

The Picture of Success: Dr. Anthony Yeung

By Elizabeth Hofheinz, MPH, MEd

If Anthony Yeung had the time, he would be making “Refuse to fuse” posters and drawing the attention and possible ire of his colleagues at orthopedic and spine meetings around the world.

But alas, this out-in-front innovator is busy evolving his endoscopic surgical technique and conducting multiple clinical studies as medical director of the Arizona Institute for Minimally Invasive Spine Care in Phoenix.

Now 65 years old, Dr. Yeung has spent the past 20 years observing and utilizing various minimally invasive spinal techniques. “My involvement with this work began with Chymopapain, the only minimally invasive technique scientifically validated by two large double blind and numerous cohort studies,” states Dr. Yeung. “Since 1991 I have devoted my time and energies to one conclusion: The endoscopic spine surgery methodology that I have developed, when used earlier in the degenerative cascade, is superior to most traditional approaches for surgical treatment of painful conditions of the lumbar spine.”

And his motivation? Dr. Yeung: “During my orthopedic residency, my mother had a centrally herniated disc. One of my attendings performed surgery on her, but because she had a congenitally small canal, he removed too much of the facet joint, caused an iatrogenic nerve injury, and created a grade II spondylolisthesis. She developed unrelenting neuropathic pain and became disabled. This tragedy is how I found out that even a good surgeon using accepted traditional techniques might cause the paradoxical consequences of spinal instability, in addition to the inherent risk of iatrogenic nerve injury. It has driven me to find a better way.”

Continues Dr. Yeung, “Current traditional surgical indications involve decompressing the nerves and stabilizing the spine. For lack of a better method, fusion is widely performed for pain. Fusion is overkill. You should only fuse if there is a deformity or instability. Everyone knows that you can



have a 90% fusion rate; that doesn't necessarily translate to 90% good results. When an ankle or a knee joint is stiff, its consequences are not as devastating long term as when there's no motion in the spine. In spine, until recently, surgeons have ignored the issue of motion preservation. By fusing, the peripheral consequences can be devastating to the patient, especially when normal stabilizing anatomy is destroyed surgically.”

Having eschewed traditional fusion techniques for pain, Dr. Yeung has found a more sophisticated, nuanced way to treat his patients using the Yeung Endoscopic Spine System™ (Y.E.S.S.™). “The foraminal endoscopic approach to the spine avoids destroying normal muscle to get to the patho-anatomy,” says Dr. Yeung. “I can probe painful patho-anatomy under local anesthesia and learn about the causes of pain, such as the presence of inflammation. The etiology of the visualized inflammatory membrane can be studied because the system utilizes a laser and radiofrequency to remove the inflammatory membrane under direct visualization. Bleeding is controlled and thus I have good visibility. Endoscopes, similar to a knee scope without a working channel, were used by my predecessors. I took a hysteroscope design with irrigation at the distal tip and reconfigured it into an endoscope for the spine. I put in two distal irrigation ports, light fibers and a lens, and changed the shape to oval. It was a major change that allowed for the rapid evolution of the spinal endoscopic technique.”

So what is the status of this procedure in the field? “Most companies have migrated toward procedures where an average surgeon or even a minimally qualified surgeon could be taught to operate competently. I look at it this way: if I'm going on the space shuttle, I don't want a single prop pilot to be doing the flying. It takes a particularly dedicated and/or well-trained person with the right surgical philosophy to do endoscopic spine surgery well. It should not, however, be surgeons and spine companies who want to make a lot of money quickly. Until endoscopic training is a routine part of surgical training, companies with endoscopic products will need to spend the money and time teaching the technology and procedures—or team up with spine companies that are set up for training. Surgeons

must decide whether to spend an extra six months or year to learn this procedure well. It is a super sub-specialization, requiring intense training to do it well. Even fellowship-trained spine surgeons may not be able to do the procedure competently without this training.”

By advocating his endoscopic surgical approach, Dr. Yeung didn't go looking for a fight; it found him. “This procedure is controversial partly because surgeons with mutual patients are critical. Because they completed a fellowship, they think their way is the only way to go. If they come across my surgical failures, let's just say my detractors are motivated to remember them; some actually try to create liability for me. Overall, the endoscopic procedures I have performed have resulted in a 90% patient satisfaction rate. As for the other 10%, unless there is a complication, because of the nature of the procedure, I haven't burned any bridges. Complications I encounter are similar to those in traditional spine surgery, but with less incidence and less morbidity.”

Anthony Yeung operates on the “let's get real” principle. “If you think about it,” says this no-nonsense physician, “spine surgeons have a built-in excuse; they operate, the patient complains, and they can blame it on the patient or on the uncontrollable paradoxical effects of spine surgery because the post-op X rays look good. The foraminal endoscopic approach does not injure normal functioning back muscles and ligaments. The paradoxical effects of the surgical approach are virtually eliminated. I'm able to operate under local anesthesia and I can probe patho-anatomy. When compared with endoscopic confirmation, imaging studies are only 70% accurate when measured against endoscopic visualization of patho-anatomy. Sometimes you have a patient with a normal MRI. The reality is that they can still have a painful annular tear. MRIs don't always show subligamentous herniations, recurrent herniations, or lateral stenosis; these things are obvious under the endoscope. The patho-anatomy in the hidden zones of MacNab and McCullough contain anomalous sympathetic and myelinated furcal nerves, subtleties and findings that are not appreciated, and therefore not accepted by the average spine surgeon.”

While determined to see his life's work be widely validated, Dr. Yeung knows that this takes time. “We are in a transition phase as the endoscopic technique evolves. In the first phase people criticize my work and think it's

crazy. Phase two comes when they see the good results but conclude that it's not viable because it is too difficult when compared with traditional, more accepted techniques. In the third phase, it will become commonplace for surgeons to use the endoscopic technique in well-selected cases commensurate with their endoscopic skills. This will happen when the procedure is incorporated into the regular surgical armamentarium of the spine surgeon.”

An enthusiastic but realistic Dr. Yeung wants the world to know his results are real. “In the end, we focus on what is hurting the patient. We do not operate unless we can address the pain generator, regenerate, repair, or replace patho-anatomy; fusion would no longer be the best option. Personally speaking, no one can be the best at everything, so I'm focused on being the best at what I do. The word on the street, however, is that if Tony Yeung is the only one who can do it then the technique is not any good.”

But Dr. Yeung knows this is far from the truth. “I truly believe that it is doable for those who can spare the time to learn it—those surgeons who do will have a competitive advantage for attracting discriminating patients. What I do is validated by my patients, referred directly by friends, family, and colleagues who don't want surgery any other way. I've done 2700 of these procedures; although I've given courses to hundreds of physicians, only 1% are doing it regularly and skillfully. Most don't have the hands-on training, the support in their surgical community or all the equipment necessary to do it well.”

Continues Dr. Yeung, “My vision is currently coming to fruition. In the industry today there is renewed focus on normal tissue preservation, motion preservation, tissue repair, tissue replacement and minimally invasive surgical techniques. The newest product that I'm involved with is a circumferential annular fence that can be used open or endoscopically to contain intradiscal implants for anterior stabilization such as artificial nucleus or bone graft. It could be used as a scaffold for biologics or injectables in the disc. The product's origins lie in my having performed endoscopic surgery on Dr. Jerry Segal, a cardiologist who had a patent on a stent device.”

A “Eureka” moment followed. “Afterwards, we adapted his device for the spine and, along with Jerry Segal, Matt Yurek, Hansen Yuan and Mike Klipcera, formed a company around the product. We named the company Ouroboros,

after an ancient Greek symbol of a snake devouring its tail and constantly regenerating itself. The configuration of the device is a circumferential mesh that can be used to contain biologic tissue regeneration products. It can contain any properly configured implant, and can reinforce the annulus. There is a lot of interest because many companies with intradiscal devices will need Ouroboros to assure containment of their device.”

Dr. Yeung, whose work gives him regeneration, is also involved in clinical research with companies that have products for posterior dynamic stabilization, nucleus replacement, and biologics. “Implantation of intradiscal devices will also necessitate the performance and confirmation of a thorough nucleotomy, something that is likely symbiotic with my endoscopic techniques. My hope is that new technology that will provide three-dimensional endoscopic visualization may flatten the learning curve.”

Continues Dr. Yeung, “In addition to this work, I have recently accepted the job as executive director of the International Intradiscal Therapy Society, an organization that will likely be in the forefront of providing evidence-based medicine on minimally invasive diagnostic and surgical procedures. My other time is spent as a Voluntary Associate Clinical Professor at the University of California San Diego School of Medicine in the Department of Orthopedics. After I trained several faculty members in endoscopic spine surgery, Steve Garfin, the chair of the Orthopedic Department at UCSD, invited me to join the faculty.”

Now that we know his work, what about the man himself? “I emigrated from China. When I was nine years old my mother brought me to the U.S. to escape the communist takeover; we got out one week before the country was closed off. I thoroughly embraced and adopted my new country. At the time in the U.S., there weren’t many professional

avenues open to Chinese people. With my father being a lawyer and my mother a U.S.-born radio personality in China, my family placed a heavy emphasis on education.”

Continues Dr. Yeung, “During my young life, my family was befriended by Dr. Jack Klein. He graciously took care of my family without charge when we could not pay. His son is a general surgeon and his grandson is an orthopedic surgeon in Tucson. I admired Dr. Klein for his generous nature and developed a desire to emulate him. I try to always credit him as one of my role models.”

The young Anthony Yeung was also guided by his father, a swimming champion who at one point represented China in the Olympics. “Regarding my education, my father said, ‘Don’t study to memorize. Learn the ‘why’ behind everything and nobody can take that away from you.’ I grew up on public education. In high school I went to an inner city school known for its focus on the trades. While only a small percentage of the students attended college, the school did have good training for college prep. I used that background to learn a number of trades, which, of course, helped me in orthopedics and spine surgery.”

The kind of fusion Dr. Yeung does accept is that of work and play. “Although I have no time for hobbies, it doesn’t bother me. I thoroughly enjoy my work and prefer to be in the lab or treating patients. My motto is, ‘No one can work harder than me.’ I am proud that my son, who did a fellowship with Robert Watkins and Lytton Williams, has a more balanced life and can incorporate the best of traditional spinal techniques, as well as his father’s invention, to do what is best for his patients.”

Dr. Anthony Yeung specializes in the subtleties of the spine. Hopefully, someday soon he will receive ovations for his innovations.

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