

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

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### Minimally invasive treatment of syringomyelia using tubular retractors

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**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.

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### Fixation of Type II Odontoid fractures with anterior single screw

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**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

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**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

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**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