



SPINAL PAIN

Minimally Invasive Spine Surgery MISS



LOW BACK PAIN

?ENDEMIC

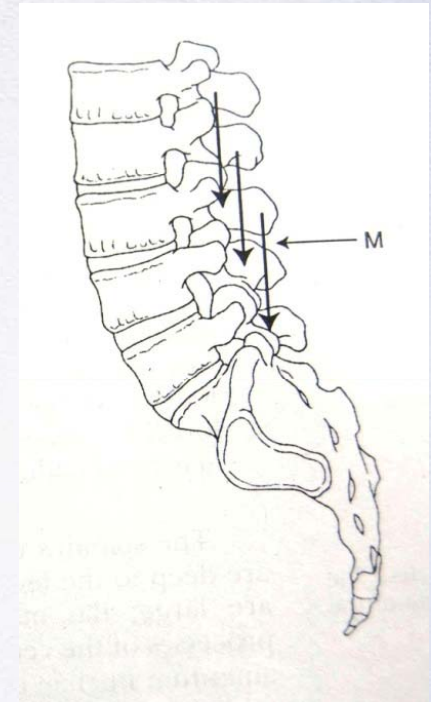
SCHOOL CHILDREN- SENIOR CITIZENS

INDIAN IT PROFESSIONALS - 76%

POINT PREVALENCE - 6.1% - 31%

HOSPITAL OPD - 23.9 %

URBAN + RURAL



Majority Back pain is Mechanical

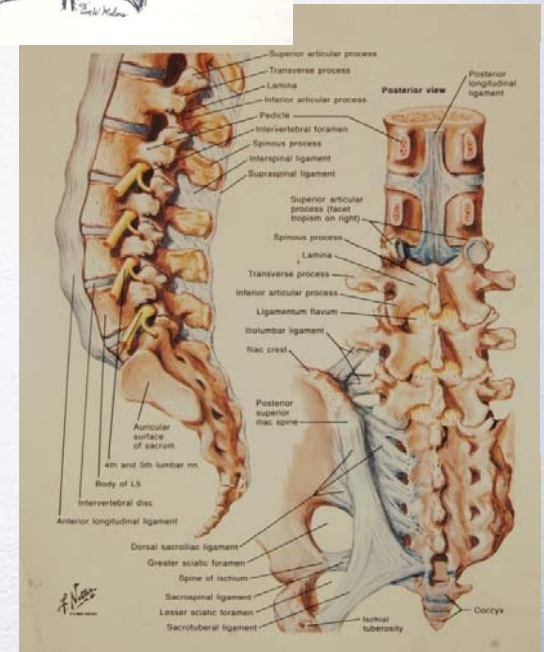
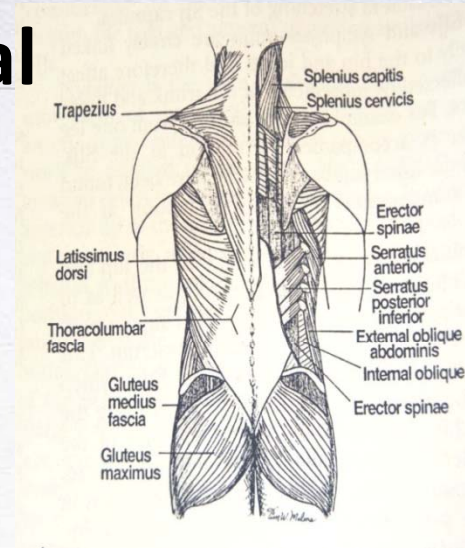
মব্বুদগ্‌ড

- ✦ Acute
- ✦ Chronic

Musculo ligamental strain
Degenerative Disc Disease

Discogenic- স্বলিত ডিস্ক
Infective- Tubercular- TB
Tumours-

Metabolic
Old Trauma
Cancer patients



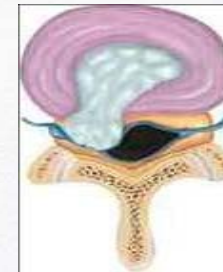
Management

Low Back/ Radicular Pain

- Degenerative Disc Disease (DDD)
'Wear and Tear' , Canal Stenosis
- Lumbar Disc Prolapse (PIVD)
'Sciatica Syndrome'

ব্যবহারাদির ফলে ক্ষয়

ALWAYS INVESTIGATE- MRI



Low Back/ Cervical pain

MAJORITY IMPROVE WITH CONSERVATIVE TREATMENT
3-6 WEEKS

বক্ষণশীল চিকিত্সা

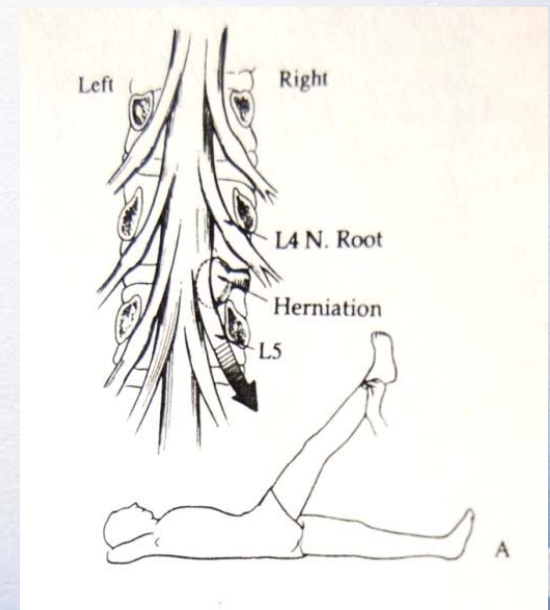
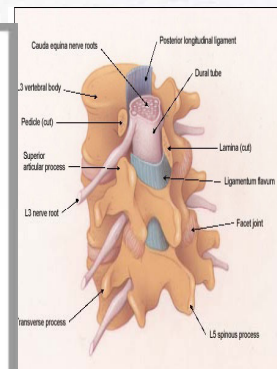
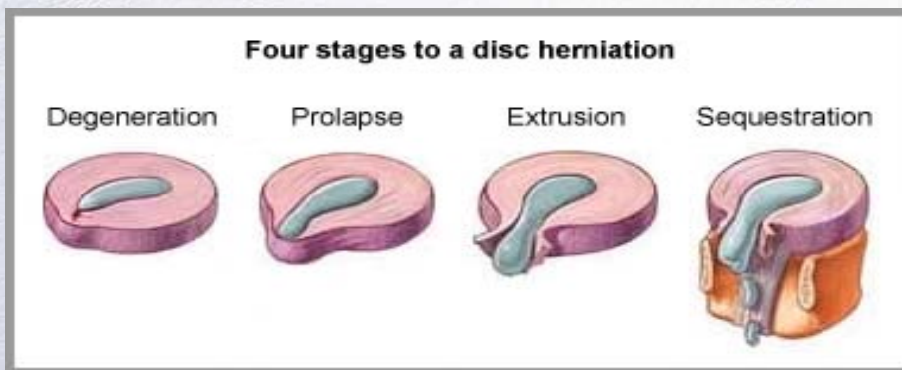
Is Spinal pain treatable/ curable?

- সারানো যায়?
- সম্পূর্ণ মুক্তি সম্ভব?

Lumbar Disc Prolapse

Who needs Surgery?

- !! Intractable Pain- Radicular > Back
- !! Progressively worsening Neurological Deficit
- !! Recurrence of Pain
- !! Cauda Equina Syndrome-Emergency
- !! MRI Scans correlate with clinical findings



MINIMALLY INVASIVE POSTERIOR LUMBAR DISC SURGERY



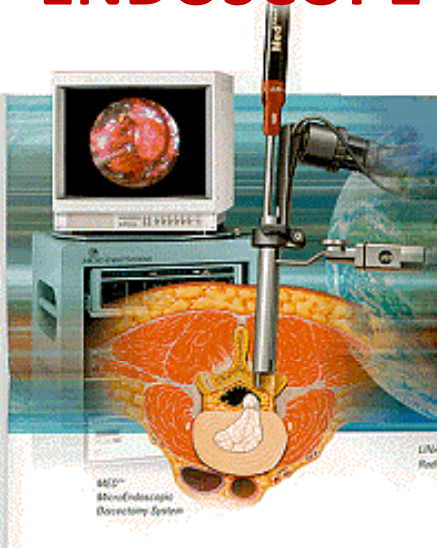
Microsurgical Techniques-

Discectomy

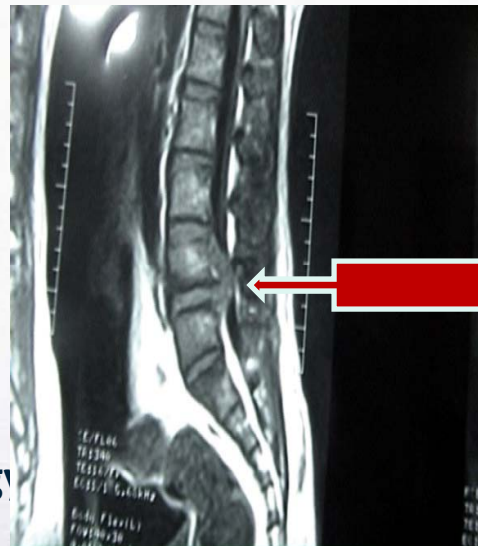
Flavectomy

Fenestration

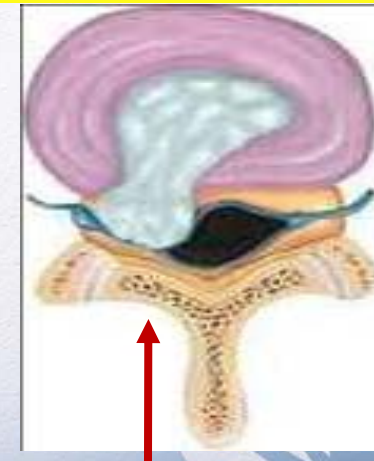
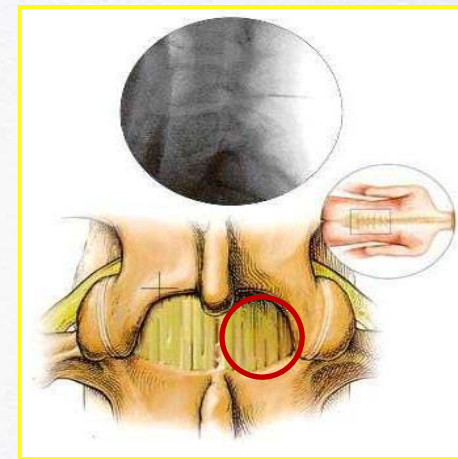
ENDOSCOPE



Minimal Access Spine Technology
MAST



MICROSCOPE



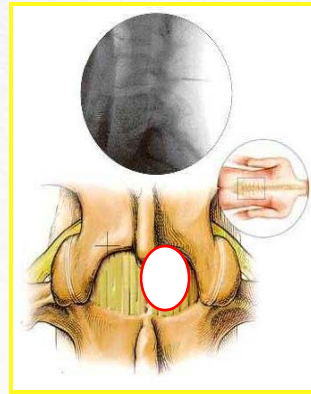
Minimally Invasive Spine Surgery MISS



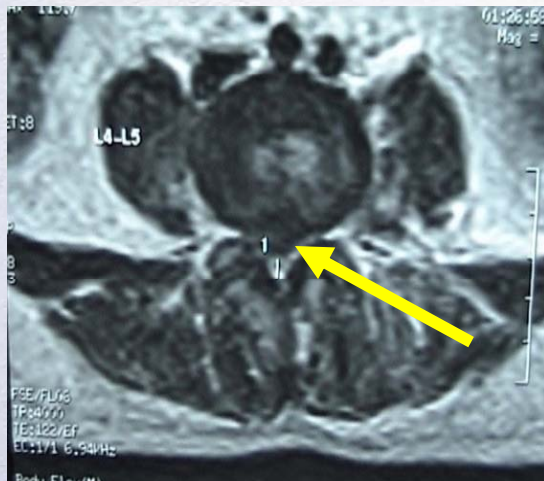
Lumbar Disc Prolapse



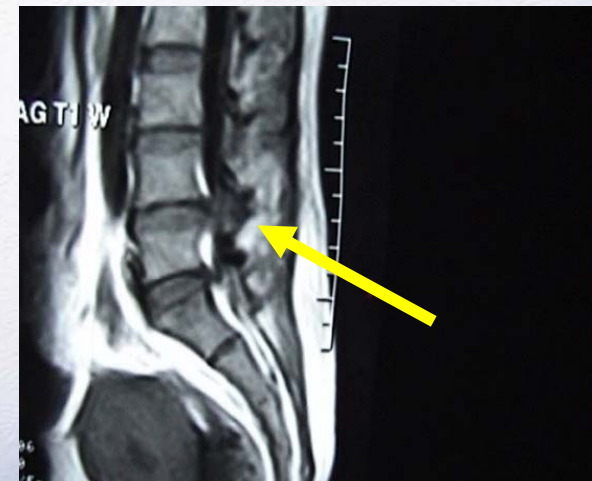
Minimal Invasive Spinal Surgery- MISS



OPERATION UNDER HIGH MAGNIFICATION USING CARL ZEISS MICROSCOPE



L4-5 Disc Herniation

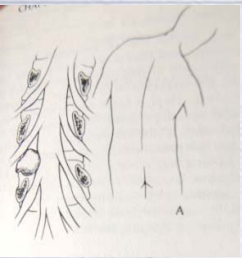


Lumbar Disc Prolapse

Minimal Invasive Spinal Surgery



MISS



BK, 35 yrs , Female



PRE-OP

Radicular & Back Pain
Scoliotic Posture
SLR +ve,
L5 Radiculopathy



L4-5 Disc Herniation



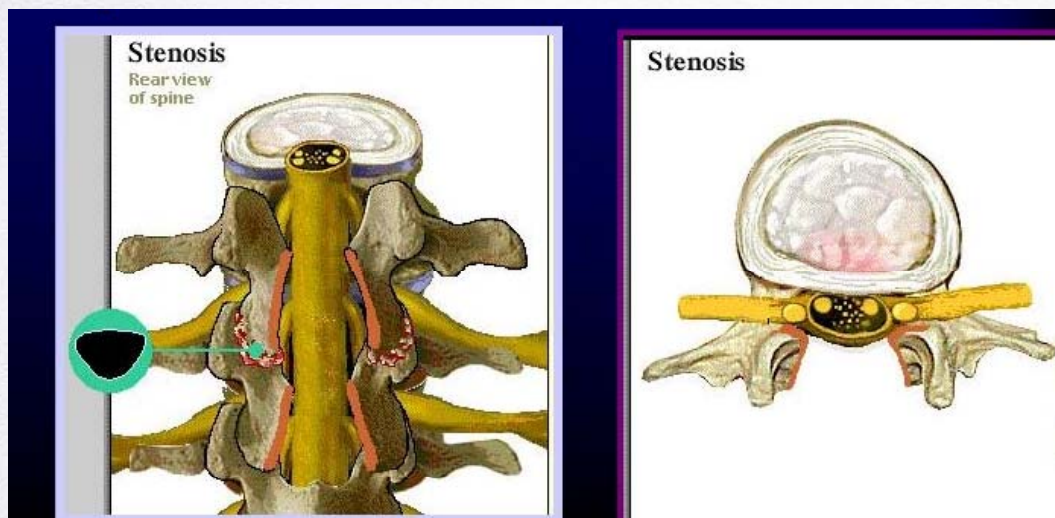
POST-OP

2nd POST-OP DAY
-Normal Posture
-Pain free
-No Neuro Deficit

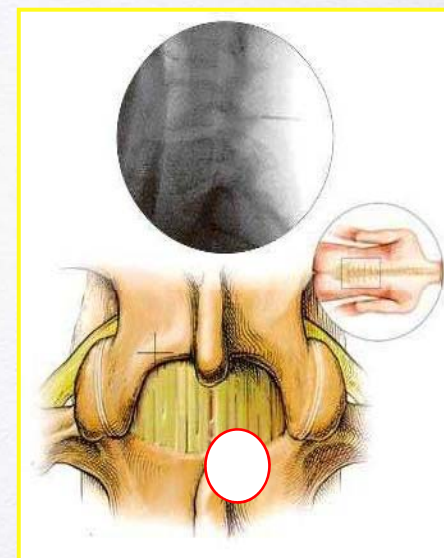


LUMBAR SPINE SURGERY

CANAL STENOSIS/ DISCECTOMY



TRADITIONAL APPROACH

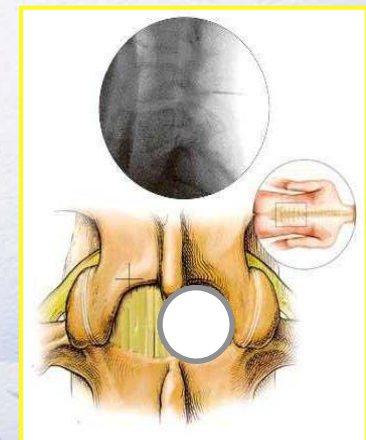


**Minimally Invasive/
Microsurgical**

Minimally Invasive Spine Surgery- MISS



**RB, 29 yrs / f, SEVERE ,
INCAPACITATING ROOT PAIN
LEFT LEG
BEDRIDDEN FOR 14 DAYS**



**PAIN FREE IN 24 HOURS
MOBILISED AND DISCHARGED
IN 48 HOURS**

DISC DEGENERATION AND NEUROLOGICAL SYMPTOMS

- NEUROGENIC CLAUDICATION
- PAIN BACK ON STANDING
- PAIN IN BOTH LOWER LIMBS ON STANDING
- NUMBNESS AND HEAVINESS IN BOTH LOWER LIMBS

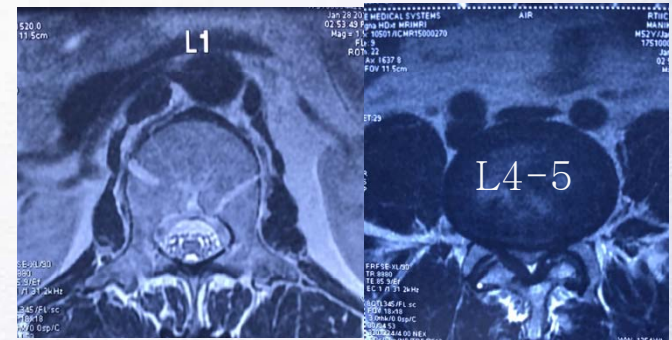
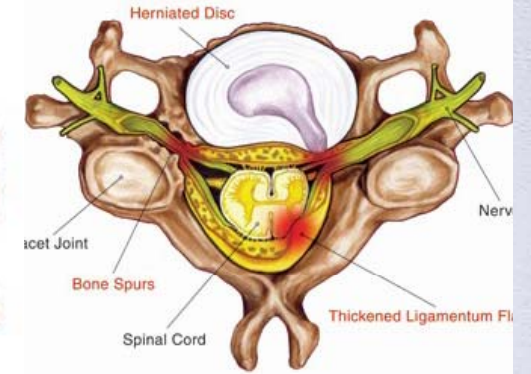
Stenosis



Foraminal stenosis



Example of Spinal Nerve Compression (viewed from above)



NORMAL

STENOSED

মেৰুদণ্ড + নাৰ্ভ চাপ

Minimal Access Spinal Surgery



LUMBAR CANAL STENOSIS

LATERAL RECESS STENOSIS

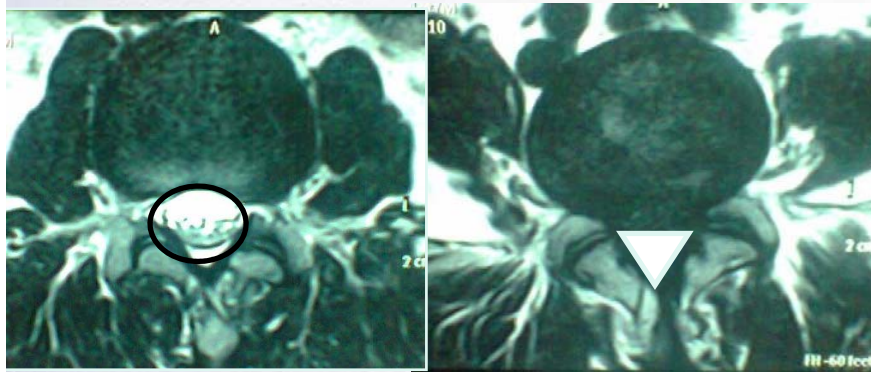
Neurogenic Claudication

Back Pain/ Leg pain

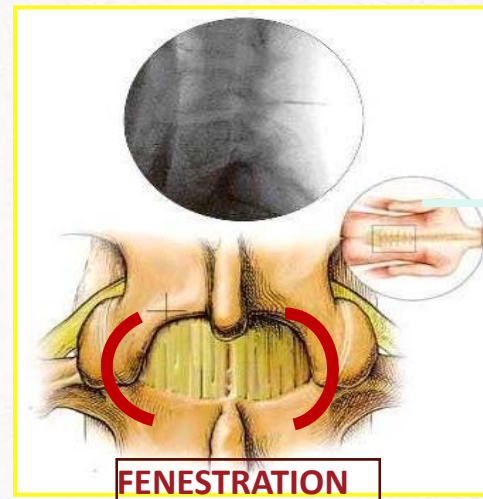
(Peripheral pulses- elderly,smokers)

NORMAL

STENOSIS



MRI SCAN : AREA OF CANAL
< 75 SQ MM-
> 100 SQ MM



A



B

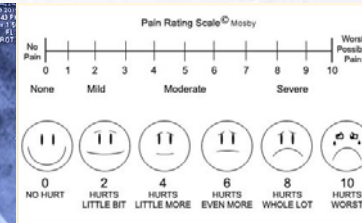


DEGENERATIVE DISC DISEASE LUMBAR CANAL STENOSIS

53 YRS /M, LONG STANDING RECURRING
LOW BACK PAIN WITH PAIN ON
STANDING AND WALKING



SPINAL CANAL AREA
: 54 SQ MM



মেৰুদণ্ড + নাৰ্ভ চাপ

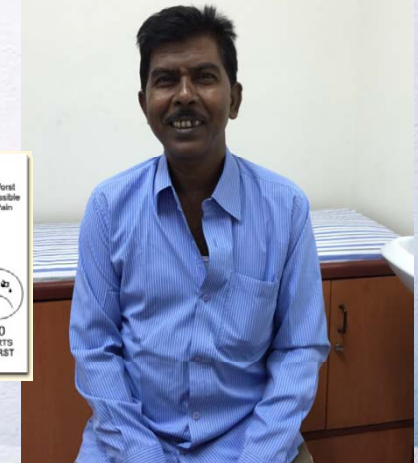
Dural tube appears normal in lumbar region and evaluation of
The imaged soft tissues show no abnormality.

Vertebra	Canal Measurement:	
	AP(cm)	Transverse(cm)
L1	1.6	2.3
L2	1.3	2.5
L3	1.1	2.5
L4	1.1	2.8
L5	1.1	3.0

L1-L2- 146.5 mm²
L2-L3 - 106.5 mm²
L3-L4 - 75.5 mm² ✓
L4-L5 - 54.1 mm² ✓ ←
L5-S1 - 129.9 mm²

IMPRESSION:

- Lumbar spondylosis.
- Central, bilateral paramedian and bilateral for L4-L5 indenting thecal sac and narrowing bilateral
- Mild central, bilateral paramedian and bilateral at L3-L4 and L5-S1 indenting thecal sac and narrowing



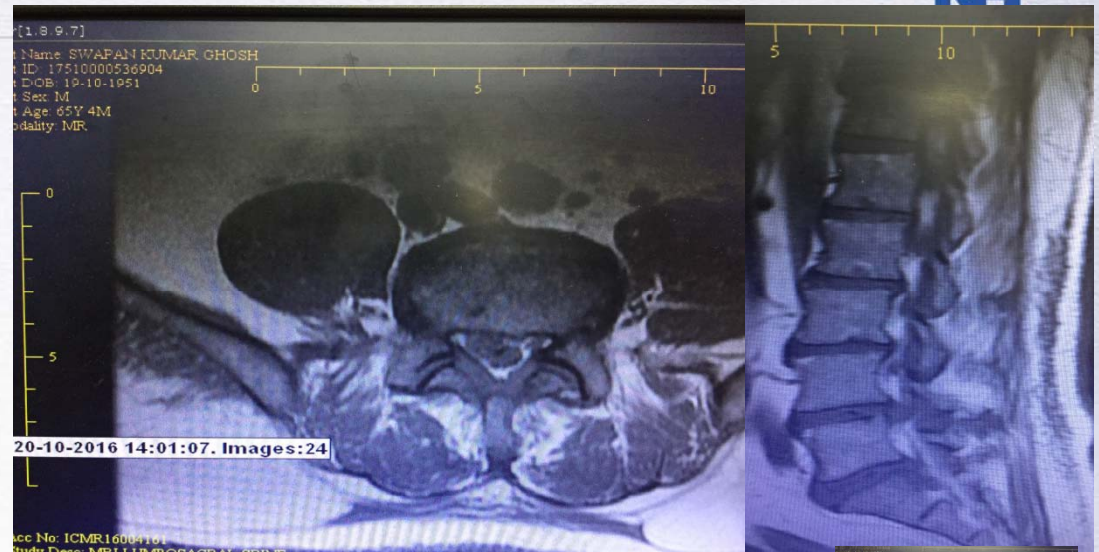
POST OPERATIVE

RESULTS OF MISS

SKG, 44 YRS M, SEVERE BACK AND LEG PAIN UNABLE TO WALK OR STAND STRAIGHT.

L4-5 DISC PROLAPSE

OPERATED BY A MINIMAL ACCESS SURGURY USING MICROSURGICAL TECHNIQUES



Spine surgery in the Elderly

Multispecialty Approach

SKB, 75 YRS /MAN WITH CO-MORBIDITIES:

HYPERTENSION, DIABETES,

CEREBRAL STROKE 2 YRS AGO.

PAIN SINCE 2 YEARS.

FAMILY CONCERNS:

AGE

FEAR OF BEING BEDRIDDEN

NOT SURE OF RECOVERY

**DX: SEVERE LUMBAR
CANAL STENOSIS-
L4-5 AND L5-S1**

মেরুদণ্ড + নার্ভ চাপ

Department of Radiology & Imaging 9, DR. U. N. BRAHMACHARI STREET, (Formerly LOUDON STREET), KOLKATA-700 017 Fax : 2280-4824 / 2287-7876 E-mail : info@believeclinic.com Website : http://www.believeclinic.com

Patient Name : Mr. SHYAMAL KRISHNA BISWAS Age/Sex : 74 Years Male
 OPD / DIRECT : DIRECT CR ID/No :
 Ref By : CGHS (PENSION HOLDER) Unit Dr. :
 Cons. Doc. : CGHS DOCTOR Req ID/No : 772811
 Reg Date : 19/07/2016 11:40:37AM
 Report Date : 22/07/2016 04:40:57PM Floor Name :
 Print Date : 22/07/2016 04:41:44PM Status :
 Thank you for referring the patient for MRI of **LUMBO SACRAL SPINE**

PROTOCOL:
 SAGITTAL - SE T1 W1, FSE T2 W1, STIR
 AXIAL - SE T1 W1, FSE T2 W1
 CORONAL - FSE T2 W1

Findings:
Follow up case reveals :-

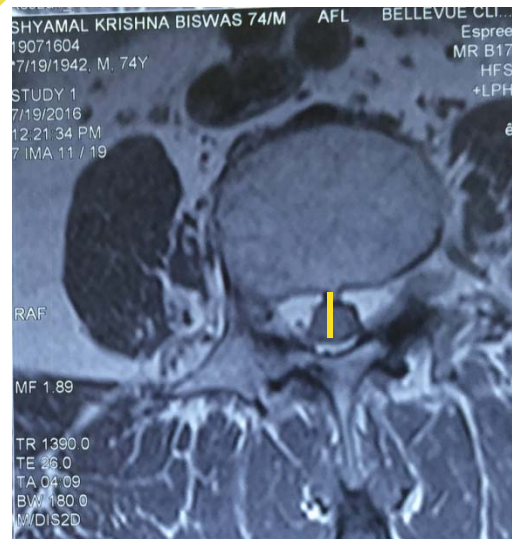
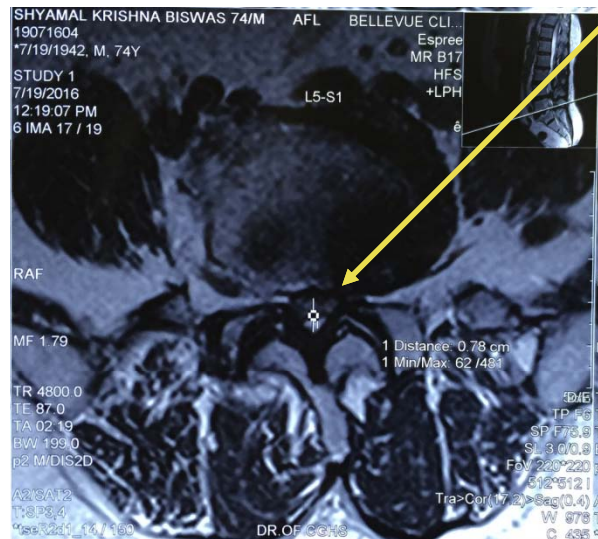
1. Diffusely bulging disc L2 - L3 to L5 - S1 levels causing thecal indentation and bilateral foraminal nerve roots compression.
2. In addition, there is postero-central protrusion at L4 - L5 level contributing thecal compression.
3. Disc dissecation with adjoining osteophytes and adjoining osteophytes at all the levels with loss of normal curvature.
4. Hemangiomas changes in L1, L2 vertebral bodies.
5. Spinal canal stenosis at L4 - L5 and L5 - S1 levels.
6. Ligamentum flavum hypertrophy at the above two levels contributing spinal canal stenosis.

AP diameter of the spinal canals at the following levels are :-

L1 - L2	-	17 m.m.
L2 - L3	-	13 m.m.
L3 - L4	-	10 m.m.
L4 - L5	-	06 m.m.
L5 - S1	-	07 m.m.

Compared with earlier MRI done on 12.7.15, radiological worsening noted.

DR. R. N. SAIN
 MD



LIFESTYLE

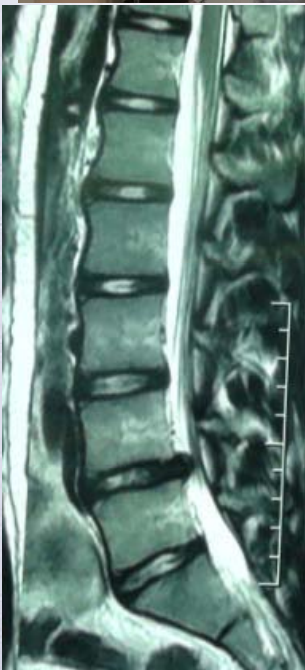
SCHOOL CHILDREN



SPINAL PAIN + GAIT ABNORMALITY

POSTURE CONTROL DURING

STUDYING, LEISURE ACTIVITIES



SPINE SURGERY

SPONDYLOLISTHESIS

SPINAL RECONSTRUCTION



45 Y /F, PERSISTENT BACK PAIN
WHILE WALKING AND STANDING
NO RELIEF WITH MEDICAL Rx

মেৰুদণ্ড + নাৰ্ভ চাপ

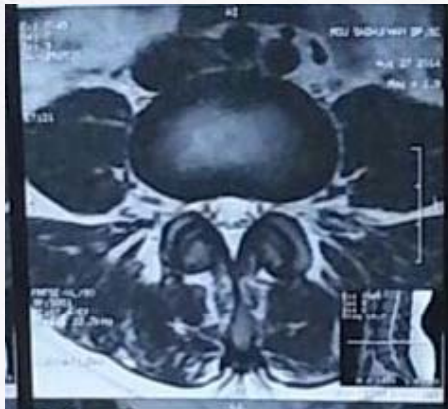
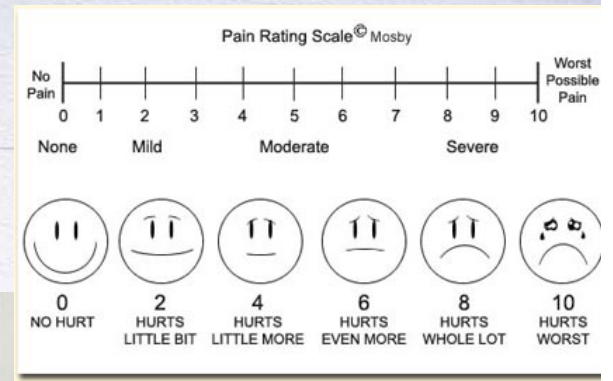
COMPLEX SPINAL SURGERY CASES

LUMBAR SPINE SURGERY CANAL STENOSIS/ DISCECTOMY

32 YRS F,

PAIN LB WITH LEG PAIN- 1 YR

OBESE – 91 KG



নাভ চাপ



POST OPERATIVE

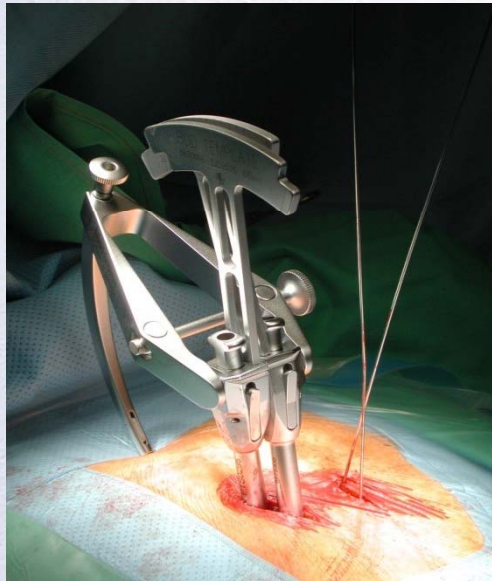


**DEGENERATIVE DISC DISEASE
LUMBAR CANAL STENOSIS
SPONDYLOLISTHESIS**

Leg Pain +
Back pain



SPON'LISTHESIS



**MINIMAL ACCESS SPINE
TECHNOLOGY
(MAST)**



PEDICLE SCREW FIXATION

CERVICAL SPINAL CORD TUMOUR

ML, 35 YRS F, PROGRESSIVE WEAKNESS IN LOWER LIMBS

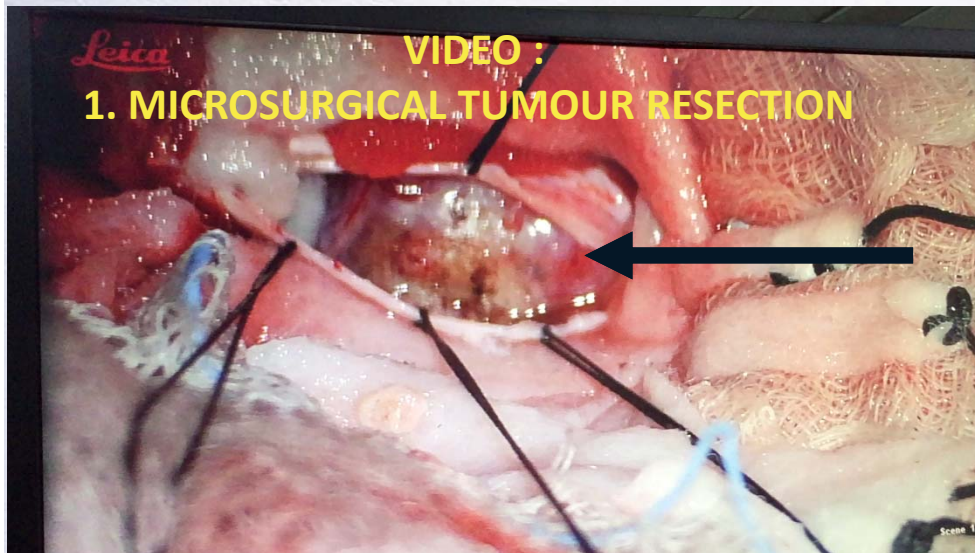
TETRAPARESIS- LOWER LIMBS MORE INVOLVED THAN UPPER LIMBS

WHEEL-CHAIR BOUND BEFORE SURGERY

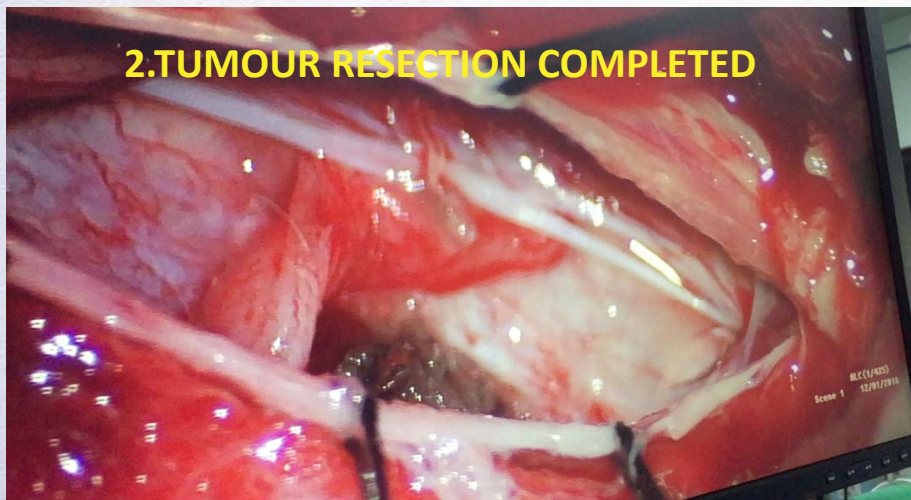
WALKING DAY 3 OF SURGERY WITH SUPPORT



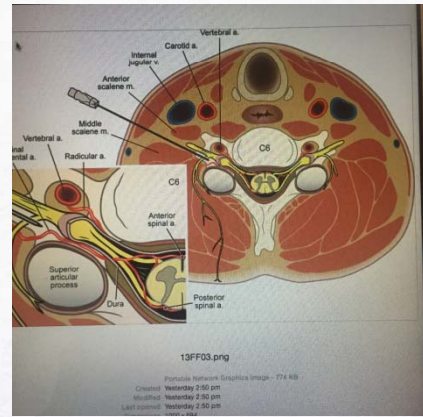
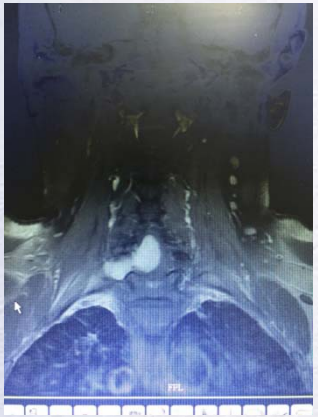
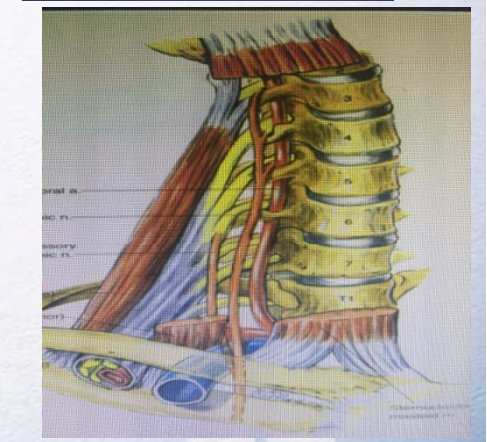
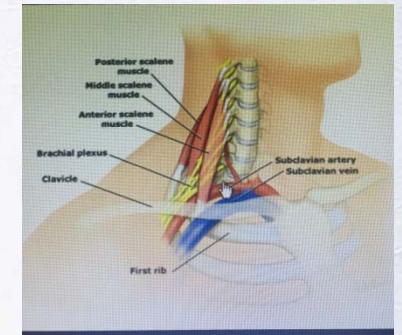
টিউমার



NEUROFIBROMA



CERVICAL DUMBELL NEUROFIBROMA



STAGE 1 : POSTERIOR APPROACH

STAGE 2: ANTERIOR APPROACH

WHO NEEDS SURGERY ?

1. Severe pain in the arms not responding to medical Rx- radiculitis
2. Weakness of upper limb/ hand- radiculopathy
2. Progressive weakness of limbs - tetra paresis- myelopathy
3. Sphincter dysfunction

Majority do not need surgery

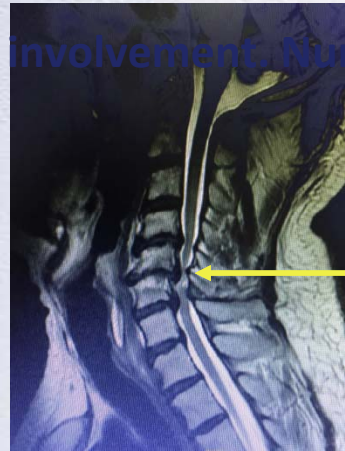
Majority do not

SEVERE OPLL-

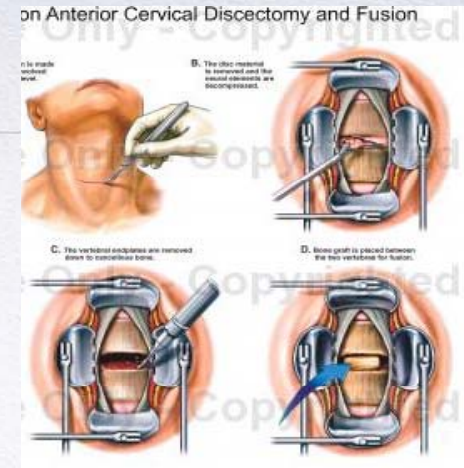
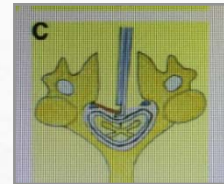
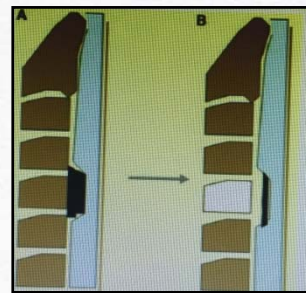
Cervical Cord Compression

KM, 45 YRS, M, PROGRESSIVE QUADRI-PARESIS

Spastic gait, weakness of grip bilateral,
bladder & bowel involvement, walking with support.



involvement, Nurick grade 4.



SEVERE STENOSIS
> 80%



NORMAL

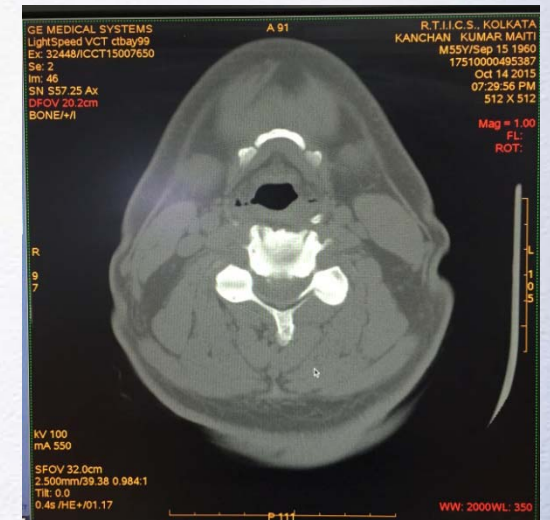
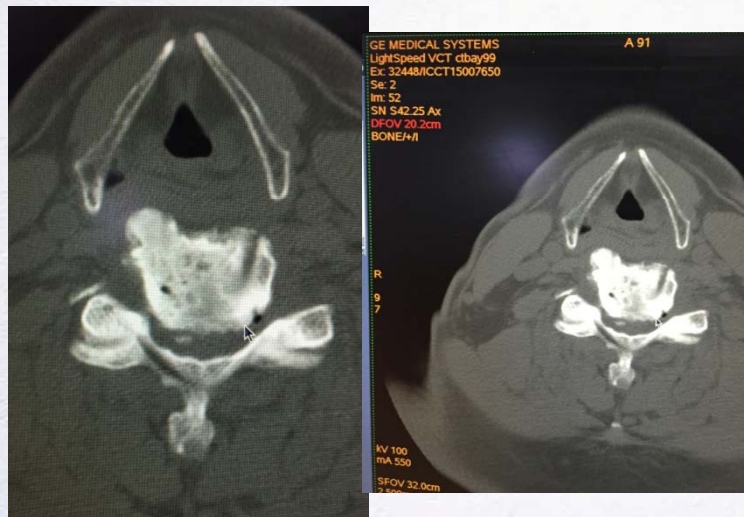
Vertebra	AP(cm)	Transverse(cm)
C2-C3	10.7	20.4
C3	10.2	18.5
C3-C4	10.6	18.8
C4	11.4	22.4
C4-C5	7.4	20.2
C5	13.4	26.4
C5-C6	6.3	20.5
C6	11.3	23.4
C6-C7	6.2	19.2
C7	12.5	23.2
C7-D1	9.2	20.6
D1	12.3	23.6
D1-D2	11.4	18.3
D2	13.4	19.9
D2-D3	12.2	17.2
D3	14.8	20.0
D3-D4	13.2	20.0
D4	14.2	18.6

2nd POST OP DAY

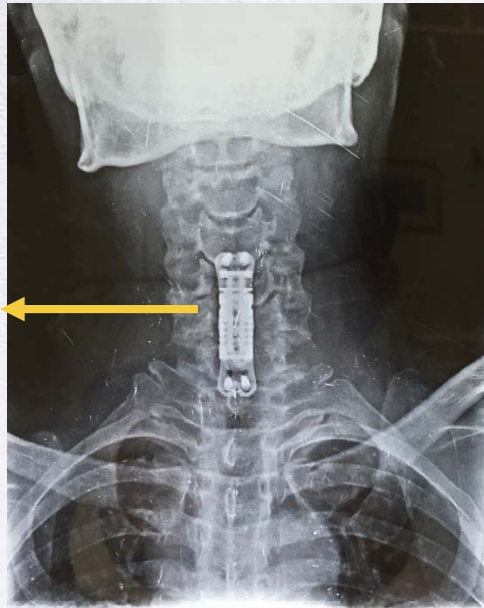
CERVICAL CORD COMPRESSION



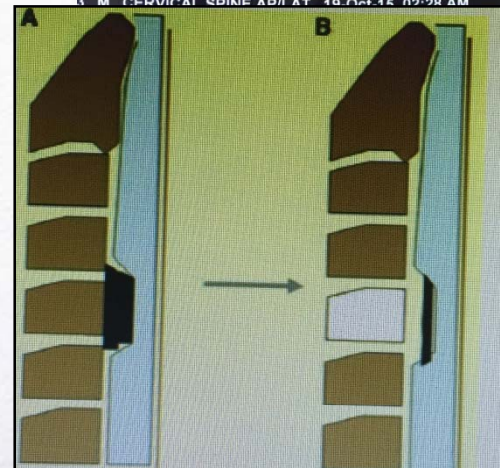
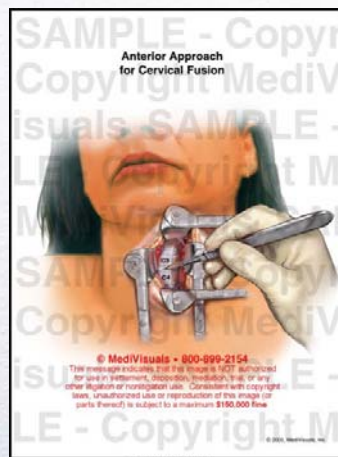
SEVERE GRADE SPONDYLOTIC MYELOPATHY(OPLL)
NURICK GRADE 4



SEVERE OPLL- Cervical Cord Compression



KANCHAN KUMAR MAITI 17510000495387 055Y 2
RABINDRANATH TAGORE INTERNA



CERVICAL CORD COMPRESSION

SPONDYLOSIS CAUSING
QUADRIPARESIS
NURICK GRADE 4

সার্ভিকাল spondylosis

মেরুদণ্ড + নার্ভ চাপ

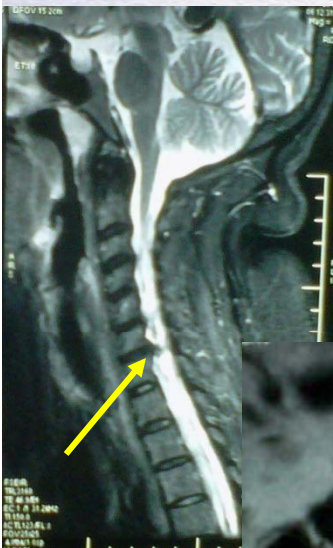
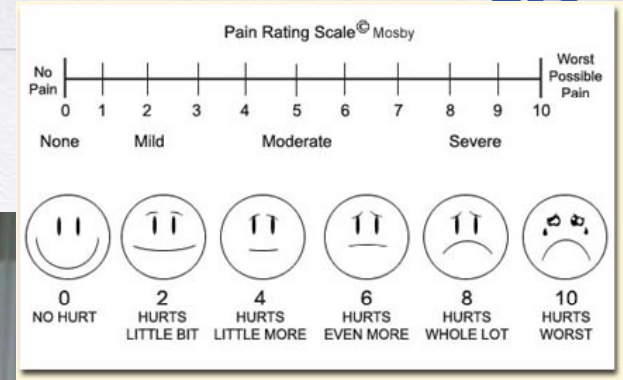


NECK PAIN

45 Y/F
Severe Neck and Lt arm pain
Not relieved with Rx

DISC

CERVICAL



**COMPLETE PAIN RELIEF
NEXT DAY of SURGERY**

**ANTERIOR CERVICAL
MICRODISCECTOMY
& FUSION**

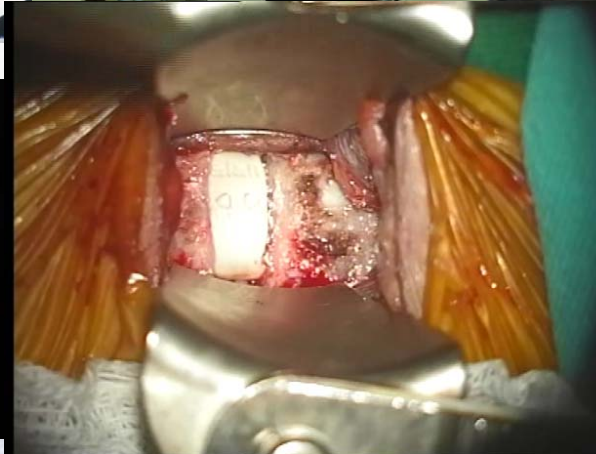
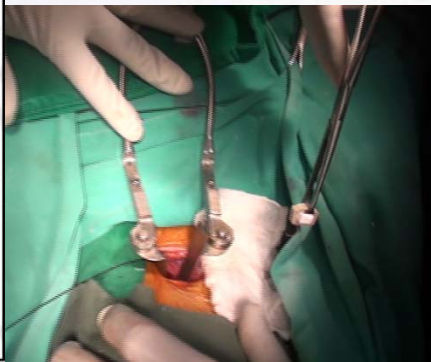
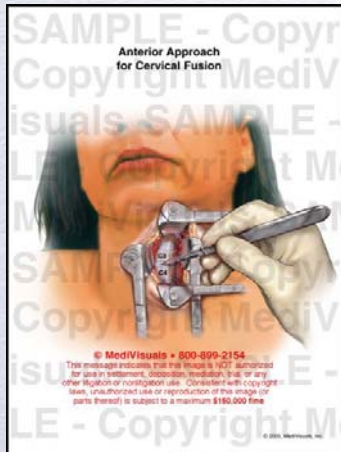


CERVICAL DISC CAUSING MYELOPATHY

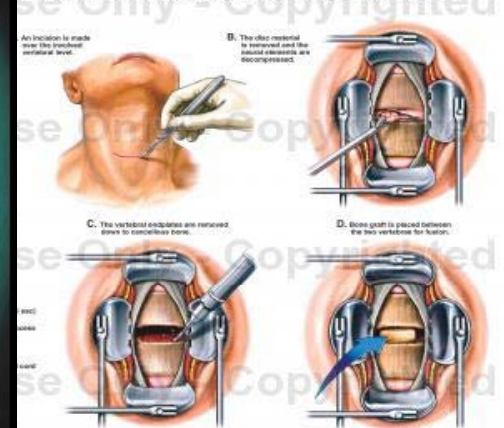
- 35 YRS LADY
- NUCHAL PAIN
- MYELO- RADICULOPATHY

**MICROSURGICAL DISCECTOMY
FOLLOWED BY RECONSTRUCTION**

VIDEO



Robinson Anterior Cervical Discectomy and Fusion





ANTERIOR CERVICAL MICRODISCECTOMY AND FUSION

ACDF

Changing trends...

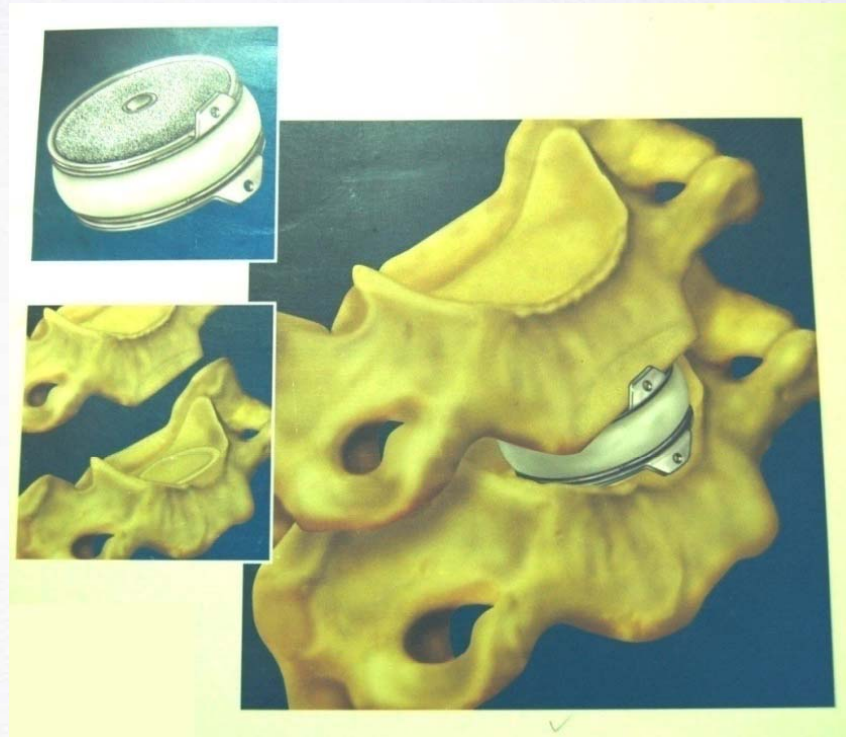
Spine Surgery



SPINAL RECONSTRUCTION

Disc Replacement Surgery

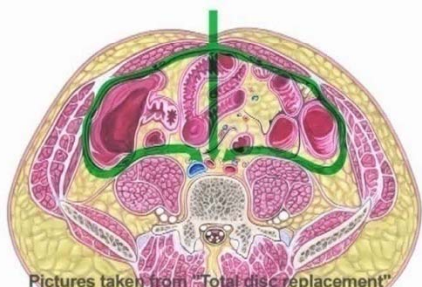
Polyurethane nucleus between
two Titanium
Alloy shells



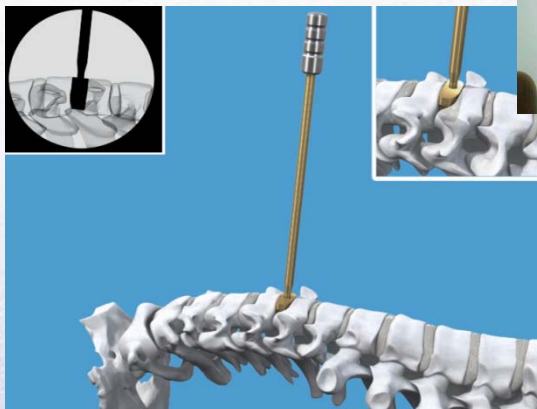
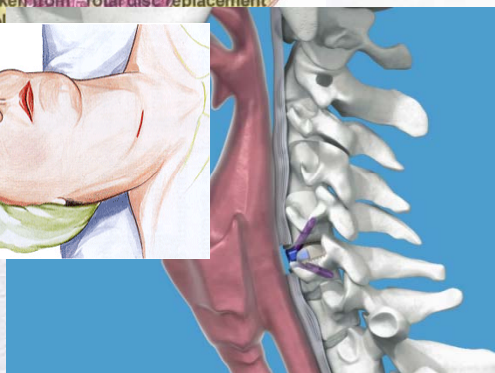
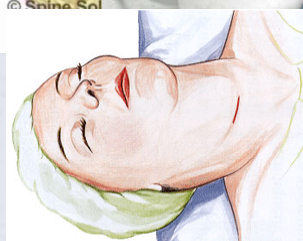
Cervical Disc System

VIDEO

CERVICAL MICRODISCECTOMY AND SPINAL RECONSTRUCTION



Pictures taken from "Total disc replacement"
© Spine Sol



BACK PAIN & SPINAL CORD TUMOR



2009



2010



2014

**K.S.,65 YEARS LADY
PARAPARESIS
MID BACK PAIN
COMPLETE MICROSURGICAL
RESECTION- MENINGIOMAS
NO RECURRENCE AFTER 5 YEARS**

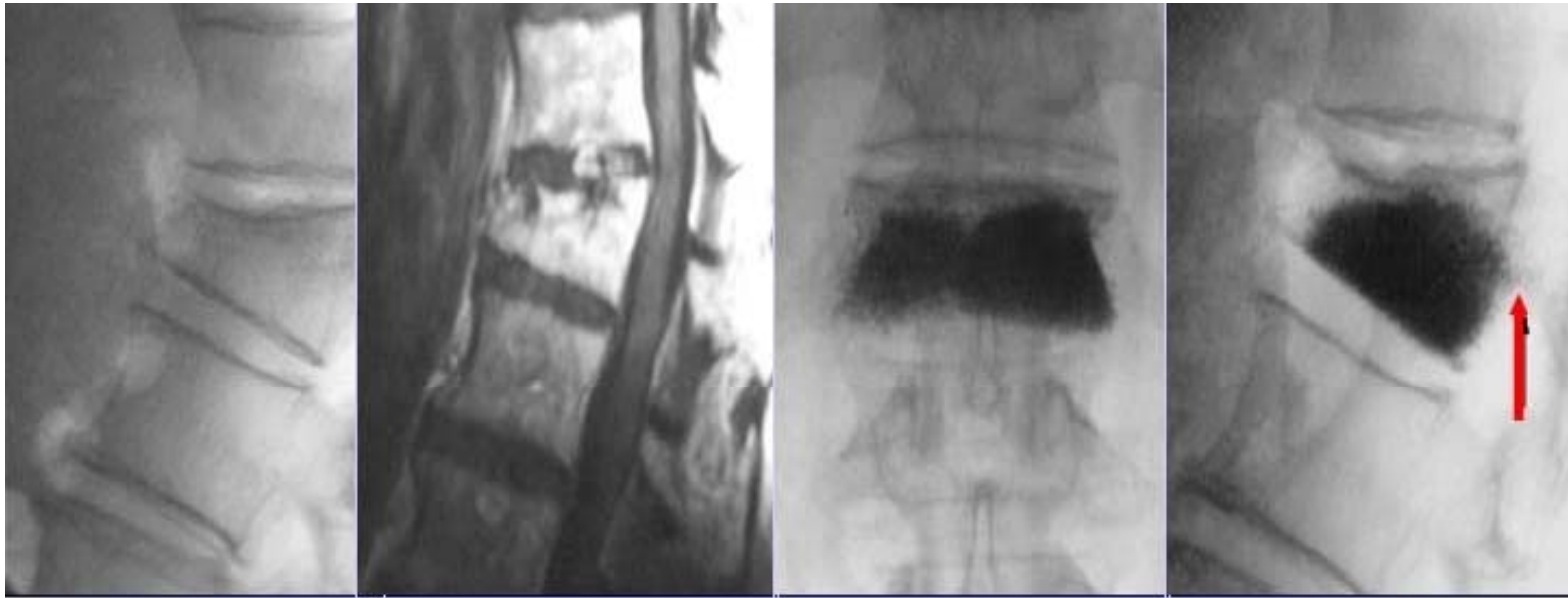
Use of ULTRASONIC SURGICAL ASPIRATOR





BACK PAIN

- OLD # OF VERTEBRAL BODIES
- OSTEOPOROSIS



VERTEBROPLASTY

BACK PAIN & TUBERCULOSIS



T B যক্ষ্মারোগ

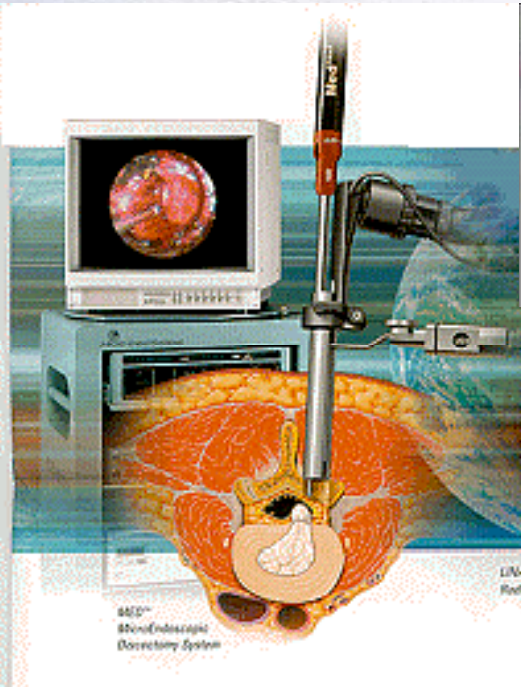


PRE TREATMENT



POST TREATMENT

ADVANCED SPINAL SURGERY PROGRAM



- ✦ **MICROSURGERY DISC AND STENOSIS**
- ✦ **MINIMALLY INVASIVE TUMOR SURGERY**
- ✦ **PEDIATRIC SPINAL SURGERY**
- ✦ **PERCUTANEOUS MIS FIXATION**
- ✦ **SPINAL REHABILITATION**

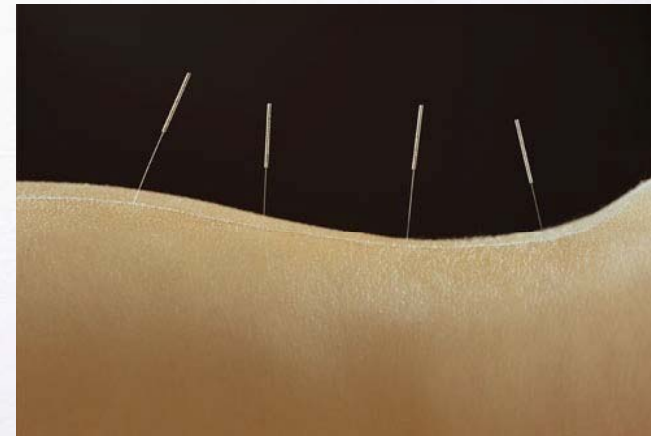
What is done after surgery ?



NEURO REHABILITATION- 24X7



CLINICAL PSYCHOLOGIST



**NEUROSCIENCES
R N TAGORE HOSPITAL**

CHRONIC BACK PAIN

HOW TO GET A HEALTHY BACK?

- HEAT THERAPY

ULTRASOUND/SWD/IFT

- EXERCISE REGULARY

MUSCLE STRETCHING

MUSCLE STRENGTHENING

BRISK WALKING

- EAT HEALTHY

- LIFE STYLE CHANGES





Post op and Follow up Protocol:

Life Style Changes
Physical exercises
Posture Control
Encourage Physical Activity

CONTINUE FOR LIFE TIME





MINIMALLY INVASIVE POSTERIOR LUMBAR DISC SURGERY

Microsurgical Techniques-

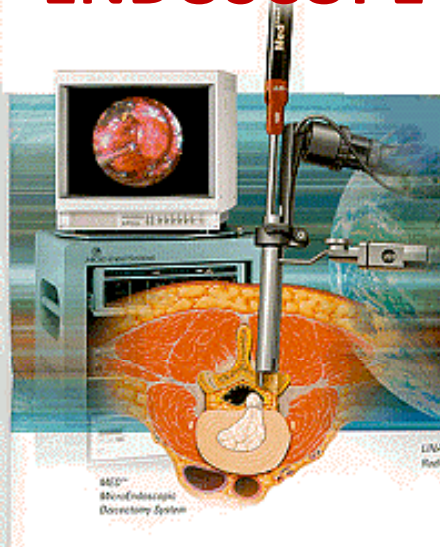
Discectomy

Flavectomy

Fenestration

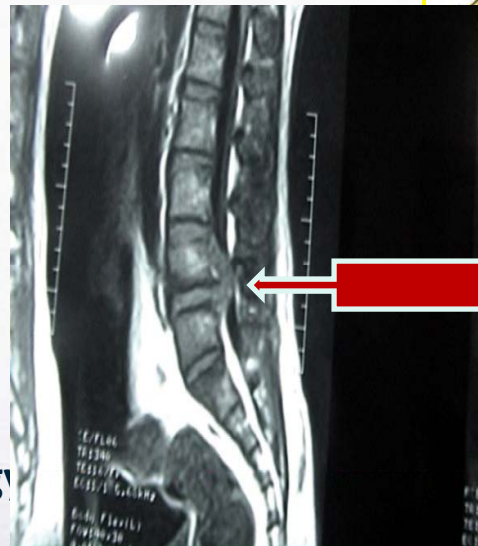
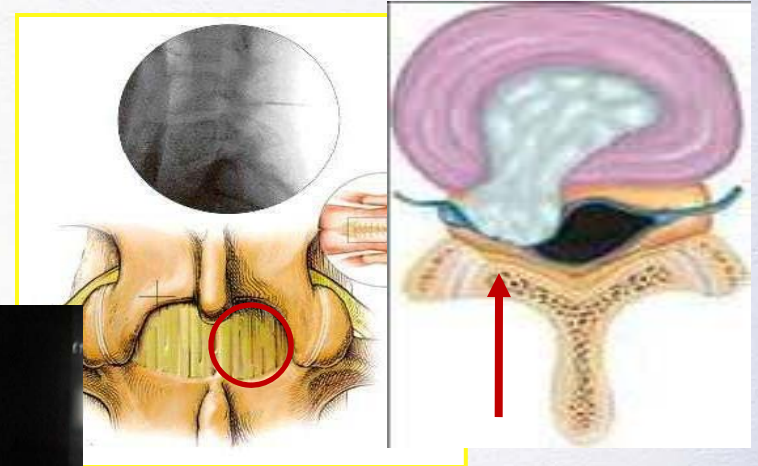
Facetectomy

ENDOSCOPE



Minimal Access Spine Technology
MAST

MICROSCOPE



STRICT SELECTION CRITERIA
FOR SURGERY

MAJORITY BACK PAIN PATIENTS
DO NOT REQUIRE SURGERY

What is the Outcome of Surgery?



Spine Surgery

Failure of improvement - Why ?

মেরুদণ্ড সার্জারি উন্নতির ব্যর্থতা- কেন?

- Wrong selection - *ভুল নির্বাচন-*
- Inadequate surgery - *অসম্পূর্ণ অস্ত্রোপচার*
- Poor Technique - *প্রযুক্তি*

Lumbar Disc Prolapse Surgery



Results of Surgery

Majority Improve

Proper Case Selection

Surgical Technique- Minimal Invasive

Success Rate : 85- 90%

Complications : 0-2.0%(Non Neurological)

: 1.0 % (Neurological)

Fear Of Paraplegia- None

Failure to Improve

Improper Case Selection

Technique of Surgery

Stenosis not Treated Surgically

Epidural Fibrosis

Instability

MINIMAL ACCESS CERVICAL & LUMBAR SPINE SURGERY

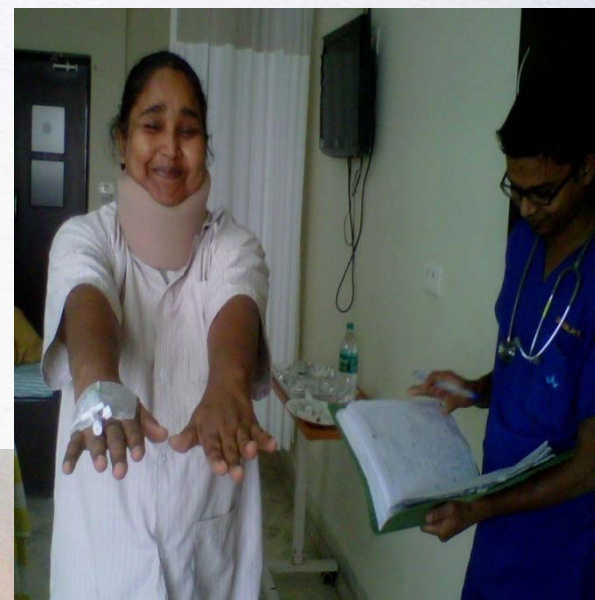
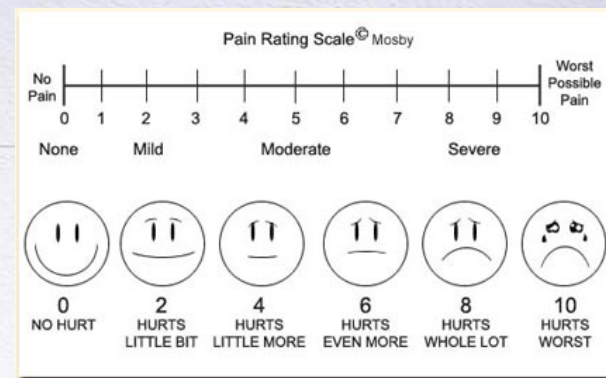
RESULTS OF SURGERY

GOOD OUTCOME

STRICT SELECTION CRITERIA

PSYCHOSOCIAL EVALUATION

NEUROREHABILITATION



What has Changed?



NEUROSURGERY TODAY

EARLY DIAGNOSIS

গোড়ার দিকে

DIAGNOSTIC ACCURACY

সঠিকতা



NEUROSURGERY TODAY

PRECISION IN SURGERY



উন্নত এবং অত্যাধুনিক মাইক্রোসার্জারীর প্রযুক্তি



BRAIN & SPINE SURGERY

INTRAOPERATIVE IMAGE GUIDANCE



NEURONAVIGATION SET UP AMRITA INSTITUTE OF MED SCIENCES, KOCHI, INDIA

NEUROSURGERY TODAY

SAFETY

নিরাপত্তা

**Special Equipments for
MINIMALLY INVASIVE
BRAIN & SPINE SURGERY**



NEUROSURGERY TODAY

MULTIDISCIPLINARY NEURO TEAM



[Journal of Neurosurgery](#)

Dec 2013 / Vol. 119 / No. 6 / Pages 1359-1369

Article: Changing our culture to advance patient safety; AANS.

WEEKLY NEURO MEET

NEUROSCIENCES PROGRAM

NEUROEMERGENCY 24X7 FOR STROKE & TRAUMA

COMPLEX BRAIN AND SPINAL CORD TUMOURS

PEDIATRIC BRAIN AND SPINE SURGERY

COMPREHENSIVE STROKE CARE- STROKE UNIT

COMPREHENSIVE EPILEPSY CARE- VIDEO EEG LAB

MINIMAL ACCESS SPINE SURGERY

STEREOTACTIC & FUNCTIONAL NEUROSURGERY



BRAIN & SPINE SURGERY TODAY

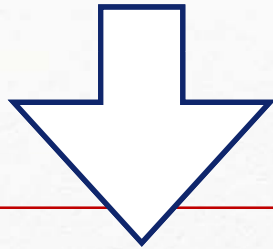


- **High precision operation**
- **Safety-Spares the normal brain and spinal cord and nerves**
- **Precision-total removal of tumors and vascular lesions is now possible with preservation of surrounding eloquent brain**
- **Spine & Spinal cord surgery can reverse neurological deficits**
- **Improved patient outcome**

BRAIN & SPINE SURGERY TODAY



- স্পষ্টতা - DIAGNOSIS
- অভিজ্ঞতা - TEAM
- দক্ষ - SURGERY
- যত্ন - POST OPERATIVE CARE



SAFETY

নিরাপত্তা

OPERATING ROOM

TECHNOLOGY



**EQUIPPED FOR HIGH PRECISION
BRAIN & SPINE SURGERY**

SAFETY
নিরাপত্তা



**SAFE & HIGH PRECISION
NEUROSURGERY**

MAXIMUM PATIENT SAFETY



TAKE TIME OUT TO RELAX





*Thank you for your time and
your kind attention*

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