

SPINAL STENOSIS

Spinal stenoses. Spine • Volume 35 • Number 14 • 2010 :1334

- **Persisting for at least 12 weeks**, found significant advantage for surgery over nonoperative treatment.
- In the as-treated analysis, the treatment effect in favour 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;**

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.**
- 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.**

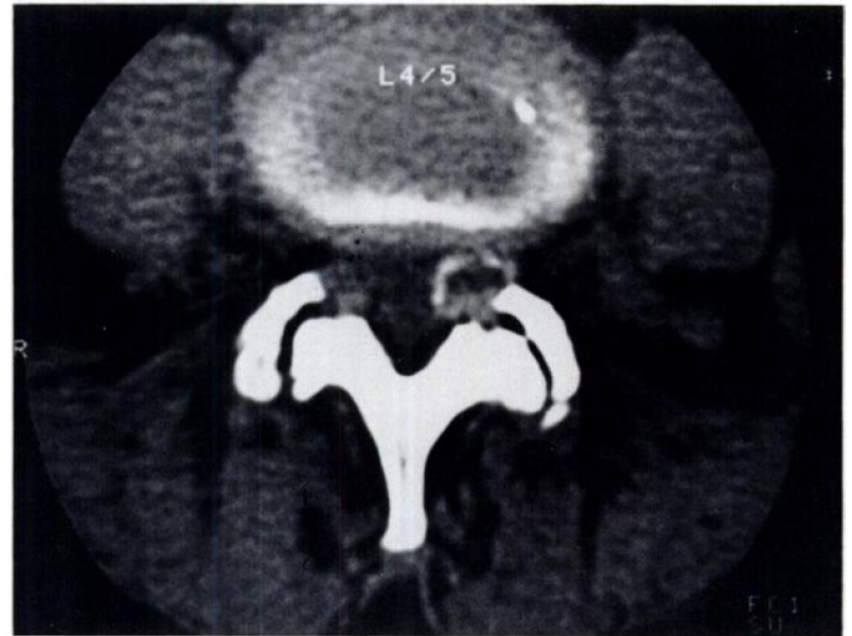
FACET SYNOVIAL CYST

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
- 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.

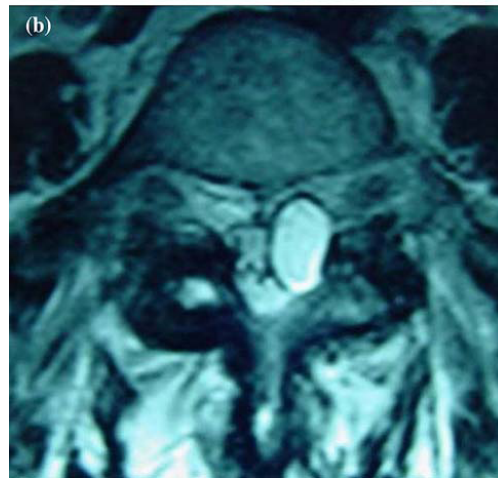
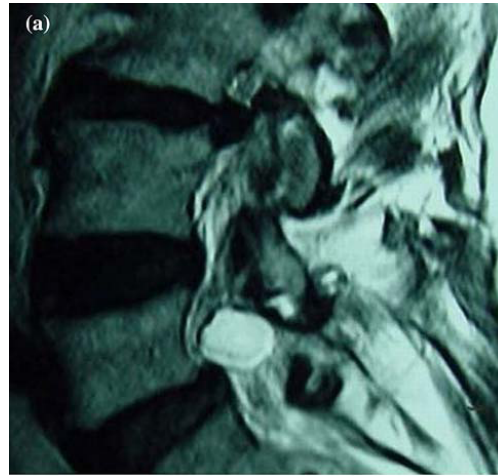
- Pathogenesis: These cysts frequently occur in consequence of a lumbar spine stress (exercise loading) in addition to a degenerative lesion of the soft lumbar tissue. This is usually seen in mobile segment: L4/5 and should be termed as “cystic formation of mobile spine” (CYFMOS)
- They found it seems 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.

Synovial cyst



Ref 4

Synovial cysts of the vertebral facet joints are a source of nerve root compression.

19 patients with a mean age of 65 years underwent surgery for medically intractable radicular pain or neurological deficits caused by synovial cysts.

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.

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 10 years. 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%.
- Syringoperitoneal shunting may be reserved for patients without severe arachnoid scarring.

Spine 2010;35:S245–S258

- The literature supports and the consensus panel recommended that there is no indication for direct decompression at the time of initial injury specifically for the purpose of limiting future risk of syringomyelia.
- The literature supports and the consensus panel gave a strong recommendation for surgical intervention in the setting of motor neurologic deterioration as a consequence of posttraumatic syrinx/tethered cord.
- The panel gave a weak recommendation against surgical intervention for patients developing sensory loss/pain syndrome or for asymptomatic but expanding syrinx.
- Finally, the literature does not provide strong evidence to support the superiority of one surgical technique over the others; however, the consensus panel gave a weak recommendation that spinal cord untethering with expansile duraplasty is the preferred first-line surgical technique.

Post Traumatic Syrinx

- Causes late motor and sensory deterioration following spinal cord injury.
- It is diagnosed, on average, 9 years after the initial injury.
- A high index of suspicion for post-traumatic syrinx when new onset of any of the above conditions occurs in the chronic phase after spinal cord injury.
- The incidence of PTS is higher in patients with complete ASIA A spinal cord injuries, in patients with posttraumatic kyphotic deformities, and in patients with residual axial stenosis.
- Decompression at the time of injury may correlate with root or segmental recovery.
- However, the literature supported and the consensus panel recommended that, there is no indication for direct decompression beyond realignment and stabilization
- There is very little published evidence regarding the natural history of asymptomatic cyst
- The panel also gave a weak recommendation against surgical intervention for asymptomatic but expanding syrinx.

DDD [dark disk disease]

Ideal

- >6 M of conservative: failed
- Single level degeneration
- Absence of Psychiatric or II gain
- Concordant pain on diskography

Poor

- Benefit/gain
- High level of opioid use
- Abnormal psychometric tests
- Exaggerated pain behaviors
- Off work > 3 M
- Over reliance of MRI , high cases of failure

