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It was supposed to be a Blue Ocean! Why sacroiliac joint fusion surgery is still a puddle of dreams

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Bruce Dall is a spine surgeon, having gained his medical qualification at the University of Nebraska Medical School (Omaha, USA), and an advocate for those with sacroiliac joint pain, publishing multiple papers on the joint. Dall edited the textbook *Surgery for the painful dysfunctional sacroiliac joint: A clinical guide*, the first to cover this topic. Most recently, he has written a book for the layperson entitled *Sacroiliac joint pain: For tens of thousands, the pain ends here*, containing patient stories and a discussion on the lack of surgeon education on sacroiliac joint pain. Here, he argues that the global spinal scene has been neglecting the sacroiliac joint for too long, and that patients are suffering as a result.

In 2010, I was told by one of the manufacturers of a device used in sacroiliac joint (SIJ) fusions that selling these devices for this surgery was expected to be the next Blue Ocean in medical device sales. For those who are not familiar with the Blue Ocean, it refers to literally unlimited returns for a business selling something. It is the “holy grail” that is constantly sought for in the sales market, especially in capitalist America. At the time this was told to me, it seemed reasonable that it could indeed happen.

Up to that time, it had become known that up to 22% of all low back pain occurs from pain generated, either totally or in part, from the SIJ(s). More surgeons were starting to believe that this joint really does move and suffers from the same arthritic changes that occur in other major joints like the spine and hip. It became known that stresses on the SIJ were increased after lumbosacral spinal fusions, especially if instrumentation was used, with the longer constructs causing more stress. The articles in the scientific literature up to 2010 overwhelmingly proved that SIJ fusion surgery worked and in up to 75% of the cases significant pain relief resulted. In my own practice, our hospital became an international referral base for those suffering with painful dysfunctional SIJs. For almost a decade over 20% of my spinal surgery practice was devoted to SIJ patients with chronic pain. This even resulted in the publication of the first textbook for surgeons on SIJ fusion surgery. Since 2010, as this new surge in industry got rolling, many more scientific articles have been published globally to further attest to the need for and the success of SIJ fusion surgery in the right patients.

It is now 2018, and as we assess the current status of SIJ fusion surgery in America what do we find? From an individual spine surgeon’s perspective, not much! Despite all the data being published about successful SIJ fusion surgery, both by self-taught orthopaedic and neurosurgical spine surgeons and those taught by industry, a Springer published textbook on the subject by multiple experienced and seasoned chapter authors, and a new global awareness that this condition is real and needs to be addressed—there is still no formally taught education out there, anywhere, especially from the institutions and organisations responsible for this sacred duty. This means that there is no formal education or research on the dysfunctional SIJ coming from medical schools, spine surgery residency programs, spine fellowship programmes, and, probably most importantly, the spine surgical societies that are primarily responsible for keeping up with and providing the education needed to keep spine surgeons informed and proficient at what they do.

In my opinion, some of the major neurological societies, as well as some of the larger spine and orthopaedic teaching societies, are most negligent in this respect. Due to this lack of engagement on the part of these trusted and powerful educational societies, unnecessary risk is now growing at a

rapid pace for patients needing these surgeries, the spine surgeons performing them, and the industry that has taken on the duty of attempting to inform and train everyone involved in this important form of treatment.

Because of this gross and premediated stance of doing nothing by our large teaching societies, several things are happening simultaneously that are endangering the very fabric of how patients with disabling chronic SIJ pain get diagnosed and treated by surgeons. The first sobering fact is that, if it is not being taught to spine surgeons, it is not looked for in the examination of the new low back pain patient. In turn, it becomes something that is not important or worth knowing about. This then translates into the smart surgeons having to figure this out for themselves and somehow teach themselves that the SIJ does result in severe chronic disabling pain in many individuals and that if some type of fusion is done most of these patients do improve. The lack of formal education further results in board examiners from both orthopaedics and neurosurgery completely avoiding this subject when asking questions that determine if a spine surgeon is proficient. The lack of meaningful involvement by the teaching institutions makes the necessary research this joint so desperately needs impossible to accomplish. The result is that all we really know at this point about both SIJ pain and the surgical treatment for it is that fusion surgery does seem to help with pain relief, but beyond that we know almost nothing. Insurance companies look at this lack of institutional involvement as fodder to claim that all this surgery for the SIJ is “experimental”. This is not a good situation for the tens of thousands of people who are out there and currently suffering with this type of pain.

The pressing question is: why are the major teaching societies not saying anything about the pain this joint can cause and the fact that surgeries do work in the right patients when performed by proficient surgeons at the right time? I certainly have my own very concrete and evolved opinions as to why, but that is not what this article is about.

The last time a Blue Ocean came along in spine surgery was with the pedicle screw. Surgeons were quick to recognise the worth of this screw in helping to achieve spinal fusions. My partner and I in the late 1980s performed 160 spine fusions using AO plates and screws to help foster solid fusions, and subsequently moved on to other more refined systems as they became available. Our teacher was Dr. Roy Camille, who taught us how to properly implant a pedicle screw and kept us out of trouble. Subsequently, both spine surgeons and industry in America began moving ahead with the use of pedicle screws at a rapid pace, while the large teaching organizations were ignoring the whole situation as it was just too new and revolutionary for the “old guard” to accept. What ultimately changed their minds and got them fully involved were the patients that were being injured by this

new technology, both due to poor training of the surgeons performing these complicated procedures, and some industries producing substandard screws that were breaking. It was the entrance of the legal system into the fray that ultimately got the teaching societies and the board examiners' attention. The FDA jumped in as well by labeling these devices as Class III devices that could cause paralysis or death. This resulted in a coordinated effort by all the appropriate institutions to properly train spine surgeons to perform these surgeries, large clinical studies to confirm the efficacy of pedicle screws, and the generation of good research to keep this all headed in the right direction. Patients benefited, surgeons became confident, and the FDA decreased pedicle screws to class II devices. It was only after all of this that the Blue Ocean for pedicle screws became a reality.

We need the same kinds of change with sacroiliac joint fusion surgery that the pedicle screw went through in order to open up that much needed Blue Ocean for sufferers of chronic SIJ pain, who do not get better with conservative measures. We need the big societies like NASS, AAOS, CNS and all the others to embrace SIJ pain and teach surgeons how to diagnose it, how to treat it conservatively, and how to choose the right surgical candidate. Surgeons then need to be taught all the anatomic variations that exist surrounding the SIJ and made comfortable with all the anatomy surrounding the joint. They need to be taught all the ways a SIJ can be fused successfully in this day and age. Spine surgeons in general are more comfortable with posteriorly oriented approaches, whilst general orthopaedic and trauma surgeons are more at home using lateral approaches. Research needs to be done to compare current systems in use as well as fostering new approaches and systems.

Right now, the SIJ fusion world is a total free for all that is using one approach (the 510(k) approach) with no one but industry in charge of educating the surgeons or providing oversight for the surgeries that are being performed. Complications do occur, and are currently managed in haphazard ways with no accountability to anyone. The one person who is really left out of the equation here is the patient. Patients who have poor results or injuries will latch on to someone to vent their frustrations. With the pedicle screws, it was the legal system. We have an opportunity now to address all our shortcomings in the whole spectrum of surgery for the SIJ chronic pain patient so that the ultimate outcomes will ensure that the patient is in the position of being first and foremost throughout their care. I believe that only when this becomes our mental framework for this condition will we see that Blue Ocean materialise.

This article originally appeared on Bruce Dall's LinkedIn page. Bruce Dall is a spine surgeon at the Western Michigan University School of Medicine, USA.