AOSPINE

Newsletter

"AOSpine is all about leadership, responsible patient care, a teaching and learning process and new friends."

Asdrubal Falavigna
Chairperson AOSpine Latin America

Editorial

It is a great pleasure and honor for me to present to you this issue of the AOSpine newsletter.

This edition features a personal interview with AOSpine Chairperson Dan Riew, where he shares his achievements at AOSpine, what he finds most gratifying, and what truly matters to him.

There are just a few days left to go before the global spine surgeon community meets in Switzerland at the Davos Courses. We are delighted that, for 2017, we have a full course with nearly 150 participants. This newsletter shares the most updated information on the event, and includes images from last year to serve as a reminder of this great event.

Also in this edition, we will present the AOSpine Knowledge Forum SCI. We also share the AOSpine Knowledge Forum Deformity's latest work on defining appropriate treatment and outcomes for spinal deformity patients.

The Global Spine Journal has had a hectic year, starting with the switch to SAGE as the new publisher. In this newsletter, we will present a „Best of" collection of the most read articles and the most popular podcasts of 2017.

While the Global Spine Congress is still half a year away, the early bird discount is still available until December 20, 2017. Make sure you register in time!

There is also a new Master Series Book available—Volume 9: Pediatric Spinal Deformity, which provides a concise yet comprehensive review of fundamental surgical and nonsurgical approaches, contemporary issues, and treatment obstacles.

Last but not least, we would like to share the stories of two of our community members. Alexander van der Horst, the only dedicated spine surgeon in Namibia, and Shahzad Shamim, one of the very few spine surgeons in Pakistan, give insights into their daily lives as spine surgeons.

We hope that you enjoy reading this AOSpine newsletter.

Yours sincerely,

Bryan Ashman
Davos Course Director
Chairperson AOSpine Education Commission (AOSEC)

Dan Riew – truly outstanding

He is a role model for surgeons all around the world with his dedication to patient care, research, and education. Besides being one of the most skilled cervical spine surgeons in the world, Dan Riew is a humble person who holds family values dear. In this interview, he shares his way from the heart to the spine, his accomplishments and where the future of cervical spine surgery lies.

You are coming to the end of term as AOSpine Chairperson. What do you consider your biggest achievements?
In my term I put the focus on two things: to centralize and revamp the research, and for the rest of AOSpine, I wanted to introduce a new approach for looking at things.

„I developed the TEAM approach – Transparency, Egalitarian, Accountable and Meritocratic. Everything about AOSpine now is based on metrics. If we give you money, we want to know how you used it, if you have a leadership position we want to see how you compare to others who have gone before you."

That's why I developed the TEAM approach – Transparency, Egalitarian, Accountable and Meritocratic. Everything about AOSpine now is based on metrics. If we give you money, we want to know how you used it, if you have a leadership position we want to see how you compare to others who have gone before you. Everything is accountable, so if you're elected as a leader in AOSpine, we take attendance and show you how many meetings you missed and if you miss too many you're asked to leave before your term is over. If you didn't do a good job previously, we had no way of knowing. Now we do. Every enterprise we go into, everything that involves money, we expect to see a report card.

Which accomplishment or achievement is most gratifying to you?
Being chair of the AOSpine International Board is one of the most gratifying things I've ever done. Being president of the Cervical Spine Research Society was an accomplishment I'm equally proud of. Beyond work, without a doubt, the thing I'm most proud of is being the father of three great kids. Thanks to my wife they are wonderful kids, who are very grounded in what is right and what is wrong. They're working hard and have been very successful in their academic careers. We have a 22-year-old, a 20-year-old and an 18-year-old. They're all out of the house now and at college.

Is this where you thought you'd end up, did you always want to be a doctor?
When I went to college, I thought I'd be a trial attorney. I took some courses in international relations in government but decided it was too subjective. I felt being a doctor would be more objective. It turns out that a lot of medicine is art, not science, but I still felt it was more objective than politics or law. At medical school, I thought I would become a cardiologist. After a couple of years, I switched to spine orthopedics. During this time, I trained with the world-renowned surgeon Henry Boleman, who had a focus on the cervical spine. When I finished my fellowship, Washington University in St. Louis was looking for someone who had trained with him. My two

partners, Keith Bridwell and Larry Lenke, wanted someone to take care of the cervical spine, so I fell into it accidentally and realized I really like it. The people who helped me on the path I'm on today and who have fostered my career are Henry Bohlman and John McCulloch, who taught me how to do microsurgery, and Richard Gelberman, who is the chair of Washington University.

How many surgeries have you performed so far, and what is your specialty?
I've done about 6,000 cases so far, on average I do approximately 250 cases in a year. About 40% of my practice is revision cases; some are awful deformities after say 10 or 12 operations with the neck bent over to one side, but we also do things like artificial disc replacements, laminoplasties, and minimally invasive procedures.

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What does the future of cervical spine surgery look like – what will be the next significant development in the field?
Over the next years, we'll have more robotic surgery, and have 3D printed individualized implants so instead of having generic manufactured implant we'll have custom made, printed off in the hospital and fit perfectly to patient's needs. We will have a 3D model of the spine so if patients have severe deformities – we do this already in our hospital – we can plan out the trajectory of screws and understand what the deformity looks like in 3D. It's an exciting field, and we're just starting to see the beginnings of a revolutionary way to treat the problems we didn't know how to tackle in the past.

Within the global spine community, you have the reputation of being an exceptional leader with very high ethical standards, who is very professional and always polite. Where have you acquired these skills?
All the mentors I've ever had have been very ethical and taught me right from wrong, starting with my parents. We're fortunate that in both AOSpine and most of the organizations related to academic spine societies the leaders have been ethical and honest people. That's an example that was set years ago, and it's easy to follow in the footsteps of those that have gone before you.

Also, you never seem to be stressed. What's the secret to your success?
Everyone has stress from time to time, but I thoroughly enjoy my job. I find surgery relaxing, but if I have a deadline for a paper or a chapter that's what really causes me stress.

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Outside the OR, now that we're empty nesters my wife and I enjoy spending time together to relax, taking very long walks, exercising together. We walk at least 4 miles a day and try to go away for weekends. She's my best friend, so we spend a lot of time together. We've been very blessed.

You were born in Korea then moved to the States. How has your cultural background influenced your career?
I was seven years old when I came from Korea, and the Asian culture is very different to the US culture in many ways. There's a lot of respect for elders, a feeling of obligation towards those who came before you and helped train you. You feel a sense of duty because you pay it forward – people who came before you mentor you and you're expected to do the same. Now the cultures have melded together in many ways, so the East and West share many of the same values. I see myself as a product of two entirely different cultures and feel at home in both.

What advice would you give to a young spine surgeon today?
These days surgeons are very pressed for time, so it's easy to forget the grounding on which everything is based. You have to put the patient first and think „how would I treat this patient if they were a family member or close personal friend". If you have that as a guiding principle, you'll do fine.

„You have to learn how to balance. Time management is not an easy thing to do, but if you succeed, in my opinion, being a surgeon is the best job in the world."

A few years ago, surgeons were mostly male and didn't have a hand in raising their children. But now whether you're a male or female surgeon, your first duty is to your kids, then to your spouse because otherwise no matter how successful you are in your career you won't be happy. You have to learn how to balance. Time management is not an easy thing to do, but if you succeed, in my opinion, being a surgeon is the best job in the world.

In your view, what makes AOSpine unique as an organization?
There's no other organization like AOSpine for bringing together surgeons from around the world. I knew a lot of surgeons around the world before joining, but the number I've met has increased tenfold by becoming a member of AOSpine.

It's a wonderful opportunity to learn from your colleagues from all over the world. Although all of us have some unique problems, there are also a lot of issues and challenges that we have in common. There are great advantages to sharing our experiences and approaches to these common issues.

Also, unlike most organizations where a tiny group of people selects leaders, AOSpine is much more democratic – we give the

opportunity to anybody to get into the International Board by becoming a member representative by being elected at the Members Assembly at the Global Spine Congress. We started this initiative because we felt it was important for every single member to have the opportunity to elect a person who could voice their thoughts, ideas, and desires. At AOSpine, if you get involved and demonstrate leadership ability, you can be rewarded by being elected to a regional or even the International Board. That makes our organization unique.

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BIOGRAPHY

K. Daniel Riew

Dan Riew is a Professor of Orthopedic Surgery at Columbia University Medical Center's College of Physicians and Surgeons in NYC. He is also the Co-Chief, Spine Division, Director of Cervical Spine Surgery and Co-Director of the Columbia Spine Fellowship. He joined the Columbia Faculty in July of 2015.

Dan Riew is recognized as one of the leading clinical and academic figures in the global spine community.

His practice is exclusively limited to the operative treatment of the cervical spine, the only such practice in the US and one of only a handful in the world. Few surgeons perform more cervical spine operations than Dan Riew, whose procedures range from minimally invasive microsurgical outpatient procedures, to the most complex "chin-on-chest" or "ear-on-shoulder" deformity corrections. He has a particular interest in cervical artificial disc replacements and other motion-sparing procedures such as laminoplasties.

As a global leader in the academic community, Dan Riew has served as the President of the Cervical Spine Research Society (CSRS) and is currently the Chairperson of the International Board of AOSpine. He has lectured extensively nationally and internationally, improving the treatment of these disorders in other portions of the globe. He has been a Visiting Professor, Key or Named Lecturer over 120 times in 22 countries. Over 75 experienced spine surgeons from all other the world have come to learn from him. He has published over 250 peer-reviewed papers, over 75 chapters and other manuscripts and edited several textbooks.

At NASS 2017, Dan Riew was awarded the prestigious Leon Wiltse Award for excellence in leadership and clinical research in spine care.

Davos Courses 2017 —the countdown is on

There are only a few days left to go before the spine surgeon community meets at the Davos Courses.

The educational format of the courses has changed completely for 2017. We have tailored it even more to suit the needs of the advanced and masters level participants.

We are delighted to see that our efforts are already bearing fruits, and to report that we have a sold-out course with nearly 150 participants. Find out the most updated information about the event in the final program http://www.aodavoscourses.org/files/davos_courses_final_program_2017_standard.pdf

„The educational format of the courses has changed completely for 2017. We have tailored it even more to suit the needs of the advanced and masters level participants."

This year, participants can choose one out of three educational courses in the morning: spinal trauma, degenerative diseases, and spinal deformity.

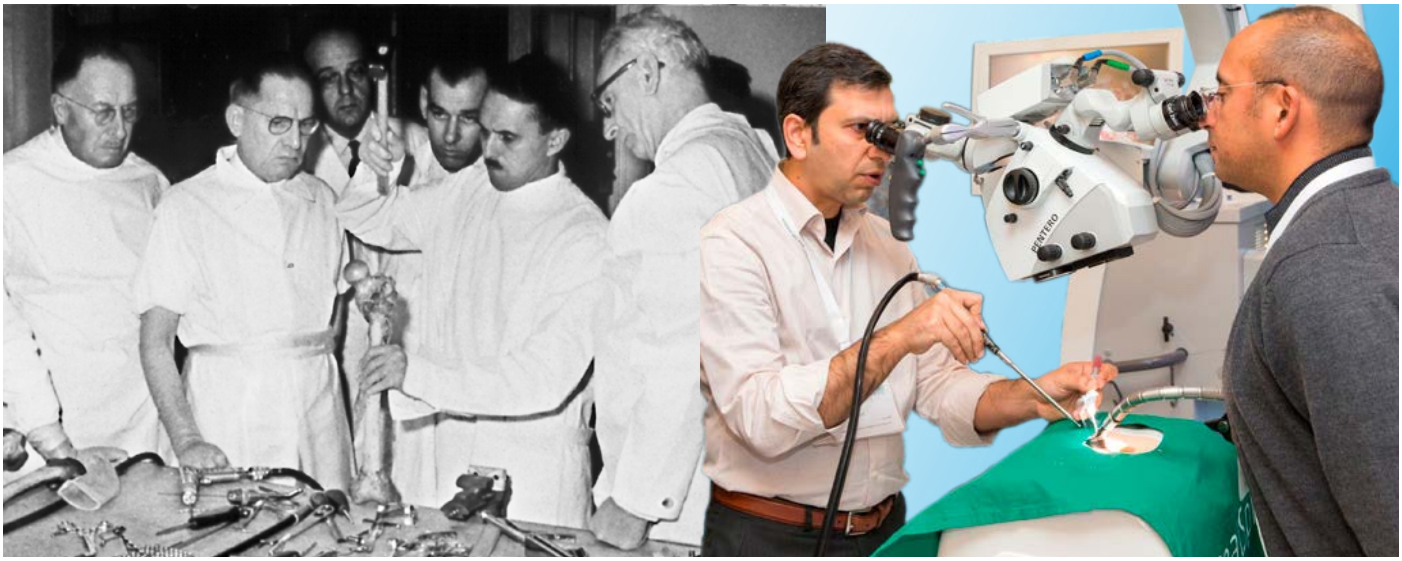
In the afternoon, participants have the opportunity to choose between practical MISS training on life-like simulators to learn minimally invasive microscopic lumbar surgery, or MISS hands-on training for percutaneous vertebroplasty and pedicle screw insertion.

Additionally, we will stage again last year's highly popular case discussions called „The Good, the Bad, the Ugly—a Case That Taught Me a Lesson" every afternoon.

At the Davos Courses, our carefully trained and highly skilled international group of faculty members will not only share their extensive knowledge and experiences with you, but also make sure that the participants have the best learning experience possible.

Last but not least, the informal environment at the Davos Courses also provides the perfect setting for networking.

Check out last year's picture gallery: http://www.aodavoscourses.org/Gallery/37/BEST OF AO DAVOS COURSES 2016.html



Davos Courses then (1960) and now..

Have a look at the first AO Davos Courses 1960–1963
http://www.aodavoscourses.org/Gallery/12/First AO Davos Courses 1960-1963.html

Image Gallery of the 2016 Davos Courses
http://www.aodavoscourses.org/Gallery/37/BEST OF AO DAVOS COURSES 2016.html

KFSCI Steering Committee, Milan, Italy, May 2017, top row, left to right: Mark Kotter, Shekar Kurpad, James Harrop, Brian Kwon. Front row: Bizhan Aarabi, Chairperson Michael Fehlings and Knowledge Forum Manager María Alvarez Sánchez. Robert Grossman missing from picture.

Knowledge Forum SCI—building on world-wide partnerships for global impact

The AOSpine Knowledge Forum Spinal Cord Injury (KFSCI) can pride itself upon a significant number of firsts, both in its studies and in their outcomes. KFSCI is also the only spinal cord injury group in the AO. Soon its accomplishments may extend to yet a new level, moving from knowledge creation to knowledge transfer, from dissemination to implementation.

The KFSCI story can be traced to the very beginning of the Knowledge Forums, but the history of their studies started long before. Thinking back, Chairperson Michael Fehlings remembers the creation of the AO Clinical Divisions, how the AOSpine Regions were set up; he vividly recalls the excitement of interdisciplinary broadening when he came onboard as a young neurosurgeon – all building up to the AOSpine Research structure, and the birth of the KFSCI.

„We had a vision … what followed meant stepping into an area completely novel to the AO: an international multi-center randomized controlled trial on a drug."

„By then we had established a significant research infrastructure in North America, and we had a vision of doing multi-centered clinical research studies." This is exactly what the KFSCI went on to do. Initially, the Knowledge Forum Trauma and SCI was launched as one study group. The groups are still working closely together, as Steering Committee member Bizhan Aarabi testifies, but a separation allowed to sharpen the focus. KF Trauma went on to develop Classifications, for KFSCI it meant building on an earlier study showing early surgical intervention had a positive impact on improving neurological outcomes and reducing complications for people with spinal cord injury.

Brave new undertakings

What followed meant stepping into an area completely novel to the AO: an international multi-center randomized controlled trial on a drug, complementing early surgical intervention, to improve outcomes in spinal cord injury. „Through systematic reviews, we decided to focus on Riluzole, a repurposing of an inexpensive drug, approved for reducing neurological deterioration in Amyotrophic Lateral Sclerosis, ALS", Fehlings explains.

At the time, AOSpine started encouraging partnering with other organizations. KFSCI quickly established strategic partnerships (*) while making use of the strengths of AOSpine North America. The clinical trial for Riluzole showed promising results, and in collaboration with other groups, the KFSCI launched the RISCIS trial. „This would have been a major undertaking by any measure.

„The guidelines findings will make life essentially easier for spine surgeons!" – „It is really exciting to think that the work we are doing could have a global impact!"

KFor the AO, it was the first ever large multi-center randomized controlled trial", Fehlings is proud

to say. Currently, the study involves 20 sites, a hundred enrolled patients, and the plan is to reach the enrollment target in three years. Aarabi is excited the outcomes will have direct implications on patient care, if with the effect from the medication you do not have to wait months to see clinical evidence for recovery of functions. „Ours is a rigorous but a very specialized group. Spinal cord injury is rare, but the chances of recovery really should encourage centers to participate in studies."

Another big area for KFSCI is the development of clinical practice guidelines and knowledge translation. „We felt that there were big knowledge gaps around the management of traumatic and non-traumatic SCIs, a condition called degenerative cervical myelopathy", Fehlings explains. A several-year undertaking of the KFSCI Guidelines Group with a broad range of partnerships (**) recently published results in an open access Focus Issue in the Global Spine Journal. The guideline indicates that patients with acute spinal cord injury should undergo early surgical intervention when medically feasible, and that surgery is the treatment of choice for patients with a more severe myelopathy. „But there is still some uncertainty how best to manage patients with mild myelopathy. So, we also defined critical knowledge gaps that will represent areas of research in the future."

Science in motion

If Bizhan Aarabi is right, the guidelines findings will make life essentially easier for spine surgeons. The KFSCI is keen to move forward in knowledge translation and disseminate the new information to everyone involved in the care of people with cervical myelopathy and spinal cord injury. To alter care, the KFSCI wants to „test drive" the guidelines, and Fehlings would like to see enhanced interaction between education, community development and the area of new technology development in the AO. „It all fits wonderfully to the AO principles as part of the knowledge to action cycle: the community defines the key questions, the researchers come up with solutions, you distill and synthesize the knowledge, disseminate it to the community, and so on."

„Through our work, I'd like to see changes in clinical practice with improved clinical outcomes, potentially changes in society with better access to care."

Overall, Fehlings sees globalization of research as an extremely positive opportunity. It can widen perspectives on certain conditions and set the stage for impact on a world-wide level. „It is really exciting to think that the work we are doing could have a global impact! We could tailor the guidelines to work in countries with advanced infrastructure, but also in emerging economies where the infrastructure is more challenged."

Jefferson Wilson also commends the international presence and perspective in the AO, which allows for a more global picture of the actual disease, injury, or clinical epidemiology. „There is an enthusiasm in the AO to get the job done, to make good studies happen, and put personal glory aside", Wilson continues. He is one of the selected young surgeons to have been invited as associate members into the Knowledge Forums. So far, he is the only associate in KFCSCI, but he hopes to see continued collaborations from participants in all stages of their career.

New generations stepping in

The past two years Wilson has participated in regular discussions with great knowledge experts in the KFSCI, fulfilling his goal of becoming a surgeon scientist in spinal trauma. „It's really exciting, this is such a rich collaborative environment! I am trying to gain as much wisdom from this group as I possibly can." Wilson points out that the spinal cord injury patient population is getting bigger and more heterogeneous: the biggest groups affected are no longer young people from motor vehicle accidents or sports injuries, but elderly people with incomplete spinal cord injuries from falls. „Besides looking at changing epidemiology we should derive preventative strategies and specific treatment strategies for the new populations", Wilson thinks. „I've already reached some of my goals. I suppose I'll spend the rest of my career trying to answer these questions."

Discoveries and break-throughs are hard to come across in complex spinal cord injury. But with time, the KFSCI trusts they can point to a body of research that has made a difference for human beings with various spinal conditions, including spine trauma and spinal cord injury. „I'd like to see changes in clinical practice with improved clinical outcomes, potentially changes in society with better access to care", Fehlings envisions, always thinking of the generations to come. „I'd also like to look at the number of people we've trained or mentored as fellows, as young faculty, and associates, and to see succession that occurs where young leaders are being developed."

Read more on the Guidelines at https://aospine.aofoundation.org/Structure/pages/newsdetail.aspx?newslist=https%3a%2f%2faospine.aofoundation.org%2fnews%2fLists%2fNews+Common&newsid=1640

Access the Guidelines here http://journals.sagepub.com/toc/gsja/7/3_suppl

For more information KFSCI see https://aospine.aofoundation.org/Structure/research/KnowledgeForum/kf-sci/Pages/kf-sci.aspx

For more information on RISCIS see https://clinicaltrials.gov/ct2/show/NCT01597518

Quick facts:

- „Burning issues in the treatment of spinal cord injuries–how can AOSpine contribute to improve patients' lives?" A workshop attended by 300 people at the Global Spine Congress 2011, Barcelona, confirmed interest in topic
- KF Trauma and SCI launched in 2011, co-chaired by Michael Fehlings and Alexander Vaccaro
- KFSCI starts operating as an independent study group from 2015
- Chairperson Michael Fehlings leads a Steering Committee of 6 members; serves as a member of the AOSpine International Research Commission
- Associate member structure in development, will provide wider regional representation
- Published 22 peer-reviewed journal articles and 18 presentations
- AOSpine Master Series, Volume 7, 2015
- AOSpine Master Series, Volume 8, 2017

This article is part of a series on the AOSpine Knowledge Forums, running since AOSpine Newsletter Issue 11. Upcoming issues will showcase more KFs and their most important study projects.

Study highlights:

- RISCIS (*) – ongoing AOSpine International study in partnership with AOSpine North America, the North American Clinical Trials Network (NACTN), Christopher and Dana Reeves Foundation, US Department of Defense, AOSpine International and North America, Ontario Neurotrauma Foundation, Rick Hansen Institute
- SCI Database Merge – merging two existing databases NACTN and STASCIS
- SCI Guidelines (**) – developed by KFSCI in partnership with AOSpine North America, the Cervical Spine Research Society (CSRS), the Joint Section Neuro-Trauma and Critical Care from the American Association of Neurological Surgeons (AANS) and the Congress of Neurological Surgeons, AOSpine International and North America, NACTN, Christopher and Dana Reeve Foundation; the Guidelines Group brought together representatives from around the word, nurses, orthopedic surgeons, ICU and Emergency Room doctors, rehabilitation specialists, physiotherapists, people with spinal cord injury and NGOs representing them, pre-clinical and clinical epidemiology scientist

Highlights

AOSpine Knowledge Forum Deformity and panel members at the final meeting of the ASD Consensus study in Kuala Lumpur, Malaysia, July 2015.

Defining appropriate treatment and outcomes for spinal deformity patients

The AOSpine Knowledge Forum Deformity and AOSpine community, used a Delphi process to define consensus on optimal treatment and core outcomes sets for both adolescent and adult spinal deformity patients. The findings are published in the European Spine Journal and the Acta Orthopedica and offer the latest up-to-date knowledge.

„The studies provide the AOSpine community and the spine deformity patient with new information to guide an evidence-based approach to optimal care“, study investigator Dr. Sigurd Berven says.

The Delphi process is a methodology designed to establish consensus whereby the current opinions of a panel of experts are put forward in an iterative and anonymous process. Knowledge Forum Deformity Chairperson Prof. Marinus de Kleuver finds it extremely useful: „There is so much information out there these days. Consensus papers offer an extra layer of empirical opinion-leader-knowledge to literature reviews, which are, by definition, outdated.“

De Kleuver reckons expert knowledge is years ahead of the newest papers published, because data acquisition is done years earlier. „The world keeps moving on! There is a huge gap between what is being published and what is at the forefront of innovation and new techniques.“ This gap can be bridged with consensus papers, literature reviews supplemented by a Delphi expert panel process. „Ultimately, you are also validating the large multi-center studies, where work takes years“, de Kleuver adds.

AOSpine network is instrumental

With the involvement of approximately 50 members from the AOSpine community, representing close to 30 countries from around the world, we have learned that there is significant variability in the management of spinal deformity between centers around the world, even within centers, Berven says, and gives credit to the worldwide community of AOSpine physicians. „They are a valuable resource for developing an evidence-based approach to optimal care of deformity. This is unique to AO, that you can leverage the international network of so many experts, and produce a proper global representation.“

The studies identified several areas of variability in care, and through the Delphi process and consensus opinion, the panel could determine specific management strategies that were appropriate or inappropriate. This information is useful in guiding an evidence-based approach to care across the continuum, from preoperative preparation to surgery, to intraoperative standardization of techniques, and to postoperative care. The results also reveal the needs for a global implementation and remaining gaps. „There are still several areas in which we do not have enough evidence to make consensus recommendations on what is most appropriate or optimal care“, Berven concludes. „We need further research regarding strategies for preoperative optimization, intraoperative techniques, and postoperative care, to better define specific approaches that are optimal for the individual patient, and specific scenarios of care.“

Importantly, the studies allow people to speak a common language, making comparative and collaborative research possible. „All these initiatives are aimed at creating a framework to communicate across different parties“, de Kleuver explains. „There is a myriad of outcome studies and outcome instruments out there, and everybody uses different instruments to measure their quality of care. We help bring more rationale to the options that are available.“

For the full articles, follow links below:

1. Berven SH, Kamper SJ, Germscheid NM, Dahl B, Shaffrey CI, Lenke LG, Lewis SJ, Cheung KM, Alanay A, Ito M, Polly DW, Qiu Y, De Kleuver M, AOSpine Knowledge Forum Deformity. An international consensus on the appropriate evaluation and treatment for adults with spinal deformity. Eur Spine J, 2017.
2. De Kleuver M, Faraj S, Holewijn R, Germscheid N, Adobor R, Andersen M, Tropp H, Dahl B, Keskinen H, Olai A, Polly D, Hooff MV, Haanstra T. Defining a core outcome set for adolescent and young adult patients with a spinal deformity. A collaborative effort for the Nordic Spine Surgery Registries. Acta Orthopaedica [Epub ahead of print] 15 Sep 2017.
3. Faraj SSA, Van Hooff ML, Holewijn RM, Polly DW, Jr., Haanstra TM, De Kleuver M. Measuring outcomes in adult spinal deformity surgery: a systematic review to identify current strengths, weaknesses and gaps in patient-reported outcome measures. Eur Spine J 26(8): 2084-2093, 2017.
4. De Kleuver M, Lewis SJ, Germscheid NM, Kamper SJ, Alanay A, Berven SH, Cheung KM, Ito M, Lenke LG, Polly DW, Qiu Y, Van Tulder M, Shaffrey C. Optimal surgical care for adolescent idiopathic scoliosis: an international consensus. Eur Spine J 23(12): 2603-2618, 2014.

The authors are grateful to the many AOSpine surgeons and collaborators who participated in these studies:

Adult Spinal Deformity (ASD) Consensus (see above Berven et al. ESJ 2017)

Richard Emery, Mater Hospital | **Brian Hsu**, North Shore Institute of Spinal Disorders | **Dianming Jiang**, The First Affiliated Hospital of Chongqing Medical University |
Xie En, Hong Hui Hospital, Xi'an Jiaotong University College of Medicine | **Arvind Bhave**, Deenanath Mangeshkar Hospital | **Ajoy Prasad Shetty**, Ganga Hospital | **Suhail Afzal**, Police Hospital | **Saumyajit Basu**, Park Clinic | **Vishal Moudgil**, Pims Medical College | **Bhavuk Garg**, All India Institute of Medical Sciences | **Yoshiharu Kawaguch**i, Toyama University | **Tomoaki Toyone**, Teikyo University Mizonokuchi Hospital | **Takashi Kaito**, Osaka University Graduate School of Medicine | **Chung Chek Wong**, Sarawaka General Hospital | **John Chen**, Singapore General Hospital | **Josef Groh**s, Medical University Vienna | **Christoph Mehren**, Schön Klinik München Harlaching | **Dimos Bouramas**, Athens Bioclinic | **Massimo Balsano**, Regional Spinal Department | **Pedro Berjano**, IRCCS Istituto Ortopedico Galeazzi | **Andrea Piazzolla**, AOU Consorziale Policlinico Di Bari | **Cajetan Nwadinigwe**, National Orthopaedic Hospital | **Traian Ursu**, Foisor Orthopedics Hospital | **Salvador Fuster**, Hospital clinic-university of Barcelona | **Cumhur Oner**, UMC Utrecht | **Ufuk Aydinli**, Medicabil Private Hospital | **Alexandre Cristante**, IOT HC FMUSP | **Emiliano Vialle**, Cajuru Hospital | **Mauricio Campos Dazian**o, Pontificia Universidad Catholica de Chile | **Nestor Adolfo Taboada Taboada**, Clinica Portoazul | **Herman Michael Dittmar**, Hospital Puerta de Hierro | **Mohamed Maziad**, Faculty of Medicine AIn Shams University | **Hany Soliman**, Al Azhar University | **Sherif Elghamry**, Teachers Hospital | **Amer Aziz**, Lahore Medical and Dental College | **Venugopal Menon**, Khoula Hospital, Mina al Fahal | **Vincent Arlet**, University of Pennsylvania | **John France**, West Virginia University | **Isador Lieberman**, Texas Back Institute | **Munish Gupta**, University of California at Davis | **Jeffrey Carlson**, Orthopaedic and Spine Center | **Jens-Peter Witt**, University of Colorado Hospital | **Dean Chou**, University of California San Francisco | **Ronald Lehman**, Washington University School of Medicine | **Justin Smith**, University of Virginia | **Jonathan Sembrano**, University of Minnesota; Minneapolis VA Health Care System

Adolescent Idiopathic Scoliosis (AIS) Consensus (see above De Kleuver et al. ESJ 2014)

Ufuk Aydinli, Medicabil Hospital, Bursa | **Amer Aziz**, Ghurki Trust Teaching Hospital, Lahore | **Saumyajit Basu**, Park Clinic, Kolkata | **Ernesto Bersusky**, Garrahan Pediatric Hospital, Buenos Aires | **Benny Dahl**, Rigshospitalet, University Hospital of Copenhagen | **Evan Davies**, University Hospital Southampton | **Maximo-Alberto Diez Ulloa**, Universitary Hospitalary Complex Santiago de Compostela | **Ignacio Dockendorff**, Clínica Alemana de Santiago | **Mohammad El-Sharkawi**, Assiut University Medical School | **Andre Luis Fernandes Andujar**, Hospital Infantil Joana de Gusmão, Florianopolis | **Brian Freeman**, The University of Adelaide | **Bhavuk Garg**, All India Institute of Medical Sciences, Delhi | **Wilmer Godoy**, Roosevelt Institute, Bogota | **Poornanand Goru**, University Hospital of Wales, Cardiff | **Tiziana Greggi**, Rizzoli Orthopaedic Institute, Bologna | **Michael Grevitt**, Center for Spinal Studies, Queens Medical Center, Nottingham | **Yong Hai**, Beijing Chaoyang Hospital, Capital Medical University of China | **Carol-Claudius Hasler**, University Children's Hospital, Basel | **Philip Horsting**, Sint Maartenskliniek, Nijmegen | **Kannan Kailash**, Sri Ramachandra University | **Khalil Kharrat**, Hotel-Dieu Hospital | **Claudio Lamartina**, Istituto Ortopedico Galeazzi, Milan | **Isador Lieberman**, Texas Back Institute | **Venugopal Menon**, Khoula Hospital, Muscat, Sultanate of Oman | **Roman Nowak**, Orthopaedic Clinic of Silesian Medical University | **Samuel Pantoja**, Roberto de Rio Children's Hospital - Clinica Las Condes Private Hospital | **Rolf Riise**, Oslo University Hospital | **Saeid Safaei**, Milad Hospital / AZAD University | **Dietrich Schlenzka**, ORTON Orthopaedic Hospital, Helsinki | **Alpaslan Senkoylu**, Gazi University, Ankara | **Masood Shafafy**, Center for Spinal Studies, Queens Medical Center, Nottingham | **Jianxiong Shen**, Peking Union Medical College Hospital | **John Smith**, University of Utah | **Shanmuganathan Rajasekaran**, Ganga Medical Centre & Hospitals Ltd. | **Daisuke Sakai**, Tokai University School of Medicine | **Paul Thorpe**, Somerset Spinal Surgery Service, Taunton | **Warat Tassanawipas**, Phramongkuthklao Army Hospital, Bangkok | **Traian Ursu**, University Hospital Foisor, Bucharest | **Seyed Hossein Vahid Tari**, Tehran University of Medical Science | **Emiliano Vialle**, Cajuru Hospital, Curitiba | **Chung Chek Wong**, Sarawak General Hospital

Global Spine Journal „Best of 2017" articles and podcast

Global Spine Journal's has had quite a successful year. From switching publishers, to receiving a record number of submissions, and publishing two Special Issues, GSJ is continuing to grow and flourish. As the year draws to a close, we would like to recognize some of the "Best of" from this year.

These are top Articles and Podcasts that were published in 2017. As a reminder, GSJ is an Open Access journal, which means that all of our content is free for anyone to read online at any time, without having to pay or log-in. All of our articles and issues can be found online at: journals.sagepub.com.

The most listened to podcast this year from our regular issues was "Thirty-Day Readmission Risk Factors Following Single-Level Transforaminal Lumbar Interbody Fusion (TLIF) for 4992 Patients from the ACS-NSQUIP Database".
You can listen to this podcast here: hwcdn.libsyn.com

The most listened to podcast from our special issues was "Change in Functional Impairment, Disability, and Quality of Life Following Operative Treatment for Degenerative Cervical Myelopathy: A Systematic Review and Meta-Analysis". You can listen to this podcast here: hwcdn.libsyn.com

GSJ has a regular podcast series usually published as companions to each issue. These podcasts feature an interview with an Editor-in-Chief and the author of a selected article.

The Top Two Downloaded and Accessed Regular Issue articles published in 2017 were:

1. "Spine Stereotactic Body Radiotherapy: Indications, Outcomes, and Points of Caution": journals.sagepub.com
2. "Spinal Compression Fracture Management: A Review of Current Treatment Strategies and Possible Future Avenues": journals.sagepub.com

The Top Downloaded and Accessed Article from the DCM/SCI Special Issue was "Clinical Practice Guidelines for the Management of Degenerative Cervical Myelopathy and Traumatic Spinal Cord Injury" which you can read here: journals.sagepub.com.

The Top Downloaded and Accessed Article from the Cervical Special Issue was "Esophageal Perforation Following Anterior Cervical Spine Surgery: Case Report and Review of the Literature": journals.sagepub.com

The Top Editor's Choice Articles for 2017:

1. "Beyond Pelvic Incidence–Lumbar Lordosis Mismatch: The Importance of Assessing the Entire Spine to Achieve Global Sagittal Alignment": journals.sagepub.com
2. "Why Does C5 Palsy Occur After Prophylactic Bilateral C4-5 Foraminotomy in Open-Door Cervical Laminoplasty? A Risk Factor Analysis": journals.sagepub.com
3. "Analysis of the Literature on Cervical Spine Fractures in Ankylosing Spinal Disorders": journals.sagepub.com

We also want to remind you that GSJ awards two Best Paper Awards each year. They are awarded for the previous year at Global Spine Congress every year. Our Best Papers for 2017 will be presented and awarded at GSC in Singapore in May.

The Best Papers are chosen by the GSJ Editorial Board. The criteria for this award are as follows- the article has to be Original Research and it has to be published during the year of consideration. The board will then vote on articles based on the articles with the most downloads/access and if there are any citations.

We would like to thank all of our amazing authors, readers and reviewers for making 2017 the best year yet for GSJ. We are excited to see where 2019 brings us!

Global Spine Congress Singapore – Check out the preliminary program and register now to receive the early bird discount!

Join us at the 7th Annual Global Spine Congress (GSC) in Singapore from 2–5 May 2018.

Access the preliminary program to find out more details. The early bird discount is still available until December 20, 2017.

Make sure you register on time on www.gsc2018.org! AOSpine members receive a USD 150 discount on the registration fee.

All accepted abstracts will be published in the special online issue of the Global Spine Journal dedicated to the Global Spine Congress in spring 2018.

We look forward to welcoming you in Singapore!

Spine surgery in Namibia

What is like to be the only dedicated spine surgeon in a country of more than 2 million inhabitants? Alexander van der Horst, spine surgeon in Windhoek, Namibia, tells his story.

Why did you choose to do spine surgery and where did you do your training?

The spine is an ever-changing and exciting field of surgery. One needs to combine a good history and clinical examination with fine motor skills in the operating theater and be able to handle very stressful episodes during surgery.

I completed my training as an orthopedic surgeon at the University of Cape Town in South Africa and a one-year AOSpine Fellowship in a high-volume spine center under the guidance of Professor Robert Dunn at the Groote Schuur Hospital in Cape Town.

How do you make sure that you stay up-to-date?

I attend congresses and workshops and read the latest journals. I also organize trauma/spine training courses all over Namibia and am regularly invited as an AOSpine faculty member across Southern Africa. In the last few years, I have also been invited to Europe as a guest speaker. All of these activities force me to read and stay up-to-date.

Who has inspired and mentored you?

The field of spinal surgery inspires me. What I know about spinal surgery was initially taught to me by Professor Dunn during my AOSpine Fellowship. We were trained to be safe and "evidence-based," conservative spinal surgeons. During my fellowship, I was exposed to various other mentors from neurosurgical and orthopedic backgrounds. Our weekly academic meetings included spine surgeons from the neighboring University of Stellenbosch. All of this contributed to a balanced approach to spine pathology.

Can you share a bit about spine surgery in Namibia?

I moved to Namibia in 2013, to take on the post of Senior Lecturer at the new Medical School at the University of Namibia. With this, I started the Division of Orthopedic Surgery and wrote the fourth-year student curriculum. I also initiated a referral system and regular spine service for the government hospitals in Namibia. This is functioning smoothly, where 35-50 patients are seen weekly at an outpatient clinic, and we have a full theatre list each week.

Sweden contributed a spinal rehabilitation clinic, Spinalis Unit, to our hospital in 2013. On this front, I am also actively involved in academic ward rounds and teaching. I also run a limited private spine practice in Windhoek. For the last three years, the Head of the Department of Neurosurgery at Stellenbosch University, Professor AJ Vlok, who is also a fellowship-trained spinal surgeon, has offered an outreach service to Namibia to address more complex cranial pathology, and to train local doctors and students in neurosurgery.

Please describe your typical working day?

Most days, I move between the government and state hospitals for X-ray meetings or ward rounds. I then meet students for a quick tutorial and prepare a lecture in my office. After lunch, I might go to my private practice for surgery or consultations. Emergency spine cases I tend to do at night or on weekends, as my week is always very full.

What are your most frequent operations?

On a weekly basis, I see spinal trauma due to our high motor vehicle accident rate. Trauma fixation of the spine is the procedure I perform most. In my private practice, the scope of work I perform is similar to Europe (cervical and lumbar degenerative surgery). In the government hospital, I tend to deal with spinal infections due to tuberculosis and tumors of the spine and spinal cord.

How did you get involved in teaching spine surgery?

I love to teach. Ironically, I was a terrible student and became bored quickly, so I try to be enthusiastic, to make the topic appealing so that it is remembered. Because I am the only dedicated spine surgeon in Namibia, the onus is on me to teach at the local level. I have been asked to teach all over Southern Africa, and I visit 2-3 neighboring countries each year to teach as part of a team on spinal surgery. Naturally, being employed by the university also enables me to be involved spine and orthopedic teaching.

How does spine surgery in Namibia compare to the rest of Africa?

I have some experience in the neighboring African countries, and they are similar to Namibia in that the capitals generally provide good to excellent spinal care, but as soon as you move a few kilometers away from the capital, there is almost no spinal care. It is my experience over the last four years that the countries that have a dedicated, fellowship-trained

spinal surgeon have been able to change the course of spinal surgery in that country.

What are the toughest challenges in your job?

Working in the government/state sector with all of its challenges and the massive workload is tough. Another challenge is not having an equally qualified surgeon to work with in the government hospitals.

What are the differences between private practice and public health care in Namibia?

There are two opposite poles in Namibia, which is similar to South Africa. In the private sector, those that have insurance or can afford the care have access to the latest in spinal care. The private sector is very well funded, has European class equipment, but serves the minority.

The opposite pole is the government hospitals. They are on a very tight budget, the facilities are old, and the theatres are often dilapidated. The theatre beds don't function properly, there is inadequate lighting, the air conditioning does not work at times, and there is a limited and unpredictable supply of spinal implants to perform complex spinal surgery.

What do you consider the most significant challenges for spine surgeons in Southern Africa in general?

The lack of equipment and facilities, including a theatre bed for spine surgery, good lighting, microscopes, and high-care beds for the post-operative period is a huge challenge. The price of spinal implants also makes good spine care very difficult in a resource-limited country.

Where do you see the biggest opportunities for spine surgeons in Namibia, and Southern Africa in general?

I believe that dedicated, "fellowship trained" spine surgeons are the way to go to provide a relatively high level of care. Once established, these individuals can help to motivate an upgrade of the facilities to meet the needs of the population. Unfortunately, the standard spinal training that residents receive in South Africa in neuro and orthopedic surgery is not sufficient to deal with the scope of spine pathology that one sees these days, so a fellowship is of utmost importance, especially in our new medico-legal climate of litigation. Pathology wise, dealing with the massive load of tuberculosis of the spine, spinal tumors, and scoliosis is the biggest burden for spine care in Africa.

What advice would you give to a young surgeon in your region?

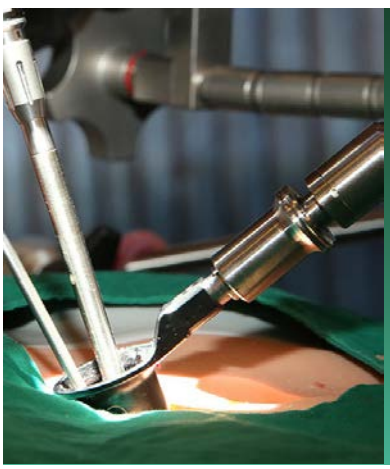
Complete your orthopedic or neurosurgery training and apply for a minimum one-year, accredited spinal fellowship at a high-volume center with hands-on experience. Accept nothing less! You will come face-to-face with the rigors and realities of working in a high demand center as a young doctor. This experience can be found in most of Southern Africa, where good and experienced hands are needed.

What does being a member of AOSpine mean to you, and how has AOSpine influenced your career?

It is probably the best forum to interact with other spinal surgeons around the world. The teaching offered on e-formats is extremely helpful, and the training courses are numerous across the globe. It is a truly global community of like-minded surgeons.

Alexander van der Horst BSc, BMedSc (Hons), MB, ChB is a South African-German Consultant Spine and Orthopaedic Surgeon based at the Central/Katutura Hospital Complex in Windhoek, Namibia.

For visiting opportunities or short term fellowship/observerships please e-mail me at gospine.avdh@gmail.com.



Spine surgery in Pakistan

What is it like to work as a spine surgeon in Pakistan? Shahzad Shamim tells his story.

Why did you choose to do spine surgery?

What attracted me to spine surgery in the first place was the magnitude of the problem in our part of the world, particularly in relation to tuberculosis. More recently, my interest has further developed, due to the constant advances in surgical technology and the growing treatment options available for spine surgeons.

Where did you do your training?

Most of my training was at the Aga Khan University Hospital in Karachi, arguably Pakistan's top Neurosurgery center. I also did a fellowship in complex spine at

the National Hospital for Neurology and Neurosurgery, London, one of the world's oldest and most reputed Neurosurgery centers.

How do you train today and make sure you stay up-to-date?

The Internet is most definitely a great equalizer that allows anybody from any part of the world to stay abreast of recent advances, by only requiring a high-speed WiFi connection. However, for true confidence ahead of major surgeries, there is no substitute for hands-on workshops with subject specialists available to guide you.

Who inspires you, or has inspired you? Who is your mentor?

My inspiration has been my father. He was an academic surgeon himself. My mentor has been Professor Ather Enam. He is the person who helped me put my first screw in the spine of a living human.

Can you share a bit in general about spine surgery in Pakistan?

Spine surgery remains underdeveloped in most parts of the country. Moreover, the standards of treatment vary greatly from center to center. AOSpine is doing a fantastic job to standardize spine care in the country. Just recently, we completed a yearlong tour of different cities, to exchange ideas, and discuss principles of spine surgery.

What does your typical workday look like?

I start at seven and usually have a couple of meetings lined up for every morning, as the Chief of Services for Neurology, Neurosurgery, and Psychiatry. I do three sessions of clinic a week, and four sessions of operating, trying my best to keep the weekend free for my family.

What are your most frequent operations?

Degenerative spine, including simple decompressions and disc herniations, with one or two fixations a week. The spine service load is mixed with an equally diverse cranial workload.

What made you become involved in teaching spine surgery?

In a country marred by embarrassingly low numbers of surgeons for a massive population, it is every physician's moral responsibility to train more and more people. The challenge is to train them well.

What are the biggest challenges in your job?

Finding the right balance between patient care, teaching, research, administration, and leaving enough time to enjoy life; to make today better than yesterday, and tomorrow better than today.

What are the differences between private practice and public health care in Pakistan?

With growing cost of healthcare, the public hospitals are lagging behind when it comes to high-quality care. Few of our public hospitals have developed public-private partnerships with philanthropists and organizations willing to support healthcare, but in the long run, that is perhaps not a sustainable solution.

What do you consider the biggest challenges for spine surgeons in Pakistan?

The first is to be able to stay abreast with the rapidly evolving spine care around the world, and to keep state-of-the-art services affordable for our people. The second, and more difficult one, is for our spine surgeons to monitor their outcomes, and share their results in an open, transparent, and mutually beneficial academic environment.

Where do you see the biggest opportunities for spine surgeons in Karachi, and in Pakistan in general?

Spine surgeons are still a rare breed. This is the right time to develop collaborations between centers for patient care, training, and research, before there are too many of us and it becomes impossible to bring them onto one forum. Moreover, this is also the right time to develop sub-specialty programs within the city and develop systems for timely referrals.

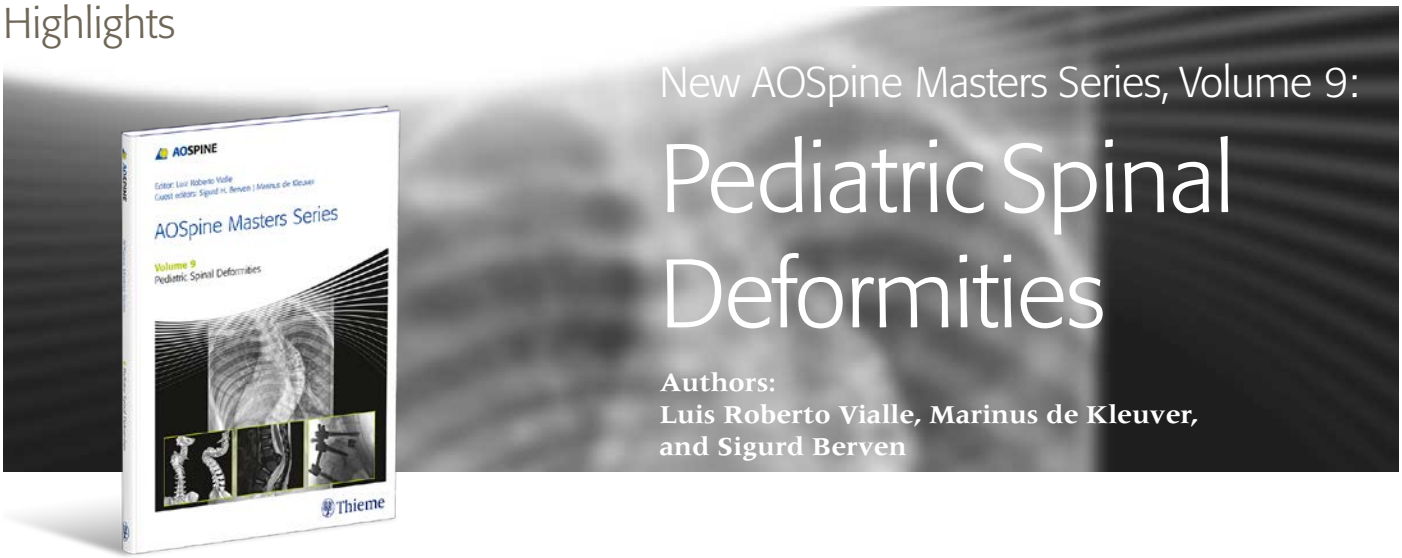
What advice would you give to a young surgeon?

Never stop learning.

What does being a member of AOSpine mean to you, how has AOSpine influenced your career and why would you recommend someone to become an AOSpine Member?

AOSpine has given me a sense of belonging to something bigger. The opportunity to learn from others has had a phenomenal influence on my career, as well as on my life. AOSpine offers an unparalleled opportunity to learn from spine surgeons from around the world. The online material is just one perk of the membership. The social contact with people from all over the world, at least to me, is the most gratifying membership perk.

Shahzad Shamim is a Consultant Neurosurgeon from the Aga Kahn University Hospital in Karachi, Pakistan



New AOSpine Masters Series, Volume 9:

Pediatric Spinal Deformities

Authors:
Luis Roberto Vialle, Marinus de Kleuver, and Sigurd Berven

An estimated 9 million children every year are affected by pediatric spinal deformities, encompassing a broad spectrum of pathologies. New classification systems, innovative imaging modalities, and advances in surgical techniques have contributed to a continually evolving, evidence-based treatment paradigm. Patient variables such as the age of onset, severity, course of deformity progression, as well as the availability of technology pose individualized challenges.

AOSpine Masters Series, Volume 9: Pediatric Spinal Deformity is a concise yet comprehensive review of fundamental surgical and nonsurgical approaches, contemporary issues, and treatment obstacles. Internationally renowned spine surgeons Luis Roberto Vialle, Marinus de Kleuver, and Sigurd Berven and a cadre of esteemed contributors deliver a state-of-the-art reference on deformities of the pediatric spine. From early childhood to adolescent spine disorders, 17 richly illustrated chapters cover diagnosis, preoperative evaluation, imaging, spine surgery interventions, non-fusion procedures, and long-term management.

Author Luiz Vialle shares:

„This Master Series Vol 9 is an outstanding issue, thanks to the commitment of the Guest Editors, Marinus and Sig. The selected authors nicely translated to the book their recognized experience on this field. A state-of-art volume that needs to be in every deformity surgeon shelf. AOSpine must be proud of presenting such pearl to the members community."

Guest editor Sigurd H. Berven comments:

„Deformity in the pediatric spine is a common and clinically important pathology. Understanding the natural history of distinct deformity types, and optimal care regarding evaluation of the patient, non-operative care, and surgical approaches to care is essential to guide an evidence-based approach to care, and to reduce variability in approaches to care between providers within and between countries around the world. Our knowledge of pediatric deformity continues to evolve, and this textbook provides an up to date overview of our present understanding of optimal care. The textbook is a dynamic reference resource, and provides the most up to date information on current knowledge by experts from around the globe. The book is organized into 3 major sections: Scoliosis, Spondylolisthesis and kyphotic deformity, and a final section on global health, safety, and outcomes measurement. The book will be a useful resource for students of spinal deformity at every level of training."

Key Highlights

- Overviews on the classification and natural history of early onset scoliosis and adolescent idiopathic scoliosis, with subsequent chapters covering non-operative management and contemporary surgical techniques
- Evidence-based discussion of long-term surgical care outcomes, indications for revision surgery, and strategies for achieving optimal results
- Management of congenital and developmental kyphosis, lordosis, syndromic conditions, and low and high grade spondylolisthesis
- Clinical pearls on spine surgery in the developing world, safety issues and complications, and the importance of developing outcome metrics

The AOSpine Masters series, a copublication of Thieme and the AOSpine Foundation, addresses current clinical issues featuring international masters sharing their expertise in the core areas in the field. The goal of the series is to contribute to an evolving, dynamic model of evidence-based approach to spine care.

This outstanding textbook is a must have for spine surgeons, in particular those who specialize in treating childhood spine disorders. Orthopaedic and neurosurgery residents, as well as veteran surgeons with extensive knowledge will find this an indispensable tool for daily practice.

Order your copy here:
aospine.aofoundation.org
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Illustrations: 155
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US Dollar Price: $119.99

AOSpine members opinion matter!

Alaa Ahmad, the AOSpine Member Representative, representing the voice of all AOSpine Members globally, wants your opinion.

Do you think the teaching activities in minimal invasive spinal surgery (MISS) AOSpine are:

– 1 –
Adequate

– 2 –
More than adequate

– 3 –
Less than adequate

– 4 –
Not needed for the time beeing

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