

SPINAL STENOSIS

Spinal stenoses.

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- Symptoms of image confirmed Stenoses persisting for at least 12 weeks, found significant advantage for surgery over nonoperative treatment.
- In the as-treated analysis, the treatment effect in favor of surgery suggests the intention-to-treat analysis underestimates the true effect of surgery. The effect was seen as early as 6 weeks, appeared maximal by 3 to 12 months and has persisted over 4 years.
- The nonoperative treatment group demonstrated only modest improvement over time. The results in both treatment groups were maintained between 2 and 4 years.
- The cohorts also had similar outcomes, with no significant differences between the treatment effects in the as-treated analyses,
- There was little evidence of harm from either treatment. In the interval between 2 and 4 years, there have not been any cases of paralysis in either the surgical or nonoperative group. The 4-year rate of reoperation for recurrent stenosis was 6% and the overall reoperation rate increased from 8% at 2 years to 13% at 4 years;

Key Points

- ● Many previous trials of spinal stenosis surgical treatment have had one or more important limitations: mixed diagnosis, small sample size, no nonoperative control, or lack of validated outcome measures.
- ● In both cohorts combined, 419 patients received surgery at some point during the first 4 years; 235 remained nonoperative.
- ● An as-treated analysis combining the randomized and observational cohorts and adjusting for potential confounders found that the clinically significant advantages for surgery previously reported were maintained through 4 years.

Discogenic origins of spinal instability.

Spine (Phila Pa 1976). 2005 Dec 1;30(23):2621-30.

- **Cadaveric study**
- **Motion segment height was reduced by 1.0 (SD 0.3) mm during creep and by a further 1.7 (0.6) mm after endplate disruption.**
- In flexion and lateral bending, the combined treatments increased NZ and ROM by 89% to 298%, and increased the "instability index" (NZ/ROM) by 43% to 61%.
- Translational movements increased by 58% to 86%, whereas BS decreased by 42% to 48%. In extension, ROM and NZ were little affected, although the COR moved closer to the apophyseal joints.
- Measures of instability increased most in lateral bending, and following endplate disruption. Stress concentrations in the posterior annulus fibrosus increased markedly after endplate disruption.
- **CONCLUSIONS: Two physical aspects of disc degeneration (dehydration and endplate disruption) cause marked segmental instability.** Back pain associated with instability may be attributable to stress concentrations in degenerated discs.

Revision back surgery

J Bone Joint Surg Br. 1993 Nov;
75(6):894-7.

- In a prospective, consecutive study 93 patients who had had previous lumbar spinal surgery underwent repeat decompression for persistent or recurrent back and leg pain.
- The previous operations had been discectomies in 65 patients and decompression for spinal stenosis in 28; two of the latter group had also had posterolateral fusion.
- At the repeat operation, disc herniation was found in 19 patients, lateral spinal stenosis in 19, central spinal stenosis in 20 and periradicular fibrosis in 35.
- The results were significantly related to the diagnosis. Nerve-root compression due to recurrent disc herniation or to bony compression responded well to repeat decompression.
- Sciatica due to nerve-root scarring was seldom improved by the repeat operation.

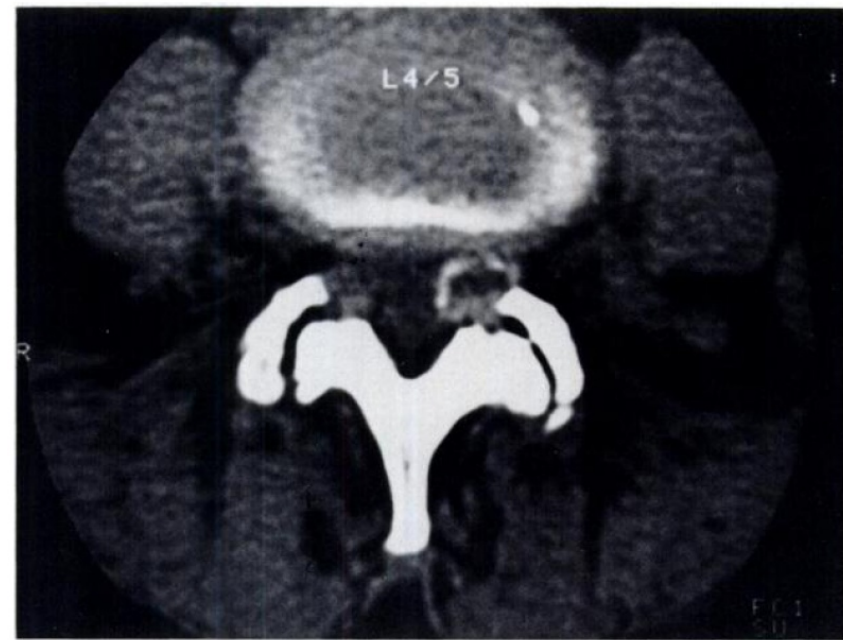
FACET SYNOVIAL CYST

Facetal Synovial cyst

- 1. Kurz: *J Bone Joint Surg Am.* 1985;67:865-871.
- 2. Christophis. *Eur Spine J* (2007) 16:1499–1505
- 3. Boviatsis. Pathogenesis of facet cyst. *Eur Spine J* (2008) 17:831–837
- 4. Trumera. *J Neurol Neurosurg Psychiatry* 2001;70:74-77

Ref: 1

- 4 patients [49-70] with back ache sciatica
- All had X ray: OA
- Deg spondylolisthesis is a frequent finding
- Occ rimmed calcification at the rim of the cyst
- Surgical excision of the cyst and laminectomy
- Complete resolution of the symptoms
- 4 hypothesis: 1. Excess stress: due to excessive movement
 - 2. Mucinous degeneration
 - 3. Synovial rest cells
 - 4. Metaplasia



Ref 2

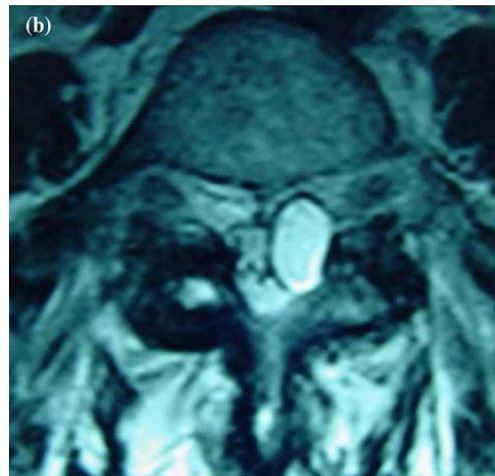
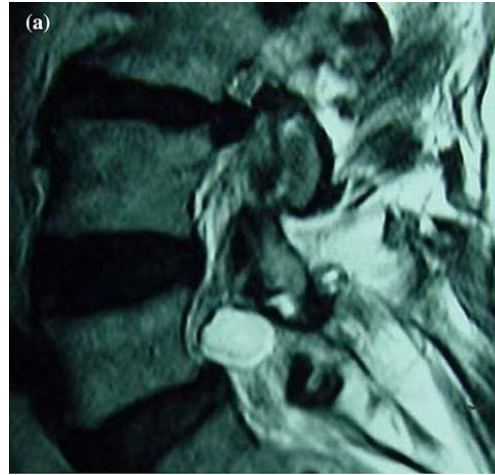
- 58 cases; [33 women]; Age 60 yrs [45-70]
- All had total excision
- All had mobile spine
- 52/53 = had radicular pain
- 40% had either sensory or motor deficit
- No recurrence after surgery
- In 32/58: there was direct relationship between cyst and facet joint
- Out of 58 cysts 32 were joint cysts (11 synovial cysts, 21 ganglion cysts). A further 19 were flavum cysts, one was a posterior longitudinal ligament (PLL) cyst and six others were unknown pseudo cysts.

- Pathogenesis: These cysts frequently occur in consequence of a lumbar spine stress (exercise loading) in addition to a degenerative lesion of the soft lumbar tissue. This is usually seen in mobile segment: L4/5 and should be termed as “cystic formation of mobile spine” (CYFMOS)
- They found it seems that amyloid in some cystic cases suggesting degeneration is in progress.
- A surgical intervention is the best treatment strategy for this cyst.

Ref [3]

- 7 pts; (age range 58–69 years, mean age 61 years)
- All patients underwent surgical cyst excision. No fusion was performed. All had good outcome
- Degeneration will cause protrusion of the synovial membrane through defects of the joint capsule. This herniation causes the formation of a para-articular cavity filled with synovial fluid
- The fact that most synovial cysts arise at the L4/5 level, the single-most mobile level of the vertebral column, along with the frequent association with spondylolisthesis, favors instability as a pivotal factor in their aetiopathogenesis
- Trauma, although not so strongly incriminated
- The definite association with osteoarthritis (40.5%) and spondylolisthesis (43.4%) and the reported relationship with disc degeneration (13.2%) only highlight the major role of segmental spinal instability in the pathogenesis of spinal synovial cysts.

- Sachdev et al. [40] reported 31 periarticular cysts as incidental findings in a series of 1,400 lumbar laminotomies (2.2%).
- A female and age :predominance has been reported
- The optimal treatment remains a matter of debate. Even though there have been reports of synovial cysts resolving spontaneously, they will usually require treatment
- In a series of 60 juxtafacet cysts, Sabo et al. [39] found no difference in outcome for those patients undergoing fusion compared to those treated with cyst excision alone.



Ref 4

- **OBJECTIVE** Synovial cysts of the vertebral facet joints are a source of nerve root compression. Different surgical procedures are in use, but no consensus has been formed so far as to which method should be used in synovial cysts. To clarify the role of surgical management, the efficacy of operative procedures and factors influencing the outcome in our own series of 19 patients treated between 1994 and 1998 were analysed.
- **METHODS** Nineteen patients with a mean age of 65 years underwent surgery for medically intractable radicular pain or neurological deficits caused by synovial cysts. The patients' records were retrospectively analysed for neurological deficits, cysts diameter, operative approach, segmental hypermobility, and clinical outcome; CT and MRI were analysed for additional degenerative changes.
- **RESULTS** In 17 patients an excellent result and in two patients a good postoperative result was achieved. Twelve patients were found to have hypermobility of the facet joints and six had spondylolisthesis. There was no correlation between cyst diameter, operative approach, and outcome. No intraoperative or postoperative complications occurred.
- **CONCLUSIONS** Age and hypermobility may play a part in the aetiology of facet joint synovial cysts. As all operative strategies showed equally good clinical outcome, total excision via a small flavectomy as the least invasive approach should be considered therapy of choice in patients with cysts causing neurological deficits.

- The preference for the L 4-5 level in 80%, the most hypermobile in the spine, spondylolisthesis in 33%, and facet joint hypermobility found in 60% of the patients suggest that hypermobility is an important aetiological factor.
- In summary, synovial cysts are rare degenerative and space occupying lesions in elderly patients and should be considered in the differential diagnosis of disc herniation. They are easily diagnosed by CT or MRI. Hypermobility of the facet joints and spondylolisthesis seem to be the most important factors in regard to pathogenesis.

J Spinal Disord. 1999 Dec;12(6):485-8.

- Treatment of syringomyelia after posttraumatic paraparesis or tetraparesis.
- 2 patients with syringomyelia related to spinal cord trauma with paraplegia or tetraplegia a
- 75% had incomplete reduction of the spinal fracture at the time of initial surgery.
- The secondary neurologic deterioration occurred within a delay of 146 +/- 16 months and included ascending sensory deficits in 92%, deafferentation pain in 83%, and increased motor weakness in 33%.
- There was a positive correlation between the severity of symptoms, incomplete reduction of spinal fracture, and the degree of arachnoid scarring in preoperative neuroradiologic examinations.
- Syringoperitoneal shunting was performed in 83% of patients, and laminectomy with arachnoid lysis and dural grafting were performed in 17%. Pain was improved in 75%, sensory deficits in 25%, and motor weakness in 8%.
- In conclusion, laminectomy with arachnoid lysis and dural grafting seems to be a promising alternative treatment for patients with secondary neurologic deterioration after traumatic paraplegia or tetraplegia. Syringoperitoneal shunting may be reserved for patients without severe arachnoid scarring.