Surgery in Infants and Young Children Heightens Neurodevelopmental Risk, Study Finds

ScienceDaily (Oct. 18, 2010) — When children undergo anesthesia during surgery, the long-term effects that anesthetics have on the developing brain is relatively unknown. A study presented at this year's American Society of Anesthesiologists Annual Meeting assesses the association between exposure to anesthesia in children 3 years old and younger and their risk for developmental and behavioral disorders.

The Columbia University College of Physicians and Surgeons study is one of a recent series by scientists seeking to determine if research from animal models showing damage to the developing brain from commonly used anesthetic agents is a clinical problem for infants and young children who receive anesthesia.

"We do not know how much of the excess risk for these disorders is attributable to anesthesia and surgery," said the study's lead author Charles DiMaggio, Ph.D., Associate Clinical Professor, Department of Anesthesiology, Columbia University. "While we suspect factors unrelated to anesthesia and surgery also play a large role in increased risk for developmental and behavioral disorders, it is important to determine the role of anesthetic agents."

About the Study

In this retrospective cohort study of New York State Medicaid health records, 10,450 children who were born between 1999 and 2005 were followed. A total of 304 children with no history of developmental problems had surgery for a variety of reasons before the age of three, while the remaining 10,146 children did not have surgery.

Findings showed 25 percent of children who had surgery were subsequently diagnosed with developmental and behavioral disorders, compared with just 9 percent of children who did not have surgery.

After taking into account pre-existing illnesses, birth complications and sex, the researchers concluded surgery at an early age doubles the risk of children having developmental disorders. The researchers also concluded that children exposed to anesthetics are more likely to have developmental delays.

"While this study found an association between anesthesia use and neurodevelopmental problems, clinical evidence remains unclear and there is no reason to keep children from needed surgery," explained study author Lena S. Sun, M.D., EM Papper Professor and Chief of the Division of Pediatric Anesthesia at Columbia University. "However, our results underscore the need for more definitive, prospective clinical research on the long-term effects of surgery and anesthesia in children."