



2<sup>nd</sup> International Conference on  
**Spine and Spinal Disorders**  
&  
6<sup>th</sup> International Conference on  
**Neurology and Neuromuscular Diseases**

Workshop  
Day 1

*Spine & Neuromuscular 2017*

CO-ORGANIZED EVENT

2<sup>nd</sup> International Conference on **Spine and Spinal Disorders**

&amp;

6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy



## Walid Ismail Attia<sup>1,2</sup>

<sup>1</sup>National Neuroscience Institute, Saudi Arabia<sup>2</sup>King Fahad Medical City, Saudi Arabia

### The value of the use of the O-arm and Neuronavigation in the Minimally Invasive Spine Surgery Cases

**Purpose:** The type and extent of image guided-surgery for spine disorders still lacks evidence-based medicine proof. It is up to the health care providers sound judgement and expertise to do what is needed for the patient. This is very true when it comes to MIS. Surgical challenges include yet not limited to; limited exposure, decompression near vital or neural structures, decompression at a blind angle, and difficult trajectories for instrumentation. The use of intraoperative CT-quality O-arm, and neuronavigation are still tested as aiding tools in such operative modalities.

**Methods:** We selected our preliminary group of 15 cases of MIS that were operated upon during the years 2012-2014 in our institute by the first two authors to be included in this retrospective study. Cases include traumatic spinal fractures, infective, virgin and recurrent disc-osteophyte compressive lesions, affecting different parts of the spinal column. All of them had technical challenges regards adequacy of decompression or safety of instrumentation. All had undergone a combination of decompression and instrumentation of different modalities and/or bone grafting. In all cases the Medtronic O-arm and Medtronic StealthStation were used as intraoperative mapping tools.

**Results:** Intraoperative navigation tools were so useful in securing adequate neural decompression, neural and vascular tissue safety together with tough bony purchases of the hardware from the first and only trial of application when needed. Intraoperative CT taken by the o-arm was a useful confirmatory intraoperative test of proper hardware placement. A group of technical problems have been faced. All are studied in some details. A learning curve existed though it was smooth and easy to catch up with.

**Conclusion:** The intraoperative use of the O-arm and stealthStation is very useful in different modalities of MIS spine surgeries.

#### Biography

Walid Ismail Attia is a Consultant Neurosurgery and Spine Surgery Director at King Fahad Medical City. He completed his Bachelor of Medicine/Bachelor of Surgery at Tanta University, Egypt and Residency in Neurosurgery at Tanta University Hospital, Egypt.

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#### Notes:



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Scientific Tracks & Abstracts  
Day 1

*Spine & Neuromuscular 2017*

## Spine surgery | Back pain | Spinal disorders test

### Session Chair

**Walid Ismail Attia**

National Neuroscience Institute, Saudi Arabia

### Session Introduction

**Title: Comparison of Automated Percutaneous Lumbar Discectomy (APLD) and Percutaneous Laser Disc Decompression (PLDD) Results with 1 year follow-up**

**Jan W Duncan**, California Spine Orthopaedic Surgery, USA

**Title: A multidisciplinary work related low back pain predictor questionnaire: psychometric evaluation among iranians patient care workers**

**Sedigheh Sadat Tavafian**, Tarbiat Modares University, Iran

**Title: Low back pain is a disease**

**Abbas Alnajji**, Al-sadir teaching hospital, Iraq

**Title: Diagnostic tests of sacroiliac joint dysfunction**

**Parisa Nejati**, Iran University of Medical Sciences, Iran

**Title: Effectiveness of multidisciplinary group based intervention versus individual physiotherapy for chronic low back pain: a clinical trials with 3- and 6- month follow ups**

**Sedigheh Sadat Tavafian**, Tarbiat Modares University, Iran

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**Comparison of automated percutaneous lumbar discectomy and percutaneous laser disc decompression results with one year follow-up**

**Jan W Duncan**

California Spine Orthopaedic Surgery, USA

**Aim:** The effectiveness of Automated Percutaneous Lumbar Discectomy (APLD) and Percutaneous Laser Disc Decompression PLDD has not been documented individually, and there has been no comparison of these two techniques. The objective is to document results of and compare APLD and PLDD.

**Method:** This is a prospective study comparing a consecutive group of APLD and PLDD with one-year minimum follow up. All cases had the same indication consisting of a bulging disc, radicular symptoms and no neurologic loss or sensory loss only. Pain status was measured using a visual analogue scale for both back and radicular pain. Pain measurements were done pre operation with six weeks, three months and one year.

**Results:** There were 21 consecutive APLD cases and 20 consecutive PLDD cases. The APLD group had a pre operation pain ranging from 7-9 leg pain and 2-6 back pain. Three months follow up was 0-4 leg pain and 2-4 back pain. By 6 months to 1 year, two underwent epidural injections and one came to surgery. The PLDD group had pre operation 6-9 leg pain and 2-5 back pain. At three months, leg pain was 0-3 and back pain 2-5. At 6 months to 1 year, three had epidurals and one underwent surgery. There were no complications. In conclusion, APLD and PLDD are both equally effective for a contained bulging disc with radicular symptoms.

**Biography**

Jan W Duncan completed his MD at University of Tennessee followed by Orthopedic Surgery Residency at University of Arkansas and specializing in Children Spinal Deformity at Scottish Rite Hospital in Atlanta. He serves as the Chairman of the Orthopedic department at White Memorial Hospital and on the Surgery Executive Committee at Verdugo Hills Hospital. He has an ongoing commitment to help his patients find solutions to back pain, develop the field of orthopedics contributing through research and presenting at conferences.

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**A multidisciplinary work related low back pain predictor questionnaire: Psychometric evaluation among Iranians patient care workers**

Sedigheh Sadat Tavafian<sup>1</sup>, Sarallah Shojaei<sup>1</sup>, Ahmad Reza Jamshidi<sup>2</sup> and Joan Wagner<sup>3</sup>

<sup>1</sup>Tarbiat Modares University, Iran

<sup>2</sup>Tehran University of Medical Sciences, Iran

<sup>3</sup>University of Regina, Canada

Psychometric evaluation of a Multidisciplinary Work Related Low Back Pain Predictor Questionnaire (MWRLBPPQ) among Iranians patient care workers are based on social cognitive theory. Health care is one of the professions in which work-related musculoskeletal disorders are found. The chronic low back pain experienced by patient caregivers can disturb their professional performance. Patient handling in hospital is the main cause of low back pain in this population. This was a cross sectional study carried out in Qom, Iran from July, 2014 to November, 2014. MWRLBPPQ based on nine concepts of the social cognitive theory and existing literature regarding chronic low back pain was developed. 10 workers of patient care completed the questionnaire as a pilot and ambiguities of the instrument were resolved during the previous pilot study with 10 patient care workers. Exploratory factor analysis was used to conduct construct validity. This questionnaire was distributed among 452 patient care workers in hospitals located in different geographically areas in Qom, Iran. Cronbach's Alpha was calculated to assess reliability. In all, 452 caregivers of patients with mean age of 37.71 (SD=8.3) years participated in the study. An exploratory factor analysis loaded seven concepts of self-efficacy, knowledge, outcome perception, self-control, emotional coping, self-efficacy in overcoming impediments and environment. All concepts were jointly accounted for 50.08% of variance of behavior change. The Cronbach's alpha coefficient showed favorable internal consistency ( $\alpha=0.83$ ), and test-retest of the scale with two-week intervals indicated an appropriate stability for the MWRLBPPQ.

**Biography**

Sedigheh Sadat Tavafian completed his Doctor of Philosophy at Tehran University of Medical Science, Iran and University of Manitoba, Canada; Master of Midwifery Education at Iran University of Medical Science, Iran and; Bachelor of Science in Midwifery at Tehran University of Medical Science, Iran.

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**Low back pain is a disease**

**Abbas Alnaji**

Al Sadir Teaching Hospital, Iraq

This is an anatomic analysis to reveal, according to the work, the infective aspect of the structural changes in the vertebra and hence the clinical outcome, and to show how pathologic changes occur in the vertebral components (spondylosis SL). In another words, spondylosis is the low grade bacterial spondylitis in the majority of prevalence. Micro and macro anatomy of the vertebra is well studied in many sources, but very little whom mentioned the exact or near to that the properties of this structure. For example Gray's anatomy mentioned in what means " *The force that breaks the body of vertebra do not distort the adjacent intervertebral disc*" where as it is very common and popular at least in my community that prolapsed intervertebral disc prolapse is created when a cocking propane jar ( about 50 kg) is lifted or some an inappropriate trunk torsion is achieved during some task. *The pathological fracture* principle is well known for them but do not goes with the above, that's to say, unless there is a massive pathology as a radiological finding, it wouldn't be a diseased vertebra! According to our vision based on the clinical and lab findings that shows most of, if not all, chronic back pain is due to a chronic active bacterial spondylitis of Brucellar origin. This infective agent is responsible for the slow ongoing inflammatory process that causes the catastrophic bony builds like spurs in the intervertebral foramina where the spinal roots exit to cause causalgia. And the posterior up going and down going spurs that causing kissing vertebrae and to press spinal cord. With the anterior Parrot peaks. For osteolytic changes, the end plate and the related bony edge are distorted to give the damaged bed for the; soft tissues changes, the disc, where both mechanical attachment for its fibrous rings is distorted and both chemical or cellular changes, (it needs extensive and advanced work ) practiced by this intracellular bacteria on the disc structure to distort it in all aspects we know (degeneration). When we come to the spinal stenosis, the inflamed soft tissue swelling decreases the caliber of spinal canal and the foramina due to tissue edema and ongoing fibrosis. According to the above concept many clinical and surgical management measures will be formed to change the traditional or today standards.

**Biography**

Abbas Alnaji was born in Baghdad 1962 and he had the Degree in Neurosurgery FICMS NS from University of Baghdad 1999. He is interested in research work and has eleven papers published in the field of surgical pathology causations.

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## Diagnostic tests of sacroiliac joint dysfunction

**Parisa Nejati**

Iran University of Medical Sciences, Iran

Sacroiliac Joint Dysfunction (SIJD) is a common cause of low back pain. It can be diagnosed by history and several diagnostic tests. When at least three tests from the provocative tests are positive, we can diagnose SIJD. The provocative tests are Patrick test; the thigh thrust test; yeoman test; Gaenslen test; compression test; distraction test and other tests like gilet test and forward flexion test. The gold standard of diagnosis is sacroiliac joint block by local anesthetics guided by fluoroscopy. Considering it is expensive and non-accessible in every place, therefore, we have started a study evaluating the accuracy of the diagnostic tests. It is comparing the accuracy of the diagnostic tests by SI block. The patients who are diagnosed by physical exam are taken SI joint block by 1.5 cc lidocaine 2%. During 1 hour after block, the provocative tests and the pain severity (visual analog scale) are evaluated. If the tests are negative and the pain is decreased by more than 80%, the tests will be accurate and reliable for diagnosis. Additionally, the positive predictive value and negative predictive value of these test as well as sensitivity and specificity of every test will be clarified in the results.

### Biography

Parisa Nejati completed her General Physician degree at Zanjan University of Medical Sciences in Iran and Post-graduation studies in the field of Sports Medicine at Iran University of Medical Sciences in Iran. She is an Assistant Professor of Sports Medicine at Iran University of Medical Sciences. She has worked in the field of musculoskeletal diseases, diagnosis and treatment for seven years. She has published more than 10 papers in reputed journals. She has worked on sacroiliac joint dysfunction diagnosis and treatment since two years ago.

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**Effectiveness of multidisciplinary group based intervention versus individual physiotherapy for chronic low back pain: A clinical trials with 3- and 6- month follow ups**

Sedigheh Sadat Tavafian<sup>1</sup>, Leila Ghadyani<sup>1</sup>, Anoshirvan Kazemnejad<sup>1</sup> and Joan Wagner<sup>2</sup>

<sup>1</sup>Tarbiat Modares University, Iran

<sup>2</sup>University of Regina, Canada

**Aim:** This study aimed to evaluate the effectiveness of a multidisciplinary group based intervention on improving pain and disability among Iranian nurses with Chronic Low Back Pain (CLBP) in Tehran, Iran.

**Methods:** In this trial study, 136 eligible nurses with chronic mechanical low back pain were classified into two groups. Intervention group (N=66 participants) who received a physiotherapy educational program (for 120 minutes) plus a health educational program based on predictive constructs of social cognitive theory (for 120 minutes). These interventions were delivered by a physiotherapist and a health education specialist. The control group (N=70 participants) just received a physiotherapy educational program (for 120 minutes). Disability rate, pain severity and back pain prevention behavior were measured initially and at 3- , 6-month follows ups using the Visual Analogue Scale (VAS), Roland-Morris Disability (RMD) and Nursing Low Back Pain Preventive Behaviors Questionnaire (NLBPPQ). Data were entered into the SPSS 16 and analyzed.

**Results:** The mean score of pain severity, disability and preventive behaviors of the two groups were the same at initiation of the study. There were statistically significant differences between the two groups in main outcome measures just after educational program, at 3- and 6-month follow-ups. Preventive behaviors of participants in intervention group were improved at 3- and 6- month follow ups (P value <0.0001). The mean scores of predictive constructs regarding low back pain preventive behaviors in intervention group were improved after 3 and 6 months of the study (all P value <0.0001). Finally, in intervention group, the pain severity and disability were decreased significantly.

**Conclusion:** This study showed that multidisciplinary educational program intervention can be an effective approach for reducing low back pain and related disability among nurses.

**Biography**

Sedigheh Sadat Tavafian completed his Doctor of Philosophy at Tehran University of Medical Science, Iran and University of Manitoba, Canada; Master of Midwifery Education at Iran University of Medical Science, Iran and; Bachelor of Science in Midwifery at Tehran University of Medical Science, Iran.

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## Lumbar Spine | Sciatica

### Session Chair

**Alfredo Pompili**

National Cancer Institute “Regina Elena”, Italy

### Session Introduction

**Title: Hybrid spinal fixation minimally invasive approach in lumbar degenerative listhesis – Our experience and outcome**

**Chandrasekaran Marimuthu**, Mahatma Gandhi Medical College and Research Institute, India

**Title: A consecutive series of 39 microendoscopic disectomies for recurrent lumbar disc herniation**

**Mohamed S Kabil**, Ain Shams University Hospital, Egypt

**Title: Predisposing factor for adjacent-segment failure following lumbar fixation for degenerative instability**

**Mohamed Shaban**, Cairo University School of Medicine, Egypt

**Title: Microendoscopic approach for far lateral lumbar disc herniation: a preliminary series of 33 patients.**

**Mohamed S Kabil**, Ain Shams University Hospital, Egypt

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**Hybrid spinal fixation minimally invasive approach in lumbar degenerative listhesis – our experience and outcome**

**Chandrasekaran Marimuthu**

Mahatma Gandhi Medical College and Research Institute, India

**Background:** Treatment of degenerative lumbar disc disease and instability is still a controversial area though surgical treatment is preferred when all non-operative modalities fail. Spinal stabilization and fusion has been the gold standard procedure for instability. To achieve optimal fusion adequate stabilization is also essential. To achieve this there are variety of methods available in the literature.

**Materials and methods:** It is a retrospective analysis of the hospital records of 16 adult patients diagnosed to have had symptomatic degenerative disc disease with lumbar spinal stenosis and instability, who had undergone ipsilateral pedicle screw (PS) with contralateral translaminar facet screw (TLFS) fixation with fusion were included in this study from 2013 Jan to 2016 January. Patients with pars defect, high grade listhesis, primary bony stenosis were excluded from the study. All patients underwent ipsilateral PS fixation and decompression with contralateral TLFS and fusion either in the form of posterolateral or interbody cage or both along with local (laminotomy) bone grafts.

**Results:** The mean age at the time of the index procedure was about 52 years with 11 female and 5 male patients. L4,5 vertebral level was found to be the most common site for degenerative listhesis in our series (14 patients). The average preoperative NRS for LBP, leg pain was 6,7 respectively which had improved to 2 at 24 months. The average preoperative ODI was 68% which improved to 19% at 24 months. Average operative time was 134 minutes with a range of 120 to 200 minutes. Average blood loss was 213ml with a range from 110 to 260ml. The overall cost of the implants was 40% lower than the conventional use of 4 pedicle screws. Postop recovery was very brisk as the one side of the spine was not disturbed. Out of 16 patients, 14 had fusion (87%) and two had delayed fusion whose status was not known as the follow up was lost at 1 year.

**Conclusion:** Hybrid fixation in degenerative listhesis with lumbar spinal stenosis is a minimally invasive, soft tissue preserving viable option with excellent outcomes.

**Biography**

Chandrasekaran Marimuthu has pursued MBBS MS Orthopedics. He Specializes in Orthopedic Surgery, Sports Medicine, and Traumatology.

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**A consecutive series of 39 microendoscopic disectomies for recurrent lumbar disc herniation**

**Mohamed S Kabil**

Ain Shams University Hospital, Egypt

**Introduction & Aim:** Interlaminar microendoscopic discectomy (MED) for treatment of primary lumbar disc herniation is a fairly established technique in clinical practice. However, in recurrent cases, a concern is raised that anatomy has been distorted thus endoscopic intervention may carry greater risks of morbidity. In the present study, the authors report their seven years of experience with posterior interlaminar MED in recurrent lumbar disc herniation, highlighting the surgical technique, its outcome and feasibility.

**Patients & Methods:** In the period between May, 2009 and July, 2016, 39 consecutive patients with symptomatic recurrent lumbar disc herniation as confirmed by clinical examination, magnetic resonance imaging (MRI) and computed tomography (CT) scan underwent posterior interlaminar MED. Mean age was 39.7 years, range: 29-56 years. The approach was similar to a standard MED. Patients were followed-up for seven years (mean follow-up was 47.9 months, range: 3-83 months). Clinical outcomes were reviewed and evaluated in terms of pain Visual Analogue Scale (VAS) and Modified Macnab Criteria (MMC).

**Results:** Mean operative time was 97 minutes (range: 59-155 min.) with a mean blood loss of 57 ml and an approximate hospital stay of 22.5 hours. There were no new postoperative neurological deficits or major complications. At initial follow-up, according to MMC (three months postoperative) 67% of patients were pain free (26/39) and considered their postoperative status as excellent, 24% as good (9/39), and 8% (3/39) as fair, whereas one patient was unsatisfied. Intraoperatively, there were three cases of dural tears, mainly toward the beginning of our study, seven cases of accidental medial facetectomies due to excess bony work and two cases had an unintended fracture of the base of the spine. Postoperatively, two cases had temporary weakness of involved root that resolved on follow-up and three cases had transient postoperative neuralgia.

**Conclusion:** Recurrent intervertebral lumbar disc herniation can be treated adequately with posterior interlaminar MED. The technique is associated with satisfactory clinical results as well as a short length of hospitalization. We conclude that although partial loss of anatomy renders recurrent cases more difficult, with necessary experience, the technique can be safely performed and provides excellent visualization and decompression of the involved nerve root.

**Biography**

Mohamed S Kabil is an Assistant Professor of Department of Neurosurgery, Ain Shams University, Cairo, Egypt. He is also the Medical Director of Cairo Endospine Clinic, for Endoscopic Spine Surgery. He obtained his medical degree in 1996 from the Faculty of Medicine, Ain Shams University where he presently serves as a staff member at the Department of Neurosurgery. He also contributed to numerous publications in international medical journals, he is the First Co-Author of the international book, Endoscopic Skull Base Surgery, and gave many presentations about minimally invasive and endoscopic neurosurgery and spine surgery.

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**Predisposing factor for adjacent-segment failure following lumbar fixation for degenerative instability**

**Mohamed Shaban**  
Cairo University, Egypt

**Aim:** Adjacent-segment failure is a well-known risk of lumbar fixation. The aim of this retrospective study was to identify risk factors for next-segment failure in lumbar fixation for degenerative instability.

**Method:** We retrospectively evaluated 122 patients who underwent of lumbar fixation for degenerative instability from 2011 to 2014 in Faculty of Medicine, Cairo University. All procedures were performed by a single surgeon. The patients with next-segment failure underwent neurological assessment, radiographic studies and sequential follow-up examinations. The mean follow-up period for this group was 30 months.

**Results:** 33 patients of 122 fusion procedures were performed in women who were postmenopausal. A total of 19 patients of 125 patients developed symptomatic next-segment degeneration at a previously asymptomatic level; 15 were postmenopausal women. All women were postmenopausal, and 50% received bisphosphonate drugs and calcium supplementation preoperatively for osteopenia. 20% of all patients with next-segment failure were cigarette smokers. Next-segment diseases included spondylolisthesis (52%), spinal canal stenosis due to disc herniation and/or facet hypertrophy (33%), stress fracture (12%), and scoliosis (3%). Patients may have more than one degenerative process at the next segment.

**Conclusions:** Postmenopausal women show the highest risk of adjacent-segment failure for patients in whom lumbar fusion with rigid instrumentation is performed to treat degenerative instability.

**Biography**

Mohamed Shaban is working as Special Surgeon at Cairo University, Egypt. He has published many research works.

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**The microendoscopic approach for far lateral lumbar disc herniation: A preliminary series of 33 patients**

Mohamed S Kabil

Ain Shams University Hospital, Egypt

**Introduction:** Far lateral lumbar disc herniation compresses the nerve root at the same level. The laterally herniated disc fragment typically could not be exposed by the standard posterior hemilaminectomy technique, and a total facetectomy including wide bone removal is usually essential for good exposure and removal of the herniation but simultaneously increasing the risk of instability.

**Aim:** In the present study, the author presents his initial 4 years of experience and surgical outcome in treatment of far lateral lumbar disc herniation with a posterior endoscopic modified trans-pars approach.

**Materials & Methods:** This prospective study was carried out in the period between February, 2011 and January, 2015, where 33 consecutive patients with symptomatic far lateral lumbar disc herniation underwent a posterior endoscopic modified trans-pars approach for lumbar resection of the herniation. The mean age was 39.3 years, range: 26-59 years. Patients were followed-up for four years (mean follow-up was 19.9 months, range: 3-47 months). Patients had their clinical outcomes reviewed and evaluated in terms of pain Visual Analogue Scale (VAS) and Modified Macnab criteria (MMC).

**Results:** Mean operative time was 91 minutes (range: 55-166 min.). At initial follow-up, according to MMC (three months postoperative) 86% of patients were pain free (28/33) and considered their postoperative status as excellent, 14% as good (5/33), no patients reported a fair or poor outcome. There were no new postoperative neurological deficits or major complications. There were three cases of accidental medial facetectomy due to excess bony work, a single case of dural tear and a single case that had a transient postoperative neuralgia that persisted for two weeks.

**Conclusion:** Far lateral lumbar disc herniation can be treated adequately with the reported microendoscopic modified posterior trans-pars approach. The technique is associated with marked improvement in back pain and lower limb symptoms, as well as a short length of hospitalization and other benefits of minimal invasiveness. Although a transitory learning curve is necessary, the endoscope in general is safe in handling bimanually and allowed adequate mobility and visualization.

**Biography**

Mohamed S Kabil is an Assistant Professor of Department of Neurosurgery, Ain Shams University, Cairo, Egypt. He is also the Medical Director of Cairo Endospine Clinic, for Endoscopic Spine Surgery. He obtained his medical degree in 1996 from the Faculty of Medicine, Ain Shams University where he presently serves as a staff member at the Department of Neurosurgery. He also contributed to numerous publications in international medical journals, he is the First Co-Author of the international book, Endoscopic Skull Base Surgery, and gave many presentations about minimally invasive and endoscopic neurosurgery and spine surgery.

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Scientific Tracks & Abstracts  
Day 2

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## Neuromuscular disorders | EEG - EMG signal processing

### Session Chair

**Bin Zhang**

Icahn Institute of Genomics and Multi-scale Biology, USA

### Session Introduction

**Title: Arbovirus infections of nervous system: Trends and threats**

**Mohammad Wasay**, Aga Khan University, Pakistan

**Title: Reduction of crosstalk in surface electromyogram by optimal spatio-temporal filtering**

**Luca Mesin**, Polytechnic University of Turin, Italy

**Title: Central nervous system involvement in mitochondrial disorders**

**Josef Finsterer**, Veterinary University of Vienna, Austria

**Title: Early detection of glioma sphere xenografts models: A diffusion MR study at 14.1 T**

**Paola Porcari**, Newcastle University, UK



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**Arbovirus infections of nervous system: Trends and threats**

**Mohammad Wasay**  
Aga Khan University, Pakistan

Arthropod-borne viruses (arboviruses) are among the most important international infectious threat to human nervous system. The neurological diseases that may be transmitted to humans in the traditional way by arthropods include meningitis, encephalitis, myelitis, encephalomyelitis, neuritis (including anterior horn cells and dorsal root ganglia), and myositis. Arboviruses are distributed worldwide. However, different species have predilection for different geographical areas. Arboviruses are transmitted among vertebral hosts by blood feeding arthropod vectors including mosquitoes, biting flies, mites, nits and ticks. Some of the well-known encephalitis include West Nile encephalitis (WNE), Dengue fever encephalitis (DFE), St. Louis encephalitis (SLE), Japanese encephalitis (JE), Toscana encephalitis (TOE), Crimean-Congo hemorrhagic fever (CCHF), Chikungunya virus encephalitis (CHIKV), Eastern equine encephalitis (EEE), and Western equine encephalitis (WEE). The keys to prevention of arboviral encephalitis include reduction of vector prevalence, reduction of amplifying of host susceptibility, avoidance of vector and reduction in human susceptibility through the use of insect repellants or immunization. With the widespread resistance to chemical control of vectors, novel methods like genetic control of vector populations are becoming increasingly important. The case fatality rate can range from <1% for LCE to as high as 70% in EEE. The case fatality rate for JEE and SLE is up to 30%. Neurological sequelae of arboviruses can result in permanent disability in as high as 90% of affected individuals depending on the virulence and type of the virus.

**Biography**

Wasay is currently a Professor of Neurology at Aga Khan University, President, Past President - Pakistan Society of Neurology, President, Neurology Awareness and Research Foundation, Chairman -advocacy and awareness task force of World federation of Neurology, Editor- Pakistan Journal of Neurological sciences, Chief Editor- Jahan e Aasab (Neurology public awareness magazine), Interim Director- Clinical Trials Unit and Chair- FHS research committee at Aga Khan University. Dr. Wasay received several national and international awards for educational, research and advocacy activities, including Teachers Recognition Award (American Academy of Neurology), Distinguished Teacher Award (Pakistan Society of Neurology), Outstanding Teacher Award (Aga Khan University), Gold medal for research(Pakistan Academy of Medical Sciences), Advocacy Leader of the Year Award (American Academy of Neurology), Victor Rivera Award (UT Southwestern Medical Center) and Lester R. Bryant Founders Award (Marshall University, Huntington, WV, USA). Recently, he was awarded fellowship of Pakistan Academy of Medical science and Gold Medal in Health Sciences by Pakistan Academy of Sciences. He has held a number of leadership positions at prestigious forums. At the international level, these include World Federation of Neurology Advocacy Task Force (Chair); International Subcommittee, American academy of Neurology (Member); Board of Directors, World Stroke Organization (Director); and Public Relations Committee, World Federation of Neurology (Chair). He is also serving as member, Technical advisory committee for Pakistan Medical and Research Council (PMRC). He has trained 33 neurologists (Fellows College of Physicians and Surgeons) under his supervision (as CPSP supervisor). He has received 21 grants from various national and international agencies as Principal Investigator or Co-Principal Investigator. His publication bibliography includes 144 papers in peer-reviewed medical journals. The combined impact factor of his scientific publications is more than 374 and the collective citations exceed 1755. He has been an invited speaker and presenter at more than 88 international conferences, with more than 100 presentations and lectures. He is an active reviewer of research grants and scientific papers for more than 25 journals and granting agencies. His book "Fasting and health" is translated into Sindhi and English. He has travelled to 57 countries in all six continents. He has more than 70 media interviews at TV channels, newspapers and web channels.

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**Reduction of crosstalk in surface electromyogram by optimal spatio-temporal filtering**

Luca Mesin<sup>1</sup> and Imran Khan Niazi<sup>2</sup>

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Crosstalk can pose limitations in the applications of surface electromyogram (EMG). Its reduction can help in the identification of the activity of specific muscles. The selectivity of different spatial filters was tested in the literature both in simulations and experiments, but their performances are affected by many factors (e.g., anatomy and dimension/location of the electrodes). Moreover, they reduce crosstalk by decreasing the detection volume, recording data that represent only the activity of a small portion of the muscle of interest. In this study we propose an adaptive approach, which filters both in time and among different channels, providing a signal that maximally preserves the energy of the EMG of interest and discards that of nearby muscles (increasing the signal to crosstalk ratio, SCR). Tests with simulations and experimental data show an average increase of the SCR of about 2 dB with respect to the SD or DD data processed by the filters. The method is applied to few signals, proving its potential in applicative studies (e.g., clinics, gate analysis, and prosthesis control) where a limited number of non-selective channels are used.

**Biography**

Luca Mesin has done his Master's degree in Electronics Engineering in 1999 and PhD in Applied Mathematics in 2003. He is an Associate Professor in Biomedical Engineering at Polytechnic University of Turin, Italy. He is the Head of the research group on Mathematical Biology and Physiology. His research activities are devoted to the processing of signals or images extracted from biological and physiological systems and to the development of mathematical models for the interpretation of the recorded data. Applications are mainly focused on the investigation of biological systems or on the development of new biomedical tools. Recent works concern the simulation of spiral waves using a model of electromechanical coupling in the heart, the investigation of the central venous pressure, the processing of multiple data reflecting the responses of the autonomous nervous system and the simulation and processing of bioelectric signals.

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Notes:

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2<sup>nd</sup> International Conference on **Spine and Spinal Disorders**  
&  
6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Central nervous system involvement in mitochondrial disorders**

**Josef Finsterer**

Veterinary University of Vienna, Austria

**Statement of the Problem:** Central nervous system (CNS) disease is increasingly recognized as a manifestation of mitochondrial disorders (MIDs). However, the broad range of clinical CNS manifestation is still underestimated. This review aims at summarizing and discussing previous and recent findings concerning the cerebral manifestations of MIDs.

**Methodology & Theoretical Orientation:** MIDs literature review was conducted.

**Findings:** MIDs frequently present as mitochondrial multiorgan disorder syndrome (MIMODS) either already at onset or later in the course. After the muscle, the brain is the second most organ which is frequently affected in MIMODS. Cerebral manifestations of MIDs are variable and may present with or without a lesion on imaging or functional studies but there can be imaging/functional lesions without clinical manifestations. The most well-known cerebral manifestations of MIDs include stroke-like episodes, epilepsy, headache, ataxia, movement disorders, hypopituitarism, muscle weakness, psychiatric abnormalities, nystagmus, white and grey matter lesions, atrophy, basal ganglia calcification, and hypometabolism on FDG-PET. For most of the MIDs only symptomatic therapy is currently available. Symptomatic treatment should be supplemented by vitamins, co-factors, and antioxidants.

**Conclusion & Significance:** Cerebral manifestations of MIDs need to be recognized and appropriately managed since they strongly determine the outcome of MID patients.

**Biography**

Josef Finsterer received his MD and is a Professor of Neurology from the University of Vienna, Austria. Since his training as a Clinical Neurologist and Electrophysiologist at the Neurological Krankenhaus Rosenhügel and the Ludwig Boltzmann Institute for Epilepsy and Neuromuscular Disorders, he is involved in the management of neuromuscular disorders, particularly muscular dystrophies and metabolic myopathies. In addition to neuromuscular disorders, research interests focus on genetics, orphan diseases, and cardiac involvement in genetic conditions.

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6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Early detection of glioma sphere xenografts models: a diffusion MR study at 14.1 T**

**Paola Porcari**  
Newcastle University, UK

**Statement of the Problem:** Diffuse gliomas (WHO grade II to IV) are the most common primary brain tumours in humans, typically associate with a severe prognosis and their diffuse infiltration into the surrounding normal brain precludes complete resection and they all eventually recur, usually having progressed to a more aggressive tumour. The infiltrative part, which is “invisible” using conventional T1 and T2-weighted MRI is difficult to target with treatment. We investigated whether diffusion MRI might be a useful method to detect the microstructural changes induced in the normal brain by the slow infiltration of glioma sphere cells. Additionally, localized proton MR spectroscopy of lesions and immunohistochemical assessment were compared with imaging results.

**Methodology:** LN-2669GS and LN-2540GS (3) orthotopic glioma xenografts were induced in athymic mice. Gliomas were monitored at 14.1T. MRI-protocol included T2-weighted turbo-spin-echo images, diffusion weighted imaging and diffusion tensor imaging, both acquired using the pulse-gradient-stimulated-echo sequence (4) ( $\Delta/\delta=80/4ms$ ), which allows exploring long diffusion times. Mean values of diffusion indices were calculated in tumours and in the corresponding brain regions of controls. Proton spectra of gliomas were acquired during the last MRI session. Finally, mice were sacrificed and sections stained underwent immunohistochemical assessment.

**Findings:** Compared with T2-weighted images, tumours were properly identified in their early stage of growth using diffusion MRI (Figure 1) at a moderately long diffusion time. MRI results were confirmed by localized proton MR spectroscopy and immunohistochemistry. First evidence of tumour presence was revealed for both glioma models three months after tumour implantation, while no necrosis or haemorrhage were detected by MRI or histology.

**Conclusion & Significance:** This study demonstrates that diffusion MRI is a useful method to detect and follow slowly growing, diffuse infiltrative tumours in mouse brain, providing a potential imaging biomarker for early detection of diffuse infiltrative gliomas in humans.

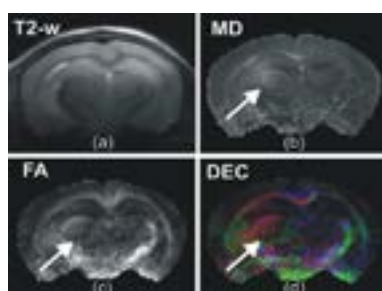


Figure: In vivo MRI of LN-2540GS glioma sphere xenograft, five months after injection of the cells. T2-weighted (a) MD (b), FA (c) and FA-modulated DEC maps of a coronal slice from the mouse brain with the LN-2540GS xenograft NCH-1365. MD, FA and DEC maps, computed after DTI reconstruction, show a lesion (indicated by arrow).

**Biography**

Paola Porcari has her expertise in high field MRI imaging of small animals. She is particularly interested in the development of new MRI methods to better understand central nervous system diseases and neuromuscular disorders. During her current work, she developed diffusion methods based on the stimulated echo sequence (STE-DWI) to investigate whether diffusion MRI can be a powerful technique for investigating muscle pathology. Previously she worked extensively on glioma model applying different MRI techniques, such as, diffusion MRI and multi-nuclear NMR, especially <sup>19</sup>F MRI/MRS to evaluate different aspect of the disease.

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## Spine

### Session Chair

**Walid Ismail Attia**

National Neuroscience Institute, Saudi Arabia

### Session Introduction

**Title: Clinical and radiological follow up data for anterior cervical discectomy and fusion: Do we need to change to cervical disc replacements?**

**Jamie O'Callaghan**, Gloucestershire NHS Foundation Trust, United Kingdom

**Title: Comparative study for cervical fusion by using cervical cage with or without bone granule**

**Mohamed Shaban**, Cairo University School of Medicine, Egypt

**Title: Spinous process osteotomy – Bone and soft tissue preserving extensile approach to multilevel spinal pathology – Our experience and outcomes**

**Chandrasekaran Marimuthu**, Mahatma Gandhi Medical College and Research Institute, India

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2<sup>nd</sup> International Conference on **Spine and Spinal Disorders**  
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6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Clinical and radiological follow up data for anterior cervical discectomy and fusion: Do we need to change to cervical disc replacements?**

Jamie O'Callaghan, Armstrong Lesley, Sha Shiv, Craig James and Sundaram Rathnam  
Gloucestershire NHS Foundation Trust, UK

**Background & Aim:** Anterior cervical discectomy and fusion (ACDF) is a commonly performed spinal operation. Aim of this study is to assess the outcomes of patients undergoing ACDF for radiculopathy secondary to disc herniation.

**Study Design/Setting:** Procedures were carried out from 2009 to 2015 in a single centre by two surgeons.

**Patient Sample:** 100 patients were recruited for this study with mean age 52 years (27-84). The mean post-operative outpatient follow up was 19 months (1-47).

**Outcome Measures:** Clinical parameter included neurological improvement, post-operative neck pain, dysphagia/hoarseness, psychological complaints, return to previous function activities, wound and evidence of infection and radiographic position of implant.

**Methods:** One investigator collected data from the database of patients who had undergone ACDF. Patient notes and radiographs were reviewed.

**Results:** No wound or deep infections were reported. All wounds were recorded as well healed. All patients achieved improvement in their presenting neurological symptoms. No secondary procedures to the cervical region were carried out during the study. No psychological problems recorded post operatively and satisfactory position of all cages.

**Conclusions:** ACDF is a successful procedure for relief of neurological symptoms. In our unit, we have not re-operated on a single patient in the time frame of the study. This is in contrast to the medical literature which states ACDF re-operation rates in the region of 5-10%, and support the use of cervical disc replacements. We feel that we are producing excellent reproducible results with ACDF and do not feel the need to change to cervical disc.

**Biography**

Jamie O'Callaghan holds BM, BSc and MRCS in Orthopedic Surgery and currently works at Gloucestershire Hospitals NHS Foundation Trust, Gloucester, United Kingdom. He specializes in Traumatology and Orthopedic Surgery and his expertise include Trauma Surgery, Fracture, Arthroplasty, Hip, Knee Surgery, Knee Injuries, Hip and Knee, Arthroplasty, Knee Arthroplasty, Hip Arthroplasty, Shoulder Surgery, Orthopedic Biomechanics, Upper Limb Surgery, Sports Injuries, Biomechanics, Musculoskeletal Imaging, Elbow Arthroplasty, Prospective Studies, Computer Assisted Surgery, Bone Biology, Scoring, Fracture Fixation, Hip Fractures, Joint Replacement, Ankle Injuries, Revision Arthroplasty, Joint Prosthesis and Orthopedic Procedures.

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July 24-26, 2017 Rome, Italy

**Comparative study for cervical fusion by using cervical cage with or without bone granule**

**Mohamed Shaban**  
Cairo University, Egypt

**Introduction:** Cervical Anterior Discectomy (CAD) of 42 patients was studied in a period from 2012 to 2014. These patients were divided into two groups: Group A, 26 patients operated by CAD with placement of cage only. Group B, 16 patients operated by CAD with placement of cage and bone granule. Result of both groups regarding fusion rate was compared.

**Method:** Both group underwent average clinical follow up more than 12 months, and result were evaluated according to radiographic evidence of fusion and chi-square test were used to compare fusion of both group, respecting patient age, sex and patient smoking status.

**Result:** The median age of all patients was 46 years old which include 56% male. 23 patients with single level, 13 patients with two levels and six patients with three levels disc disease fusion rate were achieved in single level group (A) 89.1%, group (B) 94.2%, and two levels group (A) 84.6%, group (B) 90.2%, three levels group (A) 66.4% and group (B) 81.5%.

**Conclusion:** Fusion rate is one of several factors that guide surgical decision making. Fusion rate is significantly high in group (B) than group (A). Age, sex and smoking status have no significant difference in both groups.

**Biography**

Mohamed Shaban is currently working at Cairo University as Special Surgeon. He has published many research works.

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July 24-26, 2017 Rome, Italy

**Spinous process osteotomy – bone and soft tissue preserving extensile approach to multilevel spinal pathology – our experience and outcomes**

**Chandrasekaran Marimuthu**

Mahatma Gandhi Medical College and Research Institute, India

**Background:** Surgical treatment of multilevel spinal pathology involves exposure at all levels with complete stripping of para spinal muscles. Minimally invasive endospine procedures are a good option for one or two level pathologies but have its own learning curve and availability. More than two levels and intradural pathologies cannot be addressed by endospine systems.

**Materials & Methods:** It's a retrospective study involving all those patients who underwent multilevel decompression with or without spinal stabilization; intradural tumor excision through spinous process osteotomy at our department during the period from January 2015 to December 2015. Total of 17 patients were found to have undergone the above mentioned procedure. Two of them had intradural tumor excision, four patients decompression with stabilization for lumbar spinal stenosis with instability, and remaining all for three or more levels lumbar spinal stenosis.

**Results:** All the patients were followed for a period of one year except in one, whose follow up was lost at six months. Functional outcome was assessed using VAS scoring for leg pain and back pain, ODI and neurological recovery. The average VAS of six, seven for back pain and leg pain respectively improved to two and ODI from 70% to 15% in patients with spinal stenosis. Two patients had hematoma which subsided with conservative measures alone and superficial wound infection in one patient. Another patient had small dural tear managed with Gelfoam packing alone. Postop CT/MRI revealed preservation paraspinal musculature on the non-dissected side and 22% of asymptomatic non-union at the osteotomy site.

**Conclusion:** Spinous process osteotomy in multilevel spinal pathologies is a bone and soft tissues preserving extensile approach by which multiple spinal pathologies can be addressed with excellent functional outcome.

**Biography**

Chandrasekaran Marimuthu has completed MBBS and MS in Orthopedics. He specializes in Orthopedic Surgery, Sports Medicine and Traumatology.

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**Notes:**





2<sup>nd</sup> International Conference on  
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Scientific Tracks & Abstracts  
Day 3

*Spine & Neuromuscular 2017*

## Spinal Disorders

### Session Chair

**Massimiliano Visocchi**

Institute of Neurosurgery Catholic University of Rome, Italy

### Session Introduction

**Title: Microendoscopic decompression in single and multiple level lumbar canal stenosis: A series of 583 cases**

**Mohamed S Kabil**, Ain Shams University Hospital, Egypt

**Title: Anterior midline limited corpectomy in ossified posterior longitudinal ligament – Our experience and functional outcome**

**Chandrasekaran Marimuthu**, Mahatma Gandhi Medical College and Research Institute, India

**Title: The potential impact of Dynamic Upright MRI in the surgical management of patients with degenerative lumbosacral spine disease.**

**Heba Ibrahim Ali**, Neurospinal Hospital, UAE

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&  
6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Microendoscopic decompression in single and multiple level lumbar canal stenosis: A series of 583 cases**

Mohamed S Kabil and Khaled Ebrahim  
Ain Shams University Hospital, Egypt

**Introduction:** Traditionally, lumbar canal stenosis (LCS) has been treated with conventional laminectomy involving wide resection of posterior supporting structures of the lumbar spine such as the supraspinous and interspinous ligamentum complex, the spinous process as well as wide areas of the lamina. In addition, this required a large incision of the skin and underlying musculoligamentous complex (posterior tension band). The current study focuses on the clinical outcome and utility of minimally invasive microendoscopic decompression from a unilateral approach in surgical management of patients with single and multiple level lumbar canal stenosis.

**Aim:** Aim of this study is to describe the indications, significance and applications of endoscopic spine surgery in cases with single and multiple level lumbar canal stenosis. Additionally, to highlight important anatomical perspectives of the technique and share surgical experience and results.

**Materials & Methods:** From May 2008 to January 2016, 583 consecutive patients were treated for lumbar canal stenosis at our institution. Patients' main complaint was bilateral neurogenic claudication in addition to back pain and sciatic neuralgia that was present in most cases. Single level decompression was performed in 468 (80%) cases and multiple level decompressions in 115 (20%) cases. Magnetic resonance imaging (MRI), computed tomography (CT) scans and plain X-rays were performed for all patients to confirm evidence of central stenosis and then repeated postoperatively. All patients were followed up for at least three months and their data collected. Clinical and functional outcomes were assessed using Visual Analogue Scale (VAS) and the Japanese Orthopedic Association Score (JOA) score for lumbar disease.

**Results:** Compared to preoperative complaint, there was an improvement of back pain in 62% of patients and in radiating leg pain in 86%. With regards to functional outcomes, median preoperative JOA score was  $14.93 \pm 0.48$  and improved postoperatively to  $27.17 \pm 1.45$  ( $p < 0.001$ ). The mean operating time per level was 78 minutes, and the mean intraoperative blood loss per level was 18 ml. Complications mainly included dural tears in 27 (4.6%) cases, transient postoperative dysesthesia in 46/583 (7.9%) cases and excess bony work in the form of unintended medial facetectomy in 38/583 (6.5%) cases and fracture of the spinous process in three (0.5%) cases.

**Conclusion:** The microendoscopic decompression technique via a unilateral approach is a minimally invasive surgery that is safe and effective in treatment of single or multiple level lumbar spinal stenosis, it is associated with favorable clinical results and high patient satisfaction.

**Biography**

Mohamed S Kabil is an Assistant Professor of Department of Neurosurgery, Ain Shams University, Cairo, Egypt. He is also the Medical Director of Cairo Endospine Clinic, for Endoscopic Spine Surgery. He obtained his medical degree in 1996 from the Faculty of Medicine, Ain Shams University where he presently serves as a staff member at the Department of Neurosurgery. He also contributed to numerous publications in international medical journals, he is the First Co-Author of the international book, Endoscopic Skull Base Surgery, and gave many presentations about minimally invasive and endoscopic neurosurgery and spine surgery.

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&  
6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Anterior midline limited corpectomy in ossified posterior longitudinal ligament – our experience and functional outcome**

**Chandrasekaran Marimuthu**

Mahatma Gandhi Medical College and Research Institute, India

**Introduction:** Ossified posterior longitudinal ligament is a complex phenomenon which eventually results in progressive disability due to the development of compressive myelopathy. Though the ossified mass lies anterior to the spinal cord, it is still a controversy regarding the management whether anterior or posterior surgery.

**Materials & Methods:** We at our institute did a retrospective study on the functional outcome of anterior midline limited corpectomy upto three levels of ossified posterior longitudinal ligament. Of 26 OPLL patients, 16 patients underwent standalone limited midline corpectomy during the period from January 2014 to June 2015. All the patients were evaluated preoperatively with Nurick scale. Eight patients presented with Nurick grade three, five patients presented with Nurick grade two, and two patients with Nurick grade four and one with Nurick five. Preoperative X-ray, CT and MRI of cervical spine were done in all these patients to assess the OPLL type and myelomalacia. 12 patients had segmental type involving maximum of three levels, three patients had local type and one patient had continuous type of OPLL as per the Japanese classification of OPLL. All except in two patients, follow up period was minimum of 16 months and the range was 14 months to 26 months. Postoperatively patients were evaluated with follow up Nurick grading for clinical evaluation and X-ray, CT scan and MRI for radiological assessment. X-ray was available for all patients during each visit in the post-operative period. CT scan and MRI were done at the end of 9 months to 12 months where patients could afford for it. So, we could collect post-operative CT and MRI in about nine patients from our PACS.

**Results:** Of the 16 patients in this series, 10 patients improved to grade two, four patients to grade one, two patients to grade three. Complications in our series include dural tear in two patients which was managed with collagen pack sealant with no CSF leak in the postoperative period. One patient's grade worsened to Nurick grade five in the immediate postoperative period which was grade four in the preoperative period. At the last follow-up patient had improved to grade three. One patient had C5 palsy which recovered completely at six months follow-up. On careful analysis all patients had excellent relief of radicular symptoms. Recovery was rapid in the first three months following surgery after which it was slow and attained plateau at about 12 to 14 months. There was no loss of cervical balance in the postoperative period. It's a very small series with short follow up.

**Biography**

Chandrasekaran Marimuthu has completed MBBS and MS in Orthopedics. He specializes in Orthopedic Surgery, Sports Medicine and Traumatology.

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6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**The potential impact of dynamic Upright MRI in the surgical management of patients with degenerative lumbosacral spine disease**

Heba Ibrahim Ali<sup>1,2</sup>

<sup>1</sup>Ain Shams University Hospital, Egypt

<sup>2</sup>Neuro Spinal Hospital, UAE

Degenerative disease of the lumbosacral spine is one of the most common causes of disability. MR imaging is generally considered to be the most valuable method to diagnose degenerative abnormalities of the spine. Clinical symptoms can develop with sitting, standing, or dynamic maneuvers (including flexion and extension) and may not be adequately assessed by supine MRI. It is a logical observation that the human condition is subject to the effects of gravity in positions other than that of recumbency. In addition, it is clear that patients experience signs and symptoms in positions other than the recumbent one. In cases where conventional MRI shows no evidence of cauda equina or lumbar nerve root compression in the setting of convincing clinical symptoms that warrant surgical intervention, reimaging in the upright position, with the addition of flexion and extension, is recommended. Completely open MRI scanner allows upright, angled-intermediate, as well as recumbent imaging. This would at the same time allow partial or full weight bearing and simultaneous kinetic maneuvers of the patients' whole body. The objective of the study was to assess the utility of upright dynamic MR examination to reveal occult lesions of the lumbar spine and the underlying etiology of low back pain or sciatica if conventional MRI under-estimated these findings.

**Biography**

Heba Ibrahim Ali has completed her PhD in Diagnostic Radiology at Ain Shams University in Egypt, followed by MD degree. She is working at the same university as a Consultant Radiologist. She has many publications and talks in international journals and conferences covering radiological entities. Her special interest includes MSK and Neuroimaging.

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**Notes:**

## Pain Management | Spondylolisthesis | Spine Surgery

### Session Chair

**Majid Reza Farrokhi**

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### Session Introduction

**Title: Endonasal endoscopic approach to the odontoid and craniocervical pathologies**

**Babak Alijani**, Guilan University of Medical Sciences, Iran

**Title: The effects of myofascial trigger point on preparatory brain activity and anticipatory postural control associated with voluntary unilateral arm flexion**

**Marzieh Yassin**, Iran university of Medical Sciences, Iran

**Title: The role of epidural steroids in the outcome of postoperative lumbar discectomy**

**Mohamed Shaban**, Cairo University School of Medicine, Egypt

**Title: Differential activation of muscles, during arm flexion in patient with active myofascial trigger points**

**Marzieh Yassin**, Iran university of Medical Sciences, Iran

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2<sup>nd</sup> International Conference on **Spine and Spinal Disorders**

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6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

## Endonasal endoscopic approach to the odontoid and craniocervical pathologies

**Babak Alijani**

Guilan University of Medical Sciences, Iran

Access to the lesions locating in the clival and craniocervical area is always one of the most debating approaches for the most neurosurgeons and the spine surgeons, according to high mortality and morbidity rate. On the other hand, minimal invasive endoscopic approaches are going to be more popular between new generations of neurosurgeons. In this article, we are going to discuss more about endoscopic endonasal technique and advantages with reviewing cases with pathologies in the cranial cervical region including tumors and congenital malformations.

### Biography

Babak Alijani is a Neurosurgeon and an Assistant Professor at Guilan Trauma Research Center - Poursina Hospital, Iran.

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6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**The effects of myofascial trigger point on preparatory brain activity and anticipatory postural control associated with voluntary unilateral arm flexion**

Marzieh Yassin<sup>1</sup>, Saeed Talebian<sup>2</sup>, Ismail Ebrahimi Takamjani<sup>1</sup>, Nader Maroufi<sup>1</sup>, Amir Ahmadi<sup>1</sup> and Javad Sarrafzadeh<sup>1</sup>

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<sup>2</sup>Tehran University of Medical Sciences, Iran

**Aim:** Neck pain is a common disorder in industrial countries. With upto 37% of individuals have developing and persistent symptoms. In addition, neck pain imposes a considerable economic burden on the health care system. Although there are many potential contributing factors to neck pain, Myofascial Trigger Point (MTP) is known as the chief cause of headache and neck pain. Aim of this study was to investigate the effects of arm movement on anticipatory postural control in patients with upper trapezius MTP.

**Methods:** 15 women (aged 26.8±2.67 years) with one active MTP and, fifteen women (aged 27.53±3.73) with one latent MTP in the upper trapezius and, 15 normal women (aged 27.73±3.43 years) were participated in this study. Participants were asked to flex their arms in response to a sound stimulus preceded by a warning sound stimulus.

**Results:** There were significant differences in average, peak, and area of Contingent Negative Variation (CNV), Post-imperative Negative Variation (PINV), motor times, and for reaction time ( $P<0/001$ ) between active and control group. There were not significant differences in Electromyography (EMG) measurements between passive and control group but there were significant differences in CNV measurements ( $P<0/001$ ).

**Conclusion:** CNV and EMG were changed in patients with active MTP. These patients had less compatibility with environmental stimulus and responded to a specific stimulus. The present study shows that CNV can be a new method for evaluation of the MTP.

**Biography**

Marzieh Yassin is a Visiting Professor at Iran University of Medical Sciences, Iran and specializes in the field of Physical Therapy, Biomechanics, Neuroscience, Myofascial Trigger Point.

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**Notes:**



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6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**The role of epidural steroids in the outcome of postoperative lumbar discectomy**

**Mohamed Shaban**  
Cairo University, Egypt

**Aim:** Intraoperative epidural corticosteroids have been used by some surgeons to decrease pain following surgery for a herniated lumbar disc. The objective of this study was to determine if epidural steroid have significant role to improve the outcome of lumber disc surgery.

**Methods:** We retrospective evaluated 321 patients who underwent unilateral lumbar discectomy from 2013 to 2016 in Faculty of Medicine Cairo University. Multiple discectomy, laminectomy or recurrent procedures were excluded from analysis of 321 patient divided into two groups: Group (A) 157 patient with epidural steroid postoperative (40 mg methylprednisolone) group (B) 164 patient without use of steroid. The two groups was evaluated and compared by pain relief as measured by consumption of postoperative pain medications; the length of hospital stay; postoperative functional status; and the time interval from surgery until return to work.

**Results:** The mean postoperative analgesic medications consumed was 12.2±1.9 mg of morphine equivalents in the group (A) versus 12.2±1.8 mg of morphine equivalents in the group (B). The mean hospital stay was less than two days in each group, and the mean interval until return to work was 21±3 days in the group (A) versus 25±3 days in the group (B). Moreover, no statistically significant difference was measured between both groups. The mean outcome scores, which are derived from a postoperative assessment of pain relief resulting from surgery, functional status, and interval until return to work, were identical between both groups.

**Conclusions:** The use of epidural steroid administration after unilateral lumbar discectomy does not lessen postoperative morbidity or improve functional recovery. Epidural steroid does not affect the outcome of unilateral lumbar discectomy. The mean postoperative analgesic medications consumed was 12.2±1.9 mg of morphine equivalents in the corticosteroid group versus 12.2±1.8 mg of morphine equivalents in the control group. The mean hospital stay was less than two days in each group, and the mean interval until return to work was 21.2±2.7 days in the corticosteroid group versus 25.4±3.1 days in the control group. Moreover, no statistically significant difference was measured between the steroid-treated and control groups when the data were stratified for sex, age, and site of disc herniation. The mean outcome scores, which are derived from a postoperative assessment of pain relief resulting from surgery, functional status, and interval until return to work, were identical in the corticosteroid and control groups. This study concludes that epidural corticosteroid administration after microsurgical lumbar discectomy for unilateral disc herniation does not lessen postoperative morbidity or improve functional recovery. The use of a fat graft results in excellent clinical outcomes with low incidence of postoperative cutaneous CSF fistula or other complications. The use of a fat graft is recommended as a rapid, effective means of prevention and repair of CSF leaks following lumber spinal surgery.

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Mohamed Shaban is currently working at Cairo University as a Special Surgeon. He has published many research works.

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6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Differential activation of muscles during arm flexion in patient with active myofascial triggers point**

Marzieh Yassin<sup>1</sup>, Saeed Talebian<sup>2</sup>, Ismail Ebrahimi Takamjani<sup>1</sup>, Nader Maroufi<sup>1</sup>, Amir Ahmadi<sup>1</sup> and Javad Sarrafzadeh<sup>1</sup>

<sup>1</sup>Iran university of Medical Sciences, Iran

<sup>2</sup>Tehran University of Medical Sciences, Iran

**Aim:** Myofascial pain syndrome is a significant source of mechanical pain. The aim of this study is to investigate the effects of Active Myofascial Trigger Points (AMTrPs) on muscle pattern in females with upper trapezius AMTrPs.

**Methodology:** 15 women (aged 26.8±5.9 years) with one AMTrPs in the upper trapezius, and 15 healthy women (aged 27.7± 3.4 years) participate in this study. We ask participants to stand for 10 seconds in an erect comfortable standing position to investigate the onset of muscle activation and muscle pattern. We consider the onset of Anterior Deltoid (AD) as the starting point in marking the onset of Cervical Paraspinal (CP), Lumbar Paraspinal (LP), left and right Upper Trapezius (UT), Sternocleidomastoid (SCM), and medial head of gastrocnemius. We ask participants to flex their arms in response to a sound stimulus preceded by a warning sound stimulus.

**Results:** In the AMTrPs group, the onset of all of muscles activity except SCM is significant later than the control group ( $p < 0.001$ ). Also, the results of experiments on the AMTrPs group show a different recruitment pattern compared with that on control group.

**Conclusions:** According to the results, muscles experience delay in muscle activation and alterations in their recruitment pattern during rapid arm flexion. These changes may serve as the adaptive motor control strategies due to the presence of AMTrPs in UT muscle. It can be concluded that the application of motor control techniques might be useful in treatment of patients with AMTrPs.

**Biography**

Marzieh Yassin is a Visiting Professor of Iran University of Medical Sciences, Iran and specializes in the field of Physical Therapy, Biomechanics, Neuroscience and Myofascial Trigger Point.

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**Notes:**



2<sup>nd</sup> International Conference on  
**Spine and Spinal Disorders**  
&  
6<sup>th</sup> International Conference on  
**Neurology and Neuromuscular Diseases**

# Video Presentation

*Spine & Neuromuscular 2017*

CO-ORGANIZED EVENT

2<sup>nd</sup> International Conference on **Spine and Spinal Disorders**  
&  
6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Association of intervertebral disc degeneration with upregulated myofibroblastic activity in nucleus pulposus**

**Lonoy Yan Peng, Fengjuan L V, Tiffany Y A U, Kathryn S Cheah, Kenneth M Cheung and Victor Y Leung**  
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Intervertebral disc (IVD) is a joint-like organ between two vertebral bodies throughout the spine. Nucleus pulposus (NP) is a gelatinous core disc tissue, enriched with aggrecan to retain water and confer swelling pressure against compressive strains. Previous studies have indicated an induction of fibrillated matrix in NP of degenerative IVD, displaying pathological fibrosis morphological features and fissures. Disc degeneration is associated with enhanced myofibroblast activity in NP. Aim of this study is to test if disc degeneration is associated with myofibroblast activity. Degenerative NP shows enhanced myofibroblastic cells activity. NP fibrosis is a pathological phenotype in human degenerative IVD. Fibrocytes-like cells and resident NP cells with enhanced myofibroblastic activity was evidenced in degenerative IVD, suggesting their importance in disc fibrosis. Better understanding molecular mechanisms of orchestrating myofibroblast activity of fibrocyte and resident NP cell in degenerative disc would provide insights in developing therapeutics in prevention of disc fibrosis.

**Biography**

Lonoy Yan Peng completed her Pediatric Residency/Chief Residency at Beijing Medical University Hospitals and practiced as a Pediatric Nephrologist for two years at the same hospital. After a combined six years of basic research on kidney disease at Mayo Clinic, Rochester and UT-Southwestern Medical Center (UTSW), Dallas, she went to University of Pittsburgh Medical Center (UPMC) for her Pathology Residency. Upon the completion, she took two fellowship trainings in Breast and Gynecologic Pathology at UPMC and Cytopathology at Beth Israel Deaconess Medical Center and Harvard Medical School in Boston, respectively.

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&  
6<sup>th</sup> International Conference on **Neurology and Neuromuscular Diseases**

July 24-26, 2017 Rome, Italy

**Upper limb assistive devices for muscular dystrophy patients: Proposed approaches**

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**Statement of the Problem:** People with neuromuscular diseases, such as muscular dystrophies experience a distributed and evolutive weakness in the whole body. Much effort has been invested to fight this disease from its genetic origin. Recent technological developments have improved the quality of life of many disabled people. In particular, upper limb assistance for muscular dystrophic patients is nowadays not investigated. A two-folded approach has been adopted – investigated already existing commercial solutions to be used by our target patients, and develop a dedicated device.

**Methodology:** First approach: USEFUL (User-centred assistive SystEm for arm Functions in neUromuscuLar subjects) selected two commercial solutions for upper limbs gravity compensation: ARMON AYURA (motorized) and JEACO WREX (passive) to be tested at home in a crossover RCT study. PUL, TAM, SUS scales are used to assess whether the systems are usable, acceptable and efficient for the target pathology. The clinical trial has been registered to the Italian Ministry of Health (013/16-CE), and on clinicaltrials.gov (GUP15021). Preliminary tests demonstrated that both devices are only suited for patients in the early stage of the disease. Second approach: BRIDGE (Behavioural Reaching Interfaces during Daily antiGravity Activities through upper limb Exoskeleton) is a light, wearable and powered five degrees of freedom exoskeleton (i.e., shoulder flexion/extension, abduction/adduction, internal/external rotation; elbow flexion/extension; wrist pronation/supination) under the direct control of the user through joystick, gaze or vocal control. An inverse kinematic model allows to track patient desired hand position. BRIDGE prototype has been developed, and successfully tested in simulation environment, and by a group of healthy volunteers with good tracking performance.

**Conclusion & Significance:** For both proposed complementary approaches preliminary results are encouraging towards keeping muscular dystrophy patients upper limbs as functional and autonomous as possible.



**Biography**

Marta Gandolla (MSc in Biomedical Engineering in 2009 and European PhD *cum laude* in Bioengineering in 2013 from Politecnico di Milano) is a Post-Doc Research Fellow at the Neuroengineering and Medical Robotics Laboratory since 2013. In 2011 she was a visiting PhD student at the Sobell Department of Motor Neuroscience of the UCL Institute of Neurology (London, UK), under the supervision of Dr. N Ward, co-supervisor of her PhD thesis. Her research interest is about the design, and on-field evaluation of innovative methods based on electrical stimulation and/or robotic systems for the rehabilitation and assistance of neurological patients. Moreover, she is interested in central mechanisms of neurological rehabilitation and re-learning investigated through fMRI images. She is currently Lecturer Assistant for Biomedical Signal Processing and Biomedical Images, and Bioelectromagnetism and Biomedical Instrumentation at Politecnico di Milano.

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**Doppler ultrasonography assessment of the vertebral artery in people with cervicogenic dizziness**

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**Background:** Cervicogenic dizziness is characterized by symptoms of imbalance or spinning associated with neck pain, stiffness or headache. Mal-aligned upper cervical spine, poor head and neck posture could be among the causes of the mechanical compromise of the vertebral arteries that could lead to dizziness. It is hypothesized that a course of chiropractic adjustments will have an effect on the vertebral arteries velocities. The aim was to investigate the immediate effect of cervical spine chiropractic adjustment on the vertebral arteries peak velocities in people with cervicogenic dizziness.

**Methods:** Eighteen patients with cervicogenic dizziness participated in this study. The time average mean velocities (TAMV) of the upper (C0-1) and lower (C5-6) cervical vertebral arteries were measure by Doppler ultrasonography before and after one session of cervical adjustment (toggle recoil). The cervical range of motion was also measured.

**Results:** There were no significant differences in the clinical outcome measures and blood flow measures in the control group following 3 weeks of no intervention ( $P > 0.05$ ,  $n = 12$ ). A good within-session (ICC: 0.903-0.967) and between-session (ICC: 0.922-0.984) repeatability were demonstrated in measuring the vertical blood flow velocities in patients with cervicogenic dizziness when the clinical outcome measures were unchanged. There was a significant increase in the time average mean velocities of the upper cervical vertebral arteries ( $P < 0.05$ ,  $N = 18$ ) but no significant differences in that of the lower cervical vertebral arteries ( $P > 0.05$ ,  $N = 18$ ). The results showed significant improvement ( $p < 0.05$ ) in the cervical range of motion after a single session of manipulation.

**Conclusion:** A session of toggle recoil chiropractic adjustments is effective in improving the cervical range of motion in patients with cervicogenic dizziness. The average time mean velocities of upper cervical vertebral arteries also improved.



**Biography**

Shum G is an Associate Professor at University of St. Mark & St. John, UK and an Honorary Associate Professor at the Exeter Spinal Unit, Princess Elizabeth Orthopaedic Centre, Royal Devon and Exeter NHS Foundation Trust, UK. He has completed his PhD in Spine Biomechanics from University of Sydney, Australia. His main research interests are in Musculoskeletal and Sports Biomechanics including inverse dynamics, gait analysis, ultrasound imaging and rehabilitation research.

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