Profile Jack Zigler

Jack Zigler is the medical director of the Texas Back Institute, Plano, USA, and is the associate editor of the International Journal of Spine Surgery. He spoke to Spinal News International about his career achievements and research interests.

Why did you decide to become a doctor and why, in particular, did you decide to specialise in spinal surgery?

I have always been interested in science and in how things work. For example, at Cornell [University, New York], I was an undergraduate biology major and I also enjoyed doing tune-ups on my car. I was further able to combine these two interests in medical school by delving into the workings of the human body. Firstly, this was as a teaching assistant in the gross anatomy lab, then later on it was an orthopaedic surgery resident, and then ultimately it was as a spinal surgeon. I get to work on one of the neatest machines ever devised, repair its broken parts, and help people improve their quality of life—all at the same time! What could be better than that?

Who have been your mentors during your career and what influence did they have on your career?

I have been lucky to have trained with many talented physicians and surgeons over the years. Dr Robert Rohner, my pathology teacher in medical school, taught me that "we live for our triumphs, but we learn from our defeats." Dr Robert Siffert, my orthopaedic chairman at the Mount Sinai Hospital in New York City, taught me how to approach clinical problems in a logical and goal-oriented fashion. Henry Bohlman, my fellowship director, introduced me to the surgical approaches to the anterior spine, as well as the values of persevering in your beliefs. The prevailing wisdom was then that late anterior decompression of the spinal cord was not worthwhile, despite his early research showing that patients did improve neurologically. It turned out that Dr Bohlman was correct, not the textbooks! At Rancho Los Amigos, I was humbled by the intelligence, strength and commitment of the late Jacqueline Perry, who was one of the first women to become an orthopaedic spinal surgeon in the USA and who rose to become an icon in her field of post-polio rehabilitation. All these people took the time to mentor me and allowed me to capture a small piece of their greatness, making me a better physician.

During your career, what has been the most important development in spinal surgery?

Artificial disc replacement has clearly been the most important development I have seen. Biologic advancements in spinal cord injury treatment are still in an evolving state, and hardware for spinal fixation has clearly improved during the course of my 30-year career. But, I have been most fortunate to have intensely participated in the introduction of motion technology to the lumbar and cervical spine, to have worked so closely with the pioneers of that technology while working "in the trenches" as a clinical investigator, principle investigator, and author on many of the seminal publications in the field. As a clinician, I have been privy to incredible business deliberations regarding motion technology, as well as becoming very familiar with the regulatory and legal aspects of FDA studies—areas that are generally foreign to healthcare providers. My participation in arthroplasty studies since year 2000 has tremendously broadened my horizons, and has also made me a better office-based clinician, which is my primary—and most important—job.

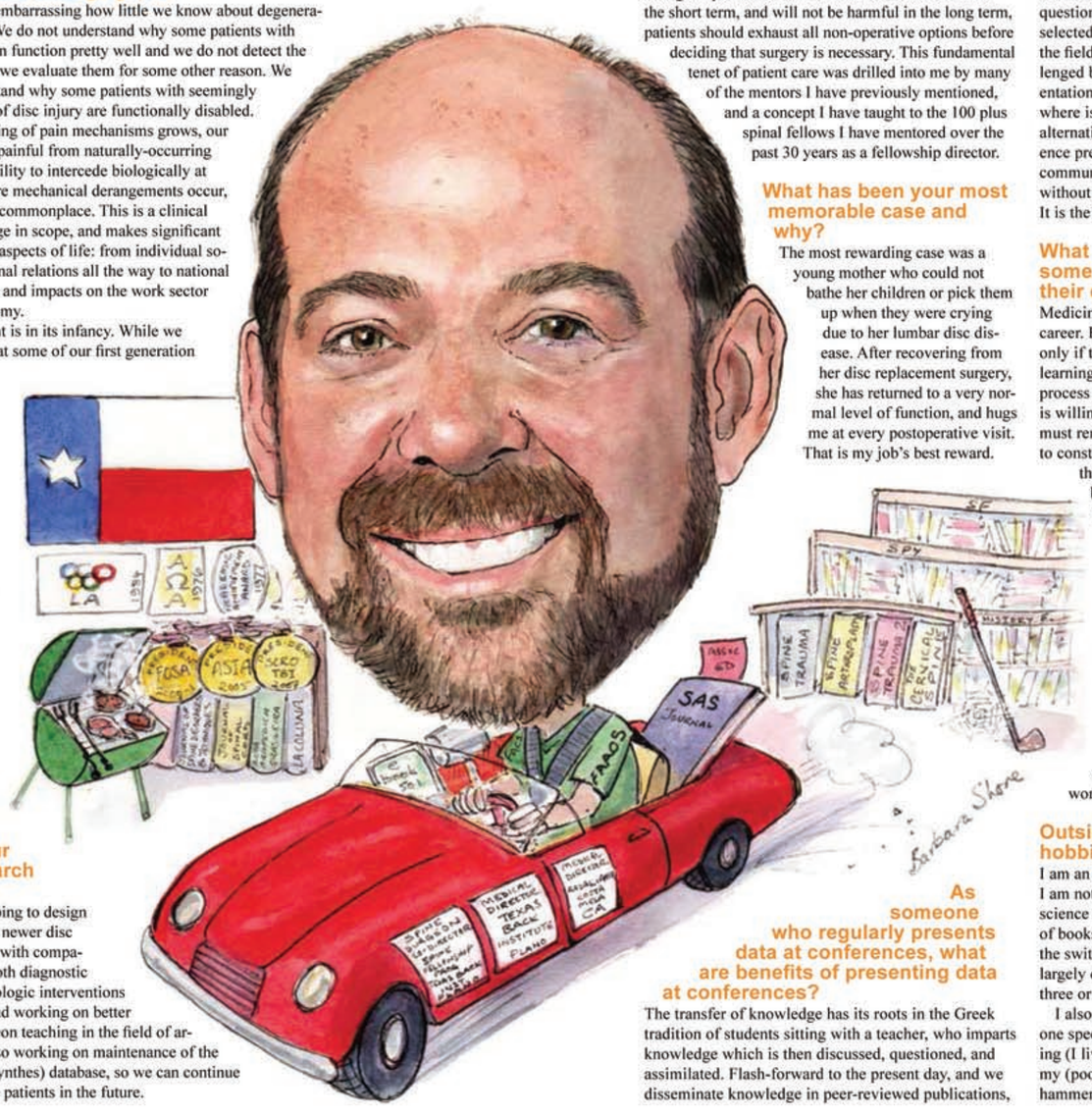
Of the research you have been involved in, which piece of research are you most proud of and why?

I am most proud of my participation in writing and publishing the results of the pivotal studies comparing arthroplasty with fusion. In the history of medicine, this has been a unique opportunity to help design multicentre prospective randomised clinical research. This involved participating as an investigator, and then helping analyse the data and present them for publication in a manner that other clinicians can understand and consider. It was a tremendous amount of work and consumed many hundreds of hours, but the final products, now seminal pieces of the orthopaedic and neurosurgical spinal literature, make me incredibly proud.

A lot of your research has focused on disc replacement in patients with degenerative disc disease. What do we now know about this area and what the knowledge gaps?

I think it is really embarrassing how little we know about degenerative disc disease. We do not understand why some patients with severe degeneration function pretty well and we do not detect the degeneration until we evaluate them for some other reason. We also do not understand why some patients with seemingly minimal amounts of disc injury are functionally disabled. As our understanding of pain mechanisms grows, our ability to separate painful from naturally-occurring lesions, and our ability to intercede biologically at earlier stages before mechanical derangements occur, will become more commonplace. This is a clinical problem that is huge in scope, and makes significant inroads into many aspects of life: from individual social and interpersonal relations all the way to national healthcare budgets and impacts on the work sector and national economy.

Disc replacement is in its infancy. While we are comfortable that some of our first generation implants are well-designed and are hardy (based on our five-year plus published follow-ups, and my own 10-year plus clinical follow-ups), we undoubtedly can improve on our designs and materials. Second generation, third generation, and generations beyond will certainly improve on function, wear, and continue to demonstrate protection of the remainder of the spine.



What are your current research interests?

I am currently helping to design clinical studies for newer disc implants, working with companies researching both diagnostic and therapeutic biologic interventions for disc disease, and working on better strategies for surgeon teaching in the field of arthroplasty. I am also working on maintenance of the ProDisc (DePuy Synthes) database, so we can continue to learn from these patients in the future.

> *"I am most proud of my participation in writing and publishing the results of the pivotal studies comparing arthroplasty with fusion"*

The Texas Back Institute quotes you as saying "surgery should be the last resort". Why do you think this is the case and what do you to avoid surgery?

Degenerative disease causing mechanical back pain is not a life-or-death matter. It is frequently, however, a significant quality of life issue. With no guarantees that a surgical procedure will be risk-free, be effective for the short term, and will not be harmful in the long term, patients should exhaust all non-operative options before deciding that surgery is necessary. This fundamental tenet of patient care was drilled into me by many of the mentors I have previously mentioned, and a concept I have taught to the 100 plus spinal fellows I have mentored over the past 30 years as a fellowship director.

What has been your most memorable case and why?

The most rewarding case was a young mother who could not bathe her children or pick them up when they were crying due to her lumbar disc disease. After recovering from her disc replacement surgery, she has returned to a very normal level of function, and hugs me at every postoperative visit. That is my job's best reward.

As someone who regularly presents data at conferences, what are benefits of presenting data at conferences?

The transfer of knowledge has its roots in the Greek tradition of students sitting with a teacher, who imparts knowledge which is then discussed, questioned, and assimilated. Flash-forward to the present day, and we disseminate knowledge in peer-reviewed publications, where panels of experts who are blinded to the manuscript authors, act as "expert sceptics" to analyse and question the authors' premise and findings. But this process frequently takes a year or more from submission to publication, through several rounds of editing and questioning. Presentation at large international congresses allows this information to be disseminated at an earlier stage and to a larger audience, with the advantage of immediate feedback. Presenters are questioned from the podium by moderators who are selected by programme chairs for some expertise in the field, but are also publicly questioned and challenged by any of several hundred attendees at the presentation. This allows for debate in a very public forum, where issues such as potential investigator bias or alternative interpretation of data can be raised. Conference presentations of evolving data bring the scientific community into the research process much sooner, and without the lag time of journal or textbook publication. It is the Socratic forum of the 21st century.

What advice would you give to someone who was just beginning their career in spinal surgery?

Medicine in general is a tremendously rewarding career. But I always advise young aspirants to do it only if they love it. It is a life of constant sacrifice and learning, and involves a uniquely intensive training process that should only be done by someone who is willing to dedicate their life to it. Spinal surgeons must remain nimble in their abilities, and be willing to constantly update their knowledge bases. One of the tremendous "perks" of training fellows has been the necessity of always working to stay one step ahead. Actually, one of the greatest accomplishments in spinal surgery during my career has been the fraternity that has developed between orthopaedic spinal surgeons and neurosurgical spinal surgeons, as well as among spinal surgeons worldwide. The historic fractiousness between specialties has largely dissolved, and it is often impossible to tell in a panel, which of the surgeons is an orthopaedic surgeon and which is a neurosurgeon. We speak a common language and have largely set aside historic biases. Similarly, advances in spinal surgery (and arthroplasty was really the key) has in essence made the world smaller.

Outside of medicine, what are your hobbies and interests?

I am an avid reader, and use my travel time (when I am not working!) to catch up on historical fiction, science fiction, and spy novels. I have a large library of books that I have collected during my life, but made the switch to electronic reading about four years ago, largely due to the difficulty of travelling abroad with three or four books.

I also enjoy driving fast sports cars (but only have one speeding ticket in the last 20 years!) and barbecuing (I live in Texas, after all). A bad shoulder stopped my (poor) golf career, but fortunately still allows me to hammer in spinal implants.

Fact File

Appointments

2010–present	Medical director, Texas Back Institute, Plano, USA
2008–present	Associate editor, International Journal of Spine Surgery
1996–present	Spine surgeon, co-director Spine Fellowship Program, Texas Back Institute, Plano, USA
1991–1996	Clinical professor of Orthopedic Surgery, USC School of Medicine, Los Angeles, USA
1994–1996	Clinical professor of Orthopedic Surgery, UCI School of Medicine, Irvine, USA

Education

1977	MD Cum Laude, SUNY Upstate Medical Center, Syracuse, New York, USA
1973	Bachelor of Science, with Distinction, Cornell University, Ithaca, New York, USA

Major presentations

April 2013	ProDisc-C: seven-year outcomes analysis, Spine Arthroplasty Society Annual Meeting, Vancouver, Canada
March 2013	Keynote speaker, 11th Annual AOSNA Fellows Conference, Banff, Alberta, Canada
Jan 2013	Cervical arthroplasty: present and future, Current Concepts in Spine Surgery (Cedars Sinai), Las Vegas, USA
Oct 2012	Five-year follow-up of 75 patients with 360 Fusion, NASS Annual Meeting, Dallas, USA
July 2012	Adjacent level lumbar disc degeneration, NASS Spine Across the Sea, Kauai, USA
June 2012	Disc degeneration and low back pain, Spine Technology and Education Group annual meeting, Carlsbad, USA
May 2012	Visiting professor, Beijing Jishuitan Hospital, Beijing, China
May 2012	Guest sSpeaker, Korean SAS meeting—arthroplasty update, Seoul, South Korea