

P.129**Patterns of spinal metastatic disease and mechanical instability: a retrospective correlation with tumor histology**

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doi: 10.1017/cjn.2016.228

Background: This study aims to provide epidemiological data concerning spinal instability and patterns of metastatic invasion of the spine based on tumor histology. **Methods:** We allocated 285 patients with spinal metastatic disease through a retrospective review. SINS was calculated using good-quality computed tomography (CT) imaging studies. Spinal metastases were also grouped into intracompartmental, extracompartmental or multiple metastases. **Results:** Esophageal cancer was the least likely to be associated with instability with about 64% of cases being stable. The highest rate of instability scores was observed in breast carcinoma with 18% of cases graded as unstable. Renal cell carcinoma was associated with lytic spinal metastases whereas blastic metastases mostly occurred in prostate carcinoma ($P < 0.001$). Whereas 68.1% of cases represented multiple metastases, the remainder was associated with either intracompartmental (13.3%) or extracompartmental (18.6%) disease. The highest degrees of spinal instability (intermediate and unstable categories) were associated with extra-compartmental metastatic disease ($P < 0.001$). **Conclusions:** This study sheds light on the patterns of spinal metastatic disease and mechanical instability on the basis of tumor histology, utilizing standardized scoring systems. The utilization of such scoring systems allows for a standardized approach towards description and analysis of spinal metastasis facilitating clinical research in this avenue.

P.130**The natural history of central cord syndrome and the role of surgical intervention: a retrospective review from 2005-2010**

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doi: 10.1017/cjn.2016.229

Background: The management of central cord syndrome (CCS) is controversial. There is a perception that CCS patients tend to improve without the need for surgical intervention. The purpose of this study was to compare the clinical improvements of patients with traumatic SCI, both with and without CCS. **Methods:** Nova Scotia Provincial Trauma Registry was retrospectively reviewed from 2005-2010. Improvement in the American Spinal Injury Association (ASIA) Impairment Scale (AIS) was determined after mean 5 months follow-up. **Results:** The study population comprised 96 cases with SCI, subdivided into cases with AIS grade A, non-CCS cases with AIS grades B-D and CCS cases. 88% of the non-CCS and 65% of the CCS patients underwent surgical decompression, with mean operative times being 71.6 ± 137.8 and 102.9 ± 144.6 post injury ($p = 0.45$). The mean improvements in the mean ASIA motor scores for the three groups were 1.3 ± 6.5 and 15.6 ± 35.0 and 22.5 ± 14.6 ($p = 0.004$) respectively, with a statistically significant difference only between the CCS and AIS grade A groups ($p < 0.001$). 20%, 54% and 10% of the patients respectively, underwent an improvement of \geq one AIS

grades ($p = 0.018$, $c2 = 8.0$). **Conclusions:** This retrospective review investigates the natural history of CCS and explores the role of surgical intervention on optimizing patient outcome.

P.131**Lumbar fusion for degenerative disease: a systematic review and meta-analysis**

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doi: 10.1017/cjn.2016.230

Background: Lumbar fusion for degenerative indications is associated with a great degree of practice variation. We summarize the current evidence on the comparative safety and efficacy of lumbar fusion, decompression alone, or non-operative care for degenerative indications. **Methods:** Literature search of electronic bibliographic databases was conducted. Comparative studies reporting validated measures of safety or efficacy were included. Treatments effects were calculated through DerSimonian and Laird random effects models. **Results:** We retrieved 62 studies (17 randomized controlled, 15 prospective, 15 retrospective, and 15 registries), enrolling a total 302,347 adult patients. Disability, pain, and patient satisfaction following fusion, decompression alone, or non-operative care were dependent on surgical indications and study methodology. Relative to decompression alone, the risk of reoperation following fusion was increased for spinal stenosis (relative risk [RR] 1.17, 95% CI 1.06 to 1.30, $p < 0.004$) and decreased for spondylolisthesis (RR 0.71, 95% CI 0.59 to 0.84, $p < 0.001$). In all indications, complications were more frequent following fusion (RR 1.88, 95% CI 1.37 to 2.58, $p < 0.001$). Mortality and treatment modality were not associated. **Conclusions:** Improvements were greatest in patients undergoing fusion for spondylolisthesis while complications limited the role of fusion for spinal stenosis. The relative safety and efficacy of fusion for chronic low back pain suggested careful patient selection is required.

P.132**Post-traumatic spinal pseudomeningocele with delayed neurological deterioration**

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doi: 10.1017/cjn.2016.231

Background: Post-traumatic spinal pseudomeningoceles are uncommon sequelae of brachial plexus injuries. These cerebrospinal fluid (CSF) collections have rarely been described to occur within the spinal canal with resultant cord compression and neurological deficit. We present the case of an intracanalicular pseudomeningocele causing spinal cord compression and progressive radiculomyelopathic weakness more than a decade after the original injury. **Methods:** Case report and review of the literature. **Results:** A 34 year old man presented with progressive cervical radiculomyelopathy 16 years after sustaining a brachial plexus avulsion injury. Magnetic resonance imaging revealed an anterior epidural intracanalicular fluid collection from C3 to L3, with focal compression at the cervicothoracic junction. Surgical intervention involved a C7 to T3 laminectomy and

fenestration of the anterior dura to permit communication of CSF between the dural space and pseudomeningocele. His strength and dexterity improved dramatically post-operatively. *Conclusions:* Spinal pseudomeningoceles following a traumatic brachial avulsion injury are typically found outside the spinal canal and are usually not associated with any neurological symptoms. There are few reported cases of post-avulsion intracanalicular pseudomeningoceles which present with delayed spinal cord compression and neurological dysfunction. Therefore, patients with a history of a traumatic avulsion injury and delayed neurological symptoms should warrant additional investigations.

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A retrospective analysis of the clinical utility of the Tokuhashi scale, and its impact in surgical management of spinal metastatic disease

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doi: 10.1017/cjn.2016.232

Background: The evaluation of patients presenting with spinal metastatic disease is often challenging. The Tokuhashi scale intends to facilitate this process. We conducted this study to investigate its clinical utility in surgical-decision making in patients with spinal metastasis. *Methods:* The oncology database was used to allocate 285 patients with spinal metastasis between 2010 and 2015. The Tokuhashi scale components were determined from a chart review. *Results:* Based on the Tokuhashi scale, there was 69.1% in the non-operative/radiation group (group 1), 23.2% in the palliative/excisional surgical group (group2) and 7.7% in the surgical group (group 3). Using Kaplan-Meiers estimate, survival time was significantly different across the three groups with means 232.8±30.8, 352.3±49.2 and 568.3±206.1 days, respectively. A significantly higher proportion of patients (84.6%) were treated non-surgically in group 1, compared to 45.5% in group 3 ($X^2=19.5$, $P<0.001$). However, there was no correlation between the type of surgical interventions (i.e. instrumented decompression, decompression alone, percutaneous vertebral augmentation and instrumented vertebral augmentation) and the Tokuhashi score. *Conclusions:* This review illustrates the utility of the Tokuhashi scale in predicting survival. However, it does not address the new role of emerging different surgical strategies for the treatment of spinal metastasis and lacks information concerning spinal instability.

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Spinal epidural abscess associated with septic facet joints-one center experience

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doi: 10.1017/cjn.2016.233

Background: Infection to the facet joints has been reported sporadically but the significance of this type of infection has not been clarified. In our study on spine infection, we identified the cases of spinal epidural abscess with septic joints and was able to compare to cases of epidural abscess with discitis and osteomyelitis. *Methods:* Between 2007 and 2014, we experienced 176 cases of spine infection

including discitis, osteomyelitis and epidural abscess. Retrospective review of the clinical data and radiological findings was performed. Among 176 cases, 80 patients had epidural abscess. They were divided to two groups, one with septic joint and the other with discitis and osteomyelitis. *Results:* 23 patients were found to have septic joints with epidural abscess based on the MRI findings. Mean age was 45.5. 15 of 23 patients (65%) required surgery and all treated with laminectomy. 78% had a good neurological outcome.

57 patients had epidural abscess with discitis and osteomyelitis. Mean age was 54. 51% required surgery. Only 62% was treated with laminectomy alone. Good neurological outcome was seen in 67% of the patients. *Conclusions:* Infected facet joints are not as rare as generally believed. The patients with septic joints are younger. Surgery was done more often and laminectomy provided better neurological outcome

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Epidemiology of spine infection in patients with history of IV drug use and HIV infection. Possibility of the secondary prevention

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doi: 10.1017/cjn.2016.234

Background: One of the major risk factors for spine infection is IV drug use and HIV infection. An increase in these risk factors has coincided with increased rates of spinal infection in Saskatchewan. However, the exact incidence and the clinical significance of spine infection associated with high-risk behavior is poorly understood. *Methods:* A retrospective review was completed for adult patients with discitis, osteomyelitis, or epidural abscess admitted to the Royal University Hospital, University of Saskatchewan over the last eight years. *Results:* This study included 176 patients consisting of 41% with discitis, 69% with osteomyelitis and 45% with epidural abscess. Overall mortality was 3% and 16% of patients developed severe disability. 40% of patients were intravenous drug users, 45% were hepatitis C positive and 12% were HIV positive. For the initial four years of our study we experienced 72 patients. We experienced 91 cases over the past four years. Geographical analysis showed high incidence areas within the city of Saskatoon. *Conclusions:* High rates of IV drug use, Hepatitis C, and HIV have important implications in terms of what measures would assist in prevention of this condition. Secondary prevention or early identification of patients may reduce the number of patients who require lengthy admission, surgery and long term care for disability.

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Type III odontoid fracture with C1 and C2 distraction injury manifesting as a variant of occipital-cervical dissociation

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doi: 10.1017/cjn.2016.235

Background: Isolated odontoid type III fractures are usually stable with surgical fixation reserved for significant fracture displacement or inability to maintain alignment with external immobilization. We present a rare but important pattern of injury involving a C2