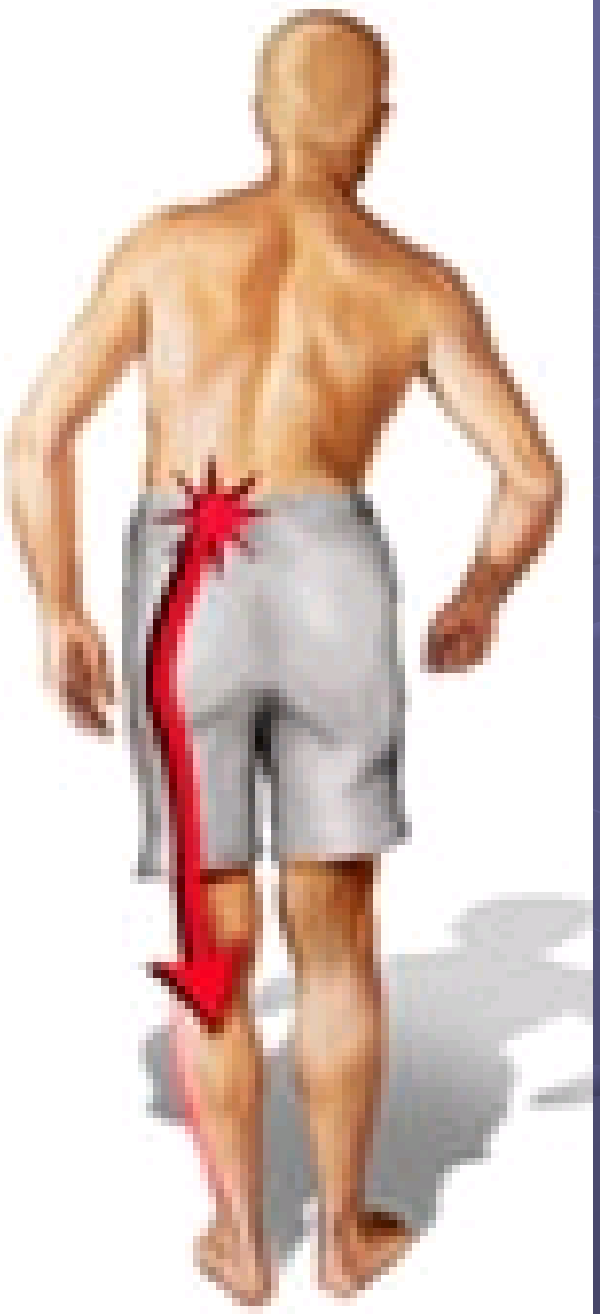
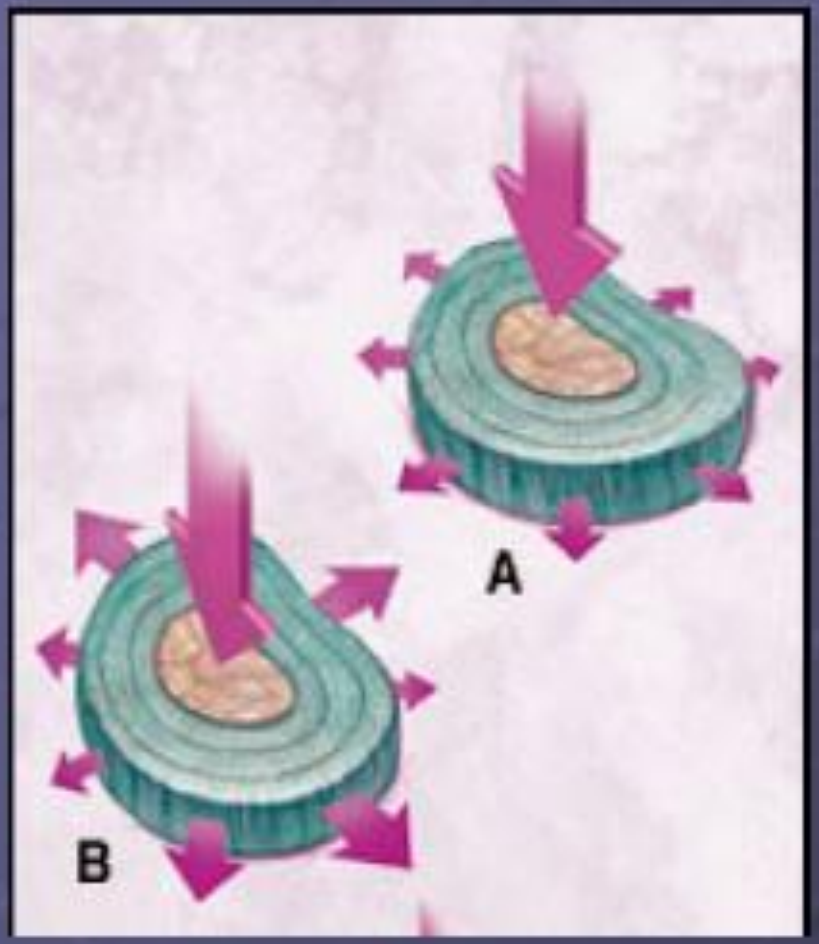


Lumbar disc herniation

Thomas Kishen
Spine Surgeon
Sparsh Hospital for Advanced Surgeries
Bangalore

Intervertebral disc



Annulus fibrosus

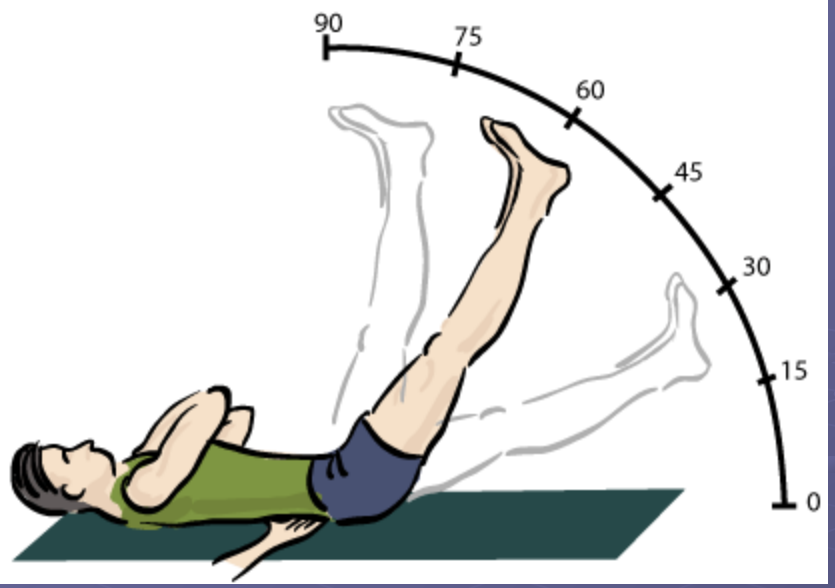
- Resists tensile stresses
- Resists torsional stresses

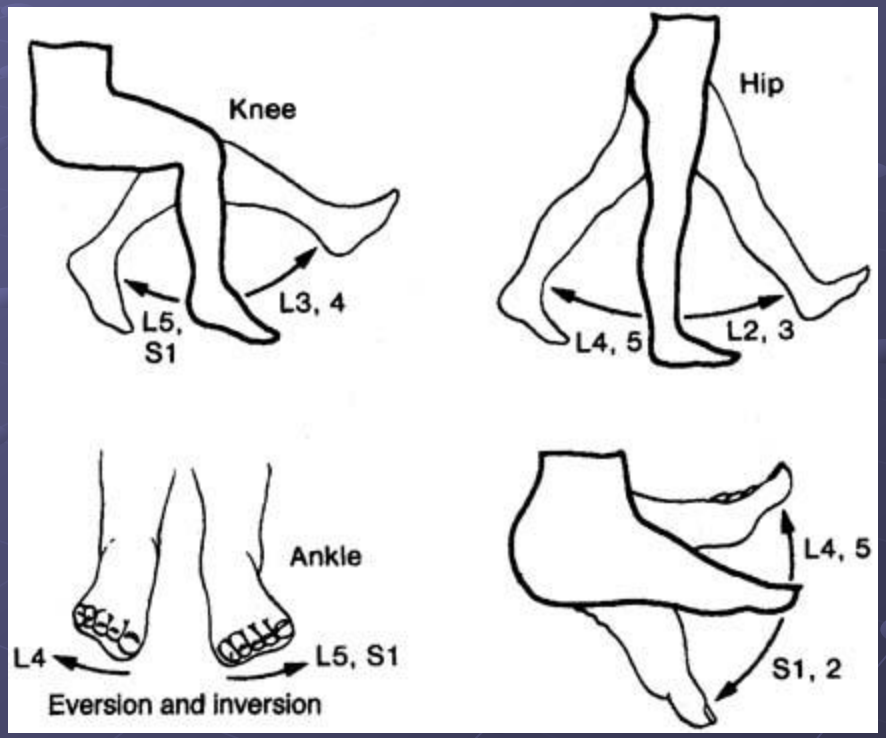
Nucleus pulposus

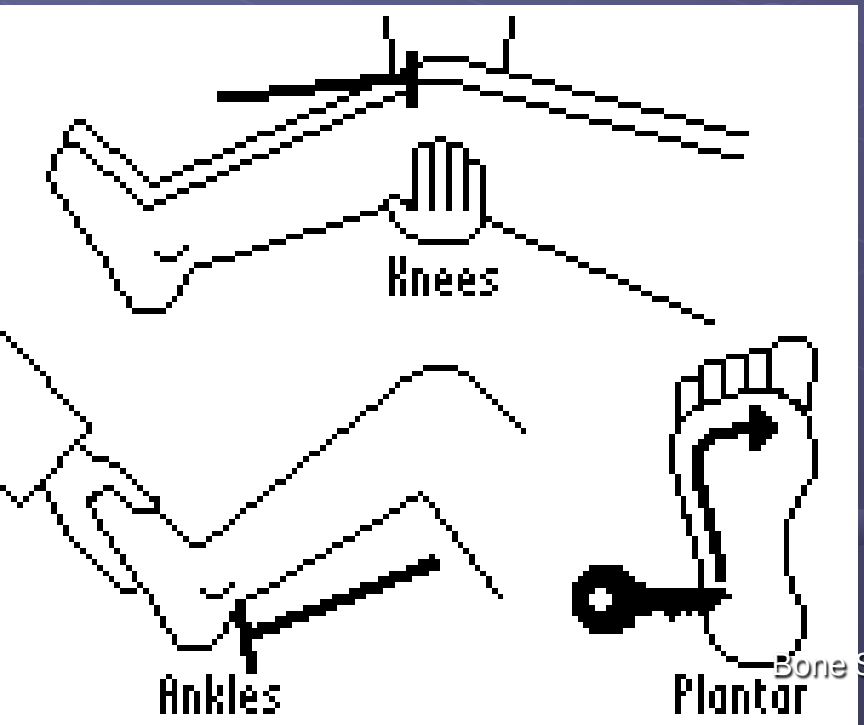
- Distributes compressive stresses

Symptoms and Signs

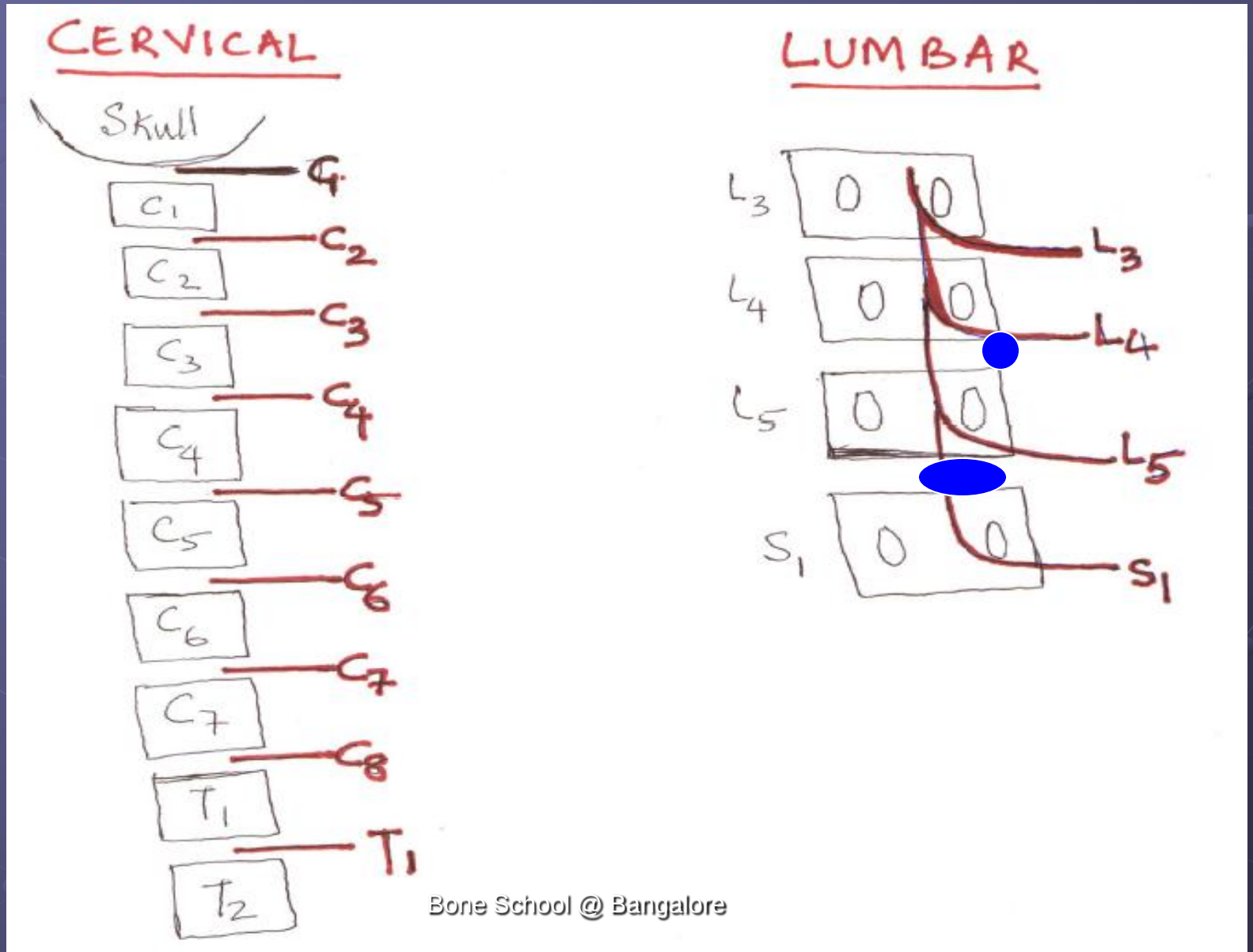
- Radicular Pain – in the distribution of the involved nerve
- Neurological deficit – motor, sensory, reflexes


90
75
60
45
30
15
0


Knee
L5, S1
L3, 4
Hip
L4, 5
L2, 3
Ankle
L4
L5, S1
Eversion and inversion
L4, 5
S1, 2


Knees
Ankles
Plantar

Relationship between disc levels and nerve roots



Appropriate imaging?

Variant 4: Radiculopathy.

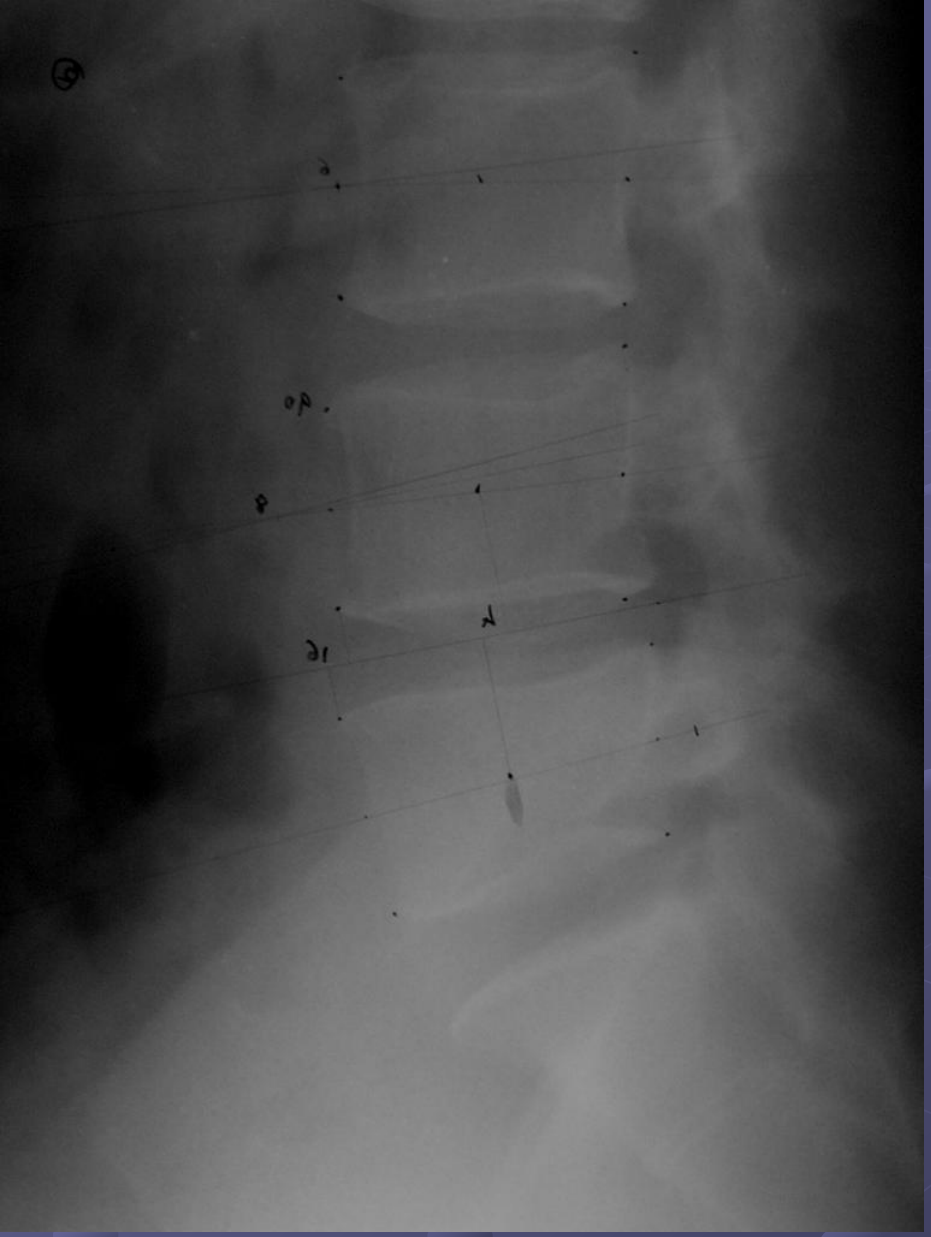
Radiologic Exam Procedure	Appropriateness Rating	Comments
Plain MRI	8	
Myelogram/CT	5	
CT	5	
MRI + Gadolinium	4	
Plain Lumbar X-Rays	4	
Isotope Bone Scan	2	
Myelogram	2	

Appropriateness Criteria Scale

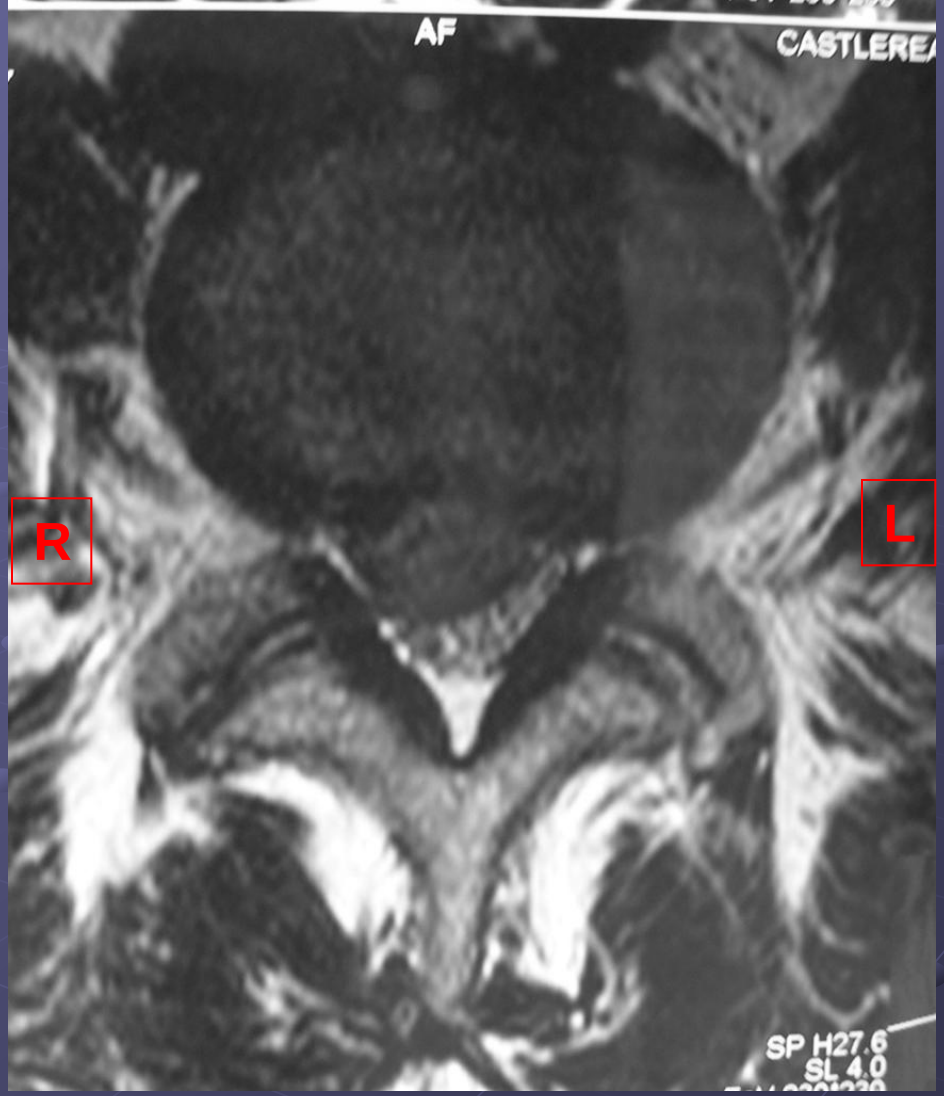
1 2 3 4 5 6 7 8 9

1=Least appropriate 9=Most appropriate

ACR Appropriateness Scale



Plain radiographs



MRI scan

Natural history - disc herniation

87 % with extruded herniation obtained satisfactory results with conservative measures.

- 10% required surgery for inadequate resolution of symptoms

Saal JA, Saal JS Spine 1989

Our study suggests that patients with sciatica for more than 12 months have a less favourable outcome. We detected no variation in the results for patients operated on in whom the duration of sciatica was less than 12 months.

Journal of Bone and Joint Surgery

Pathomechanism of spontaneous regression of the herniated lumbar disc: histologic and immunohistochemical study.

Ikeda T, Nakamura T, Kikuchi T, Umeda S, Senda H, J Spinal Disord. 1996

Inflammatory findings such as cell infiltration, neovascularization and granulation were observed in

- 16.9% of protruded discs
- 81.8% of subligamentously extruded discs
- 100% of transligamentously extruded disks
- 80% of sequestrated discs.

Natural history of lumbar disc hernia with radicular leg pain: Spontaneous MRI changes of the herniated mass and correlation with clinical outcome

Eiichi Takada and Masaya Takahashi

Journal of Orthopaedic Surgery 2001,

- 88% patients showed reduction of herniated mass on MRI
- Sequestrated and transligamentous extrusions more rapidly absorbed
- Morphologic changes of herniated mass correlated well with the clinical outcome

208 patients with clinical features of radiculopathy analysed 2- 4 weeks after onset of symptoms

- First 4 weeks – 70 % reduced pain, 60 % resumed work
- One year - 30 % complained of back pain
  19.5 % had not resumed work
- 4 patients underwent surgery

Weber, Holme, Amlie. Spine 1993

Treatment options

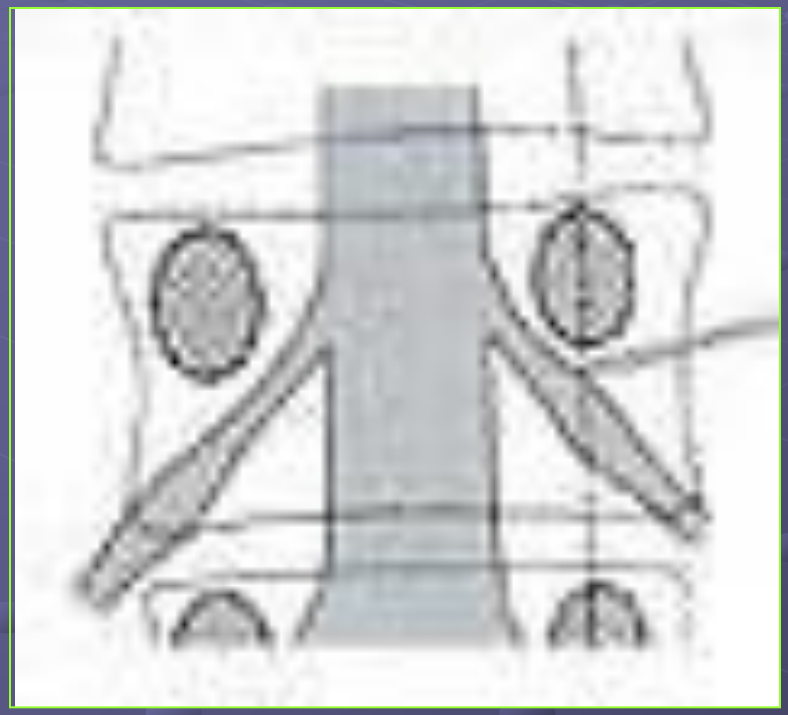
- Bed rest
- Pain medications
- Oral steroids
- Nerve root block
- Surgery

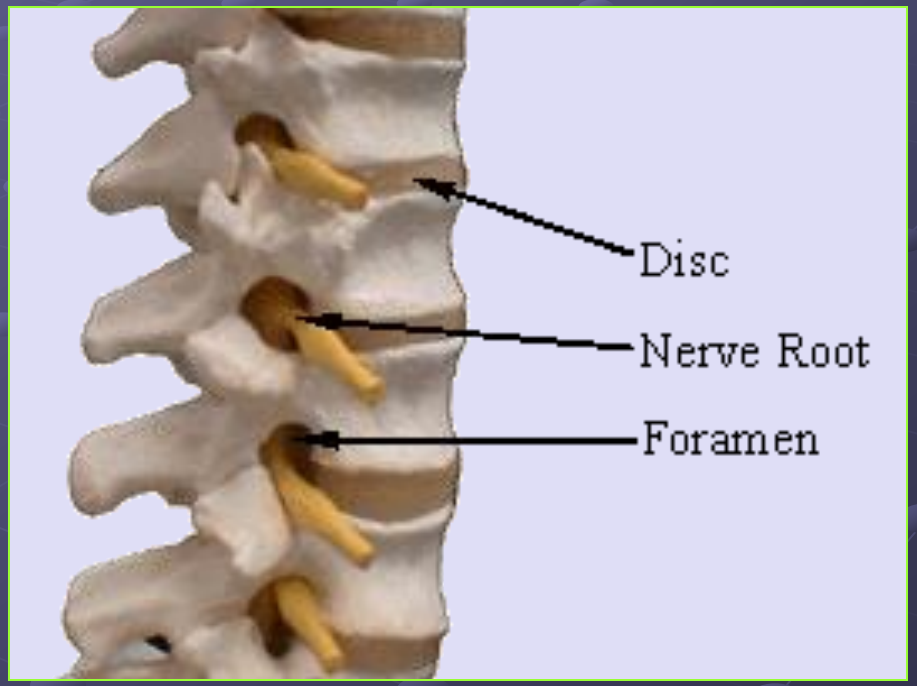
Bed rest….? ……..How long?

- For patients with sciatica, there is little or no difference between advice to rest in bed and advice to stay active. There is little or no difference in the effect of bed rest compared to exercises or physiotherapy, or seven days of bed rest compared with two to three.

The Cochrane Database of Systematic Reviews 2006

Transforaminal epidural steroid injection





Bupivacaine + steroid

Spine
An international journal for the study of the spine

Transforaminal epidural steroid injections in lumbosacral radiculopathy: a prospective randomized study.

After an average follow-up period of 1.4 years, the group receiving transforaminal epidural steroid injections had a success rate of 84%, as compared with 48% for the group receiving trigger-point injections ($P < 0.005$).

Vad et al Spine 2002

The Journal of
Bone & Joint Surgery (Br)
WWW.JBJS.ORG.UK

FORAMINAL INJECTION FOR LATERAL LUMBAR DISC HERNIATION

BRADLEY K. WEINER, ROBERT D. FRASER

N = 32 patients

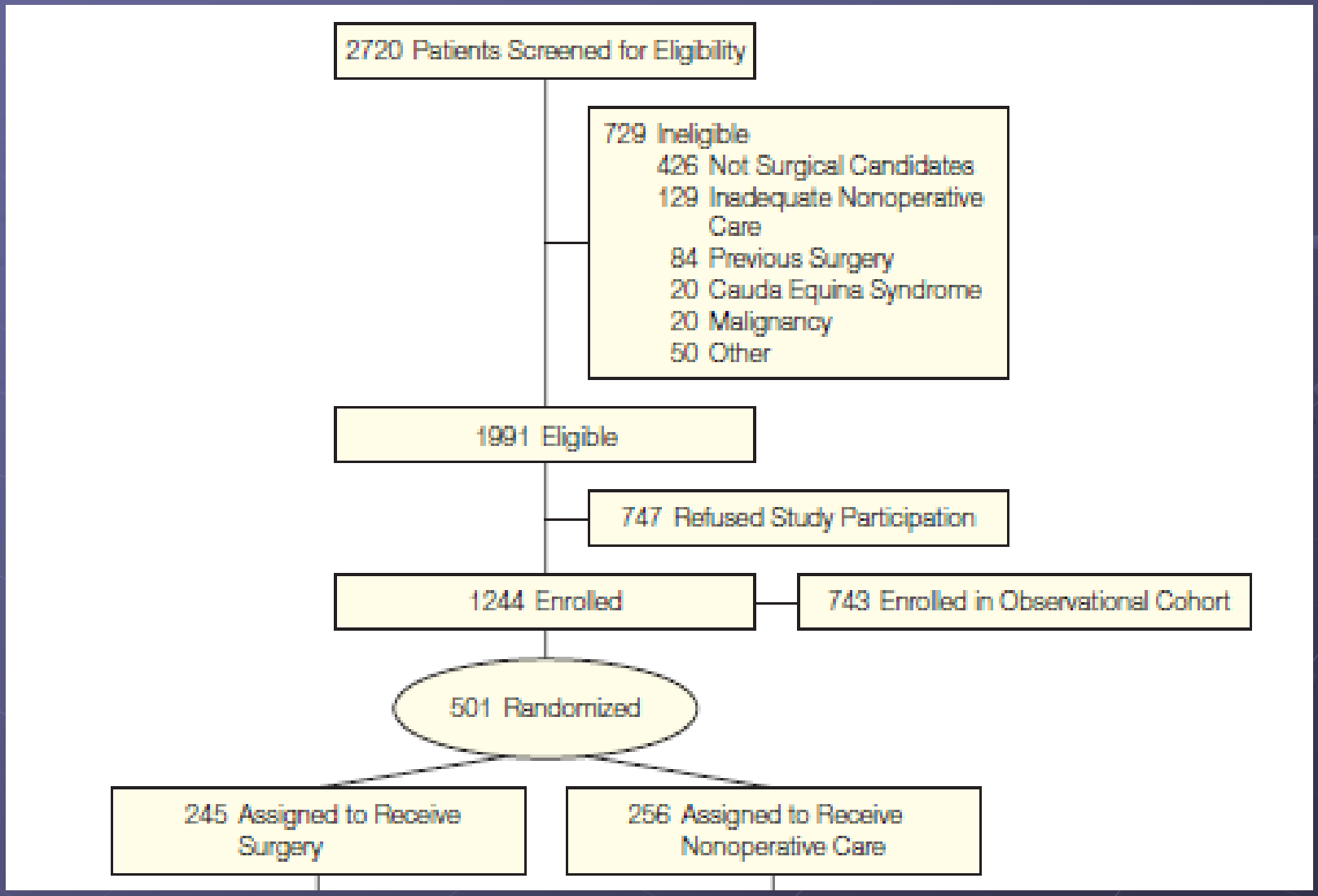
Relief of symptoms was obtained in 27 immediately after injection. Three subsequently relapsed, requiring operation, and two were lost to long-term follow-up. Thus 22 of the 28 patients available for long-term follow-up had considerable and sustained relief from their symptoms. Before the onset of symptoms 17 were

Discectomy - Indications

- Failure of non-operative measures
- Progressive / significant neuro deficit
- Signs of cauda equina compression

Surgical vs Nonoperative Treatment for Lumbar Disk Herniation

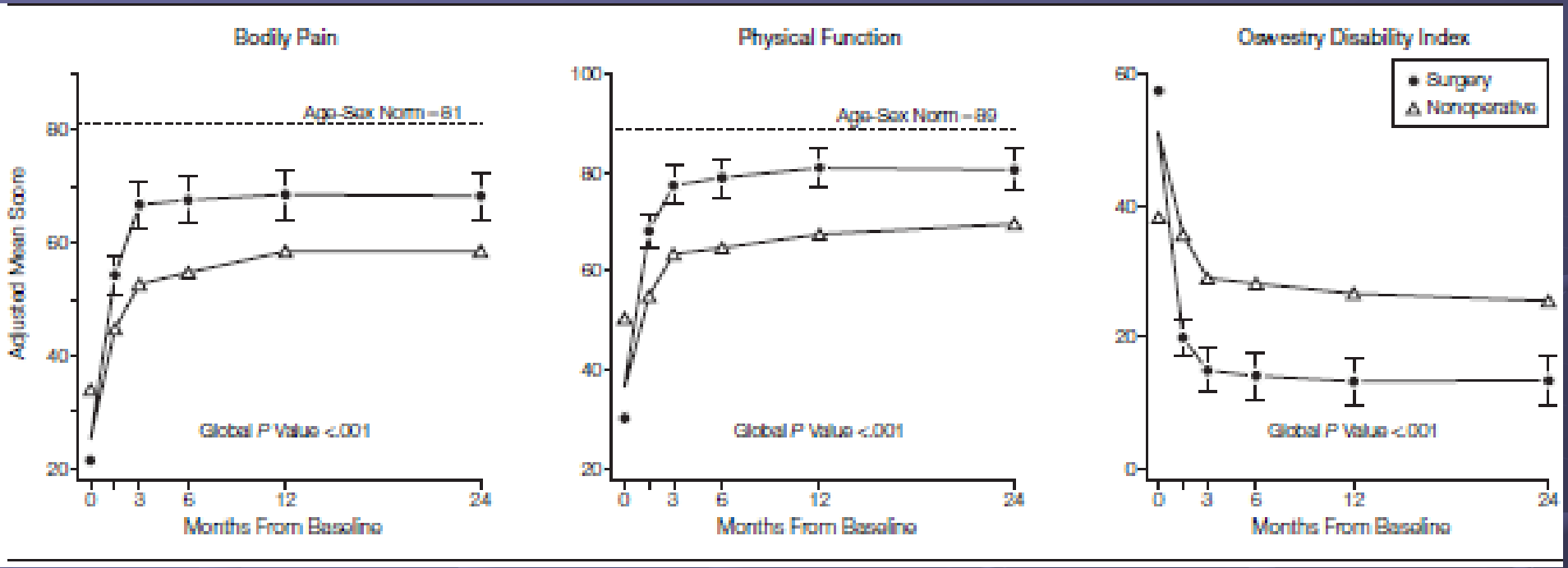
The Spine Patient Outcomes Research Trial (SPORT): A Randomized Trial



Weinstein et al JAMA. 2006;296:2441-2450

Surgical vs Nonoperative Treatment for Lumbar Disk Herniation

The Spine Patient Outcomes Research Trial (SPORT)
Observational Cohort



- Patients with persistent sciatica from lumbar disk herniation improved in both groups.
- Operated patients reported greater improvements

Weinstein et al JAMA. 2006;296:2451-2459

Surgical vs Nonoperative Treatment for Lumbar Disk Herniation

The Spine Patient Outcomes Research Trial (SPORT): A Randomized Trial

Intraoperative complications	No. (%)
Dural tear/spinal fluid leak	10 (4)
Vascular injury	1 (0)
Other	2 (1)
None	230 (95)

Postoperative complications	No. (%)
Superficial wound infection	4 (2)
Other	9 (4)
None	226 (95)

Reoperation at 2 years	No. (%)
Additional surgery	13 (5)
Recurrent herniation	8 (3)
Complication or other	4 (2)

n = 243

Weinstein et al JAMA. 2006;296:2441-2450

Non-compressive radiculopathy

- Rare
- Diabetes
- Vasculitis
- Infection
- Tumor infiltration

END