WFNS
SPINE COMMITTEE

Newsletter 3rd Issue | 2021

EDITORIAL

by Óscar L. Alves

Since our last newsletter the world was suddenly affected by SARS-CoV-2 pandemic causing an economical and public health turmoil. Globally, an immense pressure was exerted on health care resources to treat almost exclusively Covid-19 patients burdening the medical teams. As a consequence, many non-Covid19 patients were left behind, including not only mental illness but also various diseases, such as the spine problems, to an extent that is still difficult to perceive.

Due to travel bans all the on-site educational programs ceased, opening a window of opportunity to digital scientific meetings that the WFNS Spine Committee embraced seriously based on previous successful experiences. Under the leadership of the 3 co-Chairman, the WFNS Spine Committee excelled in the organization of 13 webinars, 8 symposia and 2 consensus conferences on specific spine disorders, such as "Thoracolumbar Trauma" and "Osteoporotic Vertebral Fractures".

Instead of succumbing, the WFNS Spine committee members rallied and increased the scientific output through research producing several landmark papers in one year. WFNS Spine Committee Recommendations on "Cervical Spine Trauma" and "Spinal Cord Injury", including 9 papers, were published in the Neurospine Journal in December 2020. In the same journal issue an essay on the "History of Spinal Neurosurgery and Spine Societies" was also printed. A reference book, counting 28 chapters, on "Cervical Spondylotic Myelopathy and OPLL" is about to be published by Thieme Publishers. Finally, a chapter on "The Role of Neurosurgery in Global Spine Health" was also prepared for the book "Neurosurgery and Global Health" by Springer Nature.

Hoping that this newsletter is your spine forum, I invite you to share your most valuable expertise with a wide community of surgeons by sending your input.

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Chairmen's Message

Dear Colleagues,

The WFNS Spine Committee team continues its efforts to distribute the most up-to-date information on spinal disorders, train young spinal neurosurgeons, and improve management criteria in common spinal conditions. Probably the most remarkable work done during the last four years has been the consensus meetings and setting up recommendations for some spinal disorders. Real teamwork has given the fruits by publications of WFNS Spine Committee recommendations.

We welcome you to the 3rd issue of the WFNS Spine Committee Newsletter. In this issue, you will read an interview with our former Chairman, Professor Enrique Osorio. You will find an interesting case report from Dr. Joachim Oertel's team, discussion of a paper in the Journal Club section by Dr. D'jamel Kitumba. Besides, you can read a list of our previous webinars, publications, and future plans.

We wish you to visit our website http://wfns-spine.org to reach most of these papers and webinar recordings.

We want to thank a lot to Dr. Oscar L. Alves and his team for providing the 3rd issue of our Newsletter.

Mehmet Zileli, Maurizio Fornari, Salman Sharif
Co-Chairman of the WFNS Spine Committee

Mehmet Zileli

Maurizio Fornari

Salman Sharif

Learning from Experience

by Oscar L. Alves, Portugal

Prof. Dr. Enrique Osorio

Head of Neurosurgery LOSCOBOS Medical Centre

Associated Professor Universidad El Bosque

President of the XVII World Congress of World Federation of Neurosurgical Societies WFNS 2021

Former Chairman of WFNS Spine Committee

Former President of Colombian Neurosurgical Association ACNC

1. From the beginning of your practice what are the main conceptual changes in spine surgery?

The main conceptual changes have been the minimal invasive approaches, with the introduction of new technologies such as endoscopy and the specially designed instruments for the different approaches.

2. What were the technical challenges when you switched to MIS surgery?

The technical challenges were linked to the initial difficulty of changing the traditional techniques with which I have been trained, as it is easier to keep using the same techniques. Furthermore, learning new techniques requires an additional learning curve, that includes workshops, theoretical and practical, with different kinds of models and cadavers. In the case of endoscopy the learning curve is even steeper.

3. Do you think spine training should start with open procedures and progress later to MIS, or it should happen in parallel?

I believe the spine training nowadays should be done simultaneously with open procedures and MIS.

4. You were a world pioneer in endoscopy, what do you think of its future role? Is it limited to decompression alone or will it solve spine imbalance problems?

I believe that endoscopy is not limited to decompression procedures, as it is also very useful with tumors, and is nowadays also being used for interbody artrodesis. The spinal imbalances will keep being treated with other sorts of techniques (ALIF, OLIF, MIS Transpedicular Instrumentation, etc.).

5. Since you practice in Colombia do you consider that worldwide management and surgical guidelines in spine surgery are useful considering the disparity of local resources? What's the role of WFNS spine committee in the global spine world?

I consider very useful the surgical guidelines and also the consensus that are being developed by the WFNS Spine Committee, and I believe they should include alternatives for low-income countries. One of the roles of this committee is to promote the shipping of basic instruments for spine surgery through the WFNS foundation. Furthermore, from the "Bogota Declaration" (Launched during the 2016 ICRAN), in which the WHO recommended for medium and low income countries to have the equipment needed to attend patients with cranial and spinal trauma, the Spine committee along with the WFNS Trauma and Global Neurosurgery Committees encourage governments to enlarge those recommendations in order to include instruments needed for spine surgery too.
Moreover, our committee occupies an important role in the development of a unique spine practice program for neurosurgeons on which we have been working on for several years.

6. What advice would you give to a young neurosurgeon who's interested in spine surgery ?

I would suggest learning how to work with the instruments (Microscope, Endoscope, Laser, Radio Frequency, etc.) and also learn Minimal Invasive techniques.

7. How do you balance your priorities and your clinical work, research work and family life? How do you deal with it?

I try to keep everything balanced, from family life, to clinical work and research, and teaching added on top of that. It is not easy to deal with it but it is the goal.
However, I acknowledge that most neurosurgeons do not have access to university hospitals with the needed infrastructure for research. In this case, they only dedicate themselves to clinical practice. The, I would advise them to keep pace through many theoretical and practical courses existing nowadays, many of which have been developed by our committee.

8. Why should we attend the world congress of Neurosurgery in August 2021?

We should attend the XVII WFNS world congress in Bogota, August 29 to September 3 2021 in person for various reasons:
First of all, the spine program consists of a full day pre-congress course (22 conferences), 30 conferences in state of art, 24 controversies in Neurosurgery, 18 in video session and 3 in Plenary session. In total it consists of 97 spine conferences. At that point, considering the stiming of the congress, all the neurosurgeons around the world will be vaccinated against COVID-19.
For almost a year and a half, we have only been able to gather through webinars. Therefore we have had enough of it and seek physical contact, to be able to look people in the eyes, hug each other, share experiences and broaden our bonds of friendship and cooperation. Moreover, we offer a social program in which we'll be able to enjoy the cultural and gastronomic richness of Colombia. We are waiting for you in Bogota with open arms for an unforgettable experience.

Case Report

by Magomed Lepshokov and Joachim Oertel (Department of Neurosurgery, University of Saarland, Germany)

How to deal with intraoperative CSF leak in spinal surgery?

The patient was a 46-year old woman with a recurrent herniated disc at the L5/S1 level on the left side. She was operated three times before at the same level, her last previous surgery was in 2012. Back then decompression surgery and microdiscectomy L5/S1 on the left side was performed. Her postoperative course was uneventful.
Recently, she presented with worsening low back pain, sensory changes in the L5 segment, sciatic pain radiating to the left lower extremity, and a residual weakness of the left leg (foot drop and toe extension) after the last operation.
Magnetic resonance imaging (MRI) demonstrated a recurrent lumbar disc herniation at the L5/S1 level (Figure 1). Surgical intervention was recommended.

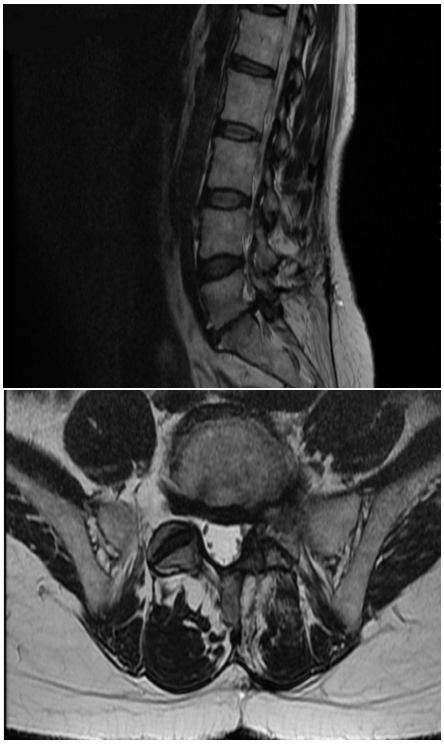

Fig.1 The T2 weighted sagittal and axial show a paramedian and foraminal disc herniation (arrow) at the L5/S1 level.

Intraoperatively, the level was reconfirmed with lateral fluoroscopy. The L5–S1 interspace was approached and a midline laminectomy was performed. The extruded disk material was removed and the vertebral canal was decompressed. The patient underwent TLIF instrumented fusion L5-S1 because of the prior 3 surgeries. There was significant scarring and many adhesions due to previous operations. A dural tear occurred during the surgery at the shoulder of the L5 root and was immediately closed. We used direct suture and augmented closure with TachoSil thrombin sponge. For assessment of tightness a Valsalva test was performed.

Following surgery, the patient was mobilized immediately. She experienced improvement in her pain and lower extremity sensory changes but with residual weakness of the left leg. Computer tomography (CT) shows correct position of implants (Figure 2). With unremarkable wound healing, she was discharged from the hospital.

Fig.2 Postoperative CT shows correct positions of screws.

However, one day later she was again admitted to hospital with orthostatic headache and subcutaneous fluid collection. The emergency spinal MRI showed large extradural fluid collections with large amount of cerebrospinal fluid leakage in the lumbosacral space (Fig. 3).

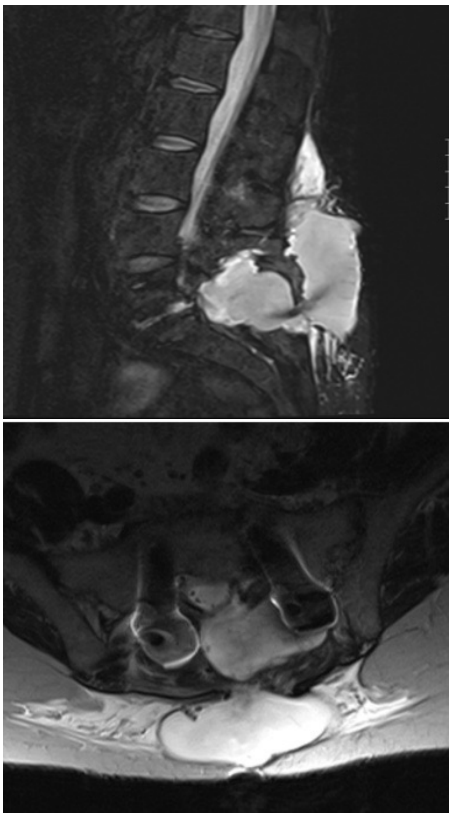

Fig.3 The T2 weighted sagittal and axial show a large fluid compartment in lumbosacral space.

The patient underwent of emergency revision operation. The dural defect was detected exactly at the earlier suture, and the fistula was further sealed with TachoSil thrombin sponge. In addition, a lumbar drain was placed for 5 days and the patient was put under bed rest. Subsequently, the wound was dry, and the patients lacked signs of CSF leakage during the subsequent in hospital stay. The orthostatic pain regressed. The lumbar drain was removed and the patient was discharged next day for outpatient treatment. In the follow-up control the patient felt good, no signs of CSF leak were noted. Subsequently, we discussed the value of bed rest immediately after closure of a dural tear. While the orthostatic pressure is of course reduced in supine position and with immobilization, prolonged bed rest and immobilization gives additional problems such as increased risk for thrombosis and embolism. Also, somehow the patient put in bed for several days becomes the impression that “something went wrong”. A recent randomized study addresses the value of bed rest after spinal surgery.

No benefit of early versus late ambulation after incidental durotomy in lumbar spine surgery: a randomized controlled trial.

Farshad M, Aichmair A, Wanivenhaus F, Betz M, Spirig J, Bauer DE. Eur Spine J. 2020 Jan; 29(1):141-146

The authors present the first prospective randomized trial on treatment of incidental durotomy in lumbar spine surgery. In the University Spine Center Zurich between October 2015 and Januar 2018 1429 patients of the lumbar spine were operated. Ninety-four patients had intraoperative incidental durotomy. Durotomy was treated by suture, fibrin patch or hydrogel. Out of the 94, 60 were randomized to bed rest (30 cases) and to early mobilization (30 cases). The groups were not different statistically for age, sex, pre-operative Oswestry Disability Index, type of surgery and number of revision operations. All patients received standard prevention of postoperative thromboembolic complications with application of NMH. The primary outcome of this study was revision surgery due to persisting CSF leakage, the secondary outcome was the development of complications and the length of hospital stay.

The number of patients requiring revision surgery in both groups was the same (6.66%). The incidence of medical complications and wound complications in the group of patients with bed rest was higher (n = 8 and n = 3), however, there were no significant differences in each type of complications (pneumonia, lung edema, CSF leakage, stroke, wound complication). The bed rest group stayed longer in the hospital (bed rest group 7.25 ± 3.0 days, early ambulation group 6.56 ± 2.64 days). The authors concluded there is no benefit of use bed rest versus early mobilization.

The study is limited by the small number of patients. However, it supports the impression of many surgeons that postoperative bed rest does not improve postoperative dural closure. It supports our impression that early mobilization improves patients healing process. Thus, we will continue to early mobilize the patients after incidental durotomy despite sometimes significant CSF fistula might develop.

Journal Club

by D'jamel Kitumba, Angola

"To operate, or not to operate? Narrative review of the role of survival predictors in patient selection for operative management of patients with metastatic spine disease." *Zach Pennington et al., J Neurosurg Spine 34:135–149, 2021*

Oncological patients with a wide variety of primary tumors are experiencing long life expectancies, increasing, thus, the incidence of bony metastases, particularly spine lesions. To operate, or not to operate, patients with metastatic spine disease, is this a finished chapter? The recent publication by Pennington et al. brought up this pertinent, debated and nonconsensual topic. They review the literature and point out the strengths and weaknesses of the existing scores that evaluate survival of patients with spine metastases and whether they should be good candidates for surgery.

In this narrative review the authors addressed the development and utility of predictive tools and highlighted current research that aims to use machine learning and multicenter collaborations to develop highly predictive, clinically valuable tools.
The authors found that survival is best predicted by measures of physiological reserve. Robust studies, including a meta-analysis identified the following poor prognostic factors: presence of visceral, multiple spine or multiple bone metastases; poor Karnofsky performance status; poor Eastern Cooperative Oncology Group grade; and aggressive primary tumor pathology.

They reviewed the earliest classifications, like the revised Tokuhashi system, Tomita score, Sioutos and others, to assess their ability to predict mortality as well as their shared weakness regarding survival endpoint to help identify surgical candidates. The role of clinical research based on new computational learning systems to predict postoperative mortality was highlighted. Nomograms, could be the future base of clinically important predictive tools.

Traditionally, a 3-month threshold has been used to decide whether a patient benefit from surgery, but a recent study concluded that patients could improve symptoms as short as 6 weeks post-surgery. The authors stressed not only the survival as an outcome per se, but also the improvement on the quality of life.

The classic thinking of a threshold of 3-month survival for surgical candidacy comes from the late 1990's, when minimally invasive approaches were not popular, as well as focused beam radiotherapy. Novel therapeutic models, like immunotherapy, ablative radiofrequency and stereotactic radiosurgery could also offer new insights to help in the development of these algorithms.

Even though it is a narrative review, with the intrinsic limitations of these type of publications, it is a sufficiently comprehensive, more factual than subjective, paper that can direct readers, regardless of their experience, to the relevant literature on clinical and validated tools to predict postoperative survival of patients with spine metastases. Moreover, new therapeutic options are challenging the predictions achieved by the earlier scoring systems, for example the change on surgical techniques, and introduction of targeted therapies.

We recommend this paper to all professionals dealing with spine disorders.
From this review it can be extracted that there is no bulletproof predictive score or tool. It is rather an evolving process, ascertained by the interest in the development of integrative learning software accounting for the emerging diagnostic and novel therapies in selecting patients that would benefit from surgery.

Educational Activities

Video recordings of all webinars and virtual symposia are available on: http://wfns-spine.org/Webinar

Webinars:

January 15, 2020: Onur Yaman: **Planning for Deformity Surgery. Use of Surgimap**

February 27, 2020: Jesus Lafuente: **Is Cervical Arthroplasty the Gold Standard for Herniated Cervical Disc?**

April 6, 2020: Mehmet Zileli: **Patient evaluation in spinal disorders**

April 13, 2020: Atul Goel: **Radiological Diagnosis of CV Junction Problems**

May 3, 2020: Francesco Costa: **Management of Thoracolumbar Fractures**

April 16, 2020: Nikolay Konovalov: **Modern aspects of minimally invasive spinal surgery: Intraoperative CT and navigation**

May 4, 2020: Nikolay Peev: **Minimally invasive spinal surgery in a center with limited resources**

May 9, 2020: Michael P. Steinmetz: **Robotics in Spine Surgery**

May 10, 2020: Douglas Orr: **Management of Lumbar Disc Prolapse**

May 15, 2020: Giovanni Grasso: **Hybrid surgery for cervical disc disease**

May 15, 2020: Richard Assaker: **Thoracic Disc Disease**

May 18, 2020: Richard Fessler: **Complex Surgery of the Cervical Spine**

October 25, 2020: Mehmet Zileli: **Lumbar Spinal Stenosis: When to decompress or fuse?**

Virtual Symposia:

March 26, 2020: **Craniovertebral Junction Surgery**
Mehmet Zileli: Indications of occipito-cervical fixation
Fengzeng Jian: Atlantoaxial dislocation and cervical deformity: Quantitative correction of AAD/BI
Tao Fan: Chiari I and Basilar Invagination: Decompression or Fusion?
Fuzhi Ai: Transoral Atlantoaxial Reduction Plate
Guangyu Qiao: Treatment of Fixed Atlantoaxial Dislocation with Basilar Invagination
Zan Chen: The Classification and Treatment Strategy of Atlantoaxial Dislocation
Hailong Feng: Transoral Approach for Anterior Release and Reduction of AAD

April 25, 2020: **Cervical OPLL**.
Fengzeng Jian: Risk Factors of Dural Tear During Anterior Decompression of Cervical OPLL
Salman Sharif: Radiology Prognostic criteria for OPLL
Xiaoming Che: Case Report: Cervical OPLL
Oscar L. Alves: Progression of OPLL despite Laminoplasty. Is motion preservation a problem?
Jutty Parthiban: Laminectomy and Fusion for Cervical OPLL
Nikolay Peev: Anterior versus Posterior Approach for OPLL
Zan Chen: A Revolutionary Technique: ACAF

May 19, 2020: **Update on Cervical Spine Injury.**
Salman Sharif: Acute Management of SCI
Nikolay Peev: Subaxial Cervical Spine Injury
Mehmet Zileli: Craniovertebral Junction Injury

June 18, 2020: **Adult Degenerative Deformity.**
Onur Yaman: Classification of Adult Degenerative Scoliosis
Richard Assaker: Sagittal Balance and Deformity
Claudia Lamartina: Surgical Techniques in Adult Degenerative Deformity
Marcos Masini: Correction of Kyphosis with Neurological Deficits
Max Aebi: Management of Proximal Junctional Kyphosis

June 21, 2020: **Management of Chiari Malformation.**
Massimiliano Visocchi: Current management plans for Chiari
Atul Goel: Craniocervical instability should be treated
Guirish Solanki: Management options in pediatric Chiari patients

August 10, 2020: **Surgery for Craniovertebral Junction Tumors**
Sukhdeep Singh Jhawar: Anatomical Concerns for the CVJ
Atul Goel: Surgery for Foramen Magnum Lesions
Ugur Ture: Lateral Approach for Upper Cervical Lesions
Ziya Gökaslan: Surgery for CVJ Chordomas and Fixation Techniques

September 5, 2020: **Craniovertebral Junction Malformations.**
Atul Goel: Craniovertebral Junction Instability in Pediatric Age Group
Fengzeng Jian: The quantitative reduction of Bİ-AAD
Mehmet Zileli: Anterior approaches to the craniocervical junction
Salman Sharif: CV junction posterior approaches
Fuzhi Ai: Treatment of AAD in pediatric patients
Massimiliano Visocchi: Management of Chiari malformation. An update
Oscar L.Alves: Anatomical considerations for surgery of intradural CVJ tumors
Vadim A. Byvaltsev: Efficacy and safety of laminoplasty versus laminectomy in the treatment of cervical spinal cord tumors
Zan Chen: Treatment of BI-AAD with CDR technique

November 16, 2020: **Complex Spine Surgery in Degenerative Deformity**
Onur Yaman: Classification of Adult Degenerative Scoliosis
Claudio Lamartina: Importance of Sagittal and Coronal Imbalance
Max Aebi: Surgical Strategies to Correct Adult Deformity
Pedro Berjano: Osteotomy Techniques to Correct Adult Deformity
Mehmet Zileli: Complication Avoidance in Adult Deformity Surgery

Publications

Consensus Meeting and Recommendations

WFNS Spine Committee Recommendations on "**Cervical Spine Trauma" and "Spinal Cord Injury"** have been published recently in December 2020 in the Neurospine Journal. (https://www.e-neurospine.org).

It is an open access issue featuring 9 papers:

(1) Cervical Spine Trauma and Spinal Cord Injury Recommendations of WFNS Spine Committee.

(2) Early Management of Cervical Spine Trauma: WFNS Spine Committee Recommendations.

(3) Upper Cervical Spine Trauma.

(4) Subaxial Cervical Trauma.

(5) Early Management of Spinal Cord Injury.

(6) Pharmacologic and Regenerative Cell Therapy for Spinal Cord Injury.

(7) Pediatric Cervical Spine Injuries and SCIWORA.

(8) Outcomes of Spinal Cord Injury.

(9) Rehabilitation of Spinal Cord Injury.

Along with the previous recommendations on **"Cervical Spondylotic Myelopathy," "Lumbar Spinal Stenosis," "Cervical Spine Trauma" and "Spinal Cord Injury"** can also be reached at WFNS Spine Committee website (http://wfns-spine.org/recommendations)

An essay on the **"History of Spinal Neurosurgery and Spine Societies"** also appears in Neurospine Journal in December 2020. (DOI: 10.14245/ns.2040622.311).

Future Plans

Due to Covid-19 pandemic the **6th Biennial Meeting** of the WFNS Spine Committee in Milan was postponed to October 2021.

The Spine Committee is fully engaged in participating in the scientific program of WFNS World Congress in Bogota from 29th August 2021 to the 3rd September 2021.

Currently, we are finalizing the recommendations on "**Thoracolumbar Trauma**" and "**Osteoporotic Vertebral Fractures**" with the intention to publish them.

A consensus conference **"Basilar invagination and Chiari malformation"** has been prepared and will be held in São Paulo in March 2022.

A book on **"Cervical Spondylotic Myelopathy and OPLL"** is in proofreading process and will be published very soon by Thieme Publishers. This reference book covers all the topics around the cervical spondylotic myelopathy and OPLL, featuring in total 28 chapters.

A chapter on "**The Role of Neurosurgery in Global Spine Health**" will appear in the book "Neurosurgery and Global Health" by Springer Nature.