

## Though rare, some disabilities seen long after newborn heart surgery

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Study authors suggest a lack of oxygen before the procedure may play a role.

(HealthDay)—Some newborns who undergo complex heart surgery may be more likely to have neurological or motor disabilities—such as cerebral palsy—as they grow older, a new study suggests.

However, one [pediatric surgeon](#) not involved with the study said such complications were relatively rare.

The Canadian study authors said that it's not necessarily the surgeries that might have led to the disabilities. Instead, a likely reason for later trouble is that the children's hearts pumped too little oxygen to the body and brain before the surgery, the authors suggested.

"This article highlights the frequent occurrence of chronic neuromotor

disability in patients who had complex [cardiac surgery](#) and the importance of early and aggressive testing of patients at risk, including prenatal testing to identify a fetus with complex congenital cardiac defects," said Dr. Irving Shen. A professor of pediatric and congenital cardiac surgery at Oregon Health & Science University's Doernbecher Children's Hospital in Portland, Shen was not involved in the study.

The babies with the highest risk of disabilities were those who needed multiple surgeries or who had higher levels of lactate in their blood when they underwent their first surgery, Shen said. Lactate is a substance produced when the body tries to function normally without enough oxygen, he explained. That means higher lactate levels indicate lower oxygen levels.

Most of the disabilities don't seem to be a result of the operations, said Dr. David Meyer, a pediatric cardiothoracic surgeon at Cohen Children's Medical Center in New Hyde Park, N.Y.

Meyer also noted that most of the babies who had these complex surgeries did well, and didn't have these disabilities.

"It is important to realize that the vast majority of surviving patients at 4.5 years old—almost 95 percent—do not have the cerebral palsy or acquired brain injury that this study investigated," said Meyer, who also wasn't involved in the study.

The findings were published online Sept. 21 in the journal *Pediatrics*.

The study researchers tracked more than 500 children born in Canada who received complex heart surgery requiring a heart and lung bypass when they were 6 weeks old or younger. Newborns require these surgeries when they're born with certain kinds of heart defects.

When the children were 4.5 years old, the researchers assessed 420 of them for various types of motor, sensory or neurological disabilities. Just over 4 percent of those who had one heart surgery had some kind of neurological or motor disability. Nearly 10 percent of children who needed more than one heart surgery had a disability, the researchers said.

Among the children with a disability, 72 percent had partial weakness or paralysis on half of their body, and 80 percent had a type of cerebral palsy, where they have stiff, tight muscles that they have difficulty controlling, the study found.

Further, 44 percent of these children had intellectual disability, 16 percent had autism, 12 percent had epilepsy, 12 percent were partially or fully blind, and 8 percent had partial or full deafness, according to the researchers.

However, the study authors determined that about a third of disabilities were caused by something that happened before the child underwent [heart surgery](#).

"It is unclear whether these patients, due to alteration of blood flow to the brain during development in utero, already have an abnormal brain at the time of birth or were more susceptible to injury," Shen said.

"If a significant number of brain injuries occurred between the time of birth and the first complex cardiac surgery, it will alter our practice of doing earlier cardiac surgery to manage patients with complex cardiac defects," he said.

On the other hand, if the cause of the disability is from some underlying condition that also plays a role in heart defects, then "perhaps it's not just lactate that is the culprit," said Dr. Richard Friedman, a pediatric cardiologist also at Cohen Children's Medical Center. Friedman wasn't

involved with the study.

Either way, the study's findings suggest there is still room for improvement in preserving the neurological abilities of children who need these kinds of heart surgeries, said Meyer.

While it isn't surprising that babies requiring multiple operations would already have a higher risk for long-term disabilities, the study "suggests that if the number of operations could be reduced, perhaps the outcomes would be better," Meyer said.

But the study's findings don't necessarily mean doctors should operate on babies sooner, he added. "It is known that operating on patients who are in suboptimal condition and whose lactate levels are high is associated with poorer outcomes," Meyer said.

Shen added, "What is unclear is whether early intervention in these patients will translate into better long-term outcome and quality of life."

The study authors said larger studies need to be done.

**More information:** For more about congenital heart defects, visit the [Cleveland Clinic](#).

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