

EP-0269 [Spine and Peripheral Nerve » Surgical Technique (Incl. Neuroendoscopy)]

Our Policy Regarding the Diagnosis and Management of Complicated Lumbar Disc Hernias (Failed Back Surgery Syndrome)

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Background: Low back pain caused by degenerative disc diseases of the spine is one of the most frequently met reasons for consulting a physician. Given the high variability of symptoms, literature data shows the prevalence of low back pain to be situated somewhere between 12 and 40% in adults.

Method: The purpose of our study is to facilitate a better understanding of how Failed Back Surgery Syndrome (FBSS) appears in patients operated for lumbar disc hernias (LDH) and to improve the results of the surgical management in these patients. We evaluated and compared all the surgical approaches available for LDH (non-endoscopic) in a cohort of 150 patients operated in 4 neurosurgical centers in Romania and followed over a period of 6 years, presenting at the same time complication occurrence rates for each approach and FBSS generating factors, thus attempting to create a standard rationale for the surgical treatment of LDH.

Results: Short term results should improve the quality of life for patients with LDH while long term results should decrease the financial pressure generated by patients with FBSS on the medical system in Romania.

Conclusion: Through its financial and socio-economic components, LDH represent a public health problem in Romania. Both prevention and early diagnosis policies should be installed in order to reduce patient suffering and to decrease the costs of treatment of FBSS. Surgical interventions should be carefully weighed and considered to be only a tailored, last resort gesture for carefully selected patients.

Keywords: Failed back surgery syndrome, Management algorithm, Surgical technique, Complications, Neurosurgery

EP-0270 [Spine and Peripheral Nerve » Surgical Technique (Incl. Neuroendoscopy)]

Clinical Result of Utilization of Image-Guided and Navigation-Assisted Method for Percutaneous Endoscopic Lumbar Disc Herniation Surgery

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Background: According to researchers, degenerative disc diseases is XXI century pandemic. Lumbosacral disc herniations are found in 61% of patients with spinal degenerative diseases. Image

guidance technology and minimal access technique advancements push the frontiers of minimally invasive spine surgery. While traditional intraoperative imaging remains used, newer platforms, like 3D-fluoroscopy, cone-beam CT, and intraoperative CT/MRI enabled safer, accurate instrumentation placement with less surgeon radiation exposure. This work reviews a private experience of image guided system uses in lumbar spine endoscopic procedure.

Method: Authors used the O-ARM and S7 navigation system for percutaneous endoscopic lumbar disc herniation removal (PELD). This study included 65 patients who underwent transforaminal procedure for migrated disk herniation. Image-guided navigation utilized in 9 cases. Pre- and postoperated examination included visual analogue scale (VAS) Oswestry Disability Index (ODI), radiological workup and operation time.

Results: Postoperative mean ODI decreased from 77,27±7,1% to 16±1,6%. All patient noted improved pain status. Mean VAS score for back pain improved from 9.27±0.27 to 1.87±0,93 and leg pain from 8.0±0.67 до 1.62±0,98. Analysis of radiological work up confirms advantages of navigated PELD versus non navigated. Common radiation dose was 1.5±0.5 mSv for patients who undergone navigated procedure versus 5,3±0.7 mSv in non navigated group. The mean operation time was not deferent in both groups.

Conclusion: Intraoperative cone-beam CT combined with navigation system in PELD decreases common radiation dose versus traditional fluoroscopy. Improvement of visualisation and control of instruments increase quantity "best result" of surgery via improving of quality of nerve structures decompression.

Keywords: Degenerative disc diseases, Image guidance technology, Minimally invasive spine surgery, Percutaneous endoscopic lumbar disc herniation removal (PELD)

EP-0271 [Spine and Peripheral Nerve » Surgical Technique (Incl. Neuroendoscopy)]

Modified S1 Transpedicular Screw Entry Point in Closed Posterior Superior Iliac Spine

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Background: Posterior spinal fusion at the lumbo-sacral junction remains challenging because this surgery is associated with a high rate of complications, such as pseudarthrosis, instrumentation failure, pull-out, incorrect placement etc. In cases in which there is a closed posterior superior iliac spine (PSIS), placement of pedicle screws into S1 is difficult. In this study, we describe a novel S1 screw entry point and screw direction. With that projection, we can insert safe and strong S1 corpro-pedicular screw in case of closed posterior iliac spine.

Method: In this anatomic study, five formalin fixed cadavers were dissected to describe S1 entry point, twenty adult dry sacra were used to measure S1 pedicle morphology. All sacral parameters were measured bilaterally using calipers accurate to 0.1mm and a goniometer accurate to 1°. The screws were inserted into S1, in formalin fixed cadavers, were shown and confirmed by fluoroscopy.

Spinal computerised tomography images crossing S1 pedicle level were also be analysed and measured by an radiologist.

Results: In this study, we described a new S1 screw direction method. The starting point for transpedicular S1 screw introduction is, in comparison to classical method, more cranial and superiolateral of S1 superior facet, and the direction of screw is more caudal. Therefore, one can insert the S1 screw with the present method regardless of limiting posterior superior iliac spine.

Conclusion: Thus, this new surgical technique may be used successfully and safely in cases of PSIS and revision of S1 screw.

Keywords: Sacrum, screw, Surgical technique, Anatomy, Iliac

EP-0272 [Spine and Peripheral Nerve » Surgical Technique (Incl. Neuroendoscopy)]

Chiari Malformation I: Is It a Nature's Protective 'Air-Bag'?

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Background: Understanding that atlantoaxial instability is the cause of Chiari malformation, the author treated 120 patients using atlantoaxial stabilization.

Method: Cases of CM treated using atlantoaxial fixation during the period from January 2010 to June 2015 were reviewed and analyzed. Surgery was aimed at segmental arthrodesis.

Results: The author treated 120 patients with CM in the defined study period. Eight patients had been treated earlier using foramen magnum decompression and duroplasty. According to the extent of their functional capabilities, patients were divided into 5 clinical grades. On the basis of the type of facet alignment and atlantoaxial instability, the patients were divided into 3 groups. Type I dislocation was anterior atlantoaxial instability wherein the facet of the atlas was dislocated anterior to the facet of the axis. Type II dislocation was posterior atlantoaxial instability wherein the facet of the atlas was dislocated posterior to the facet of the axis. Type III dislocation was the absence of demonstrable facet alignment and was labeled as "central" atlantoaxial dislocation. All patients were treated with atlantoaxial plate and screw fixation using techniques described in 1994 and 2004. Foramen magnum decompression or syrinx manipulation was not performed in any patient.

Conclusion: On the basis of outcomes in this study, it appears that the pathogenesis of CM with or without associated basilar invagination and/or syringomyelia is primarily related to atlantoaxial instability. The data suggest that the surgical treatment in these cases should be directed toward atlantoaxial stabilization and segmental arthrodesis. Foramen magnum decompression is not necessary and maybe counter-effective.

Keywords: Chiari malformation, Atlantoaxial instability, Atlantoaxial fixation

EP-0273 [Spine and Peripheral Nerve » Surgical Technique (Incl. Neuroendoscopy)]

Cervical Microdiscectomy Surgical Technique: Anterior Approach vs Posterior Approach

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Aim: To implementate the interlaminar lateral approach for extraction of herniated discs in the cervical spine.

Method: 2012-2016 were operated 67 patients with cervical herniated discs. The main disease signs were: cervicgia and monoradiculopathy. 51 patients with medial localization of hernia were operated by anterior approach with herniated disc extraction and intervertebral cage implantation (PEEK material). 16 patients had lateral hernia placing. They were operated by posterior interlaminar cervical microdiscectomy. Anterior approach was made by standard method. The way of posterior interlaminar approach was such: paramedian skin incision (3cm), intermuscular approach to the rear side lateral angle bows on the affected side. After that we used highspeed drill for interlaminectomy (1cm), then – hernia extraction from under nerve root.

Results: In all cases we managed to achieve the regress of radicular and cervicgia syndroms. No complications were fixed during performance of both surgical approaches. The average time in the surgery between the two methods didn't differ significantly and lasted about 64±12 minutes. All patients were verticalized and activated in 3-4 hours after surgery inside the clinic.

Conclusion: The posterior interlaminar approach is effective method in case of lateral herniations, especially sequestered herniations. It intends the preservation of own intervertebral disc and reduces the general price of surgery due to no necessity to use the implants-prosthesis of the last one. We suppose that posterior cervical microdiscectomy of lateral, sequestered intervertebral discs herniations in cervical spine must become a standard method of treatment.

Keywords: Intervertebral discs herniation, Cervical microdiscectomy, Surgical treatment

EP-0274 [Spine and Peripheral Nerve » Surgical Technique (Incl. Neuroendoscopy)]

Posterior Occipital Condyle Screw Trajectories

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Background: Craniocervical instability requiring instrumented fusions may occur in multiple pathologies such as Rheumatoid arthritis, postoperative iatrogenic, trauma, or infection. For patients with prior suboccipital craniectomies, craniocervical fixation is challenging. Anatomical feasibility on condylar screws as a craniocervical fixation point has been previously demonstrated. Direct condylar screws have several biomechanical advantages such as a shorter moment arm and longer screws than midline occipital screws provide. We present a cadaveric anatomical review of several occipital condylar screw techniques including their entry point, trajectory, and proximity to important surround structures.

Method: This was a cadaveric study comparing 3 entry points and trajectories for occipital condyle screw insertion as previously described in the literature. A standard posterior midline approach was performed exposing the craniocervical junction. Entry points for condyle screws were marked on the posterior condylar surface. The proximity of the entry points to the vertebral artery, posterior condylar emissary vein, and sagittal relation to hypoglossal canal were measured.



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