

WFNS Spine Committee

NEWSLETTER

1st Issue, Winter 2018

CHAIRMEN'S MESSAGE

LEARNING FROM EXPERIENCE

CASE REPORT

JOURNAL CLUB

Editor:
Oscar L. Alves, Portugal

Editorial Board:
D'jamel Kitumba, Angola
Raul Baggen Santos, Portugal
Rui Reinas, Portugal

WFNS Spine Committee Chairmen:
Mehmet Zileli, Turkey
Daniel J Hoh, USA
Michael Fehlings, Canada



EDITORIAL



by Oscar L. Alves

We are very much pleased to offer you the first issue of WFNS Spine Committee Newsletter.

Besides being a tool to improve the outreach of the WFNS Spine Committee endeavors and decisions, this newsletter is designed to be a forum for global neurosurgeons dedicated to spine surgery. Therefore, I invite you all to join us in this venture and share your most valuable expertise with a wide community of surgeons. You can input in different items such as journal club, clinical case of the trimester, learning by experience interview or advertising your own spine meetings.

The contents of this newsletter will necessarily reflect a worldwide spectrum of spine surgery practice, taking into account the regional idiosyncrasies related to different resources availability and cultural bias. Nevertheless, we will strive to include state-of-the-art scientific contents to improve spine surgery concepts and, thus, positively impact in spine surgery outcomes.

E-mail: oscar.l.alves@gmail.com

TABLE OF CONTENTS

CHAIRMEN'S MESSAGE

Pg. 2

LEARNING FROM EXPERIENCE

Interview with Prof P.S. Ramani

Pg. 3

CASE REPORT

Severe Cervical Kyphosis With Myelopathy in Patient With Neurofibromatosis Type 1

Pg. 4

JOURNAL CLUB

- Risk factor analysis of kyphotic malalignment after cervical intramedullary tumor resection in adults Pg. 7

- The sagittal spinal profile type: a principal precondition for surgical decision making in patients with lumbar spinal stenosis Pg. 7

- Is fusion necessary for thoracolumbar burst fracture treated with spinal fixation? A systematic review and meta-analysis Pg. 8

UPCOMING EVENTS

Pg. 11

Chairmen's Message

Dear Friends,

After WFNS 2017 meeting in Istanbul, WFNS has decided to proceed with more active committees. We are privileged to share the chairmanship of this prestigious spine committee. Spine committee will serve for 2 years and is composed by 33 members.

Our projects for the next two years are:

a) Meetings:

Bi-Annual Spine Symposia will be the main activity of the WFNS Spine Committee. This year it will be held in Surabaya and Bali, Indonesia on 25-28 October, 2018. Surabaya will host a cadaver course, and Bali a symposium. The chairman of the meeting will be Dr. Abdul Hafid Bajamal. We will have Cadaver Courses at least once in a year in different countries.

Consensus Symposia on one topic to clear some issues on spinal disorders. The first consensus symposia will be on lumbar spinal stenosis in Milan, Italy, between 9-10 November, 2018. The Chairman of the meeting is Dr. Maurizio Fornari. We are also planning to cooperate and contribute to some other spine related meetings.

b) Guidelines and Consensus: At the end of consensus meetings, we will declare a minimum standard of care on each topic. We also will try to create guidelines on some common spine topics.

c) Newsletter: A newsletter of the spine committee will be delivered under the leadership of Dr. Óscar Luís Alves, appointed as Editor.

d) Webinars: We plan to organize webinars by the leadership of Dr. João Luiz Pinheiro-Franco. A recent survey has been concluded to learn about the most wanted topics and trends among spine surgeons. We wait for your suggestions and recommendations on any spine related topic. We wish we can achieve our aims to improve our understanding and training for a better spine care.



Mehmet Zileli
Turkey



Michael Fehlings
Canada



Daniel J. Hoh
USA

Learning from Experience

interview by Oscar L. Alves

Dr. P. S. Ramani, first chairman of the WFNS Spine Committee, is a senior consultant neurospinal surgeon at corporate Lilavati Hospital and Research Centre in Mumbai, India. He has retired from the University of Mumbai as Professor and Head of the Dept. of Neuro & Spinal Surgery at L.T.M. Medical College and Hospital in Mumbai. He is an avid writer and publisher and has published as many as 24 textbooks on spinal surgery including 3 major textbooks.



1. From the beginning of your practice what are the main conceptual changes in spine surgery? And what will be the future directions?

I am 80 years old and was born almost simultaneously with the development of lumbar disc surgery by Mixter & Barr and development of PLIF surgery by my late friend Dr. R. B. Cloward. Developments followed and among them the crucial

development of bipolar cautery by Mallis and development of microscopes in Germany gave a tremendous boost to spinal surgery. Biomechanical developments helped us to understand function of the spine much better and spinal surgery evolve to be more scientific. Today, spinal surgery is all minimally invasive which is quite comforting and safe to the patient. Unfortunately, to me the future appears to be totally dictated by technology with high-speed online access changing radically doctor's appointments and consultations and transforming the health economics like that of banking and retail. Human touch will be a rare commodity.

2. In an era of advanced technology and business approach to medicine by hospital management do you think medicine lost its humanistic component in patient/ doctor relationship? what would be the consequences of it and it should be battled?

Yes, indeed. With this approach the medicine will have lost its humanistic component in patient-doctor relationship. This is very sad, as we know it very well that 70 % of the diseases are psychosomatic and patient can feel better with a kind word or gentle tap on the back of the patient by the doctor. Even today, in many centers the patient is left aside and decisions are taken by the doctors on looking on the MRI films and with this attitude it has become very easy for the doctors to give opinion on the net merely by looking at the net images and not much knowing about the patient which is very sad and unfortunate. Medicine is considered as a noble branch of science and we as medical fraternity have to work very hard if we have intentions to preserve the sanctity of medicine.

It is right time the fraternity takes the issues with the governing bodies to make it mandatory to clinically examine the patient before making an opinion.

3. Are you a strong believer in radiological surrogate end-points for outcome or do we need to progress to patient-based approaches and outcome in our practice?

I have always worked very hard to discipline myself, my assistants, my students and impress upon other doctors to follow suit and forcefully write on the paper his clinical impression of the patient which I have always termed as "Working diagnosis". Most of us seniors and dedicated to science always write our working diagnosis. Radiology then can assist us only when necessary to take our diagnosis to completion.

4. Do you consider that worldwide management and surgical guidelines in spine surgery are useful at this stage considering the disparity of local resources?

Guidelines are important without which we can not achieve uniformity. However, if we have to make spinal surgery very popular and make sure it reaches each corner of the World, then the guidelines have definitely to be tampered to suit the local circumstances. In such circumstances, it is my common teaching to young doctors "Do what you think is the best for the patient in your circumstances, find out what is the best alternative in the World and struggle hard to achieve it". But until one has achieved it, one should not stop providing service to the patient.

6. Do you consider that there is an epidemics of over-treatment in spine surgery? And how to modulate it?

Needless to say, that there is definitely an over treatment in spinal surgery and there is lot of literature to suggest that implants are over used. It also casted out on the integrity of the surgeon regarding his relationship with the industry. It is a well known fact that the concept of industry is success in commerce and to achieve this goal many times they do not mind stepping beyond a legal step.

7. As epidemiology of spine diseases is changing with a big cohort of elderly patients on one end and severe degenerative changes afflicting more and more younger patients, are we prepared for these challenges?

I am perhaps in the right position to answer this question. In countries like USA, elderly population dominates, but in a country like India, younger population dominates. I feel depressed to see degenerative changes in the spine in younger population. It is related simply to lifestyle. Today, life has become extremely competitive and working on the principal of the survival of the fittest, leaving very little time to look after one's personal health, resulting in degeneration of the spine, increase in diabetes, increase in high blood pressure and heart attack, and increase in cancer. It is indeed a pathetic story of the society. It is a known fact that today's society is full of stress and it has increased consumption of alcohol and smoking leading further to ill effects on health.

8. Should philanthropy be an important feature of a surgeon? What is the importance of Goa marathon in your professional life?

For the last 15 years, I conduct Dr. Ramani Goa Marathon, purely as a philanthropy, but my purpose is farsighted and aimed at maintaining good health. Today, my marathon has been recognised as a qualifier marathon. Speaking more philosophically it is the bounden duty of each citizen of any country to share his wealth with the society and that is perhaps the purpose of life.

9. What's the role of WFNS spine committee in global spine world?

The intentions of WFNS spine committee are genuine to spread progress in the science to the World and at the same time makes spinal surgery available even to the under privileged. With such aims and with dynamic, aggressive, selfless and well motivated doctors in WFNS, spine committee should one day dominate global spine.



Case Report

Severe Cervical Kyphosis With Myelopathy in Patient With Neurofibromatosis Type 1

Fernando Luiz Rolemberg Dantas, 1, 2
François Dantas, 1
Gustavo Agra Cariri, 1
Ricardo Vieira Botelho, 2
1 Neurosurgery Service of Biocor Hospital, Belo Horizonte – MG
2 Post Graduation Program in Health Sciences – IAMSPE – Hospital do Servidor Público Estadual de São Paulo – SP, Brazil

Introduction

Neurofibromatosis type 1 (NF1) or von Recklinhausen disease is an autosomal dominant hereditary disease. Several characteristic lesions can be observed. They include “café au lait” spots, neurofibromas and Lisch nodules. It is frequently associated with skeletal abnormalities, with scoliosis being the most commonly found manifestation (1). Cervical kyphosis related to NF1 is a rare entity, with only few cases described in the literature (2,5,6,7,8,9,17). We present a case of dystrophic cervical kyphosis in a patient with NF1 who was surgically treated.

Case presentation

Patient, 16 yrs, male, presenting with NF1 (Fig 1), in clinical follow up since the age of 10. He was submitted to an MRI of the cervical spine at that time, which demonstrated dystrophic alterations without medullary compression and extramedullary neurofibromas (Fig 2). In the past six months presented with worsening loss of strength in the four limbs. Neurological examination showed quadriparesis with bilateral Hoffman and Babinski. Radiological evaluation of the cervical spine showed an X-Ray with an important kyphosis C3-C5 and dystrophic alterations in C3-C4-C5 (Fig 2). CT-scan and MRI with a significant reduction of the anteroposterior diameter with extreme dorsal angulation and C3-C4 spinal cord compression (Fig 3). Patient was submitted to corpectomy with medullary decompression followed by anterior cervical arthrodesis with prior 4 kg traction, which achieved good pre-operative alignment at C3-C4. Iliac crest graft removed, using plates and screws at C2-C5 (Fig 5). Perioperative neurophysiological monitoring was used.



Fig 1 - The patient with “café au lait” spots

It was a technically challenging surgery due do the small size of the vertebral bodies and its dystrophic malformations. Postoperatively the patient evolved with slight improvement of strenght on the right side. He did not accept to use the cervical collar. CT-scan performed post-operatevely demonstrated that the screw in the C2 body had migrated anteriorely with loss of vetebraal reduction and alignment. A posterior approach was then proposed. Patient was then submitted to a new surgical approach three weeks after the first intervention. An occipito-cervical arthrodesis was carried under cervical traction (Fig 4). Patient evolved with progressive improvement of strength in the four limbs. Control MRI one year post-op demonstrated adequate spinal decompression with a good cervical alignment.

Discussion

Bone anomalies associated with NF1 include vertebral body collapse, loss of lordosis, kyphosis, atlantoaxial rotational subluxation, scoliosis, vertebral scalloping, and pencil ribs . These abnormalities are present in about 26-50% of patients with NF1 (Cotran RS). Severe dystrophic cervical kyphosis in NF1 is a rare entity, and there are no well-defined indications in the literature for the correction. In general, deformity correction is indicated when the patient has a neurological deficit, severe pain or functional impairment (difficulty breathing and swallowing). Some authors prefer the anterior approach (Kokubun, Goffin), others the posterior, with high failure rates of 64-72% (Winter RB). Several posterior surgical techniques have been used and included the use of hooks (Kokubun), stems (Ward), vascularized fibula (Asazuma), lateral mass screw (Goggin) and pedicle screw (Yonezawa). Surgical approaches must often be mutiple due to failure in single ones. The literature shows that in combined approaches the complication rate is much lower, about 7.5% (Hsu LCS).

In another series of Junming et al. with 8 cases, only 1 case underwent a single approach, 6 a 540 degrees (anterior, posterior and anterior) and one patient 360 degrees (anterior, posterior) (Junming). Kawabata et al. showed 3 cases in which all of them underwent a double approach and 1 case required occipito-cervical fixation (Kawabata). There was a recently comparison between the isolated anterior, isolated posterior and antero-posterior approaches regarding 81 patients with severe cervical kyphosis. The conclusion was that combined anterior and posterior approaches presented with better results, better kyphosis and sagittal balance (Lin, T).

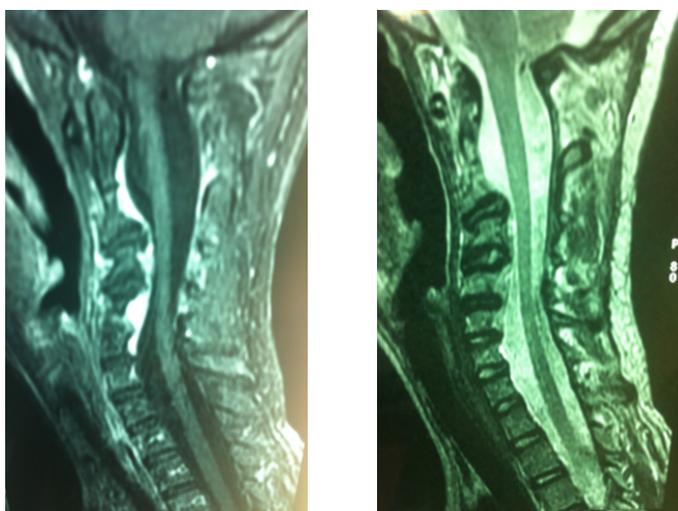


Fig 2 - T2 Sagittal (a) and T1 (b) Gadolinium weighted magnetic reronance image demonstrates kyphotic apex at the C3-C4 without medular compression at the age of 10



Fig 3 - Cervical X-ray (a) and panoramic (b) showing severe cervical kyphosis

The postoperative complications of deformity correction are frequent in the surgical approach of patients with NF1. Hellenius et al. in a multicenter study in 4 countries with 11 hospitals and 22 patients, presented complications in 59% of the cases, being 5 neurological C5 root deficits and 9 other cases requiring a surgical revision due to hematomas. There was no difference between neurological deficit in the posterior and combined approaches, 56 versus 62%, respectively.

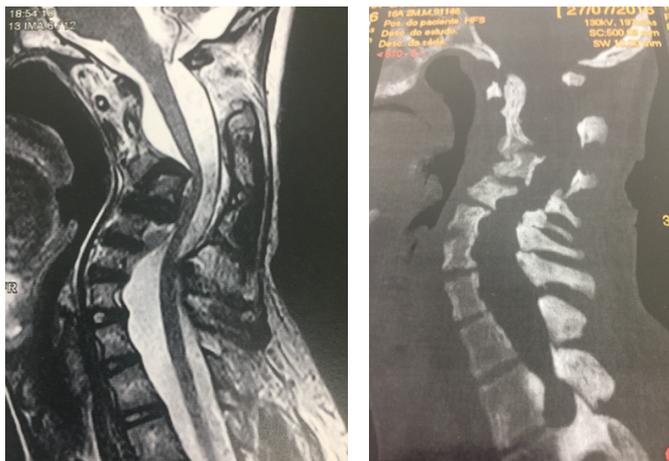


Fig 4 - T2 Sagittal weighted MRI imaging showing spinal cord compression at C3-4 (a) and CT demonstrating dystrophic kyphosis (b)

Conclusions

Dystrophic cervical kyphosis in patients with NF1 is a challenging entity. The primary goal of surgery is to stabilize the spine, prevent progression of deformity and potential neurological lesions. Treatment requires meticulous surgical planning and strategy that are essential for the good clinical outcomes. The literature proposes more aggressive surgery with the use of combined approaches to reduce the risks of disastrous loss of deformity as occurred with our case.

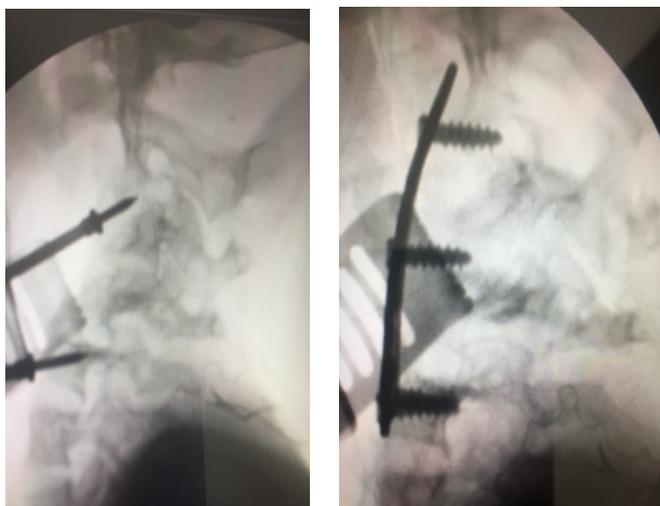


Fig 5 - Per-operative X-ray after traction with 4kgs demonstrating good alignment (a) plating with graft C2-C5 (b)

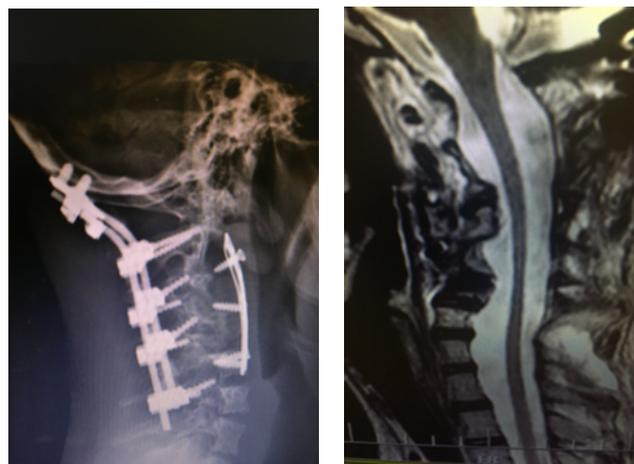


Fig 6 - Post-operative imaging showing correct implant positioning and decompression

References

- 1 - Singh K, Samartis D, An HS: Neurofibromatosis type 1 with severe dystrophic Kyphosis and its operative management via a simultaneous anterior posterior approach: a case report and review of the literature. Spine J 5:461-466,2005
- 2 - Kyphosis and its operative management via a simultaneous anterior posterior approach: a case report and review of the literature. Spine J 5:461-466,2005
- 3 - Kokubun S, Osawa H, Sakurai M, Ishii Y : One-stage anterior and posterior correction of severe kyphosis of the cervical spine in neurofibromatosis. A case report. Spine 18:2332-2335,1993
- 4 - Nijlan EA, Berg/van/der MP,Wuisman PIJM, Royen/van BJ, Ouwerkerk/van WJR: Correction of a dystrophic cervicothoracic spine deformity in Recklinghausen's disease. Clin Orthop Relat Res 349:149-155,1998
- 5 - Ward BA, Harkey HL, Parent AD,McGuire RA Jr,Kending RJ:Severe cervical kyphotic deformities in patients with plexiform neurofibromas: case report. Neurosurgery 35:960-964,1994
- 6 - Yonezawa I, Arai Y, Takahashi M, Kurosawa H, Anterior fusion and posterior correction of severe cervical kyphosis using pedicle screw in a patient with neurofibromatosis: case report. J Spinal Disord Tech 16:493-496
- 7 - Vigneswaran K, Sribnick EA, Reisner A, Chern J. Correction of progressive severe cervical kyphosis in a 21 month old patient with nf1: Surgical technique and review of literature. Operative Neurosurgery, 17:2017 (WWW.operative neurosurgery online.com)
- 8 - Inoue M, Sairyo K, Sakai T, Yasu N. Significance of surgical treatment for severe dystrophic changes in the cervical spine associated with neurofibromatosis type I: a case report. Journal of Pediatric Orthopaedic 19:Vol 19(3), 2010
- 9 - Kawabata S, Watanabe K, Hosogane NM, Ishii K, Nakamura M, Toyama Y, Matsumoto M. Surgical correction of severe cervical kyphosis in patients with Neurofibromatosis type I. J Neurosurg Spine 18:274 279,2013
- 10 - Cotran RS, Kumar V, Robbins SL: Genetic disorders, in Cotran RS, Kumar V, Collins et col. (eds): Robbins Pathologic Basis of Disease, Ed. 4 Philadelphia: Saunders, 1989, pp121 162
- 11 - Winter RB, Lonstein JE, Anderson M. Neurofibromatosis hyperkyphosis: a review of 33 patients with kyphosis of 80 degrees or greater. J Spinal Disord 1:39 49,1988
- 12 - Hsu LCS, Lee PC, Leong JCY: Dystrophic spinal deformities in neurofibromatosis. Treatment by anterior and posterior fusion. J Bone Joint Surg Br 66:495 499,1984
- 13 - Lin,T, Shao W, Zhang K, Gao R, Zhou X. Comparison of outcome in 3 surgical approaches for dystrophic cervical kyphosis in patients with neurofibromatosis 1 World Neurosurgery 2017
- 14 - Hellenius, JJ,Sponseller PD, Mackenzie W, Odent T, Dormans JP et cols. Outcome of spinal surgery for kyphosis in children with neurofibromatosis. J Bone J Surg Am 2016;98: 95(1-10)
- 15 - Goffin J, Grob,D. Spondyloptosis of the cervical spine in neurofibromatosis: a case report. Spine 1999;24:587-590
- 16 - Asazuma T, Yamagishi M, Nemoto K, et col. Spinal fusion using a vascularized fibular bone graft for a patient with cervical kyphosis due to a neurofibromatosis. J Spinal Disord 1997;10: 537-540
- 17 - Vadier F, Courjard X, Pointillart V, Vital, JM: Neurofibromatosis of the lower cervical spine: an operative case report. Rev Chir Orthop Reparatrice Appar Mot 86:737-740, 2000 (Fr)

Journal Club

Besides the quality of decompression that relates to neurological outcomes and, more recently, the concept of a balanced spine, fusion remains a cornerstone for a successful spine surgery. In this Winter 2018 issue of WFNS Spine Committee Newsletter, we revisit 3 different papers that may challenge the traditional indications for fusion in different typical clinical scenarios: thoracolumbar burst fractures, surgery for removal of intramedullary tumors, and lumbar stenosis.

Risk factor analysis of kyphotic malalignment after cervical intramedullary tumor resection in adults

Satoshi Nori, et al.

Departments of Orthopedic Surgery and Radiology, Keio University School of Medicine, Tokyo, Japan
J Neurosurg Spine 27:518–527, 2017

The authors have retrospectively reviewed their own institutional 54 cases submitted to cervical osteoplastic laminoplasty for removal of pure intramedullary tumors, from 2001 to 2011, to assess risk factors for cervical sagittal misalignment. This is a pertinent topic as spinal deformity following surgery for intradural spinal tumors, estimated around 10%, is probably underreported due to absence of late follow-up. As there was no sacrifice of facets joints during surgery or by the tumor, the clinical model studied is quite homogeneous.

An initial criticism can be formulated, as they excluded patients under 21 years old or submitted to radiotherapy, which are a significant number of patients presenting with these pathologies. Accordingly, conclusions shouldn't apply to this cohort of patients. They also arbitrarily divided tumors in 2 groups according to their location above or below C5. Finally, and quite unusual, only 5/54 patients showed kyphotic malalignment of the cervical spine before surgery, which can be misleading as to the conclusion that preoperative C2–7 angle was not as a risk factor for cervical malalignment after surgery.

Besides the usual parameters, they wisely included data on atrophy of the deep extensor muscles (DEMs) and detachment of the DEMs from the C-2 spinous process and correlated them with cervical spine

malalignment using standard statistical analysis. Multiple linear regression analysis revealed the following as risk factors for kyphotic change of the cervical spine after surgery: 1) atrophy of the DEMs after surgery ($b = -0.54$, $p < 0.01$), and 2) detachment of the DEMs from the C-2 spinous process ($b = -0.37$, $p < 0.01$). Therefore, the authors concluded that preservation of the DEMs, especially those attached to the C-2 spinous process, is important for the prevention of kyphotic malalignment of the cervical spine after surgery for intramedullary tumors. Careful cervical deep extensors muscle handling and attachment preservation to spinous process, namely semispinalis cervicis and semispinalis capitis muscles that generate 40% of the total strength produced by all the neck muscles in isometric neck extension, is a very simple and effective measure, which can be replicated worldwide. When this is not possible, posterior fusion might an option. However, it is crucial to keep in mind that instrumentation of the spine will affect the follow-up with magnetic resonance imaging. This is a very common occurrence and has to be weighed into the decision-making.

The sagittal spinal profile type: a principal precondition for surgical decision making in patients with lumbar spinal stenosis

Simon Heinrich Bayerl et al.

Department of Neurosurgery, Charité Universitätsmedizin Berlin and Department of Orthopedic Surgery, Klinikum Magdeburg, Germany
J Neurosurg Spine 27:552–559, 2017

The authors depart from a very pertinent observation that we all spine surgeons face: a significant percentage (40%) of patients fail to achieve the expected clinical improvement after lumbar spine stenosis (LSS) surgery despite satisfactory decompression. This co-joined paper by neuro- and orthopedic surgeons from Germany aimed to elucidate about the influence of the four pre-operative sagittal profile types (SPT), as defined by Roussouly et al. in 2005, on the clinical outcome in patients with lumbar spinal stenosis (LSS), who were treated with microsurgical decompression (MD) alone.

The authors retrospectively studied 100 patients with symptomatic spinal stenosis, rightly excluding patients with major spinal instability and severe deformity. Regarding the surgical technique,

Unfortunately the procedure was not uniform raising concerns on putative consequence on spinal stability associated with each procedure: single-level hemilaminectomy (n = 13), single-level laminectomy (n= 5), or 1-sided interlaminar fenestration with undercutting (n = 82).

From pre- and post-operative radiographs, the usual pelvic parameters and the ratio of the C7 plumb line to SFD were extracted, and patients stratified according to the Roussouly spinal profiles. After allocating 100 patients in four groups, the authors end up with a small sample per group, limiting the conclusions drawn from the study. Additionally, for each individual patient, the change on the sagittal alignment induced by the surgery was not analyzed as no data is provided regarding the chance of patients crossing-over Roussouly's groups as a direct effect of their operation. Finally, a rather small mean follow-up time was reported (range from 14.5 and 17.7 months)

However, one of the strengths of the study is the correlation of radiological parameters with clinical end-points for outcome, such as ODI, RMDQ, VAS, WD, SF-36 (incompletely applied prior to 2011) and Odom's criteria. While the procedures led to a significant decrease in leg pain for all groups, group SPT1 did not improve significantly VAS back pain, leading to lower satisfaction and QoL scores compared to the other groups.

The authors conclude that the spinal profile types defined by Roussouly et al. have a significant influence on the outcome of symptomatic spinal stenosis after MD. The characteristics of SPT1 – retroverted pelvis with a small SS, a small PI, strong lordosis in the lower lumbar spine and a long thoracolumbar kyphosis – lead to higher biomechanical stress upon the thoracolumbar musculature. SPT1 patients have a more limited possibility of compensation mechanisms when compared to SPT2-4 patients, and this would explain the outcome differences. A lower SS, per se is not a predictor of bad outcome, if combined with lower lumbar lordosis, as in SPT2. Rightly, the authors conclude sagittal balance parameters cannot be considered individually.

Conceptually, there are anatomical specificities, and not just isolated parameters, which the spine surgeon should pay attention in the decision-making when treating surgically LSS. Further studies need to evaluate if SPT1 type of patients warrant a fusion, beside decompression, to correct for pre-operative imbalance in order to achieve better

outcomes.

Is fusion necessary for thoracolumbar burst fracture treated with spinal fixation? A systematic review and meta-analysis

Juliete M. Diniz and Ricardo V. Botelho
Department of Neurosurgery, Hospital do Servidor Público Estadual-IAMSPE, São Paulo, Brazil
J Neurosurg Spine 27:584–592, 2017

Recently published papers questioned the need to perform spinal fusion in thoracolumbar burst fracture, shading controversy over the traditional method of treatment. Bearing this in mind, the authors aimed to assess the effect of fusion on surgically treated thoracolumbar burst fractures, for which they performed a meta-analysis with quite uniform inclusion criteria and compliant with guidelines for this type of study.

Five randomized trials, which involved a total of 220 patients and an average follow-up time of 69.1 months, were included in this review. It has to be conceded that the studied population is quite heterogeneous, due to different fracture classifications used in different studies, and also small in volume. Studies with a higher number of patients are needed to increase the power analysis and to empower the conclusions.

No significant difference between groups in the final scores of the visual analog pain scale or low back outcome scale was detected. Surgical time and blood loss were significantly lower in the group of patients who did not undergo fusion ($p < 0.05$).

As expected, greater mobility in the affected segment was found in the group of those who did not undergo fusion. But, most importantly, no significant difference between groups in the degree of kyphosis correction, loss of kyphosis correction, or final angle of kyphosis was observed. However, the radiological parameters studied were not uniform for all studies.

According to the authors, classical fusion did not improve clinical outcomes nor promote significant enhancement in radiological parameters, instead it was associated with increased surgical time and higher intraoperative bleeding. This conclusion, which needs to be further validated, would have a major and worldwide impact on expensive healthcare resources allocation

WFNS Spine Committee Survey

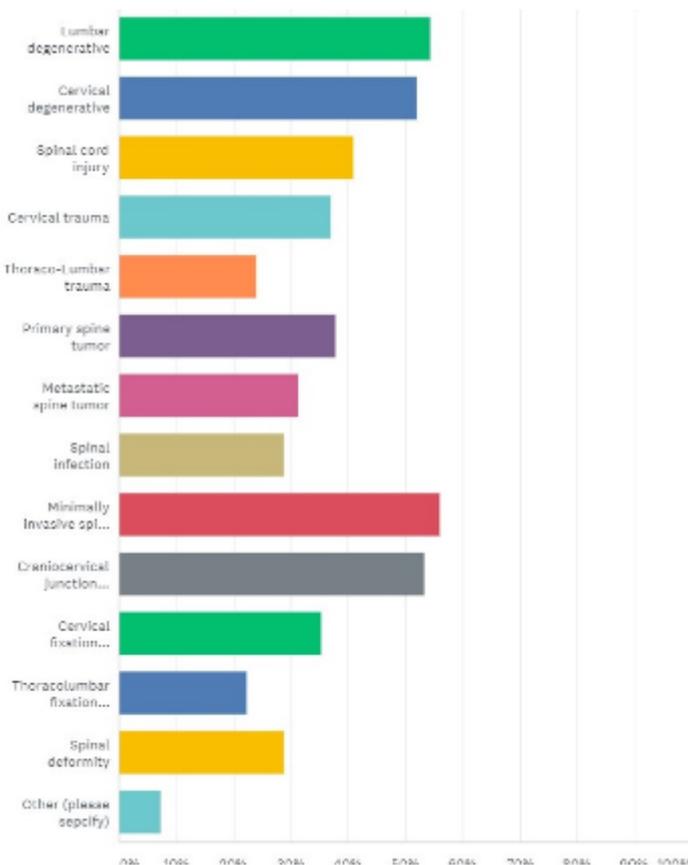
Dr Mehmet Zileli conducted a survey about the most wanted topics for our webinar series and consensus meetings. The survey has been started in December 2017, and was sent to almost 3.000 email addresses. A total 232 responses was obtained.

1-Please indicate 5 topics you would be most interested in viewing in a webinar?

The most interested topics were:

- (1) Minimally invasive spine surgery (130 hits)
- (2) Lumbar degenerative spinal disorders (126 hits)
- (3) Craniocervical junction surgery (124 hits)
- (4) Cervical degenerative spinal disorders (121 hits)
- (5) Spinal cord injury (95 hits).

The histogram of the results are expressed on below graphic.



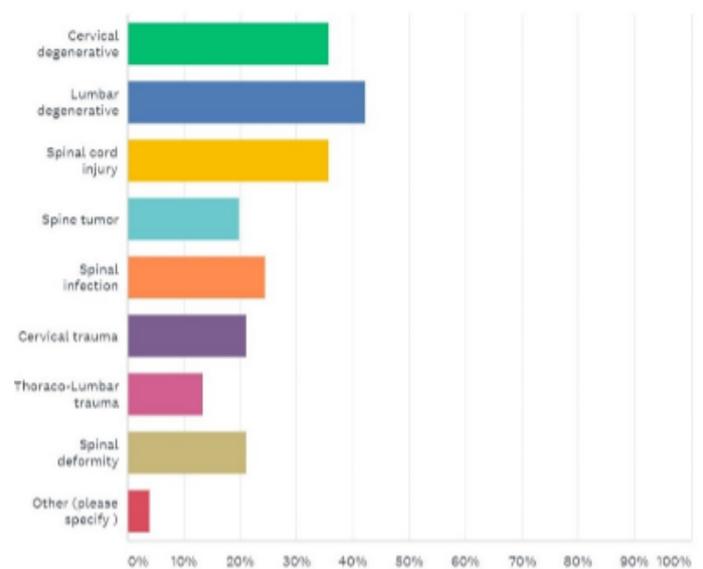
2-Please indicate the 2 topics you feel are most in need of consensus guidelines.

There are many topics in spine surgery where there are still big controversies in their management. WFNS Spine Committee wishes to clarify some issues with consensus meetings.

According to the survey, the most wanted two topics are:

- (1) Lumbar degenerative spinal disorders (98 hits)
 - (2) Cervical degenerative spinal disorders and spinal cord injury (both have similar results, 83 hits).
- The other topics with less interest were spinal infection (57 hits), spinal deformity (49 hits), cervical trauma (49 hits), spine tumor (46 hits), thoraco-lumbar trauma (31 hits).

The histogram of the results are expressed on below graphic.



3-Please comment on any additional specific knowledge gaps specific to your environment

This was an open question and respondents were asked to give suggestions with their words.

48 respondents (20%) said that there are not further topics to ask.

As for the suggestions they were such in frequency:

- Lumbar degenerative disorders (27 hits)
- Trauma (25 hits), surgical fixations (21 hits)
- minimally invasive spine surgery (19 hits)
- spine tumors (15 hits)
- deformity (14 hits)
- infection (11 hits),
- craniocervical junction surgery (9 hits)
- spinal biomechanics (8 hits)
- congenital disorders (7 hits)
- cervical degenerative disorders (4 hits)

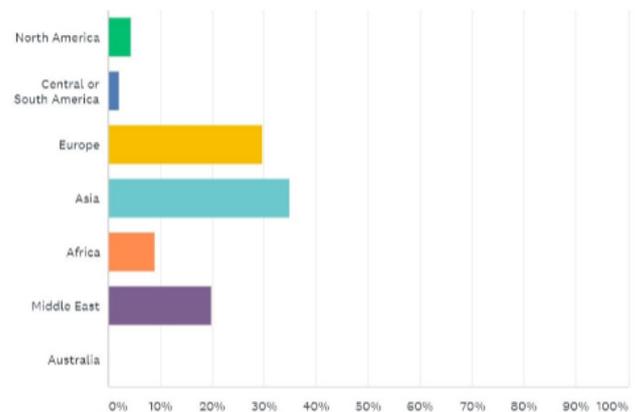
Two comments reproduced below were very stimulating for the committee:

“The standardization of spinal disease treatments has a gap among neurosurgeons and spine surgeons. For instance, many cervical trauma cases and tumors, in my environment have delayed in surgery due to social problems. I believe that this gap results from the disturbed residency-educational process in general.”

“Nice to work as a team”

The profile of the responders:

- Gender: 215 males and 17 females (7.3%).
- Years after residency: It was average 16.1 years (+/-10.7)
- Geographic region? Most of the responders were from Asia (81) and Europe (69).
- Hospital/ Practice type? Most were from Academic/ University (n=182, 78.4)
- Percent of spine surgery in daily practice? Most responders had more than 60% spine surgery in their daily practice (49.1%).



Upcoming Events

- **INTERNATIONAL SYMPOSIUM OF SPINE SURGERY AND NEURO-ONCOLOGY**
WWW.BASICNEUROLOGY.INFO/
28TH MARCH - 1ST APRIL 2018
ANTALAYA, TURKEY
- **GLOBAL SPINE CONGRESS**
WWW.GSC2018.ORG
2-5TH MAY 2018
SINGAPORE

Upcoming Events

- **CERVICAL SPINE RESEARCH SOCIETY**
WWW.CSRS-EUROPE-CONGRESS.COM/
9 - 11TH MAY 2018
LISBON, PORTUGAL



- **CONTINENTAL ASSOCIATION OF AFRICAN NEUROSURGICAL SOCIETIES**
WWW.EOAFRICA.CO.ZA/CAANS-2018/
24 - 27TH JULY 2018
ABUJA, NIGERIA

- **NEUROTRAUMA 2018**
WWW.NEUROTRAUMA2018.COM
11 - 26TH AUG 2018
TORONTO, CANADA

- **SPINE SURGERY IN XXI CENTURY**
4 - 7TH OCT 2018
NIS, SERBIA

- **5TH BI-ANUAL CONFERENCE WFNS/**
25 - 28TH OCT 2018
BALI, INDONESIA