

A sprinkle of 'pixie dust' reduces post-surgical infection in spine

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(Medical Xpress) -- Scattering a gram of powdered antibiotic (vancomycin) directly into a spinal surgery wound appears to be a safe, cost-effective way to achieve low post-operative infection rates, according to a University of Rochester Medical Center study.

The URMIC team retrospectively reviewed the [medical records](#) of more than 1,500 patients who received this novel treatment at Strong Memorial Hospital at URMIC, and reported the results at the American Academy of Orthopaedic Surgeons 2012 Annual Meeting in March. The findings also have been presented at a Scoliosis Research Society meeting, and recently published in the *European Spine Journal*.

Robert Molinari, M.D., associate professor in the Department of [Orthopaedics](#), intuitively began using this method in the 1990s while deployed as a U.S. Army surgeon and working in less-than-sterile environments.

“My theory was that sprinkling powdered antibiotics directly into the wound might provide the highest concentration of medicine where it was needed most,” Molinari said. “And what I noticed was that my infections rates from that time period were low.”

After his deployment ended in 2003, Molinari began using the same technique at URMIC in his most complex cases, with patients most prone to infection due to severe spinal trauma or cancer. A dusting of [vancomycin](#) was used in addition to intravenous antibiotics prior to

surgery, the latter of which is called for in evidence-based guidelines set by The North American Spine Society.

“Our surgical residents said it looked like I was sprinkling pixie dust and they observed that it seemed to work like magic,” Molinari said.

Thus, the surgical residents -- William J. Molinari III, M.D., (Molinari’s nephew), and Oner A. Khera, M.D. – agreed to review the data from Molinari’s 1,512 consecutive cases from 2005 through 2010. They found a general infection rate of only 0.99 percent, equal to 15 patients or one in 100.

That compared to a national, general infection average of approximately 2.1 percent among 108,419 patients in the national database of the [Scoliosis](#) Research Society.

“Our infection rate is not zero percent – which would be ideal – but no matter how you look at it our rates are below the national averages, and as a result many surgeons are adopting this technique,” Molinari said.

He also noted that a gram of vancomycin costs only about \$4.27. He chose this particular antibiotic, in fact, because of its relatively low hospital cost, the ease of use in powdered form, and its broad and effective coverage against organisms that infect the spine, such as methicillin-resistant *S. aureus* or MRSA.

Infection after spinal surgery is a dreaded complication that can occur in up to 20 percent of all cases. It is associated with significant long-term illness or death. Accurate documentation of infection following surgery is important, and yet Molinari’s team also discovered that the scientific literature is confused by a range of types of infection, from superficial suture reactions to deep infections that require additional surgeries and long-term medical management.

The UPMC team observed that although many institutions have explored other methods of reducing infections – such as irrigating the wound with diluted povidone-iodine solutions, and using special drainage techniques and wound dressings – none appear to be as effective as powdered vancomycin during surgery.

Depending on the type of spinal surgery, the UPMC infection rates varied from 0.55 percent to 5.4 percent, with removal of tumors having the highest rates. Molinari noted that nationwide [infection rates](#) can be as high as 10 percent for cancer cases and among surgeries requiring use of metal screws and rods to stabilize the spine. His study purposefully omitted cases of superficial [infection](#).

Complications related to the use of powdered vancomycin were few. One patient experienced unexplained kidney failure after surgery, and two patients experienced temporary hearing loss that was resolved during the post-operative recovery period.

“We think we’re on to something and our study has been well received by the orthopaedics community,” Molinari said. “The next step would be a large, case-controlled trial – and already several institutions across the country have expressed interest.”

Provided by University of Rochester Medical Center

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