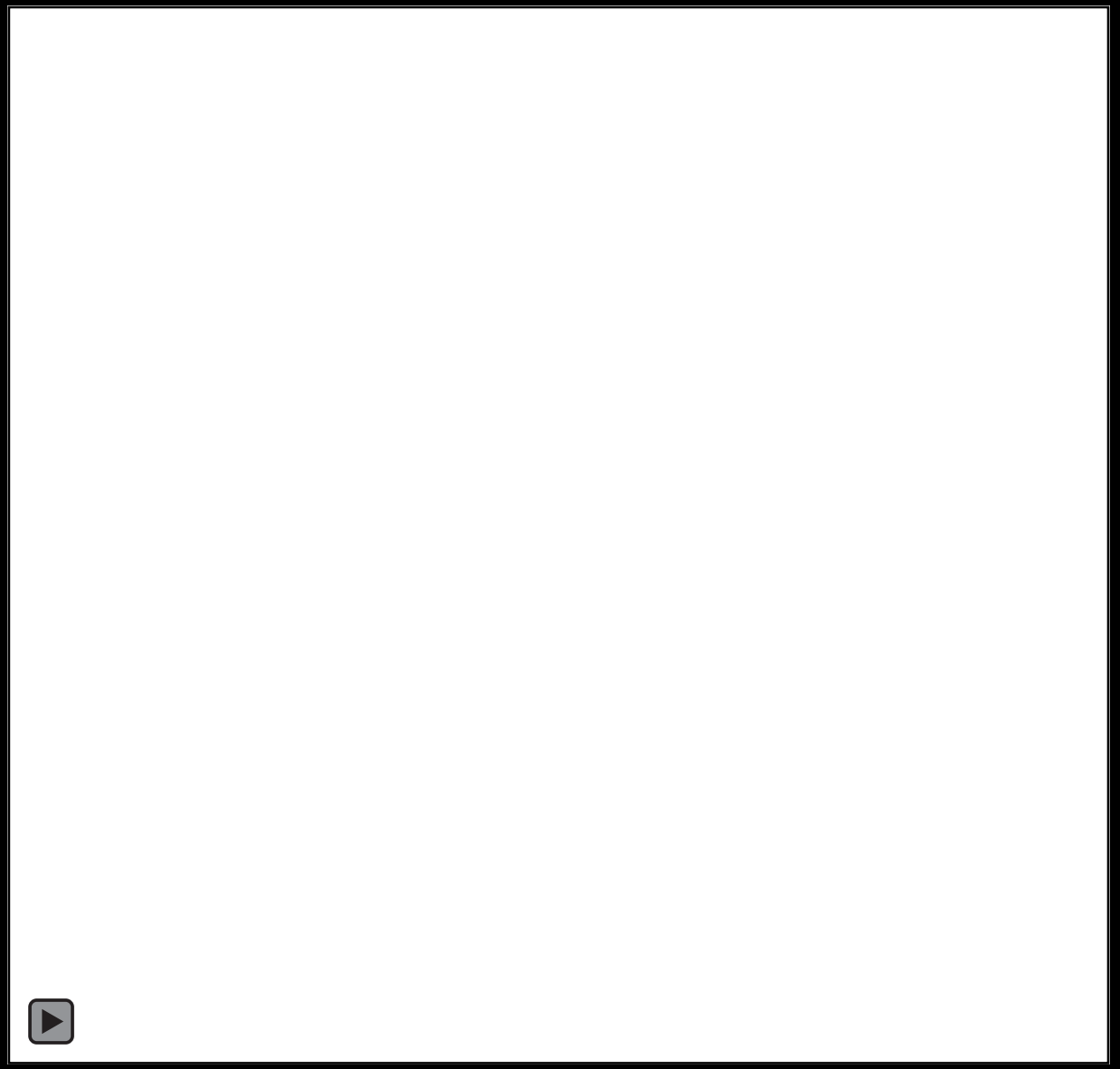


Neurosurgery Clinic “Prof. Dr. Nicolae Oblu” Iasi

Case
- 18 y.o.
- LDH LEFT L5-S1

Endoscopy

Microdiscectomy



SUMMARY

1. Lumbar Back Pain in Children (LBP)

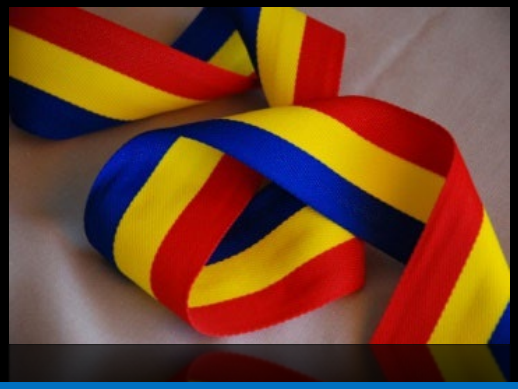
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   - Complications

3. Follow-up & Conclusions







POSIBLE PEDIATRIC LDH COMPLICATIONS

Nica & Ciurea et. al: 18 OP cases

MINOR COMPLICATIONS: 3 cases

- DURAL COMPROMISE :
  - Minor
  - large – suture
  - CSF leak
- NEW NEUROLOGICAL DEFICIT
- SUPERFICIAL WOUND INFECTION: 1 case
- DISCITIS
- PERINEURAL FIBROSIS
- POSTOPERATIVE INSTABILITY
- FOLLOWUP RECURRENCE: 2 cases

SUMMARY

1. Lumbar Back Pain in Children (LBP)

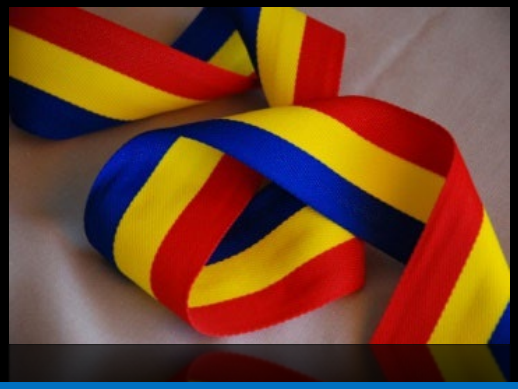
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   - Complications

3. Follow-up & Conclusions







FOLLOW-UP & CONCLUSIONS

- **Clinical Monitoring:**

Ongoing evaluation of symptoms and neurological status

- **MRI:**

Follow-up imaging as indicated to assess structural changes







FOLLOW-UP & CONCLUSIONS

- **Physiokinetic Therapy:**

Recommended for functional recovery and pain control

- **Medical Treatment:**

Analgesics only; **no corticosteroid therapy**



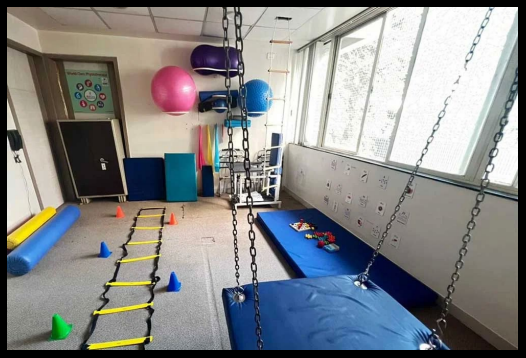




IMPORTANT RESTRICTIONS

- **Avoid:**
- Extreme sports
- Activities involving spinal torsion (e.g., tennis, golf)
- Heavy lifting or powerlifting





- **Recommended sport:**
- Swimming – ideal for safe, low-impact strengthening and mobility



CONCLUSIONS



- **Low back pain** is not an uncommon complain in children, but disconforts are **mostly from soft tissue injuries**



- The most common site of involvement is at **L5-S1**;
- **multiple involvement is rare**

- At surgery, the disk is difficult to remove because of the **herniated disk is usually moist, elastic and gelatinous**



CONCLUSIONS



Pediatric lumbar hernia IS RARE.

Complete spine evaluation is recommended.

Surgery is indicated only in very selected/restricted cases.



CONCLUSIONS



Surgical procedures include:

- Microdiscectomy
- Endoscopic minimally invasive approach

Neurorehabilitation is mandatory for selected patients.



Complication rate is very low.

CONCLUSIONS



MEDICAL TEAM:

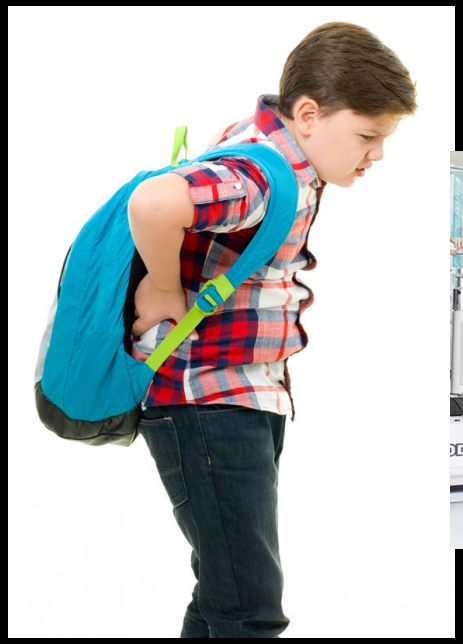
- Pediatric neurosurgeon
- Pediatric physician
- Pediatric neurorehabilitation specialist



FINAL CONCLUSIONS

BETTER PREVENTION THAN OP TREATMENT

WARNING FOR THE EDUCATIONAL DEPARTMENT







LOMBAR DISK HERNIA IN CHILDREN

INSTEAD OF CONCLUSIONS



PERFECT NEUROSURGICAL OUTCOME !!

Ciurea et al. 2026



ROMANIA IN IMAGES

Thank you for your attention!