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AO SPINE

Newsletter Issue 23

November 2019

Welcome

Bryan Ashman
AO Spine Education Chairperson

Editorial

Dear Readers
With only a little over a month to go until the AO Davos Courses, it is my pleasure to reach out to you through our newsletter.

It has been a very busy summer for AO Spine, and we have been working on some very exciting projects over the last few months. Most evidently, you may have noticed that AO Spine has a completely new look. This is a significant milestone in AO's digital transformation and evolution, as we seek to ensure we remain relevant to younger generations of surgeons across the world.

We are delighted to feature three amazing women in this newsletter. With female spine surgeons making up as little as 5 percent of our membership, the gender gap is a real and pressing issue. AO Spine included an event on gender diversity at the Global Spine Congress 2019. Here, we continue the conversation by asking three leading surgeons to share their experiences. It's time to shine a light on the women in our profession!

In this newsletter, we also talk about unconscious bias. Often, unless it's pointed out, people don't realize their own internalized biases. It's only human to have them. Here, we share how to recognize that blind spot in the brain and to overcome it.

On November 1, 2019, AO Spine launched the AO Spine Global Diploma Exam. This new exam has been designed by a group of worldwide leaders in spine surgery education, and allows candidates to demonstrate that they have attained a level that reflects their knowledge as a specialist spine surgeon with at least five years of practical experience. We invite you to enhance your professional reputation through expert certification! The registration process is open until November 14, 2019. You can find all the details at: aospine.aofoundation.org

Another important milestone was reached by AO Spine research: the AO Surgery Reference has adopted and implemented the AO Spine Knowledge Forum Tumor treatment recommendations and classifications for metastatic spine tumor. This module, now available on the surgery reference website, will highlight the key considerations and surgical indications when it comes to the evaluation of the metastatic spine tumor patient. It's a great tool to help you make the right treatment decision.

In terms of organ culture experiments, AO is at the international forefront and a favored consortia partner for studies on new cell therapies. AO Spine and AO Research Institute (ARI) collaborate in innovative applied pre-clinical studies to achieve more effective patient care worldwide. In this issue of the newsletter, find out more about this unique collaboration, and what the next projects are.

Last but not least, I would like to also share the good news about the Global Spine Congress (GSC) 2020 in Rio de Janeiro, Brazil. Spine professionals from 61 countries have submitted 1,234 abstracts in over 25 categories, which is the highest number of papers received for Latin America and a 12% increase from GSC Singapore. GSC 2020 takes place from May 20–23, 2020. Make sure you register before December 20, 2019, in order to receive the early-bird registration discount: www.gsc2020.org

I hope you find this issue interesting and informative, and hope to see you in Davos in December!

Yours sincerely

Bryan Ashman
AO Spine Education Chairperson

It's time to shine a light

With female surgeons making up as little as 5 percent of our membership, the gender gap is a real and pressing issue. AO Spine shined a light on gender diversity at the Global Spine Congress 2019. Here, AO Spine continues that conversation by asking three leading female surgeons to share their experiences.

Serena S Hu, MD is a professor of orthopedic surgery and, by courtesy, of neurosurgery at the Stanford University Medical Center, Stanford, California, United States.

Christina Goldstein, MD is an assistant professor of orthopedic surgery at the University of Missouri, Columbia, Missouri, United States.

Yu-Mi Ryang, MD is associate professor at the Technical University Munich and head of the Department of Neurosurgery, Helios Klinikum Berlin-Buch, Berlin, Germany.

It is well known that there is a shortage of female leaders in spine surgery. How do you feel this impacts on our profession?

Serena Hu (SH): It's so important that we collectively find ways of opening the doors to diversity of gender, background and training. *If your practice or your profession doesn't have enough diversity of opinion, if it's just a bunch of people who all think the same way, you simply won't find the real opportunities.* Women are good leaders, we're good listeners, and we're consensus builders. We are also more likely to support diversity of opinion and diverse hiring. Some of the old stereotypes are true; we're generally not good at speaking up in meetings, and social norms mean that in order to be heard, we have to assert ourselves. However, the data shows that women who are assertive or aggressive are frowned upon, whereas the same traits in men are often perceived as strengths. It's the likeability trap; we need female leaders to be likable, but we don't have the same expectation of men. Therefore, we need to manage a fine balance of being effective leaders without antagonizing people.

What role do you feel mentoring can play, and how would you summarize your own approach as a mentor?

Christina Goldstein (CG): Our fellows come to us with lots of skills and confidence, so we try to give them some degree of autonomy—give them a push within safe boundaries. I like to find out where they see themselves in the future, not only from a professional standpoint but also from a personal standpoint and get an idea of who they are. Their goals will change how I mentor them as individuals. Mentors of either gender are great, and I've been blessed to have had some wonderful male mentors. The main thing is that you connect with your mentor and he/she understands your values. However, *sometimes it's good to try to find a female mentor—even from a different area of surgery—as there are some things all women surgeons will understand.* One of my first female mentors was a general surgeon who did laparoscopic surgery, but she understood what it was like to be a mom, wife, and a full-time academic surgeon.

Yu-Mi Ryang (YMU): In the beginning of my career I thought it was really important to have a female mentor, but I could not find one. Now I think it's just about having someone who will support you simply as the person you are and of course as a surgeon, and not only as a female surgeon. I did not really have a mentor in my career. But I was very fortunate to learn many things from my former head of department. He taught me a lot about how to be very effective in what you do, not to waste time on things you can't change, and how to challenge yourself as much as possible to get where you want to go at a very fast speed. Of course, this approach also brings a lot of sacrifice.

So, one of the biggest challenges for me was to find out what I want and how to get it. It took me a long time to understand how the system works and how to achieve things. With a mentor, I probably would have succeeded earlier in my career. So, I see part of my role as a mentor not only as a mental and moral support but in giving insight into a system that has unwritten rules and invisible barriers, in encouraging female surgeons that it is worth it to go the extra mile and that it is necessary that we start breaking the glass ceiling.

There's growing awareness that work/life balance is one of the things surgeons of both genders may sacrifice. Is that an issue that has affected you?

SH: In our profession we are asked to do a lot, and it's important to know that we don't have to say yes to everything. For me, one part of work/life balance is that for every new responsibility I take on at this point in my career, I have to give up something else. Otherwise, I feel I am always teetering on the edge. I know I can't possibly get any less sleep and still function, so if I want to do more, I have to give something up. That's not always about loss; there were committees I gave up but that created an opportunity for someone else, too. My advice is to consider your professional goals, and that changes over time. Periodically look at your trajectory but don't forget your personal goals, either. The age-old question is: Can we have it all? I'd say yes, if you prioritize what's important to you, but not all at the same time!

CG: It's easy to get on a track where, to be successful, you're expected to be involved in more and more things. That's good for your ego and reputation, but I feel that teaching trainees to never say no may be dangerous. If you're always saying yes to joining another committee, seeing another patient, doing another surgery, you might start saying no to things in other areas of your life. That's what happened to me. I was on the tenure track, saying yes to everything until I started saying no to the things that were healthy for me: sleeping, eating well, exercising, socializing with friends and family. Those are the things we need to do to stay healthy and maintain connection with the people we care about, who can help us in times of stress. Unfortunately, I started to experience symptoms of burnout quite early in my career—about three years in—which exacerbated a long-standing history of depression and anxiety. We are all successful at work and people see us as having it all together, but we need to be mindful of the things that we must do to avoid failure in other areas of our lives. We are all different and need different things to succeed, and my hope is that health care organizations are able to support those needs so we may enjoy long, successful, rewarding careers.

In addition to work/life balance, many organizations are becoming increasingly aware of the role of unconscious bias in the workplace. Do you see evidence of that from a gender perspective?

CG: *Sometimes with patients, our abilities are questioned because of our gender. What role we play in their surgery seems uncertain to some patients. They'll say, "You actually do the surgery?" and I would reply, "Well, yes, I am your surgeon, Dr Goldstein." That's still a thing.* There are a lot of misperceptions and many people continue to have exp ectations about what life should look like for a female surgeon, particularly related to family planning. Many assume that because you're a woman, you're going to have children and that will negatively impact your career while others assume that as a surgeon, you're career-minded and won't have children. Every woman has different goals. What's important is to recognize these basic differences between men and women and have an open, early dialogue about it with women in your department. This will ensure the best outcome for everyone involved.

YMR: Yes, that happened to me all the time, too! The more you talk to patients the more they realize you are very knowledgeable but in the beginning there's a lot of prejudice. I faced situations where people would confuse me with a nurse or ask to see the "real" doctor. When I told them I was "real" doctor, they would ask for the surgeon who would perform the surgery on them. When I told them that that would also be me, patients often times got scared asking me whether I had ever performed that surgery before. So I told them "no" and that I was just as excited and anxious as they were. Of course, that was a joke, but it helped to loosen up the situation. But also, male colleagues would ask me, whether I perform surgeries at all and as a teacher, some participants would not come to my table during hands-on sessions or cab labs, because they thought I could not teach them anything. *The situation changed when I became the head of the department. The perception was different, sort of like "if she is the head of department, she must be capable". But it's been a long way for me and I hope other female surgeons to follow will not have such a hard time proving that in fact they are capable.*

What advice would you offer to female surgeons navigating these issues?

SH: One thing that's good is to learn the best aspects of all the people you come across, and you work from there. You ask them how they did things, learn from their mistakes, and take their advice—not just your superiors, but those under you, too.

YMR: First of all, we need to get away from the typical female mind trap, that we need to please everybody and let ourselves being patronized or feel intimidated. Many women think that they might not be as capable and strong or as deserving as their male peers. That is just not true. Women have the same abilities as their male counterparts and therefore deserve the same chances and opportunities and equal salaries. Being a good surgeon is not about being strong in a physical sense. It's about being strong in every other sense. For women in general and probably even more so in a male-dominated field such as surgery, it is about finding a healthy balance in an environment where they can co-exist and are recognized as equal peers independent of gender. It's a process that needs a lot of work and commitment from both sides. I think it's important to recognize that unconscious bias and gender diversity are not just issues concerning women. Lots of male surgeons feel this issue needs to be addressed, too. We need to include everybody in this discussion. It's about equal access to opportunities.

What can AO Spine do to encourage change?

SH: The symposium on women in spine was great. *There are subtle things, like ensuring there are female moderators and that committees are diverse. You see women in these roles and it perpetuates itself.*

CG: We need to focus on highlighting the amazing aspects of our specialty and cultivating and supporting our female trainees at a very early stage. AO Spine can also continue to shine a light on these issues, bringing them to the attention of its members.

YMR: During the networking event, we learned that the number of female surgeons in AO Spine is very low and there are virtually no women on any committees, let alone in any leading positions within the community. It is time for women to be more actively involved in AO Spine activities. And I see the responsibility within the community to achieve that. The

acceptance of and awareness for female surgeons and female teachers needs to improve greatly. Unconscious bias is not only a problem originating from male peers but just as much or even more so from our female peers.

I have been an AO Spine faculty member for more than six years and was asked to participate as a teacher only twice during this entire time. I guess it is a sort of vicious cycle in the sense, that men will only ask their male peers to be part of any activity, not because they actively discriminate, but just because they do not know too many female surgeons. So, if the number of female surgeons in leading roles does not improve, this might never change.

Biographies:

Serena S Hu

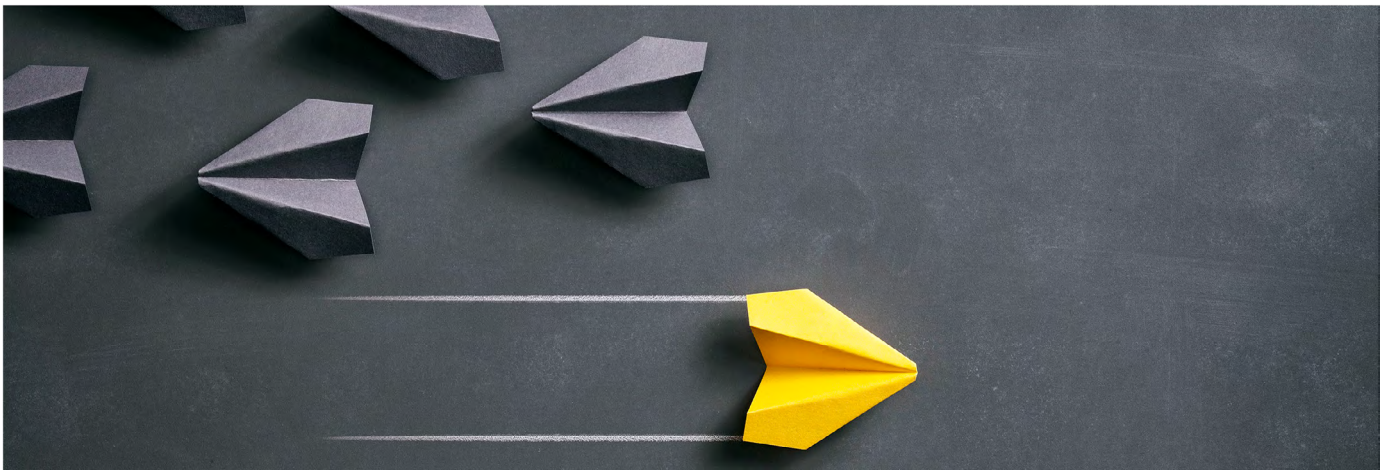
Serena S Hu, MD is Professor of Orthopaedic Surgery at the Stanford University Medical Center in Stanford, CA Dr Hu's research interests include disc degeneration and its potential prevention or treatment. Her clinical interests include prevention of complications and treatment of adult scoliosis. She also is involved in improving and measuring quality and value in orthopedics. Dr Hu received her undergraduate degree from Cornell University in Ithaca, NY. She completed her medical training at McGill University in Montreal, Canada before serving an internship in general surgery at Beth Israel Medical Center in New York. Dr Hu was a resident in orthopaedic surgery at the Hospital for Special Surgery, Cornell University Medical School in New York. Following her residency, she completed a fellowship in spine and scoliosis surgery at Rancho Los Amigos in Downey, CA.

Christina Goldstein

Dr Goldstein received her undergraduate degree and MD and completed her orthopaedic surgery training at McMaster University in Hamilton, Ontario, Canada. She then completed 3 years of fellowship training in complex adult spine surgery at the University of Calgary, Foothills Hospital, and the University of Toronto, Toronto Western Hospital. She also has a Master of Public Health degree from Johns Hopkins University. Her clinical interests include adult spinal deformity and complex cervical spine surgery. Her research interests include novel injectable materials for vertebral compression fractures and the impact of social determinants of health on outcomes of spine surgery. Dr Goldstein has been an American Orthopaedic Association North American Traveling Fellow (2017) and was named one of NASS SpineLine's inaugural "Top 20 Under 40" (2018).

Yu-Mi Ryang

PD Dr med Yu-Mi Ryang graduated from medical school (Ruhr-Universität Bochum, Germany) in 1999. She started her training at the Department of Neurosurgery of the University hospital of the Technical University Aachen, Germany. After achieving her board certification, she became consultant and absolved a research fellowship in for her professorial thesis. In 2010 she started working as a consultant and later vice chair at the Department of Neurosurgery at the Klinikum rechts der Isar of the Technical University Munich, Germany.
In February 2019 she became chair of the Department of Neurosurgery at the Helios Klinikum Berlin-Buch, Germany.
She is faculty member of AO Spine, DGNC (German Neurosurgical Society), DWG (German Spine Society), EANS and EUROSPINE.
Since 2018 she is chair of Module 4 (Trauma) of the EUROSPINE education week. She is member of the EUROSPINE education committee, the DWG research committee, the advisory board of the official DWG journal "Die Wirbelsäule" and of the NCA (German Neurosurgical Academy). Furthermore, she is author of numerous book articles and manuscripts in international peer-reviewed journals and is also active as reviewer of multiple peer-reviewed journals.



Unconscious bias: how to recognize that blind spot in the brain and overcome it

Often, unless it's pointed out, people don't realize their own internalized biases. Affinity bias—having a more favorable opinion of someone who is similar to oneself—is only human.

What is unconscious bias

As it turns out, what people want to believe about themselves and their own behavior toward others is often quite different from how they actually behave.

We are inclined to prefer or hire people who are similar to them on the basis of a wide range of characteristics, including social or career background, gender, education, ethnicity, age and interests. Unconscious decision-making has played an important role in the survival and evolution of specie and is rooted in the human brain's automatic processing systems: sorting through millions of pieces of data very quickly and then take shortcuts to gain a rapid understanding of the situation. But what may have served people well in prehistoric times can be problematic in today's workplace.

Everyone is biased. The question is not about whether biases exist; it's a question of what those biases are.

For organizations, unconscious bias can result in unintentional discrimination and in poor decision-making. It is worthwhile to understand the existence of unconscious biases in oneself and others and focus one's efforts to consciously recognize and overcome them.

Five corrective maneuvers to unconscious bias

1. **Acknowledge that everyone is biased**
   Recognize that everyone biased, and it's not something that is nasty or needs to be kept under the rug; bias is only human.

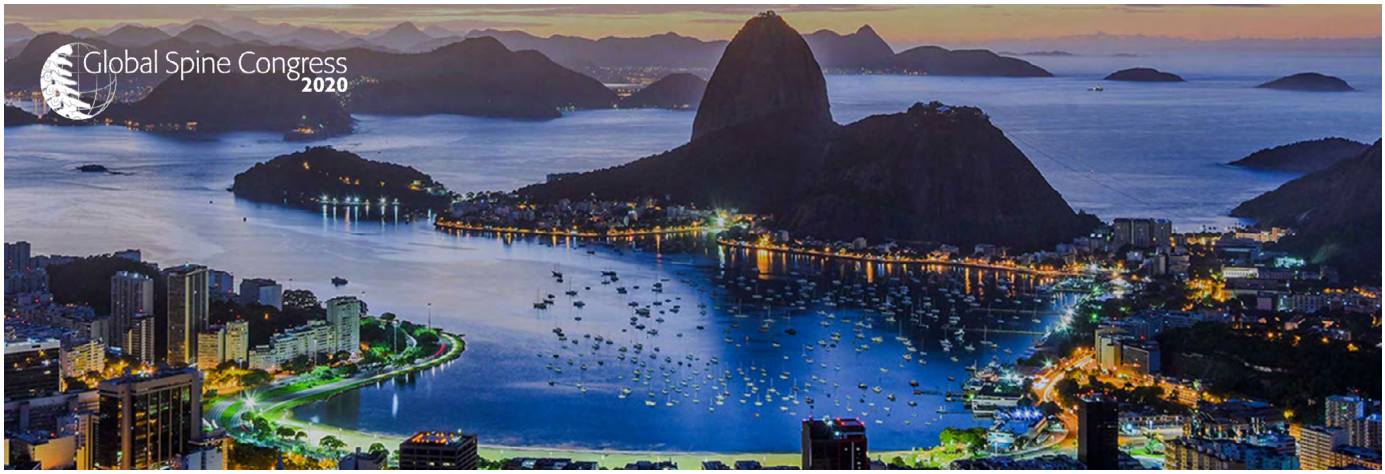
2. **'Flip it to test it'**
   This is a relatively easy way to call out bias as it happens. People can ask themselves, "If I exchanged the person in question with someone different, such as someone of another gender, would I treat that person the same way?"

3. **Understand the personal benefits of reducing bias**
   Diversity in the workplace makes people more innovative and promotes better critical thinking. Everyone has a lot to gain personally by working with people from all different backgrounds.

4. **Remove the appearance of bias starting at the hiring process**
   Ensure that job descriptions contain no indication that a particular gender or type of person is preferred for the role. If possible, several members of a team should be involved in the hiring process ranging from the application review to phone interviews to face-to-face discussions with job candidates.

5. **Lead, don't follow**
   In some industries and disciplines, there's a severe lack of diversity in the employment pool, perhaps reflecting a social prejudice that could take generations to shift. Where this is the case, consider how the organization could look to make a difference.

Does the organization have leaders who could challenge the status quo, training programs that could improve diversity, recruitment strategies that celebrate difference? All these small steps can lead to a seismic shift in generations to come.



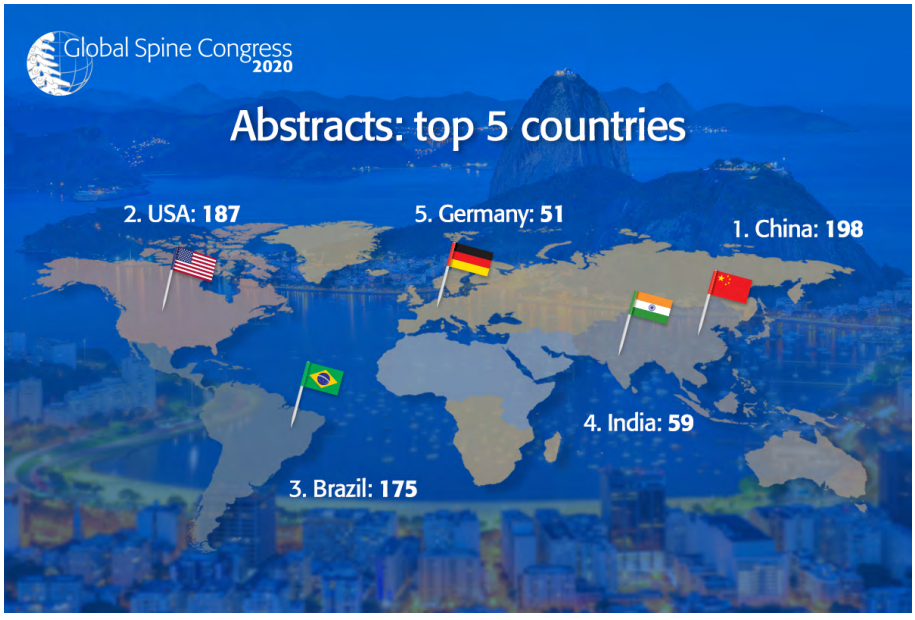
Abstract results for Global Spine Congress 2020

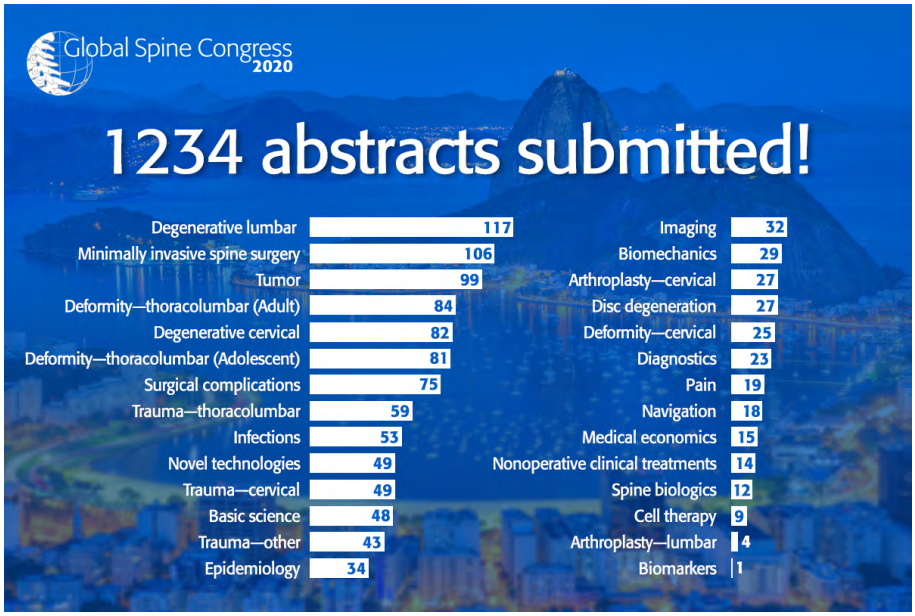
Spine professionals from 61 countries submitted their abstracts to the Global Spine Congress (GSC).
This is a chance to present their research and findings at one of the largest spine meetings taking place in 2020.
GSC 2020 takes place in the beautiful city of Rio de Janeiro from May 20–23, 2020.

1,234 abstracts were submitted in over 25 categories, surpassing the number of abstracts submitted for GSC Buenos Aires by over 500—this is the highest number of papers received for Latin America and a 12% increase from GSC Singapore.

The program committee is currently reviewing all submitted abstracts. Authors and submitters of the abstracts will be notified in November 2019. We would like to thank all contributors who submitted their research to the GSC.

See below how each region of the world contributed to the total number of abstract submissions and which are the most popular abstract topics.





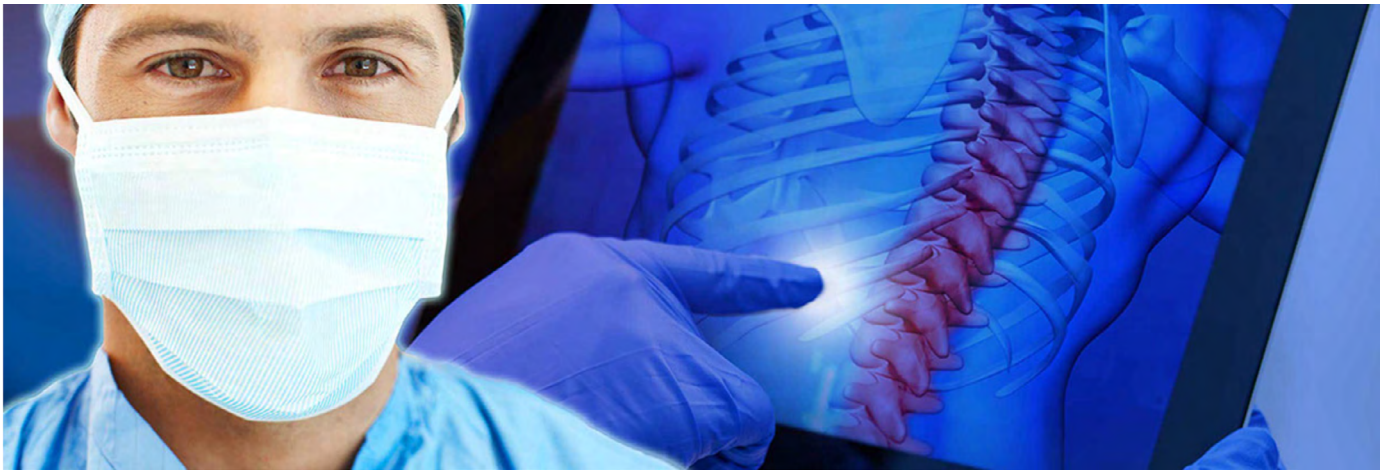
It's never too early to start planning—register now to take advantage of early bird savings

The GSC in Rio de Janeiro is expected to gather 2,000 participants and will take place at the Windsor Convention & Expo Center (WECC). The venue is in Barra da Tijuca, a vibrant and modern city, located only 45 minutes from Rio de Janeiro International Airport. The GSC is a great venue to network with spine professionals from around the world, explore career development opportunities, and gain access to the world's best research and clinical experts.

Register today

In addition to our early bird discount, AO Spine members receive a $150 (USD) discount on the GSC registration fee. Additional discounts also apply for medical or research students, residents, fellows and participants from low-income countries. Not an AO Spine member? Sign up for membership today.

For more information, visit the official GSC 2020 website.



AO Spine Global Diploma Exam 2020

Are you an experienced spine surgeon with at least five years in spine practice? Would you like to certify your knowledge and enhance your professional reputation?

Register now for the AO Spine Global Diploma Exam

The AO Spine Global Diploma Exam is the first truly global diploma certification of a world-leading organization in medical education. It has been designed by a group of worldwide leaders in spine surgery education.

It enables candidates to demonstrate that they have attained a level of knowledge expected of a specialist spine surgeon after five years of practical experience.

The Diploma Exam is a formal assessment of the knowledge required for the management of patients with spinal disorders. It is not intended to certify the competence of technical skills or the ability to perform surgical procedures. It is not a compulsory or regulatory certificate of competence or excellence.

Who is eligible for the AO Spine Global Diploma?
In order to be eligible for the AO Spine Global Diploma exam, candidates must be:

- AOSpine members (if you are not an AO Spine member, join now)
- Spine surgeons that have been in practice for at least five years. Candidates will be requested to provide evidence of specialist qualifications in orthopedics or neurosurgery in the spinal field for at least 5 years, together with a CV demonstrating practice in spine surgery for at least 5 years.

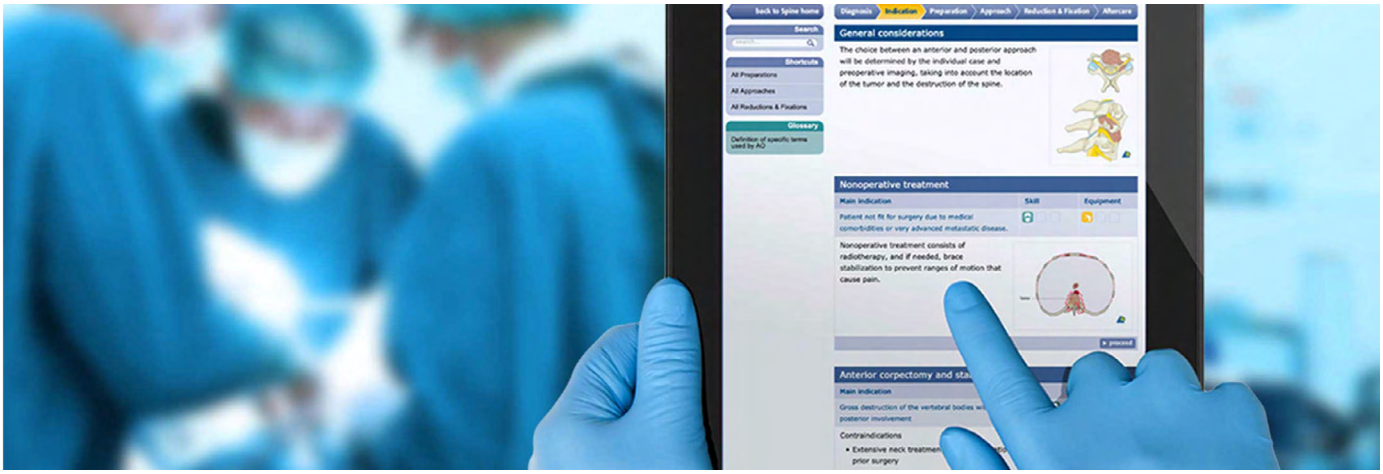
To receive the Diploma, candidates will need to pass written and oral examinations

The content of the examinations (written and oral) is based on the AO Spine curriculum.

The application process closes on November 14, 2019. The space is limited to 100 candidates for the 2020 Diploma Exam and will be assigned on a first-come, first-served basis.

How can you benefit from being AOSpine certified?

- Benefit from AO Spine's global reputation as the leading global academic community in spine care
- Worldwide credibility guaranteed
- Unique digital badging is available to highlight your accomplishments online
- It's an excellent opportunity to have your theoretical knowledge in spine surgery accredited at an international level
- Gain recognition by having proof that your theoretical knowledge has been assessed to the latest standards



Launch of AO Surgery Reference for Metastatic Spine Tumor

Access recommended surgical techniques at a moment's notice anytime, anywhere, on hand-held devices.

The AOSpine Knowledge Forum Tumor treatment recommendations and classifications for metastatic spine tumor have been adopted and implemented into the AO Surgery Reference. This module will highlight the key considerations and surgical indications, when it comes to the evaluation of the metastatic spine tumor patient.

A tool to help you make the right treatment decision

"We've come a long way in finding out which patients benefit from surgery, defining clear treatment indications, surgical strategy recommendations, and studying treatment outcomes," author Ilya Laufer explains.

The AOSpine AO Surgery Reference for Metastatic Spine Tumor organizes concepts in a way that helps spine surgeons think systemically about their treatment indications and options, makes it easier to come up with a surgical plan, and to know exactly what techniques to use for each individual case.

Access AO Surgery Reference for Metastatic Spine Tumor

ARI spine researchers Sibylle Grad, Zhen Li, and Mauro Alini believe certain spine diseases could be explored deeper on the molecular level to find efficient diagnostic tools.

Back to basics—clinician meets basic science

AO Spine and AO Research Institute (ARI) collaborate in innovative applied pre-clinical studies to achieve more effective patient care worldwide. Focus is on regeneration of the spinal column and postoperative spinal infection. The validation of a new bioreactor for standardized pre-clinical biological assessment is also underway.

In terms of organ culture experiments, AO is at the international forefront and a favored consortia partner for studies on new cell therapies. Mauro Alini, ARI Program Head and AOSpine Research Commission member, recalls his first ARI spine study more than 20 years ago, developing his first organ culture system known as a bioreactor with Cindy Lee, James Iatridis, and later Keita Ito. "Already then, we built one of the first organ cultures and were able to culture entire motion segments with the vertebral body, disc, and end plate."

ARI is the first to be validating such an innovative bioreactor system reproducing the conditions of the human spine.

Today, ARI's advanced ex-vivo bioreactor systems allow using even more complex structures and organ culture models to test new approaches. Principal Scientist Sibylle Grad explains the clinically relevant setting means "we could, for example, include pain markers analyses and measurements in our organ culture systems, or test new biomaterials such as the hydrogels ARI is developing." In addition, certain animal studies would no longer be needed when testing new therapies. They are the first group to be validating such a system.

Closer to the patient—precision medicine

One of the ARI spine studies looks at a new way to deliver mesenchymal stem cells. Alini believes homing could be a new way to deliver stem cells without injuring the disc and could serve as a means of prevention. "Homing is naturally present in young people and happens normally in most tissues. It would be interesting to apply this stem cells migration potential in certain surgeries—for example in the adjacent disc of a degenerated disc, which is replaced by cage or is fused—where we know that the adjacent one tends to degenerate in a few years," Alini says.

Alini is also excited about the current Immunospine project, which hypothesizes a correlation between the patient's preoperative immune status and the occurrence of a postoperative spine infection. The pilot phase will be finished by the middle of the next year.

Turning to the immediate future, Grad sees vast prospects: *"We could measure not just one biomarker but integrate panels of biomarkers and combine them with imaging tools for a more comprehensive diagnostic approach."* Patient-specific healthcare and precision medicine is the future, but Grad is quick to remind of the responsibilities. "We must take ethical questions and data protection very seriously. The data does not belong to us, but to the patient."

Crossover—where innovation happens

Alini is pleased there is crosstalk between the pre-clinical and clinical research bodies within AO. "It's very important in the long-term, and to keep new generations of surgeons interested. *Novelty comes from where clinicians meet basic scientists and vice versa, where there is real collaboration between all contributors in the spine world."*

Alini encourages AO Spine clinicians to participate in these discussions and interact with basic scientists. "There are many clinical issues that can be tackled with a fundamental approach, such as the immune system, something we are heavily involved in. It plays a major role in regeneration and infection."

Close collaboration is needed also on new biological approaches to apply treatments, such as stem cells. "At the end of the day, it's the clinician who will use new treatments on patients," Alini reminds. He envisions working groups, where clinical problems and topics could be discussed and brainstormed amongst basic scientists and clinicians.

Grad also expects growing collaboration with clinics. "We have already started with ethical approvals to be able to measure patient blood samples or even tissue samples, to analyze them in the lab. We have huge capacity at the AO to analyze biomarkers, to develop better diagnostic tools, and to combine basic science with clinical translation."

Selection of recent ARI Spine publications:

Peroglio M, Gaspar D, ZeugolisDI, Alini M.
Relevance of bioreactors and whole tissue cultures for the translation of new therapies to humans. J OrthopRes 36(1): 10-21, 2018.

D'Este M, Eglin D, Alini M.
Lessons to be learned and future directions for intervertebral disc biomaterials. Acta Biomater 15; 78:13-22, 2018.

Navone SE, Peroglio M, Guarnaccia L, Beretta M, Grad S, Paroni M, Cordiglieri C, Locatelli M, Pluderi M, Rampini P, Campanella R, Alini M, Marfia G.
Mechanicalloadingofintervertebral discmodulatesmicrogliaproliferation, activation, and chemotaxis. Osteoarthritis Cartilage 26(7): 978-987, 2018.

Wangler S, Menzel U, Li Z, Ma J, Hoppe S, Benneker LM, Alini M, Grad S, Peroglio M.
CD146/MCAM distinguishes stem cell subpopulations with distinct migration and regenerative potential in degenerative intervertebral discs. Osteoarthritis Cartilage 27(7):1094-1105, 2019.

2020 AO Spine International Observership Program application period opens

The application process for AO Spine Latin American members is open.

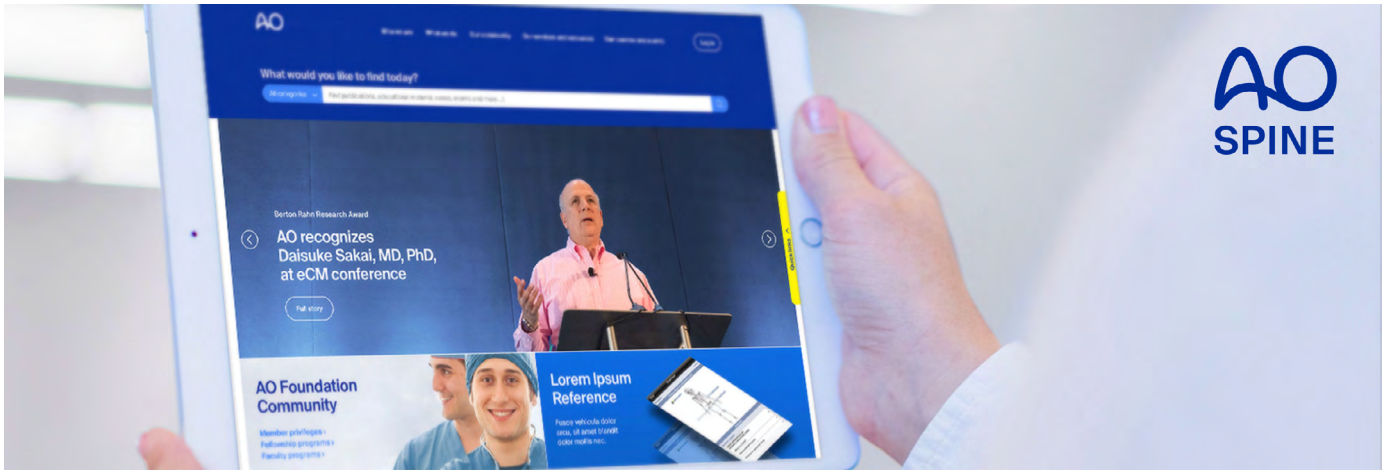
The application period for the 2020 AO Spine International Observership Program opened on September 5 and continues until November 30. The program was developed to ensure that the knowledge and skills acquired in AO educational events are applied in the daily work of spine surgeons in the region. It is an outstanding way for Latin American members to advance their professional careers with the benefit of improving the care of their patients. During their observerships, participants will learn and develop skills by observing highly skilled spine surgeons work with one specific technique or pathology, such as minimally invasive spine surgery (MISS), trauma, deformity or tumor.

Candidates can select an area and an expert:

- **Trauma:** Carlo Bellabarba (US), Pedro Bazán (AR)
- **Tumor:** Claudio Tatsui (US), Alessandro Gasbarrini (IT)
- **Pediatric deformjity:** Jean Ouellet (CA), Munish Gupta (US), Carlos Montero (CO), Luis Eduardo Rocha (BR)
- **Adult deformity:** Claudio Lamartina (IT) and Pedro Berjano (IT), Barón Zárate (MX), Emiliano Vialle (BR)
- **MISS:** Khai Lam (GB), Roger Härtl (US), Cristiano Menezes (BR), Néstor Taboada (CO), Alejandro Morales (AR)

The goal of the program is help participants acquire knowledge from some of these disorders' foremost experts who are willing to pass on their knowledge to colleagues who want to learn and apply these specific skills in their practices.

To apply and learn more about the program's requirements are, please visit: aosla.com



AO Spine has a new look

The AO has a new look and feel online. This digital rebranding has given our online presence a much-needed new look. You will see that the AO Spine website and our key social media pages: Facebook, Twitter, and LinkedIn, have been rebranded in this new fresh, bold design.

This is a significant milestone in our digital transformation, and in AO Spine's evolution, as we seek to ensure we remain relevant to younger generations of surgeons across the world who share our mission.

Transitioning to the new brand is a gradual process, and for the next nine months you will see both old and new branding used.

Global Spine Journal—top articles of the fall

Global Spine Journal is pleased to congratulate Deputy Editor Michael Fehlings on receiving the Ryman Prize. The Ryman Prize is a $250,000 annual award for the world's best development, advance or achievement that enhances quality of life for older people. Dr Fehlings is also the one who spearheaded our most successful issue to date "Clinical Practice Guidelines for the Management of Degenerative Cervical Myelopathy and Traumatic Spinal Cord Injury".

We would also like to recognize the top articles of the fall! Make sure to check out all of these great articles with links below

Top Cited Regular Issue Articles:

1. "Risk Factors for Delirium After Spine Surgery in Extremely Elderly Patients Aged 80 Years or Older and Review of the Literature: Japan Association of Spine Surgeons with Ambition Multicenter Study"
2. "Current Diagnosis and Management of Cervical Spondylotic Myelopathy"
3. "Autograft versus Allograft for Cervical Spinal Fusion: A Systematic Review"
4. "Spine Stereotactic Body Radiotherapy: Indications, Outcomes, and Points of Caution"
5. "Comparison Between S2-Alar-Iliac Screw Fixation and Iliac Screw Fixation in Adult Deformity Surgery: Reoperation Rates and Spinopelvic Parameters"

Top Cited Special Issue Articles:

1. "Timing of Decompression in Patients With Acute Spinal Cord Injury: A Systematic Review"
2. "Spinal Tuberculosis: Current Concepts"
3. "A Clinical Practice Guideline for the Management of Patients With Acute Spinal Cord Injury and Central Cord Syndrome: Recommendations on the Timing (≤24 Hours Versus >24 Hours) of Decompressive Surgery"
4. "C5 Palsy After Cervical Spine Surgery: A Multicenter Retrospective Review of 59 Cases"
5. "Classification of Osteoporotic Thoracolumbar Spine Fractures: Recommendations of the Spine Section of the German Society for Orthopaedics and Trauma (DGOU)"

Top Downloaded Regular Issue Articles:

1. "Contact Sports as a Risk Factor for Amyotrophic Lateral Sclerosis: A Systematic Review"
2. "Overlapping, Masquerading, and Causative Cervical Spine and Shoulder Pathology: A Systematic Review"
3. "Outcomes of Halo Immobilization for Cervical Spine Fractures"
4. "Current Strategies in Prevention of Postoperative Infections in Spine Surgery"
5. "The Incidence of Pars Interarticularis Defects in Athletes"

Top Downloaded Special Issue Articles:

1. "A Clinical Practice Guideline for the Management of Acute Spinal Cord Injury: Introduction, Rationale, and Scope"
2. "Surgical Site Infections in Spine Surgery: Preoperative Prevention Strategies to Minimize Risk"
3. "Treatment of Fractures of the Thoracolumbar Spine: Recommendations of the Spine Section of the German Society for Orthopaedics and Trauma (DGOU)"
4. "Esophageal Perforation Following Anterior Cervical Spine Surgery: Case Report and Review of the Literature"
5. "Cell Therapy for Treatment of Intervertebral Disc Degeneration: A Systematic Review"

AO SPINE

www.aospine.com
info@aospine.org