

fluorescein to localize high grade intramedullary spinal cord tumours appears to be safe, accurate, and inexpensive.

P.138

Minimally invasive treatment of syringomyelia using tubular retractors

K Yang (Hamilton) M Sourour (Hamilton) N Zagzoog (Hamilton) K Reddy (Hamilton)*

doi: 10.1017/cjn.2018.240

Background: Multiple modalities have been used in the treatment of syringomyelia, including direct drainage, shunting into peritoneal, pleural and subarachnoid spaces. The authors report their experience of surgical treatment of syringomyelia in a minimally invasive fashion. **Methods:** We conducted a single-center retrospective chart review on our syringomyelia cases treated with minimally invasively using Metrx Quadrant retractor system since January 2011. Lateral fluoroscopy was used to guide the placement of the retractor onto the lamina of the corresponding level. This was followed by laminectomy and a small durotomy. Once the syrinx cavity was identified and the proximal end of the tubing was inserted into the syrinx cavity, the tubing was tunneled into the pleural incision subcutaneously. Insertion of the pleural end of the shunt was performed under the microscope, with removal of a small amount of the rib at its upper edge. **Results:** 10 procedures were performed in 7 patients by the senior author. Etiologies of syringomyelia included Chiari malformation, trauma, diastematomyelia and kyphoscoliosis. All patients improved neurologically. No patients had immediate postoperative complications. One patient underwent two revisions of syringopleural shunts due to multilobulated nature of syringomyelia. **Conclusions:** Our case series presents a novel, minimally invasive technique for shunting of syringomyelia with results comparable to open procedures.

P.139

Fixation of Type II Odontoid fractures with anterior single screw

AM Seleem (Gizan) NM Sayed (Gizan)*

doi: 10.1017/cjn.2018.241

Background: More than 60% of spinal injuries affect the cervical spine, and approximately 20% of all cervical spine injuries involve the axis. The most common axis injury is odontoid fracture. The management of odontoid fractures became less controversial than before. **Methods:** Thirty consecutive patients (25 males and 5 females) who underwent anterior single screw fixation for recent Type II odontoid fractures at King Fahd Hospital, Al-Madina Al-Munawarah, in Saudi Arabia (SA) between January 2004 and December 2007 were included in this study. Data including clinical examination, imaging studies and operative technique were used to analyze the results of this surgical technique. **Results:** Single screw for fixation of type II odontoid fracture was found easier and simpler than double screws with the same advantages. This method resulted in immediate spinal stability and preserves normal rotation at C1–2 in all patients. Radiological evidence of bone union achieved in 22 patients (73% of cases); and nonunion in 8 patients (27% of cases). Complications related to surgical procedure and hardware failure

were recorded in 4 patients (13% of cases). **Conclusions:** Direct anterior single screw fixation is an effective, simple, and safe method for treating type II odontoid fractures. It is associated with rapid patient mobilization, minimal postoperative pain, and shorter hospital stay. By this technique, the required anatomical and functional outcome can be obtained through immediate stability of the axis, preserves C1–2 rotatory motion, and achieved high union rate.

P.140

A new international nomenclature of far and extreme lateral approaches to the craniocervical junction

Ns Alshafai (Toronto) T Klepinowski (Toronto)*

doi: 10.1017/cjn.2018.242

Background: Far and extreme lateral approaches have become a mainstay treatment for lesions located at the anterolateral aspect of foramen magnum and its vicinity. However, there is a significant discrepancy between authors on what these approaches truly are, which leads to producing papers naming different techniques the same and same techniques differently. **Methods:** We performed literature search employing PubMed-MEDLINE and Scopus databases. The search terms referred to the nomenclature of far lateral approach (FLA), extreme lateral approach (ELA), and their variants. Finally, important papers on the topic from article references were also included, if deemed contributory. **Results:** In total, 37 articles were collected. Surprisingly, we found that not a single paper has addressed the confusing nomenclature directly yet. Nine truly separate variants of FLA and ELA were found. We implemented them intraoperatively depending on both patient and lesion characteristics. The essence about each is summarized. **Conclusions:** In the CNSF meeting, we will shortly discuss causes behind confusion and debate each FLA and ELA variants according to a number of authors and their unique yet sometimes confusing understanding of the approaches. Ultimately, a logical proposal for the unification is provided to stir up discussion

P.141

Is occipito-condylar screw a better alternative fixation point for occipitocervical stabilization? 1. Review of the literature

Ns Alshafai (Toronto) M Dibenedetto (Toronto)*

doi: 10.1017/cjn.2018.243

Background: Occipitocervical fusion (OCF) using screws and rods offers immediate stability and an high fusion rates. However, multiple cranial fixation points are required in order to compensate for the poor bony purchase. **Methods:** The aim of this study was to compare the occipital condyle screw with the standard OCF techniques as well as to compare available techniques of the occipital condyle screw insertion. Materials and **Methods:** A comprehensive “Medline” and “Web of science” database search was performed. Cadaveric, radiographic and case studies were included. **Results:** The occipital condyle screw in comparison to the occipital plate enables an increased screw length, greater screw pullout strength, lower profile of the hardware and extended grafting surface. Both constructs have similar biomechanical properties (range of motion restriction, stiffness). Proximity of the vertebral artery and hypoglossal canal

presents the greatest technical challenge of occipital condyle screw. Four surgical techniques with different entry points, cranial-caudal and medial angulations were described. None of these techniques is superior to the other. **Conclusions:** Occipital condyle screw is a viable alternative to standard OCF techniques. Challenges exist due to the proximity of the vital anatomical structures. Choice between four available techniques depends on unique patient's anatomy

P.142

The effect of modern technology on cervical spine biomechanics. Literature review

Ns Alshafai (Toronto)* W Aldhafeeri (Toronto)

doi: 10.1017/cjn.2018.244

Background: The use of smartphones has increased drastically over the last decade. Improper posture, and excessive use have raised concerns about their effect on cervical spine health. **Methods:** MEDLINE database was searched for articles using the keywords: neck pain, musculoskeletal symptoms, cervical spine, cervical biomechanics, mobile phone, cell phone, smart phone, smartphone, mobile device, touchscreen phone. Full-text Articles from 1990 to 2017 were included. Statistical comparisons and tables are provided when appropriate. **Results:** 43 articles were included for review. First article was published in 2002. Majority of studies were published between 2010 – 2017 (36 vs. 5 in 2000-2010). Studies included were of cross-sectional, experimental, or systemic review design. No longitudinal studies were identified. We categorized articles into 5 sub-groups; we found 14 biomechanical studies, 10 electromyographic studies, 5 ergonomical studies, 14 clinical studies, and no surgical studies. **Conclusions:** Text-neck posture leads to significant changes in cervical spine biomechanics. Increased compressive load, antero-posterior shear load, and high cervical extensor muscles activity were associated with forward flexed neck posture adapted by smartphones users. Neurosurgeons need to take the abnormal posture and load distribution into consideration when planning for surgical interventions, especially in young adults with history of excessive use of smartphones.

P.143

Spinal cord intramedullary malignant peripheral nerve sheath tumour: case report and review of literature

V Karapetyan (London) MD Staudt (London)* SM McGregor (London) B AlYamany (London) FA Haji (London) LC Ang (London) F Siddiqi (London)

doi: 10.1017/cjn.2018.245

Background: Malignant peripheral nerve sheath tumours (MPNST) are uncommon but aggressive neoplasia associated with radiation exposure and neurofibromatosis (NF). These tumours are often found in the trunk, extremities, head and neck, with capacity to metastasize. Only a handful of case reports have described intramedullary spinal cord MPNST. **Methods:** We report the case of a 35 year-old female who presented with progressive gait disturbance and paraparesis. MRI of the spine demonstrated an enhancing intramedullary mass at the C7 vertebra. Laminectomy with expansile duraplasty, and extended surgical biopsy were performed for cord decompression and tissue diagnosis. **Results:** Pathological sections

demonstrated a spindle cell neoplasm with nuclear atypia, frequent mitotic figures, focal necrosis, and infiltration into adjacent neurological tissue. It was positive for S100, SOX10, p53 with partial loss of INI-1. Diagnosis of spinal intramedullary MPNST was confirmed, however given the prior history of remote trigeminal MPNST, it was unclear whether the mass represented a delayed metastasis, or a de novo neoplasm. **Conclusions:** Typically relegated to the periphery, our case represents a rare spinal medullary presentation of MPNST. While the differential for tumours in this location typically includes diffuse astrocytomas, ependymomas, and rarely schwannomas, we move that consideration of MPNST in select high risk cases advise surgical planning and subsequent therapy.