

International Bone Research Association

Report on IBRA Scholarship B Program Spine Fellowship

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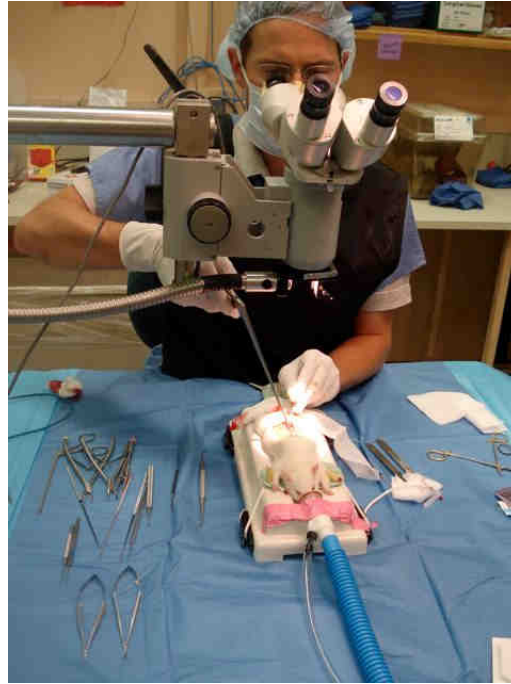


Golden Gate Bridge, San Francisco

In September 2006 I interviewed for a 2 year North American Spine Society (NASS) spine fellowship at the University of California, San Francisco. In January 2008 I was offered a position as a spine fellow for their two-year program. This included a dedicated research year with the spine research group headed by Prof. Jeffrey Lotz, PhD, a pioneer in the understanding of the biomechanics of the spine. Dr. Lotz is a nationally and internationally well recognized researcher whose studies have led to the better understanding of how the spine functions. His current studies are analyzing how loading of the lumbar discs affects the health of the disc itself.

I was able to get a better understanding in the basics and biomechanics of the intervertebral disc. On my first project I had the opportunity to work on a novel therapeutics to regenerate the intervertebral disc. In prior studies at our laboratory it has been shown that transplanted chondrocytes may initiate regeneration and repair of disc tissue subsequent to nucleus removal. The objective of our study was to evaluate the effect of transplanted chondrocytes on neural

tissue structure and function in a xenogeneic rat model. No chronic adverse effects were observed following placement of human juvenile chondrocytes in fibrin carrier on the spinal nerve tissue of immune competent rats. The results of our study suggests that transplantation of chondrocytes into the disc space may be a safe therapeutic strategy for disc nucleus regeneration.



My work station in my first year

In my second project we tried to understand the effects of plasma-mediated radiofrequency-based ablation (coblation) in the regeneration of degenerated intervertebral discs. This is an electrosurgical technique currently used for tissue removal across a wide range of surgical applications, including lumbar microdiscectomy. *In vitro* and *in vivo* studies have shown the technique to alter the expression of inflammatory cytokines in the disc, increasing levels of IL-8 that may promote maturation and remodeling of the disc matrix.. Our study characterizes the temporal and spatial pattern of healing following stab injury to the rabbit intervertebral disc with and without plasma-mediated radiofrequency treatment.

In a rabbit model we tested our hypothesis and showed that plasma-mediated radiofrequency ablation appears to have an anabolic effect on disc cells, stimulating proteoglycan and IL-8 production and maintaining annulus architecture. Coblation treatment appears to reduce cellular response to pro-inflammatory stimuli and to restore overall disc architecture, which may prove beneficial in a number of degenerative disc paradigms.

Humbled and with great respect I do thank Dr. Jeffrey Lotz and his team for giving me the opportunity to work at this well known facility. Without their effort, kindness and patients it would have been impossible for me to finish all my projects.

My research year ended in July 2009 and on our Swiss National day I started my first clinical day as a spine surgeon in the US. I was assigned with two fellows from Toronto, Canada. For visa reasons my colleagues were not able to start on time. I therefore spent my first months by myself trying to run the service as smoothly as possible. Finally by the end of August Dr. Ahmed Al Jahwari joined me and life got a little bit easier. I was not before January 2009 when Dr. Samuel Bederman, the third fellow, joined our service.

The UCSF Spine fellowship offers a comprehensive exposure to all aspects of spine surgery including adult and pediatric, deformity and degenerative, cervical, thoracic and lumbar, and trauma and tumor. The operative techniques included a full complement of anterior and posterior instrumentation as well as the major approaches to the spine and minimally invasive techniques. I frequently saw referrals of complex spine conditions from around the country for treatment at our unit. The service was very busy with four clinic days per week and four operative days per week where at least three operating rooms were running at a time.



OR at UCSF, together with , MD.

I was responsible for patient care, resident education, and participation in weekly basic science and clinical conferences. We were involved in the day-to-day care of the postoperative patient and worked closely with two residents who were on our service for 2 months in a row. I also participated in the attending staff clinics which provided me with a good exposure to patient clinical care as well as developing good judgment skills for decision making.

Daily patient rounds were a must and made with the residents. The morning rounds started at 0530h followed by a 0645h morning conference. I often wondered how Swiss patients would

react if we wake them up this early in the morning. As fellow we were responsible for examining the preoperative patient and ensuring that the proper x-rays were ordered and complete, the accuracy of measurements made on the x-rays were correct and a proper time-out was done. We then participated at the different conferences held each morning. On Monday morning we had to give our spine conference. There all surgical patients for the upcoming week were presented and discussed. This was a very good opportunity to develop good judgment skills for surgical decision making. Every other week the spine lecture was held by one of the attending. A given topic about spinal disorders was discussed based on the current literature.

Grand rounds took part on Wednesday at 700h am. As guest speakers Professors from all around the United States were invited. Jim Weinstein, Freddy Fu, Lawrence Lenke were among those who shared their experience with us. On one of these occasions I had to give a 45 min lecture about thoracic disc herniations.

Wednesday at 745h the Neuroradilogy conference started. Tricky and interesting case were discussed with the Neurosurgeons, the Neuroradiologists, the Neurologist and the Orthopedic spine surgeons. This was probably the most valuable conference to me.

On Thursday the research conference started at 0700h. There we discussed our clinical research projects. We were encouraged and expected to participate in at least one research project. I did a follow up on a new technique for thoracic disc herniations. In a minimally invasive lateral approach (XLIF) we were able to produce excellent results for patients already showing signs of myelopathy. The results were presented at the AO Global spine meeting in San Francisco June 2009.

Drs. , , , , Shane Burch and are the distinguished faculty at the UCSF Spine center. They are nationally and internationally well recognized spine surgeons and published many papers in Peer reviewed journals. UCSF is known for its excellent work in spinal deformity and I do have to admit that I was privileged to participate in the care and treatment of many of those patients. Flat back Syndrome, Morbus Bechterew, Tumors and degenerative Scoliosis, cervico-thoracic deformities and many other pathologies are treated successfully at UCSF. Their close bounds to the research groups and industry gave us the opportunity to use evidence based surgery as well as the newest technology out on the market to treat our patients.

All of above mentioned faculty members are dedicated surgeons and teachers. They always took their time to answer my questions and improve my judgment and operative skills. With

great respect for their work I would like to thank each of them to teach me and therefore become a better clinician and surgeon.

Personally my family and I spent two wonderful years in the Bay Area. During our second months, in September 07, my wife gave birth to our second son, As family we not just gained in numbers but also in personal experience. We meet very nice people and are thankful to call them by now close friends. Our older son was able to join Pre School for two years where he not just learned to speak fluent and accent free English but also was involved in many sport activities. We also had the opportunity to live close to my sister and her family. She has been living in the Bay Area for 9 years.

Moving back to Switzerland after two years left us with mixed feelings. On the one hand we had to leave family and friends back in the bay area and on the other hand we were looking forward to meet again with our family and friends in Switzerland. By now we settled in again, my wife works part time as a high school teacher, our older son started Kindergarten and I work as an attending spine surgeon at the Kantonsspital St.Gallen. We are thankful for these two years and every so often dream of the city at the bay where we left part of our heart(Tony Benett).

I would like to thank IBRA for supporting my fellowship with one of their scholarships.



P.S. If you are going to San Francisco be sure to wear some flowers in your hair (Scott McKenzie)