

Micro-Endoscopic Lumbar and Cervical Disc Surgery

Satnam S. Chhabra

Senior Consultant

Sir Ganga Ram Hospital

New Delhi

Minimally Invasive Spine Surgery (MISS)

Satnam Chhabra

Vice-Chairman

Department of Neurosurgery

Sir Ganga Ram Hospital

Why MISS ?

- To reduce the iatrogenic trauma to the patient during surgery
- To do an efficient target surgery with a minimum iatrogenic trauma

How to Achieve MISS

- Types of MISS
 - Minimal Access surgery
 - Efficient Target surgery with minimum trauma
 - Both of above

Principles of Planning MISS

- **Skin Incision-** Adequate placement
Adequate size
Cosmetic
- **Route to target** Least Traumatic (anatomical pathway)
Fast
- **Collateral Damage** Negligible
Reparable
- **Target exposure** Adequate
- **Proper Illumination & magnification** Endoscope/Microscope
- **Target Treatment** Efficient
Without restriction due to small approach
- **Postoperative traces** Negligible
Not relevant for outcome
Options for return(recurrences)

Latest Techniques of MISS

- Endoscopic Techniques
- Vertebroplasty / Kyphoplasty
- Percutaneous Stabilisation
- Dynamic Stabilisation
- Injection Techniques

Injection Techniques

- Ozone nucleolysis
- IDET(Intradiscal Electrothermal Therapy)
- Facet and Epidural Blocks
- Percutaneous Disk Decompressor

Endoscopic Techniques

Posterior

- Micro-endoscopic Discectomy(MED)
- Percutaneous endoscopic Discectomy
- Endoscopic technique for tumour removal

Anterior

- Anterior cervical foraminotomy
- Thoracoscopic- Discectomy, Stabilisation, Scoliosis surgery
- Laparoscopic: stabilisation, disc replacement

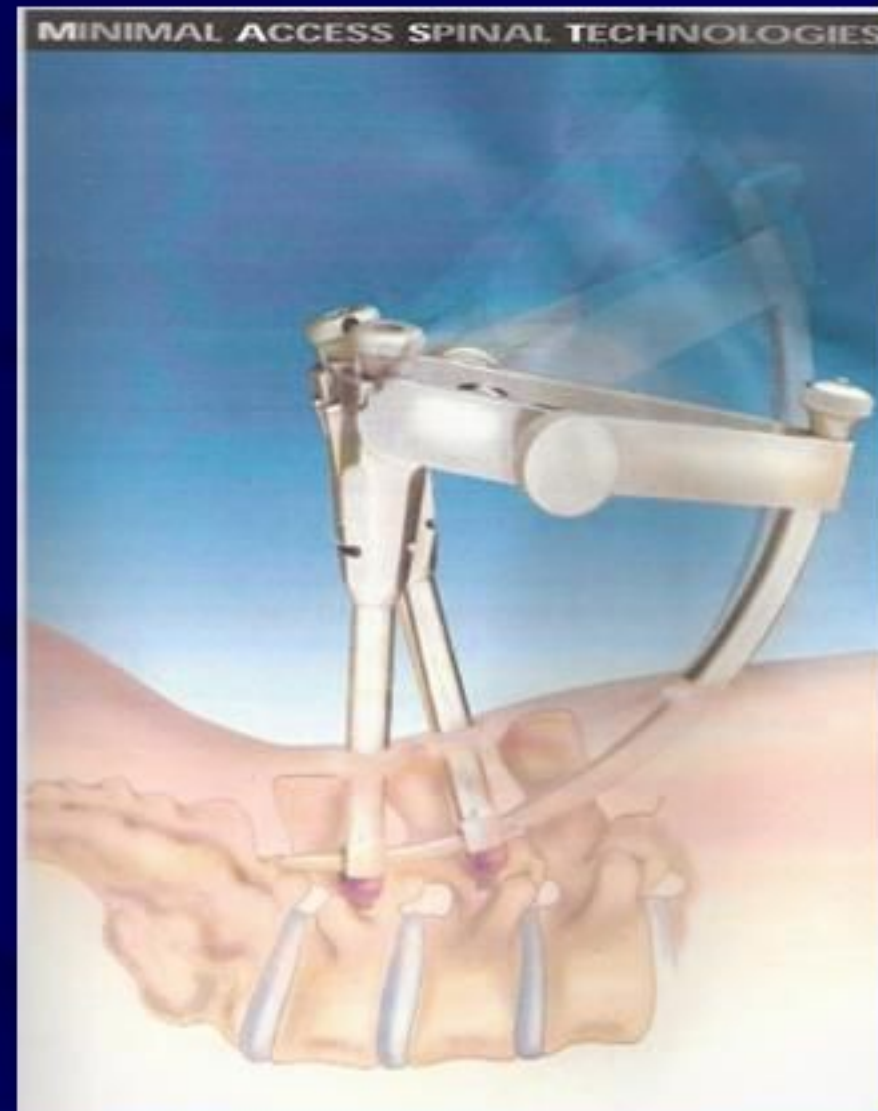
Vertebroplasty/Kyphoplasty

Indications

- Fractures: Traumatic/ Osteoporotic
- Tumours: Metastatic/ Hemangioma

Percutaneous Stabilisation

- Sextant



Posterior Dynamic Stabilisation

Interspinous devices

- Corflex(Paradigm)
- Wallis(Abbott Spine)
- Diam (Medtronic)
- X-Stop (Kyphon)

Indications

- Disc herniation
- Lumbar spinal stenosis
- Facet syndrome and Black disc

Posterior Dynamic Stabilisation

- DSS (Paradigm Spine)
- Dynesys (Zimmer Spine)
- Stabilimix (Applied Spine Technologies)

Micro-Endoscopic Disc Surgery

What is MED:

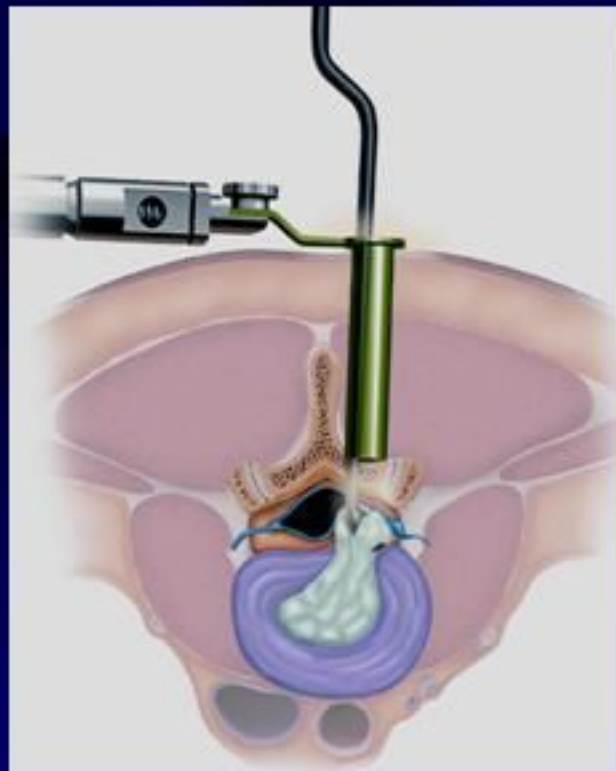
Microdiscectomy under endoscopic vision
thru a tube in the back

- Foley & Smith's in 1997 (METRx-Medtronic)
- Destandau's in 1999 (Karl-Storz)

Comparison

Foley & Smith's

- hollow tube
- 3 mm scope
- fixed system
- more working space
- max. area (283 mm²)
- smaller incision (1.5 cm)
- expensive



Destandau's

- multi-channel tube
- 4 mm scope
- mobile system
- limited space, fixed direction
- larger area (340 mm²)
- larger incision (2.5 cm)
- economical



Modified tube

- hollow tube
- 4 mm scope
- fixed / mobile
- more working space
- max. area (288 mm²)
- smaller incision (1.5 cm)
- regular instruments
- very economical



(> 200 Discectomies)

Indications of Endoscopic Lumbar Disc Surgery

- Extruded / Contained / Migrated disc
- Central / Lateral / Far lateral disc
- Focal Canal stenosis

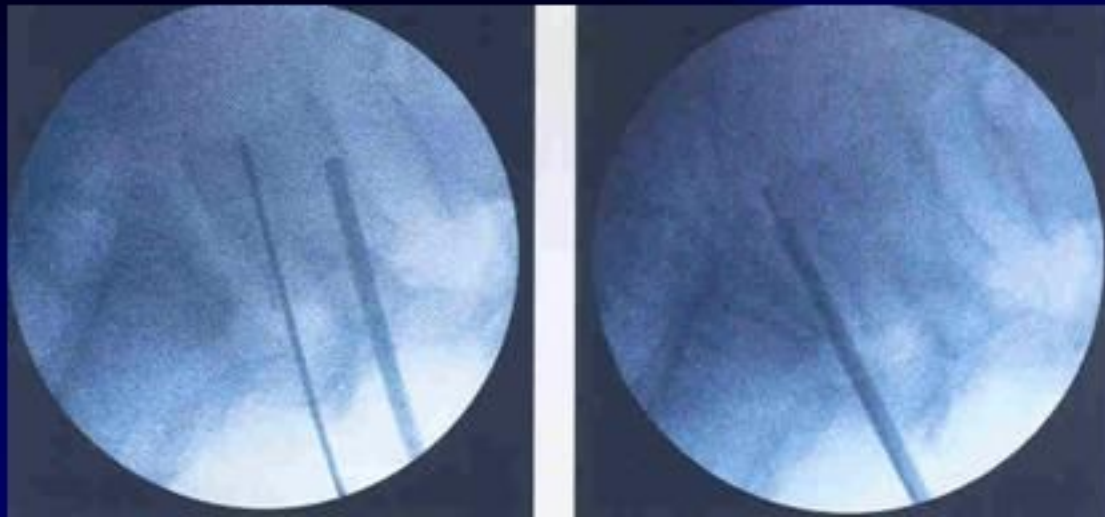
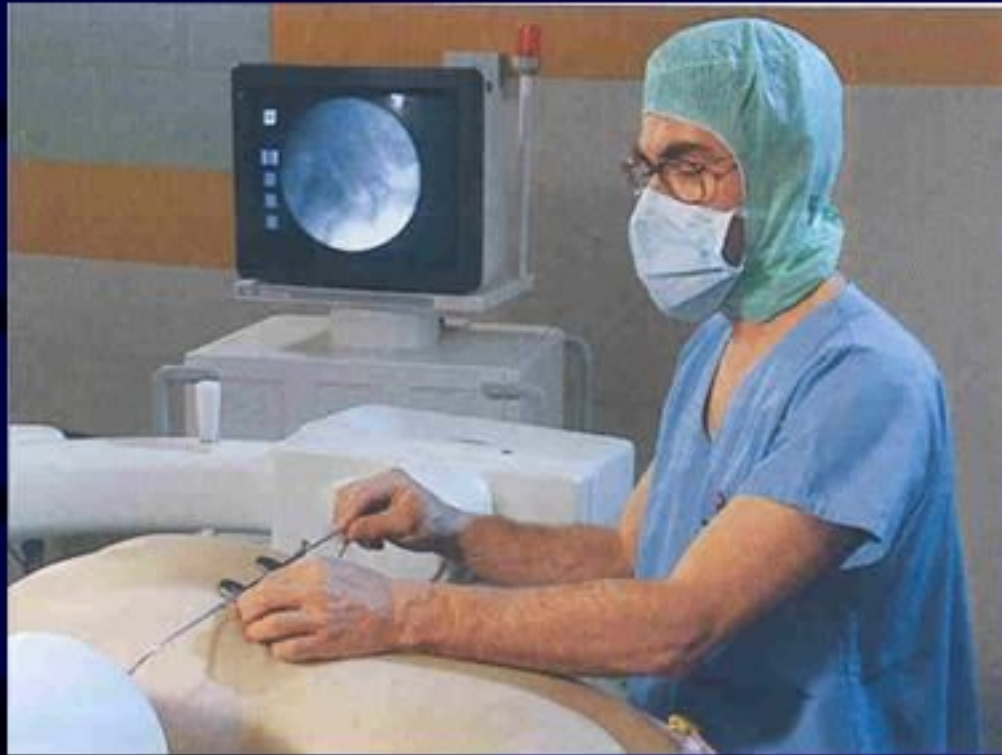
Indications of Endoscopic Cervical Disc Surgery (Posterior Approach)

- Postero-Lateral Disc Prolapse with Radiculopathy
- Cervical Foraminal Stenosis

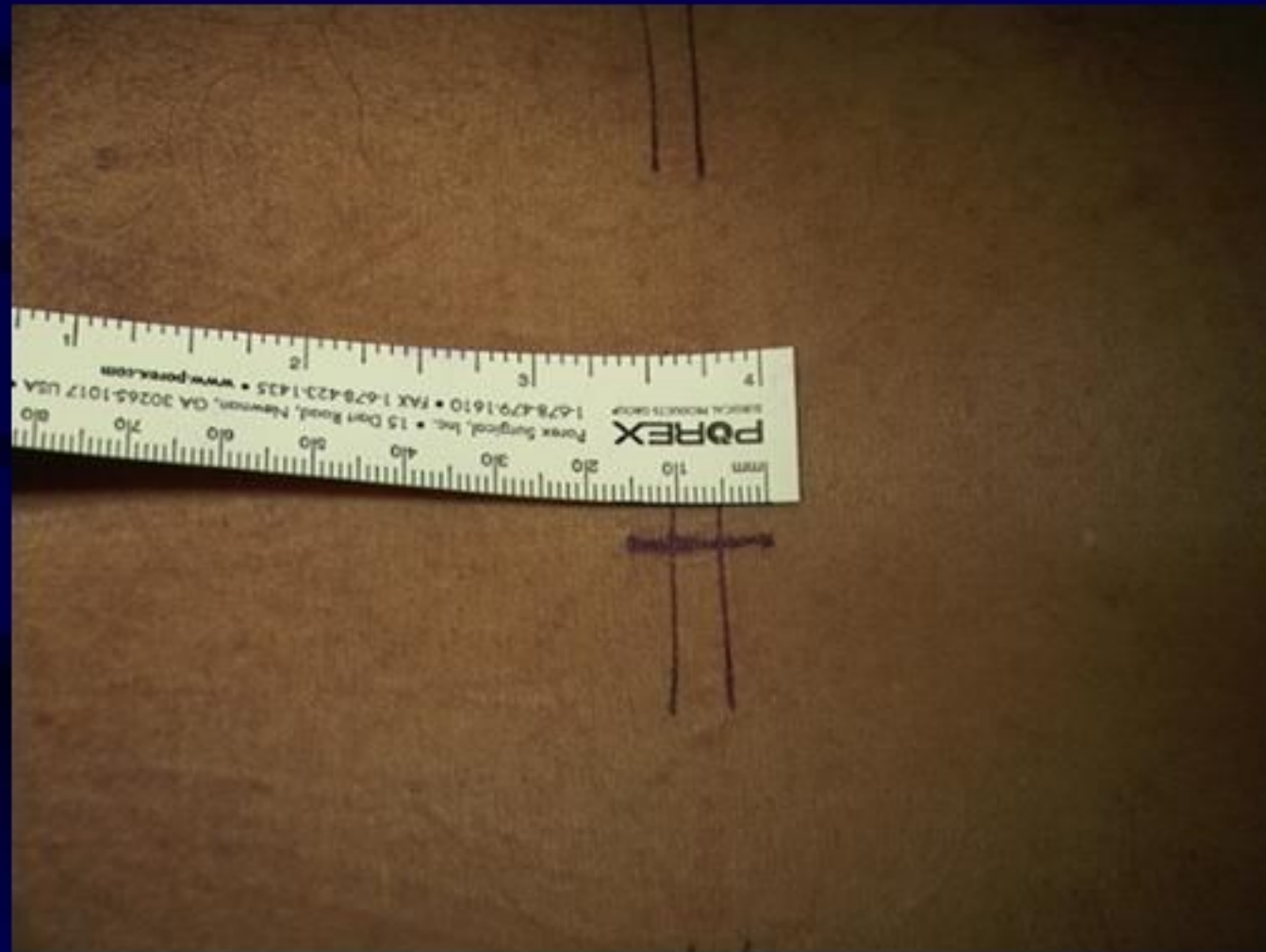
Endoscopic Disc Surgery

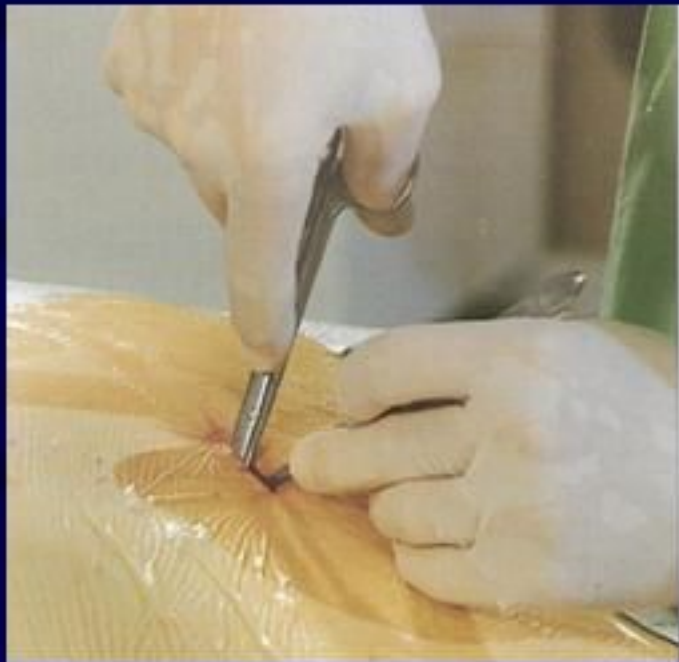
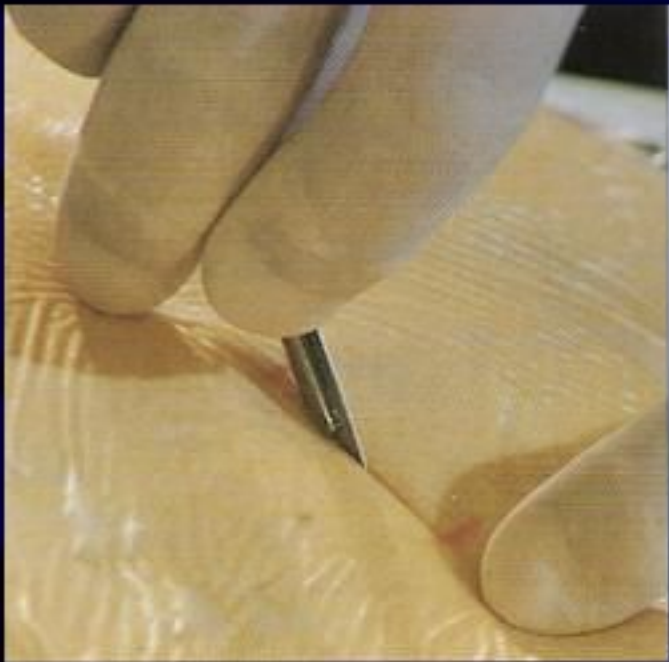


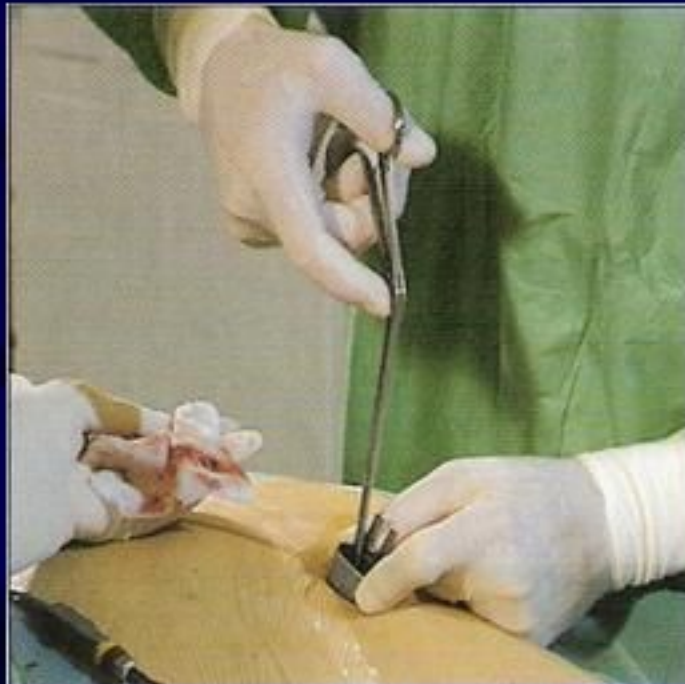
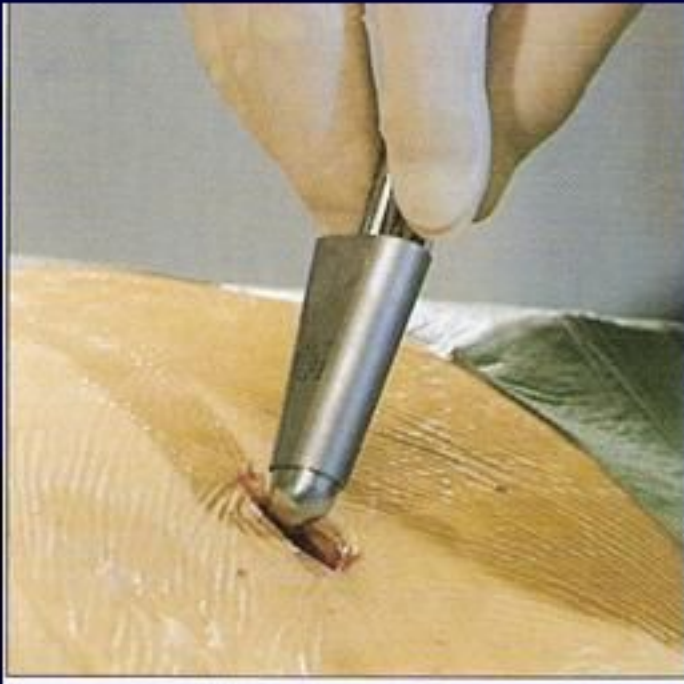
Endoscopic Disc Surgery



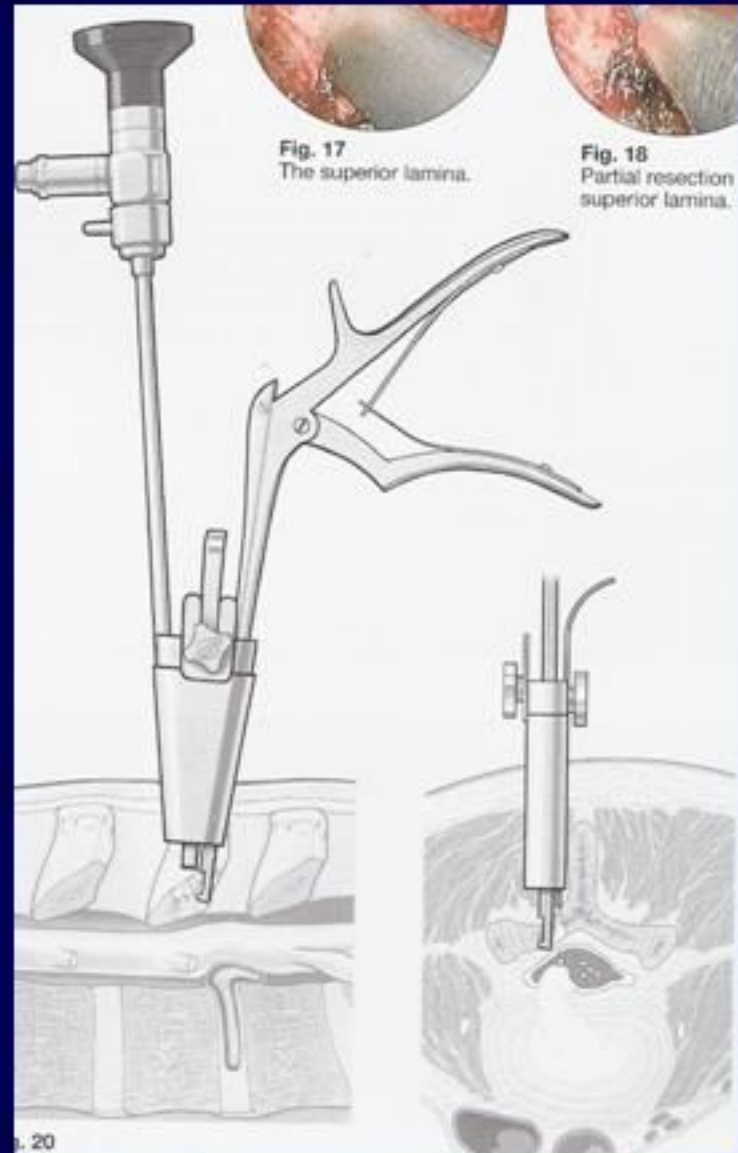
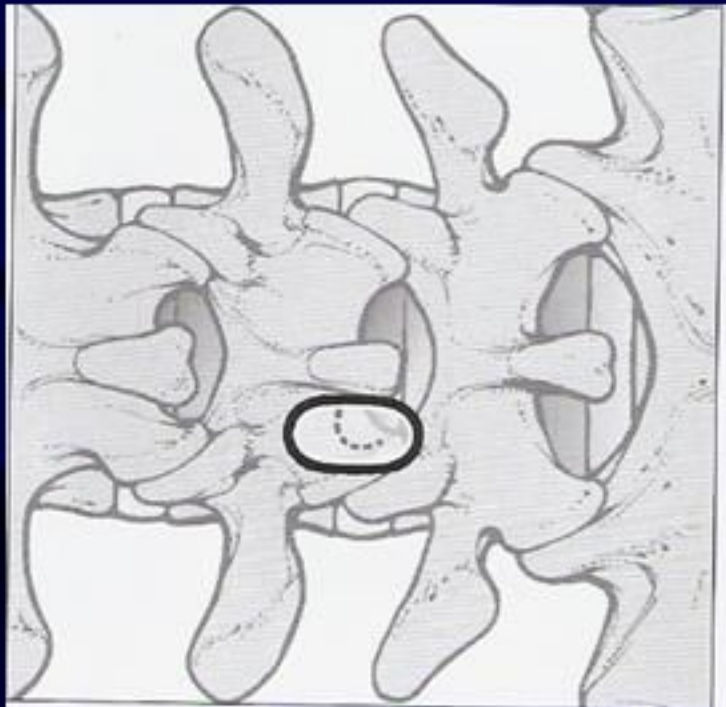
Endoscopic Disc Surgery











1.8 Closure of the Incision

The ENDOSPINE™ operating tube with its working insert is retracted, allowing hemostasis of the muscle layers under video-endoscopic control. Suture of the aponeurosis. Intracutaneous suture. A water-impermeable dressing is then applied.

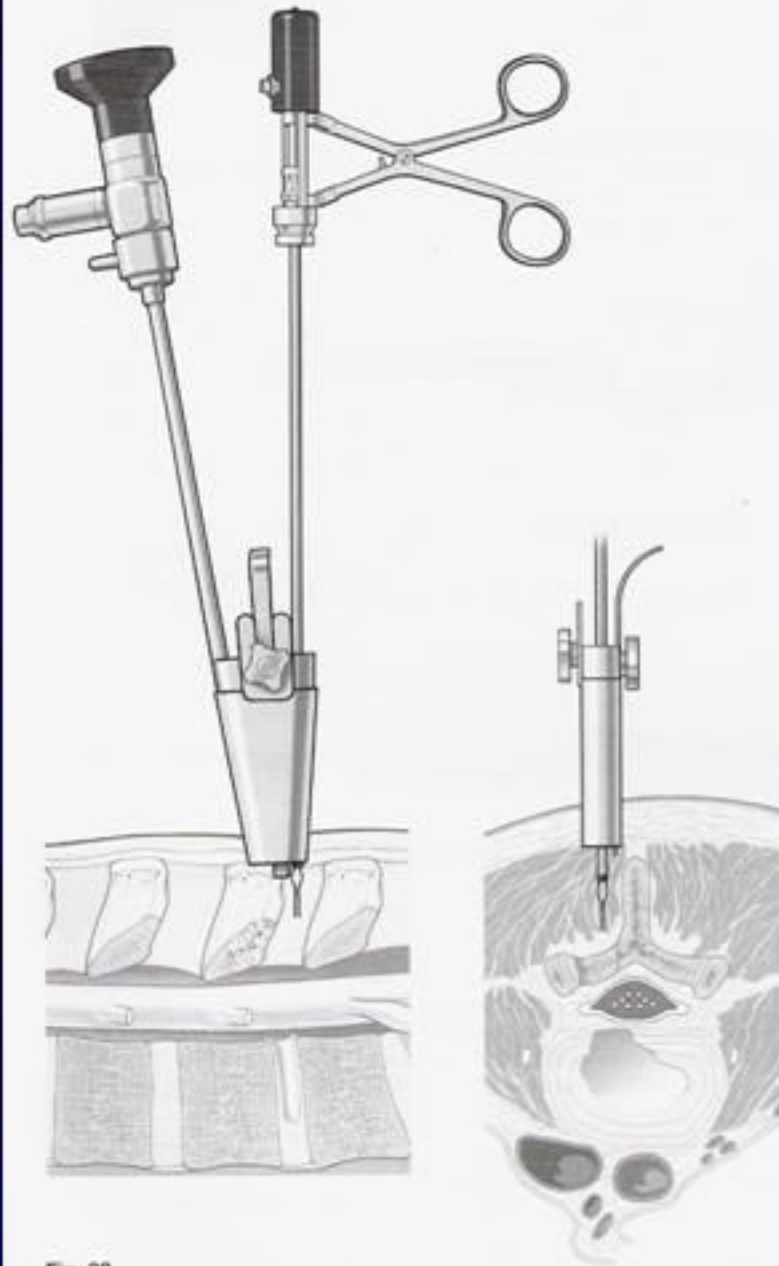


Fig. 30

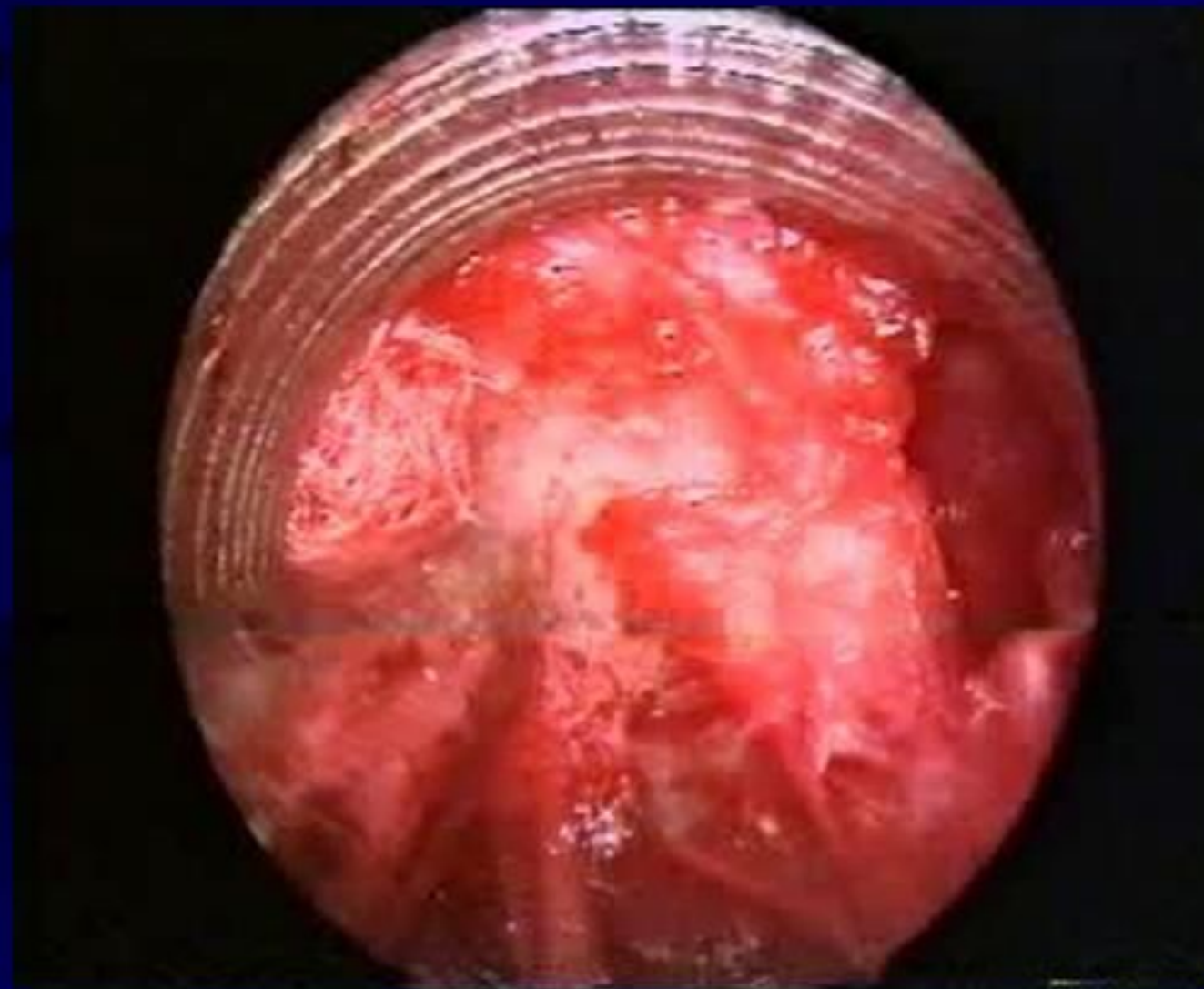
Endoscopic Disc Surgery



Endoscopic Disc Surgery L5/S1 left

Medial

Cranial



Caudal

Lateral

Endoscopic Surgery (L5/S1 right) Contained Lumbar Disc

Medial

Caudal



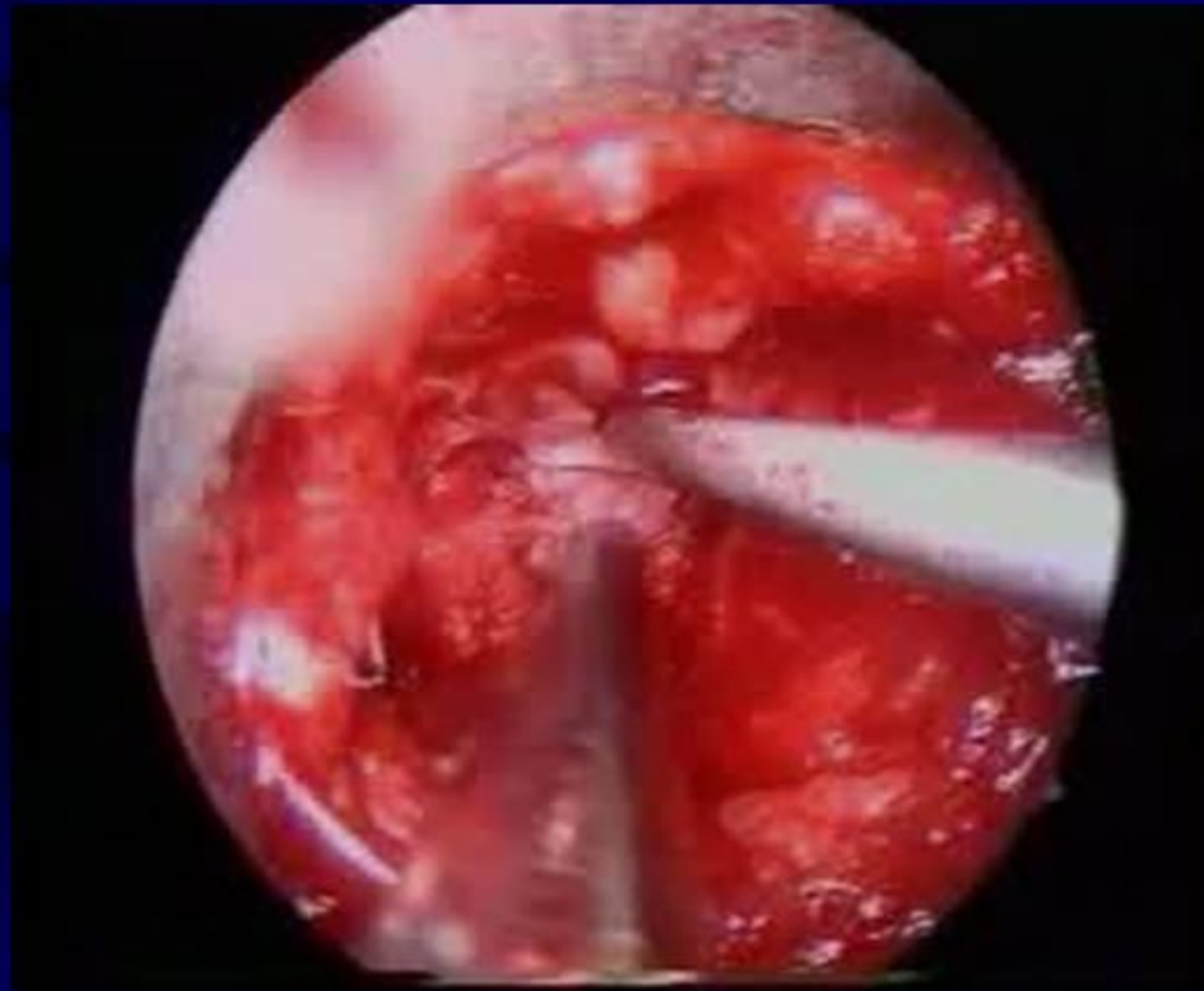
Cranial

Lateral

Endoscopic Surgery (L5/S1 right)

Sequestered Lumbar Disc

Medial



Caudal

Cranial

Lateral

Endoscopic Surgery (L4/5) Lumbar Canal Stenosis

Medial

Caudal



Cranial

Lateral

Endoscopic Surgery (C /7 right) Cervical Discectomy

Medial

Caudal



Cranial

Lateral

Endoscopic Disc Surgery

(August 2003-Nov 2006)

- Total no.: 300
- Male : Female 202 : 98
- Age: 17-82 years
- Weight: 110 Kg
- 2-level: 24

Endoscopic Disc Surgery

- Level of surgery

L1 / L2- 2	L2 / L3- 1
L3 / L4- 10	L4 / L5- 154
L5 / S1- 130	Cervical- 3

- Type of disease

Extruded disc	96
Contained Disc	161
Lateral Disc	116
Central Disc	44
Far Lateral Disc	1
Synovial cyst	1
Canal Stenosis	42

Experience of Cervical Disc

- Total No.: 3 (M:1, F:2)
- Distribution: C 6/7: 2
C 4/5: 1
- Symtoms: Severe radicular pain: 2
Shoulder weakness: 1
- Outcome: Complete recovery in all three

Endoscopic Disc Surgery

Complications:

- No Major Complication
- No Neurological worsening
- Minor Dural Tear : 4 patients
- Recurrence: 2

Endoscopic Disc Surgery

- Stay in Hospital

Day-care: 251

> 1 day : 49 (insurance & other

reasons)

Outcome

Modified Macnab's Criteria

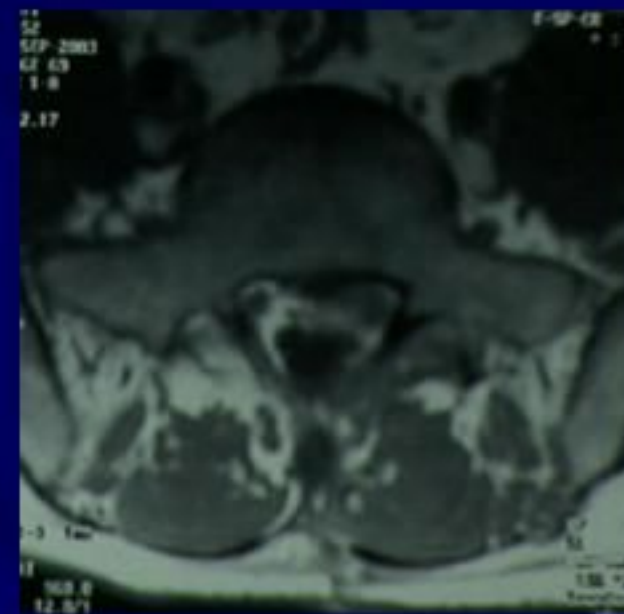
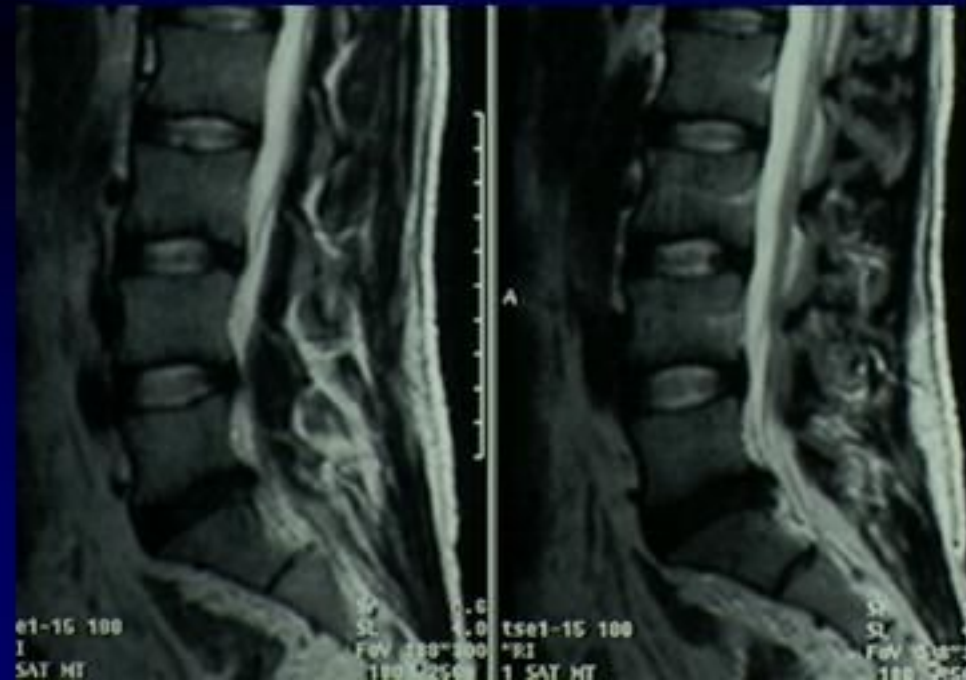
- **Excellent:** No pain; no restriction of mobility
- **Good:** Occasional non radicular pain, relief of presenting symptoms
- **Fair:** Some improved functional capacity; still handicapped &/or unemployed
- **Poor:** Continued objective symptom of nerve root involvement; additional op intervention needed

Outcome

(Modified Macnab's Criteria)

- Excellent to Good : 96%
- Fair : 3%
- Poor : 1%

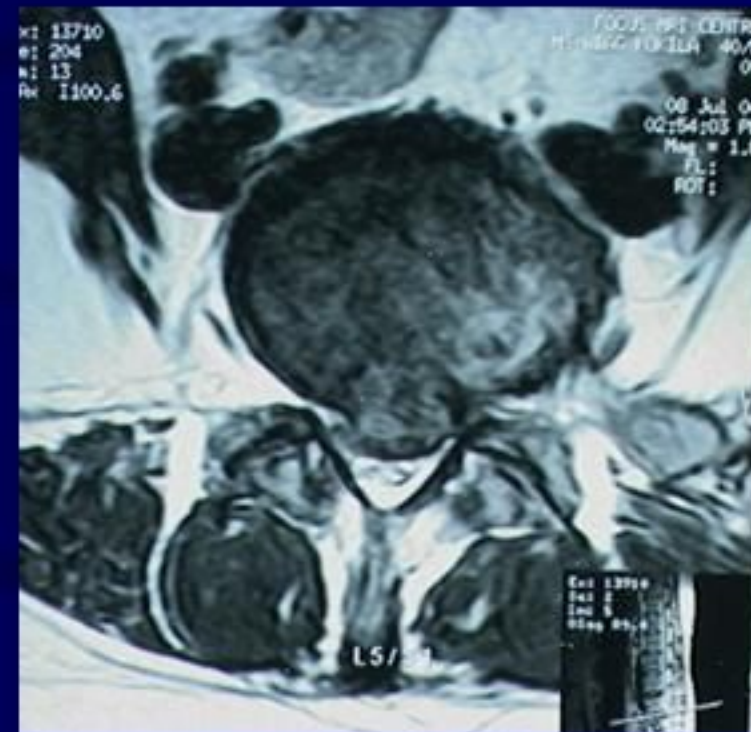
35 yrs male: Severe pain



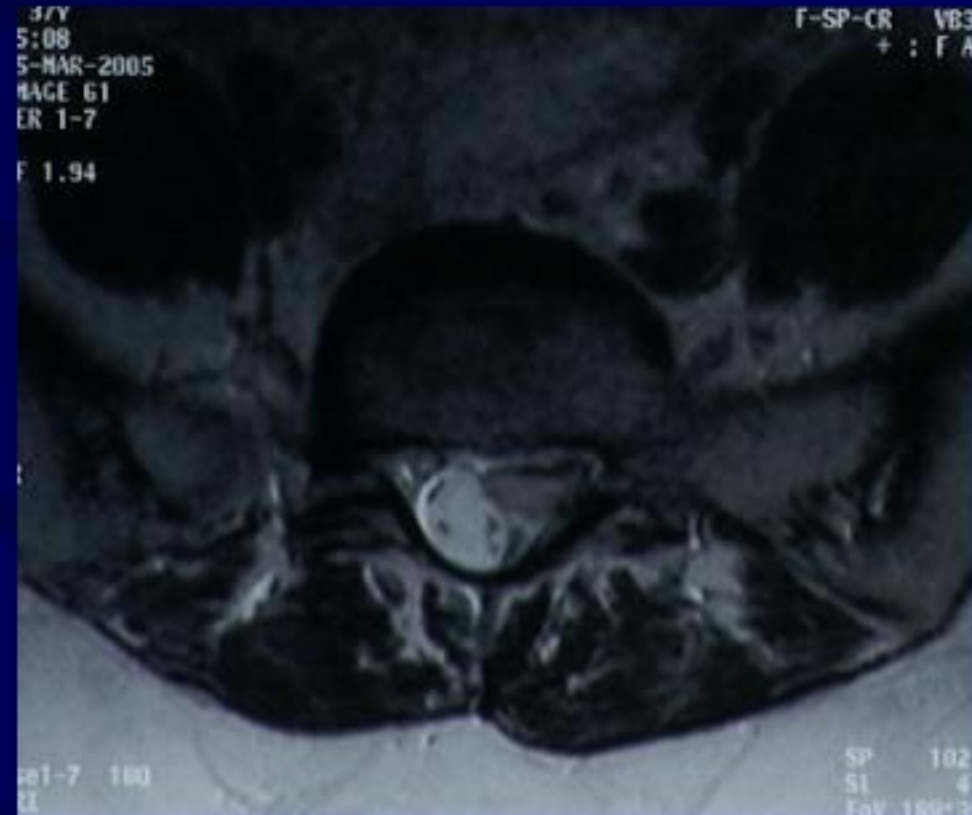
35 yr. Male with Extruded Disc



48 yrs. Female with left leg pain



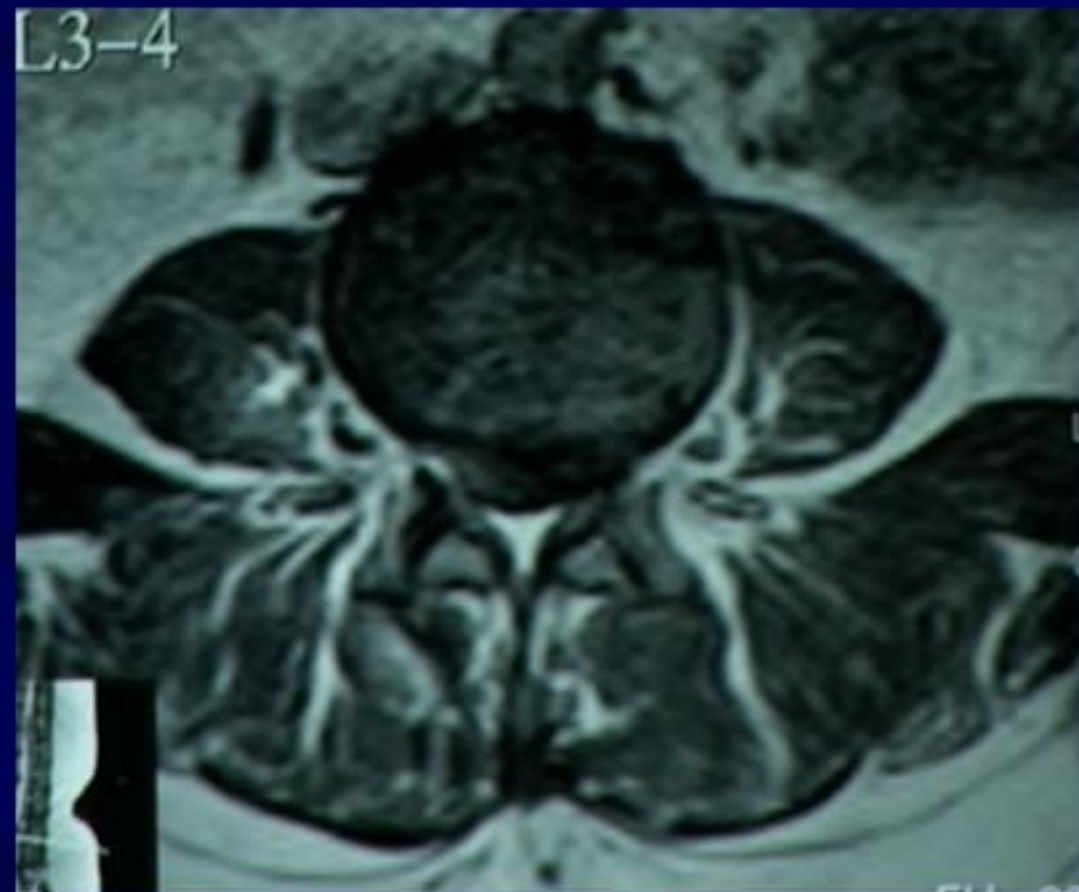
39 yr female with migrated disc



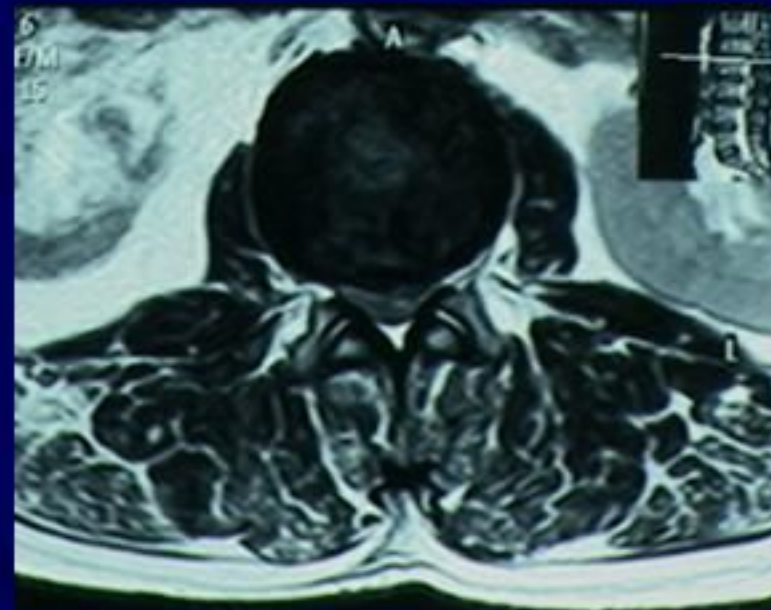
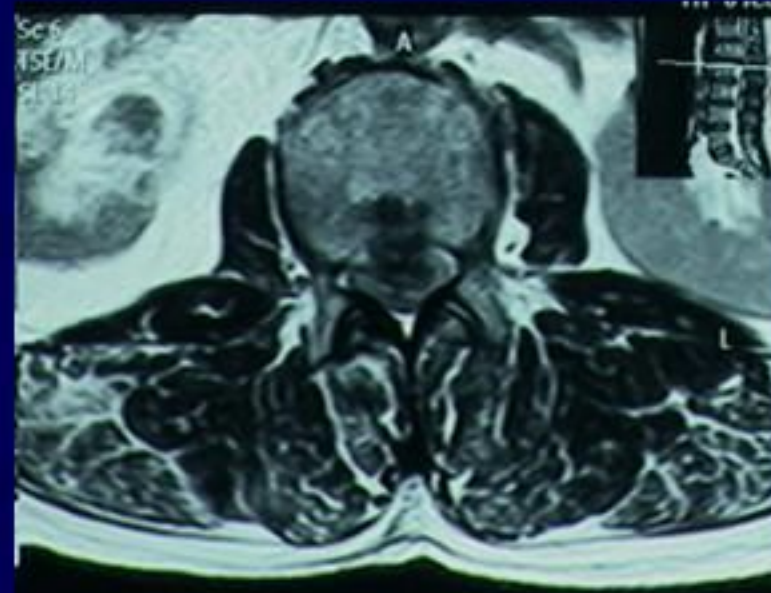
52 yrs. Female: claudication



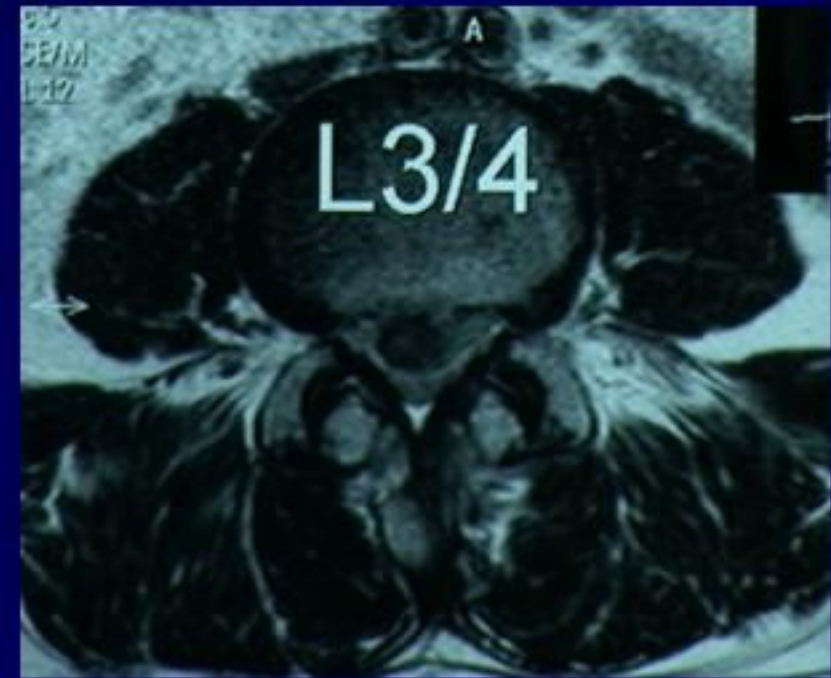
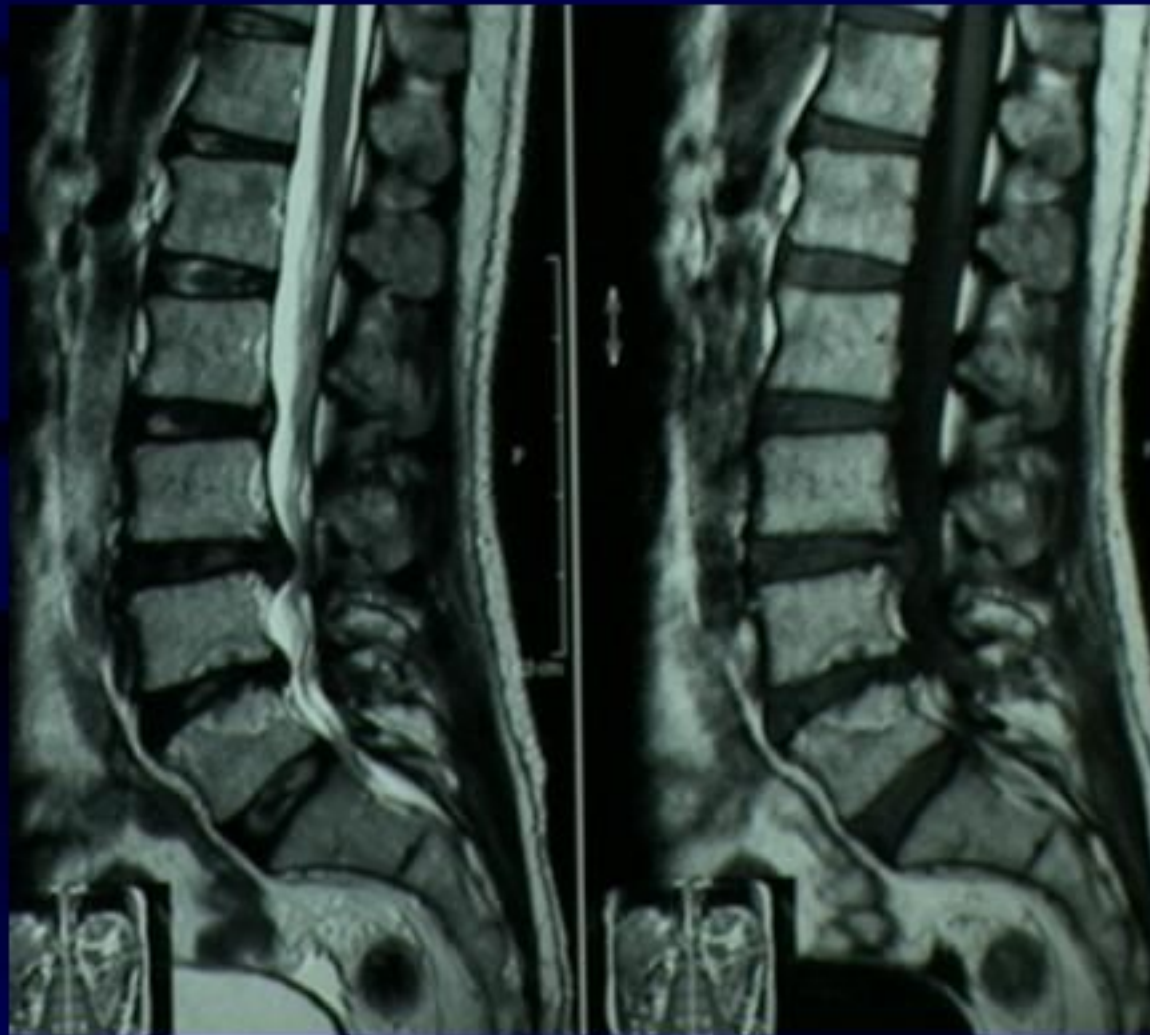
L3/L4 Lateral Disc Prolapse



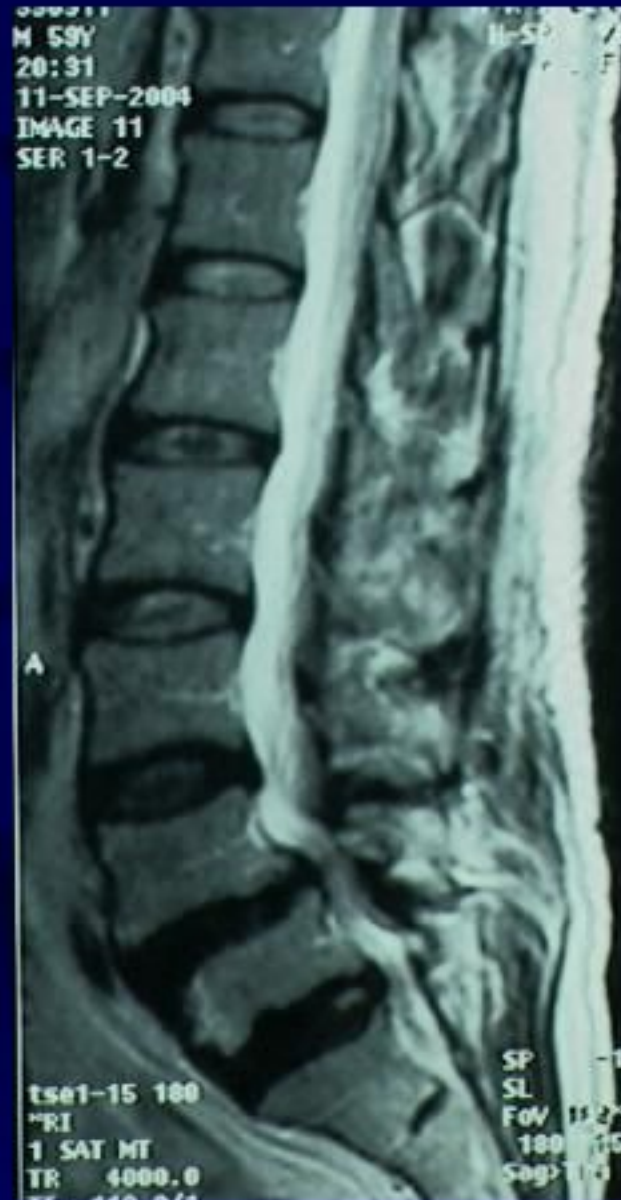
54 yr. Lady with pain and bladder symptoms



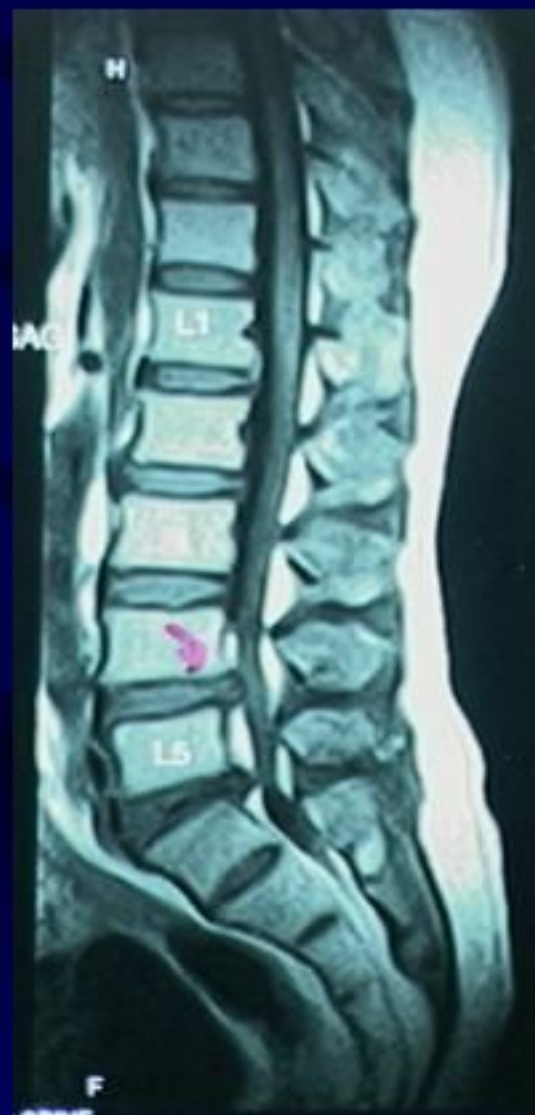
L3/L4 Central Disc Prolapse



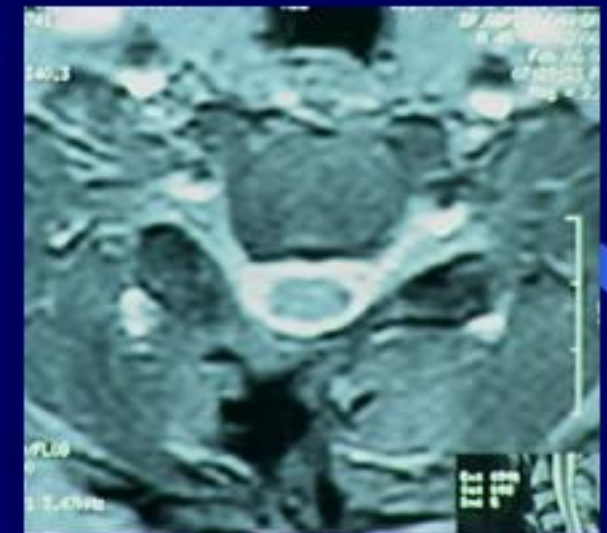
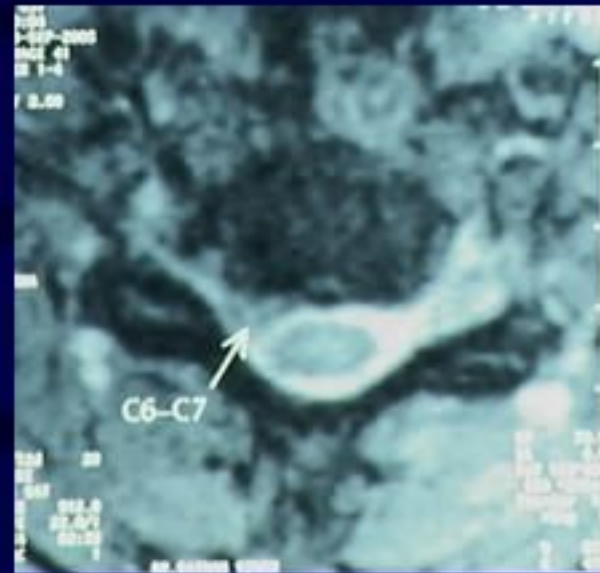
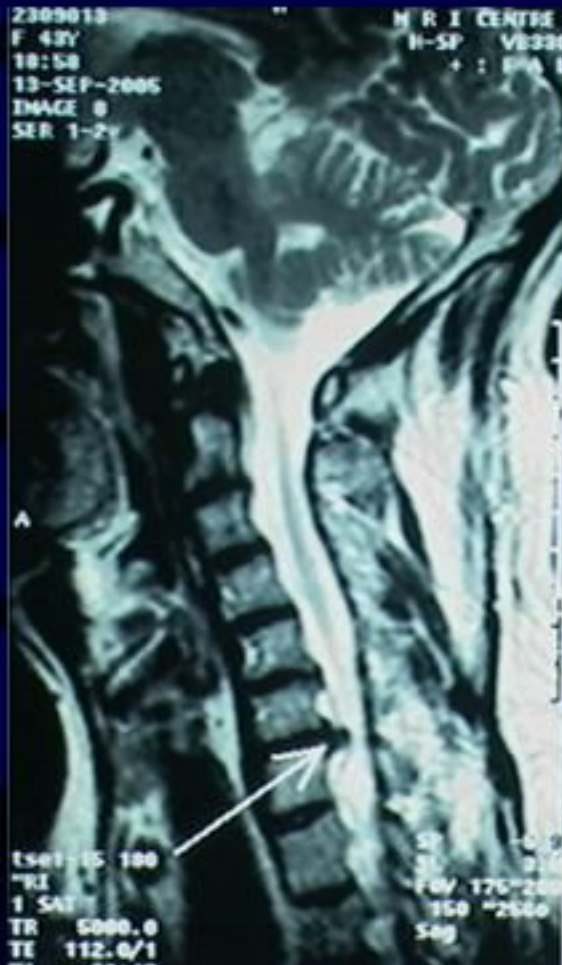
62 yr male with Lumbar Canal Stenosis



Multiple Lumbar Disc



C6/7 Disc prolapse (Right)

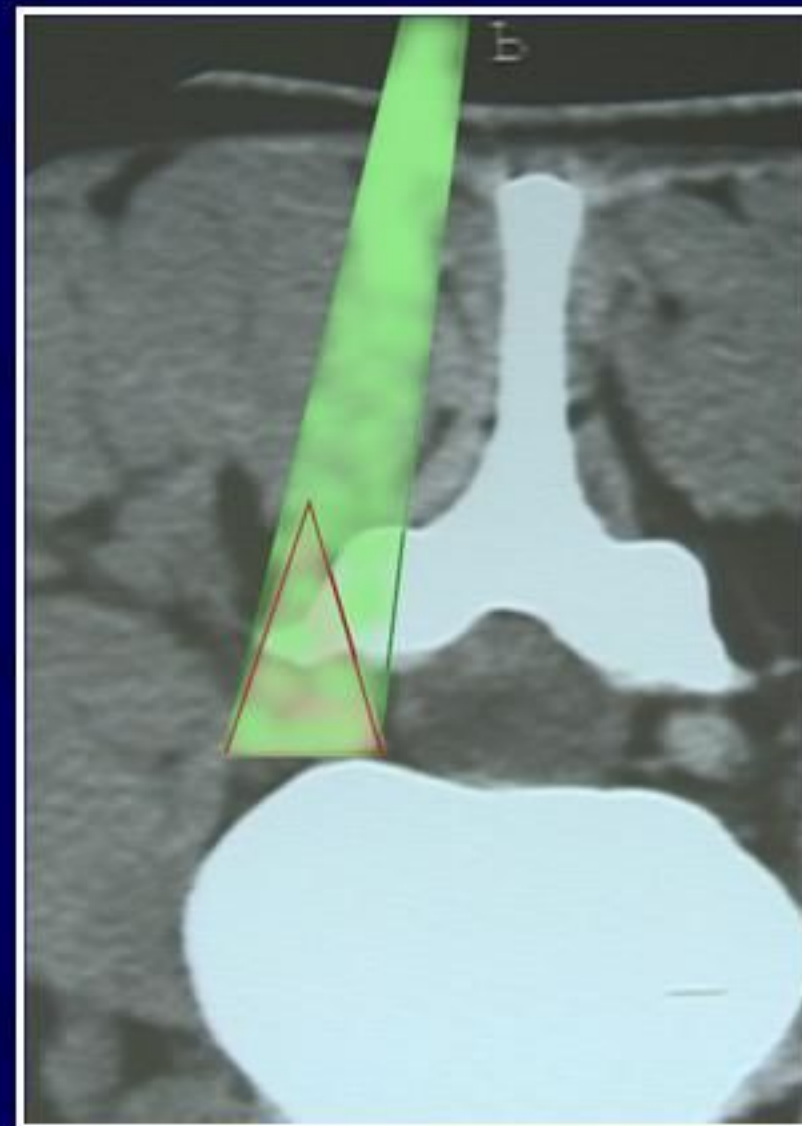
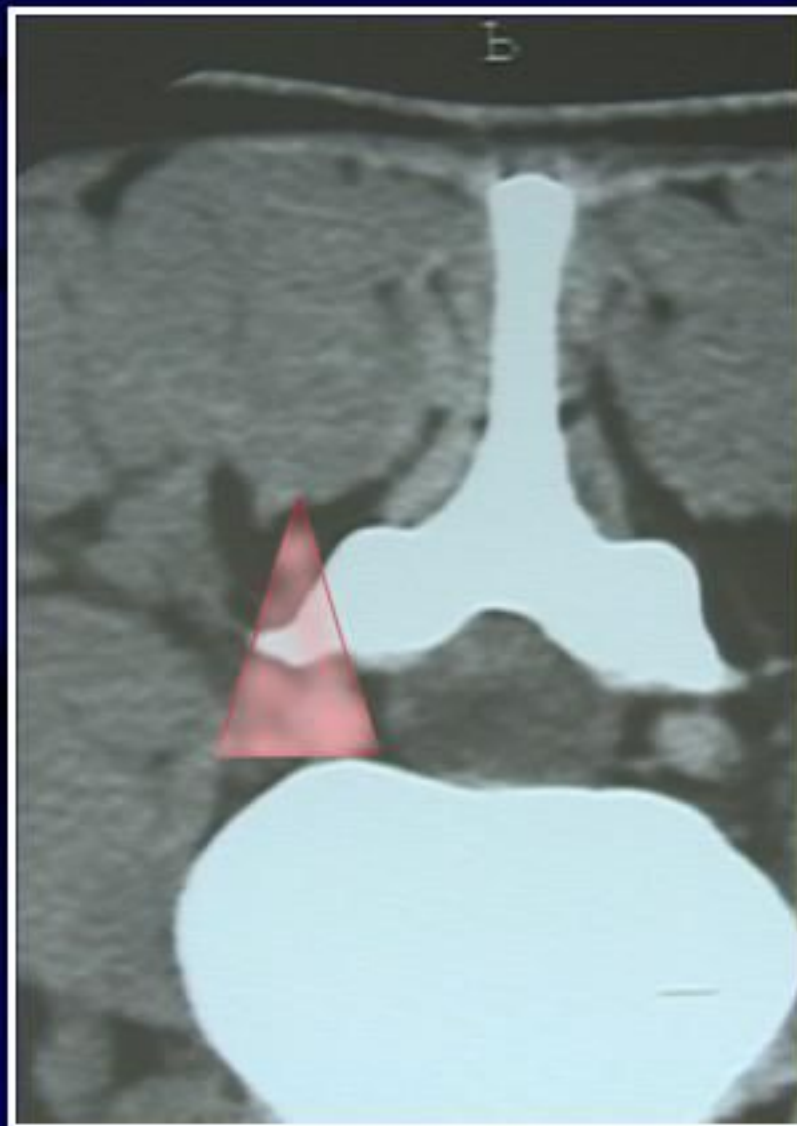


Endoscopic Vs Microscopic

- Incision: 1.5 cms



Endoscopic Vs Microscopic



Endoscopic Vs Microscopic

- Early Mobilisation



Conclusion

Endoscopic Disc Surgery

Advantages

- Minimally invasive
- Smaller incision (About 1.5 cms.)
- Less painful
- Under Regional anaesthesia
- Early discharge (Daycare)
- Quick return to work

Conclusion

Endoscopic Disc Surgery

Disadvantages:

- Steep Learning curve



Sir Ganga Ram Hospital

Accumulating trust for over Fifty Years.



Thank You