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Cardiac hybrid OR gives newborn heart patient new hope

EDMONTON – A four-month-old Calgary boy with a congenital heart defect has been given time – and an improved chance of survival – after undergoing the first neonatal cardiac hybrid surgery in Western Canada.

Last October, an Edmonton pediatric cardiac team used the new hybrid operating room at the Mazankowski Alberta Heart Institute to treat an infant with aortic valve stenosis, a narrowing of the valve between the left ventricle of the heart and the largest artery in the body that caused the left side of the boy's heart to be smaller than it needs to be.

This milestone procedure – performed on Isaac Tymchuk when he was 16 days old – involved an interventional cardiologist (cardiac specialists who treat heart defects using minimally invasive, catheter-based techniques) and a cardiac surgeon working simultaneously in an operating theatre with the advanced imaging equipment that is necessary for catheter procedures.

“Thanks to the new hybrid OR, we were able to perform this less invasive procedure initially which eliminates the need to put a two-week-old boy on a heart-lung machine and enables us to delay the complex surgery until he is older. This should improve Isaac's chances of a positive outcome,” says Dr. Andrea Wan, pediatric cardiologist at the Stollery Children's Hospital.

Cardiac surgeon Dr. Mohammed Al Aklabi inserted bands to regulate the flow of blood to the lungs; at the same time, Dr. Wan inserted a stent through a catheter into a small artery that typically closes in the first days of the life, giving Isaac's heart another route for blood to circulate through his body.

“Having access to the hybrid OR means we can delay performing a complex open-heart surgery on a newborn,” says Dr Al Aklabi. “The procedure buys us time to see how Isaac's heart will grow before proceeding with a double or single ventricle repair.”

Shandra Tymchuk, Isaac's mom, learned 21 weeks into her pregnancy that her baby had a congenital heart defect.

“Since my husband Matt and I first learned about Isaac's congenital heart defect, we have taken every option available to give his heart the best chance possible,” says Tymchuk.

She was flown to Toronto for an experimental procedure to dilate Isaac's aortic valve in the womb during the second trimester of her pregnancy in hopes of keeping him alive and encouraging the left side of his heart to grow. The procedure was successful; however, Isaac required additional interventions following birth.

Tymchuk says she's thankful her son's continued care can be provided in Alberta.

“We are so grateful to live in a province where we have access to the equipment and expertise at the Stollery Children’s Hospital and the Mazankowski Alberta Heart Institute,” she says.

Approximately one per cent of children are born with a congenital heart defect.

Through donor generosity, the University Hospital Foundation provided \$6.6 million to fully fund the development of a hybrid operating room for the Mazankowski. About 50 procedures have been performed in the hybrid OR since its opening last April.

“The Mazankowski Alberta Heart Institute was built to deliver the highest level of care to patients young and old,” says Joyce Mallman Law, President of the University Hospital Foundation.

“Our donors are proud to have fully funded the cardiac hybrid operating room and are delighted that the littlest patients have benefitted from our world-class care that doctors are able to provide there.”

Alberta Health Services is the provincial health authority responsible for planning and delivering health supports and services for more than four million adults and children living in Alberta. Its mission is to provide a patient-focused, quality health system that is accessible and sustainable for all Albertans.

- 30 -

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