

Antimicrobial sutures reduce infections in brain shunt surgery, study finds

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Children born with hydrocephalus, or "water on the brain" must have shunts implanted to drain the fluid away from the brain to reduce harmful pressure.

While shunts do their job well, the rate of shunt infection in children is very high for a variety of reasons, which requires putting the child through another surgery to replace the shunt, bringing with it more hospital time, potential additional neurological complications and an increased risk of death.

Now a new trial conducted by faculty at the University at Buffalo has shown that using antimicrobial sutures to secure the shunt and close the wound significantly reduces the number of shunt infections arising during the first six months after surgery.

Results of the trial appear online in the *Journal of Neurosurgery: Pediatrics* and will be published in the August issue of the journal.

Sixty-one children requiring shunt surgery were assigned randomly to undergo their surgery with antimicrobial sutures, considered the study group, or with usual sutures, which served as the control group. A total of 84 shunt procedures were performed over 21 months. All procedures were performed by one of two pediatric neurosurgeons at Women & Children's Hospital of Kaleida Health in Buffalo.

At the trial's end, the shunt infection rate in the study group was 4.3 percent (2 of 46 procedures), compared to 21 percent (8 of 38 procedures) in the control group.

"Many techniques and devices have been investigated to reduce shunt infection rates," said Curtis J. Rozzelle, M.D., assistant professor of neurosurgery in UB's School of Medicine and Biomedical Sciences and first author on the paper.

He also is surgical director of the Comprehensive Epilepsy Program at Women & Children's Hospital. "Some studies, but not all, found that antibiotic-impregnated shunt systems in particular appear to reduce infection risk," noted Rozzelle.

"Unfortunately, none of these studies were prospective, randomized and double-blinded.

"In animal trials sutures coated with the antimicrobial triclosan have been shown to reduce the number of bacteria adhering to sutures, but only one study has been published to date on their effect in preventing surgical site infection, so we decided to conduct our own trial," he said.

"Our results showed that using antimicrobial sutures reduced infection risk by 16 percent."

Antibiotic-impregnated shunts, which are used in some surgeries, have several limitations, said Rozzelle: "They don't provide complete protection, they can't be used in patients who are allergic to the antibiotics and they are a lot more expensive than non-impregnated shunts."

"Closing wounds with antimicrobial sutures may reduce infections in procedures implanting other devices, such as pacemakers and neurostimulators, pumps that deliver pharmaceuticals and shunts elsewhere in the body," he said.

Rozzelle and colleagues are planning to conduct a larger randomized controlled trial to confirm their initial findings.

Source: University at Buffalo

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