Clinical Pearl: Nicotine Use in Spinal Surgery

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Target Audience:

Nicotine has been known to effect many aspects of health. Most physicians and patients are aware that tobacco use increases the risks for cancer, lung diseases, heart disease, stroke, and depression. However, many people are surprised to learn that smoking damages the spine, contributing to intervertebral disc disease and facilitating osteoporosis.

The association between back pain and smoking in adults is well established by decades of research. Degenerative disc disease is a condition where vertebral discs are weakened; they no longer properly act as cushions between the vertebrae. Instead of remaining strong, the discs become softer. This condition can develop naturally as part of the aging process but may also result from injury. Disc degeneration is thought to be largely responsible for back pain.

Nicotine use may be directly responsible for intervertebral disc degeneration by causing cell damage in the annulus and nucleus. All these detrimental changes mean that smokers damage not only healthy discs, but greatly accelerate disc degeneration in any already damaged discs.

Smoking may also increase sensitivity to pain by altering the perception of pain through the neuroendocrine system. One study evaluated self-reported health statuses from over 25,000 patients and found smokers who had spinal symptoms for the same amount of time as non-smokers reported symptoms as more severe and present for a greater percentage of time each day. Reporting was almost double in the smokers group compared to controls. 2

Tobacco also decreases your ability to heal after spinal surgery. Tobacco users have a higher incidence of wound complications. 3. Dural lesions at time of surgery. 4. Nicotine also is vasoconstrictor and limits new blood vessel formation. New vascularization is needed for bony fusion to occur. There for nicotine use has been shown to decrease the fusion rate in spinal surgery, higher re-operation rate, and need for more costly and less successful revision surgery.5.

Two year data comparing smokers vs non smokers in spinal surgery follow-up demonstrate current smokers are almost twice as likely to be dissatisfied with surgical outcome. 6.

Smoking cessation has been shown to improve patients surgical results for lumbar fusion compared to current smoker, but non smokers have the best outcomes regardless of smoking cessation. This indicates that there is some permanent impairment that nicotine use has within the body even after cessation. 7.

As we treat patient with spinal disorders, nicotine education and smoking cessation become an integral component of a successful treatment of the patient. Smoking cessation is an important step in patient undergoing spinal surgery and should be undertaken as soon as possible for all health benefits.
References:


