

Risk of blood loss in childhood back surgery varies with cause of spine deformity

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(Medical Xpress) -- The relative risk of blood loss during corrective spine surgery in children appears linked to the underlying condition causing the spinal deformity, according to a new study from Johns Hopkins Children's Center.

Results of the study, published online March 15 in the journal *Spine*, can help surgeons prepare, plan and safeguard against this common and serious complication, the investigators say. Blood loss during surgery can increase the length of hospital stay, lead to complications and portend worse overall outcomes.

The Johns Hopkins investigation, believed to be the first to explore the link between intraoperative blood loss and pediatric patients' underlying condition, is based on an analysis of 617 cases of children, ages 10 through 18, who had surgery to fuse bones to stabilize and correct a spine deformity. All surgeries were conducted at Johns Hopkins between 2001 and 2011.

Review of the cases showed that children with cerebral palsy experienced the highest blood loss — 3.2 milliliters of blood per kilogram of body weight on average — compared with children with other conditions, the researchers found. Children with idiopathic scoliosis — a curvature of the spine not associated with any known underlying disease — had the least blood loss. Those with neuromuscular conditions, such as muscular dystrophies and muscular atrophies or traumatic spinal cord injuries, as well as those with genetic syndromes



like Marfan or Down, ranked in the middle. Overall, children with neuromuscular and genetic conditions were more likely to suffer significant blood loss than those with idiopathic scoliosis, but less likely than those with cerebral palsy, the researchers concluded. Like children with idiopathic scoliosis, children with a condition known as Scheuermann's disease, a spinal deformity that causes a hunchback, had relatively little blood loss.

"Our findings have clarified the suspected but not well understood link between blood loss and underlying condition that, we hope, will help surgeons ward off or at least minimize complications like prolonged recovery, poor healing and susceptibility to infection," says senior investigator Paul Sponseller, M.D., director of orthopedic surgery at Johns Hopkins Children's Center.

The researchers say the elevated risk of blood loss among children with neuromuscular and genetic conditions is likely due to poor venous tone, altered blood-clotting ability and low platelet count, the researchers say.

But the disproportionately high blood loss in those with <u>cerebral palsy</u> patients remains a bit of a puzzle, Sponseller says.

"There is no immediately obvious reason why these <u>children</u> would be more prone to <u>blood loss</u> than others, yet they are," Sponseller says.

Co-investigators on the study included Amit Jain, B.S., and Dolores Njoku, M.D., both of Hopkins.

Provided by Johns Hopkins University

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