Differences In Outcomes Of Cervical Spine Surgery At Teaching Versus Non-Teaching Hospitals

For patients undergoing surgery on the cervical (upper) spine, overall rates of complications and death are higher at teaching hospitals than at non-teaching hospitals, reports a study in the June 1 issue of Spine *[1]*. The journal is published by Lippincott Williams & Wilkins [2], a part of Wolters Kluwer Health [3].

But the differences are small and are likely explained by the more-complex surgeries performed and higher-risk patients treated at teaching hospitals, according to the report by Dr Kern Singh of Rush University Medical Center, Chicago, colleagues.

Small Increase in Risks with Cervical Spine Surgery at Teaching Hospitals…

Using a national database (the Nationwide Inpatient Sample), the researchers identified more than 212,000 cervical spine surgeries performed at U.S. hospitals between 2002 and 2009. The study focused on cervical fusion procedures, performed to join together one or more vertebrae in the upper spine; and various decompression procedures, done to relieve pressure on spinal nerves.

Dr Singh and colleagues compared complication and mortality rates for patients treated at teaching hospitals, which have residency training programs, versus non-teaching hospitals. The characteristics of the patients treated and procedures performed were compared as well. About 55 percent of the procedures were done at teaching hospitals, even though teaching hospitals accounted for just 30 percent of hospitals in the database.

Risks of both death and complications were higher at teaching hospitals. The mortality rate was twice as high: 1.2 per 1,000 patients at teaching hospitals, compared to 0.6 per 1,000 at non-teaching hospitals. The complication rate was also somewhat higher at teaching hospitals: 24.7 versus 17.4 per 1,000 patients.

…But Mainly Related to Higher-Risk Patients and Procedures

However, there were also some significant differences in the types of surgeries performed and the characteristics of patients treated. Teaching hospitals performed more complex procedures, entailing higher surgical risks. For example, they performed more multilevel fusion procedures, in which three or more vertebrae are fused. Teaching hospitals also treated more patients with pre-existing medical conditions that could increase the risk of poor outcomes.

After adjustment for these and other factors, undergoing surgery at a teaching

hospital was no longer associated with a higher mortality risk. In contrast, older age and certain medical conditions remained significant risk factors.

There's a long history of debate over the quality of care provided at teaching and nonteaching hospitals. Studies have found that teaching hospitals achieve better outcomes for patients with some common medical conditions, and for certain types of complex surgery. But patients are sometimes concerned about risks related to having a resident (trainee) surgeon perform their procedure.

The new study shows some "subtle yet significant" differences in outcomes of cervical spine surgery among U.S. teaching versus non-teaching hospitals. Mortality and complication rates appear higher at teaching hospitals. However, teaching hospitals also perform more complex surgeries in a higher-risk patient population, which likely explains the difference in outcomes.

Dr Singh and colleagues note some important limitations of their database analysis—for example, it provided no information on whether patients were operated on by a resident or not.

"This study should provide reassurance to patients that the presence of a teaching hospital will have little, if any, effect on their surgical outcomes," according to an editorial by Dr Timothy S. Carey of University of North Carolina. Further studies are needed to assess longer-term benefits or risks from cervical spine surgery, after patients are discharged from the hospital.

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