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10 Spine Surgeons on Defining Minimally Invasive Spine Surgery ^{Featured}

Written by Laura Miller | June 21, 2012

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Here are 10 spine surgeons discussing their thoughts on what constitutes minimally invasive spine surgery.

Ask Spine Surgeons is a weekly series of questions posed to spine surgeons around the country about clinical, business and policy issues affecting spine care. We invite all spine surgeon and specialist responses. Next week's question: **On a scale of 1 to 10, how much do you depend on device representatives in the operating room?**

Please send responses to Laura Miller at laura@beckershealthcare.com by Wednesday, June 27 at 5pm CST.

Q: How do you define 'minimally invasive' spine surgery?

Neel Anand, MD, Director of Spine Trauma, Minimally Invasive Spine Surgery, Cedars Sinai Spine Center, Los Angeles: There isn't one definition of minimally invasive spine surgery because it isn't a technique or product. It is more of a philosophy; what it means is doing any and all surgery in a non-disruptive manner, which is, in my mind, preserving as much as possible of the ligaments, tissues and muscles surrounding the spine. At the same time, surgeons must do the surgical procedure on the spine — bony elements and neurological elements — as confidently and appropriately as one should do. Any damage of muscles, ligaments and tissues in the spine that aren't a part of the pathology is really unnecessary collateral damage.

The job that must be done is two things: decompress the spinal canal and nerves and stabilize the spine. That to me is what minimally invasive surgery is all about. It doesn't matter whether you use a microscope, tubes, imaging and navigation to perform the procedure, or how big the incision is, as long as you are addressing the pathology of the spine without unnecessary collateral damage. We don't want to do "voodoo" surgery sometimes done with lasers; you have to decompress the spinal canal and provide stability if the spine is unstable.

Jaideep Chunduri, MD, Spine Surgeon, Beacon Orthopaedics & Sports Medicine, Cincinnati: Minimally invasive surgery to me, means any type of muscle sparing approach to the spine whether it means using small incisions (small fascial incisions), tubes or small retractors. This can be from anything like a lateral procedure, percutaneous spinal fixation, or in some instances an anterior lumbar fusion through a small retroperitoneal approach where you are completely away from nerves as well as not cutting of the musculature.

Dennis Crandall, MD, Founder and Medical Director of Sonoran Spine Center, Mesa, Ariz.: Using a smaller incision to perform a surgery that was previously done through a larger incision, in some cases with less disruption of the local anatomy.

Richard Kube, MD, Founder & CEO, Prairie Spine and Pain Institute, Peoria, Ill.: Minimally invasive spine surgery is a term applied to many types of procedures. In a sense, any type of procedure that minimizes the volume of collateral damage to surrounding bony and soft tissues during a spine surgery would be in many ways a minimally invasive procedure. Preservation of those tissues such as the multifidus in lumbar surgery helps to preserve the natural function of operated and surrounding non-operated portions of the spine. This preservation of the motion segment should translate into better motion and function while accomplishing desired pain control in treated individuals.

Fardad Mobin, MD, The St. Vincent Spine Institute, Los Angeles: Minimally invasive spine surgery provides strategically conceived approaches to the spinal pathology, through carefully planned surgical corridors, to minimize collateral normal tissue damage while providing adequate exposure and access to the target pathology.

Michael Schneier, MD, Neurosurgeon, Mission Community Hospital, Panorama City, Calif.: Minimally Invasive Surgery is an evolving process of utilizing novel technique and technology to achieve the same surgical goal and outcome via less traumatic measures. Minimally invasive surgery utilizes new technology and different planes of

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dissection and trajectories with greater surety, often yielding a better outcome resulting in fewer hospital days and a lowered medical cost.

Nick Shamie, MD, Co-Director of UCLA Comprehensive Spine Center: Minimally invasive surgery in my mind is trying to perform a surgery through the smallest incision possible, with the least amount of injury or collateral damage to the surrounding tissues...but also without jeopardizing safety or adequate treatment for the patients. In some cases, minimally invasive surgery requires a several inch incision. I have seen cases where a patient has been treated with "minimally invasive" techniques through a few millimeter incision and is not any better or in some cases even worse than preop; this is an example of stretching the indications of minimally invasive surgery.

Christopher Silva, MD, Rockford (Ill.) Spine Center: Minimally invasive spinal surgery (MISS) is loosely defined as any spinal surgery that attempts to minimize tissue damage caused by the surgical approach. MISS is therefore a term attached to notate the modification of a surgical approach for a given spinal procedure, as opposed to significantly modifying other aspects of a given procedure. Therefore, while the specific surgical approach differs between traditional, open surgery and MISS, the end goals of both techniques are the same.

Open spinal surgery relies significantly on direct visualization, by the surgeon, of the spinal elements, and variable manual sensory feedback of instrument response against bone and soft tissue resistance. Minimally invasive surgery, in general, differs in that the techniques rely on limited direct visualization and more dependency upon real time interpretation of fluoroscopy, particularly when instrumentation is inserted.

Risks do vary among procedures as MISS does not necessarily have lower risks compared to more traditional approaches. Although there are advantages of MISS in experienced hands, the long term outcomes for these modified approach procedures are not known to be substantially better than traditional approaches.

There has been a significant increase in available technologies that allow surgical approaches to the spine to be performed with less damage to the surrounding tissues. Some of these techniques are generally established while others are quite controversial and are ever evolving. It is unlikely, however, that there will ever be one specific "best MISS technique" identified, as appropriate and predictable surgical indications will always outperform a technique for a surgical approach.

Michael Steinmetz, MD, Chairman of Neurosciences & Medical Director of the Spine Center, MetroHealth System, Cleveland: Minimally invasive spine surgery is: surgery that minimally disrupts the anatomic barriers of the soft tissues of the spine.

Scott Tromanhauser, MD, Spine Surgeon, Boston Spine Group: Purists will likely say that it is surgery performed through tubes and percutaneously. I like to think of it as anything that reduces the impact on the patient compared to traditional open surgery. For example, performing an anterior lumbar interbody fusion is less "invasive" than an open posterior instrumented fusion. There is less muscle dissection, less bleeding, reduced risk of nerve injury and usually better tolerated by the patient. In my opinion, it is less a matter of what is minimally invasive and one more of what is appropriately invasive.

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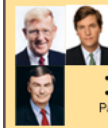
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