

of post-operative CSF leakage. This safe and reliable method of delivery of ITM should be routinely considered in lumbar spine surgery.

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Functional and goniometric outcomes after surgical treatment of odontoid fractures

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Background: Surgical approaches to stabilize Type-II odontoid fractures include posterior atlantoaxial fixation (PAF) and anterior screw fixation (ASF). While ASF may theoretically allow for greater preservation of neck motion compared to PAF, there is a lack of evidence that one method preserves rotation and function better than the other. **Methods:** Single-centre study involving patients under 75 years old who underwent surgery for Type-II odontoid fracture. Following chart review, degree of neck rotation was assessed in patients using goniometric measurements. Participants completed questionnaires to investigate their perception of neck function and overall health (Neck Disability Index, Short Form-12, and EuroQol 5-D). **Results:** Patient recruitment is ongoing. To date, eleven patients have been reviewed (7 PAF, 4 ASF). Mean patient age was 61+/-12 years in the PAF group and 52+/-16 years in the ASF group. Measured neck rotation was lower in the PAF group compared to the ASF group (mean 58 vs. 110.5 degrees). However, the PAF group also reported fewer functional complaints. **Conclusions:** Preliminary data suggest that patients who receive ASF tend to be younger. While range of neck rotation is superior in ASF patients, their perception of functional ability does not correlate, suggesting that perceived neck function is multifactorial.

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Epidemiology of spinal infections: retrospective review of the patients with osteomyelitis, discitis, and epidural abscesses

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Background: Spinal infections are one of the most difficult, complex, and multi-disciplinary health conditions. The purpose of this paper was to gather demographic information of the patients with spinal infections and to identify factors that would influence their management. **Methods:** Retrospective chart review of 146 adult patients with osteomyelitis, discitis or epidural abscesses admitted to the Royal University Hospital, Saskatchewan, from 2007-2014. **Results:** Patient demographics included 59% male, 41% female, mean age 53 years. 36% of patients required surgery, 44% were IV drug users, and 71% were managed by surgeons. Presence of a neurological deficit, higher white blood cell count, and longer hospital admission, in relation to poor outcomes, were statistically significant. Higher age and shorter duration between onset of symptoms and admission showed a trend toward a poorer outcome. Epidural abscess and presence of a neurological deficit are variables isolated as being statistically significant in relation to need for surgery. 57.1% of patients with epidural abscess and 51.7% with neurological deficit required surgery. **Conclusions:** We were able to identify high-risk patients as to the need for surgery and poor outcome. Based on this information, we can better tailor our management strategy of this difficult condition.

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Free calcium induces degenerative changes in the intervertebral disc through the calcium sensing receptor

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Introduction: Degenerative disc disease (DDD) is a common cause of lower back pain. Calcification of the intervertebral disc (IVD) has been correlated with DDD. The role of IVD calcification in the development DDD is unknown. We noticed an increase in ionic calcium content and expression of the extracellular calcium-sensing receptor (CaSR) in the degenerate discs, however, its role in DDD remains unclear. **Material and Methods:** IVD Cells: Bovine and human NP and AF cells were incubated in culture media supplemented with various concentrations of calcium, and a CaSR agonist IVD Cultures: IVDs from bovine tails were isolated and the vertebral bone was removed. IVDs were cultured for 6 weeks in culture medium supplemented with calcium (1.0, 2.5, or 5.0 mM), or a CaSR agonist. Western blotting was performed on extracts to assess for aggrecan and Col II. **Results:** The expression of aggrecan and Col II decreased dose-dependently in both NP and AF cells, as well as in the organ culture model following supplementation with calcium or the CaSR agonist. **Conclusion:** Our results suggest that changes in the local concentrations of calcium are not benign, and that activation of the CaSR may be a contributing factor in IVD degeneration.

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Os Odontoideum: an unusual association of compressive synovial cyst. Case report and review of the literature

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Background: Os odontoideum is a rare cervical abnormality that harbours a potential risk for atlantoaxial instability. In rare circumstances, synovial cysts may develop and compromise the spinal cord. Therefore, cyst excision has been suggested as part of the surgical management. However, in recent reports, it has been shown that atlantoaxial stabilization alone is sufficient for synovial cyst regression. **Methodology:** 48-year-old woman presented with symptoms and signs of cervical myelopathy secondary to os odontoideum with atlantoaxial instability. A large synovial cyst was diagnosed with significant spinal cord compression. In addition, her spinal and cranial imaging was suggestive of multiple sclerosis which was confirmed clinically thereafter with one episode of MS flare up and positive cerebrospinal fluid analysis. **Results:** After she had recovered from her MS flare up, posterior atlantoaxial instrumentation and fusion was performed without synovial cyst resection. Postoperatively, her clinical condition improved substantially and complete regression of the synovial cyst was noted on cervical MRI. Interestingly, she has not had any MS recurrent episodes after the surgery. **Conclusion:** Degenerative changes in os odontoideum are consequences of atlantoaxial instability. Compressive synovial cysts may develop with associated cord compression. We recommend posterior atlantoaxial stabilization alone in such conditions while preserving cyst fenestration or excision for persistent symptoms related to unresolved synovial cysts.