



## Hot Topics in Spine Surgery: Volume III

### Are all MRI studies created equal?

Advanced imaging modalities including MRI are an integral component in the assessment of spinal conditions. With escalating expenditures in healthcare, it is important to rationalize cost of imaging studies with the diagnostic information obtained. This invokes the statement, "*If all MRI's are created equal the least expensive should be utilized to save cost*". An appropriate follow-up question would ask "*Are all MRI's created equal?*" There is incredible variability with how imaging centers perform MRI's which has a dramatic impact on diagnosis. Specific variability includes:

- Tesla (strength) of MRI – The strength of the magnet contained in MRI scanners has a dramatic impact on the overall quality of the study and ability to correctly diagnose pathology.
- High-field versus low-field MRI – high-field MRI's have thinner slice sections (more views) and faster scan times which reduce motion artifact. Low-field MRI is often unable to detect pathology including small disc herniations, sequestered discs or synovial cysts.
- MRI imaging protocols – imaging protocols dictate how images are obtained including number of images, imaging planes and specific views obtained (sagittal, axial, coronal and foraminal)
- MRI radiologist interpretation - sub specialization of the interpreting radiologist with spine pathology markedly improves diagnostic capabilities.

Failure to utilize high quality MRI's with appropriate imaging protocols and sub specialty trained radiologists may result in unnecessary and inappropriate care, which may ultimately result in further deterioration of spine conditions, ironically generating an overall higher cost. At the Taylor Spine Team, our standard is to use a high-field 3 tesla MRI with superior imaging protocols which provide extensive views and diagnostic information. Interpretation is performed by radiologists with extensive training and experience in diagnosing spine pathology based on MRI studies.

*Reference - Herzog, MD, Richard J. "Are All Spine MRI Studies Created Equal? Understanding and Rewarding Quality." The Spine Journal 15 (2015): 2122-125. Print.*

### Orthopedic Surgery versus Neurosurgeon

In the treatment of spinal conditions, the question often arises, "*Orthopedic Spine Surgeon or Neurosurgeon?*" A recent article by Rodts and Lenke describes that both orthopedic spine surgeons and neurosurgeons complete extensive residency programs which focus on surgical correction of spine pathology. Today, orthopedic and neurosurgeons specializing in spine care are collaboratively referred to as "spine surgeons" as there is little distinction between the two. Both are trained in treating disc



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herniations, spinal stenosis, vertebral fractures and spondylolisthesis of the spine. An important differentiation in spine surgeons arises between those who have completed a post-residency fellowship program, and those who have not. Post-residency Spine fellowships provide additional specialized training to surgeons who are willing to improve skills treating spine conditions. Dr. Brett Taylor has completed a combined orthopedic/neurosurgery post-residency Fellowship at the Rothman Institute at Thomas Jefferson University. The Taylor Spine Team places extensive emphasis on the educational process and maintaining the highest level of knowledge to provide spine care to injured individuals.

*Reference - Rodts, MD, Gerald E., and Lawrence G. Lenke, MD. "Neurosurgeon or Orthopedic Surgeon? Does It Matter?" Spine Univ (2016): 1-2. Web.*

### Chronic Opioid Treatment in Worker's Compensation Treatment

Prescription narcotic treatment remains one of the most controversial topics in current medical literature. As an update to our prior newsletter release titled "Opioid Epidemic and Spine Surgery" the CDC released guidelines on March 18, 2016 regarding prescribing opioids for chronic pain. Recent empirical evidence supports short term (less than 3 months) of opioid treatment in reducing pain. Use of narcotics for greater than 3 months carries significant elevation of risks including addiction and death and no physiologic benefit. A recent commentary by Dr. Choll Kim titled "*NSAIDS can help manage spine pain postoperatively without opioids*" reviews a study of 1,400 patients who utilized NSAIDS 2 weeks following spine fusion. This demonstrated no effect on nonunion rates; however, due to bleeding risks, institution of NSAIDS can be recommended at 8 weeks postoperatively following spine procedures. At the Taylor Spine Team, IV Tylenol is used intraoperatively and after fusion procedures patients may be started on NSAIDS at 8 weeks postoperatively while narcotics are being weaned. If individuals are not weaned from narcotics by 12 weeks postoperatively, a consultation with a pain management specialist is arranged for narcotic cessation.

*Reference - Kim, Choll W. "NSAIDS Can Help Manage Spine Pain Postoperatively without Opioids." Orthopedics Today (November 2015): 20. Print.*

### Diabetic Spine Patients

Diabetes Mellitus is an epidemic which affects 26 million Americans. The disease is divided into type I and type II categories. Type I (T1D) is an acquired autoimmune condition which occurs in adolescents. Type II diabetes (T2D) occurs later in life and is rapidly increasing among the American population. The most common inciting factors for T2 Diabetes include obesity, inactivity, hypertension and genetic predisposition. T2 Diabetes is often associated with medical comorbidities including vascular disease, pulmonary disease and peripheral neuropathy. Surgical implications of T2 Diabetes include increased infection rates, increased costs, prolonged hospital stay and increased mortality rates. With specific relation to costs, a study by Golvinvaux et al. comparing complications after elective lumbar fusion found uncontrolled diabetics to cost on average \$11,000 more per case. Recommendations for preoperative evaluation include HgbA1c less than 7%. This has been shown to reduce rates of complications associated with T2D. On the Taylor Spine Team, preoperative patients



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undergo HgbA1c testing with a goal of <7%. We also utilize preoperative chlorhexidine gluconate (hibiclens) and Mupirocin (Bactroban) nasal ointment for 7 days preoperatively for infection prevention. Medical physicians are utilized as necessary to assist with perioperative glucose management, thereby reducing overall complications and costs.

*Reference - Armaghani, MD, Sheyan J et al. "Diabetes Is Related to Worse Patient-reported Outcomes at Two Years following Spine Surgery." The Journal of Bone and Joint Surgery 98 (2016): 15-22. Print.*

*Reference - Diulis, MD, Carrie A., and E. Kano Mayer, MD. "Caring for Diabetic Patients Requiring Spine Procedures." SpineLine (2016): 14-16. Print.*