

## Minimally invasive surgery “markedly reduces” postoperative infection risk

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Minimally invasive surgery is generally considered to reduce blood loss and preserve surrounding tissue, among other benefits. There is a dearth in the literature, however, on the association between minimally invasive techniques and surgical site infections.

Research published in the *Asian Spine Journal* has found very low rates of postoperative infection following minimally invasive spinal surgery in comparison to open surgery.

“One of the worst complications of any orthopaedic or spinal operation is surgical site infection, which can have devastating consequences,” lead author [Arvind Kulkarni](#) told *Spinal News International*. “Hypothetically, it appears that the incidence of surgical site infection should be minimal in minimally invasive surgery compared to open surgery—the reasons being lesser soft tissue dissection, lesser destruction of tissues, lesser exposure of surface area to pathogens etc.”

Records from 1,043 patients (52% male, 48% female; 52.2 years average age) undergoing tubular discectomies, decompressions and transforaminal interbody fusions at the Bombay Hospital and Medical Research Centre in Mumbai, India, from January 2007 to January 2015 were used to find the frequency of surgical site infection over the 12 months following each procedure.

Three patients from the cohort developed surgical site infection (0.29%; 0% for noninstrumented surgeries, 1.07% for instrumented surgeries), all of whom had risk factors for infection (two patients had diabetes and one was obese). In each case, potential causes for infection were described. One surgery was particularly long, one involved the accidental puncture of the abdomen with a guidewire, and one required the use of a power drill to create tracks for pedicle screws due to tough bone.

The authors performed a literature review using a MEDLINE search to find reported rates of infection in open surgery for comparison. The results they discovered varied from 0.7% to 16% surgical site infection rates following open surgery. This makes for a 2 to 16 fold increase in postoperative infection in comparison to the results for minimally invasive procedures in the present study.

The researchers also used hospital records to work out the financial burden of the direct costs of surgical site infection. “Infections after open spine surgery increase the health care utilisation cost four-fold,” the authors write, commenting on that reported in the literature. Reporting on their centre’s own results, the researchers note that the additional direct costs of surgical site infection per 100 minimally invasive procedures was only US\$2,678. This makes minimally invasive procedures, they argue, financially appealing in comparison to open surgery, in terms of additional healthcare utilisation costs.

The research was limited in a number of ways. Because it was a single-centre trial, the authors note, longer operative times and steep learning curves associated with minimally invasive surgery might lead to different results at different centres, depending on the experience of surgeons. Furthermore, the lack of a control group of comparable open procedures at the institution weakens the groups’ conclusions. The tiny number of infections in the series, too, means that “a valid conclusion regarding the risk factors cannot be extracted” and “do not represent every situation that could arise in patients with surgical site infections.”

Future research efforts should be focused on expanding the application of minimally invasive techniques, Kulkarni told *Spinal News International*. “The next steps should be more research and innovation to make minimally invasive surgery possible for all indications in spine surgery, more research to develop newer powerful antibiotics, and more efforts to stop antibiotic abuse and standardise protocols for effective and safe use of prophylactic antibiotics.”

The authors conclude, in spite of the study’s limitations, that the “minimally invasive technique markedly reduces the risk of postoperative infection when compared to other large open spine surgery series.” As well as offering lower risk of infection, minimally invasive spinal surgery “can be an effective tool to minimise hospital costs.”

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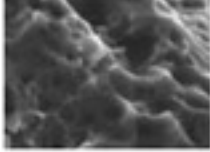
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