

Transplant Teams Perform the Institution's First Three Heart-Liver Transplants Within a Span of Seven Months

About 1,000 infants undergo a Fontan procedure every year, and many live well into adulthood thanks to specialized medical care. However, as these children grow older, their circulations often become vulnerable to various health issues, including heart dysfunction and liver complications. For some patients, a combined heart-liver transplant is the only alternative for a better long-term outcome.

Last year, transplant surgeons at Cincinnati Children's performed the institution's first heart-liver transplant, doing three of these complex surgeries in a span of seven months.

Two of the patients were in the 20s and were being followed in the Cincinnati Children's Fontan Management Clinic, which is part of the medical center's renowned multi-disciplinary Adult Congenital Heart Disease Program. They had developed poor function of the heart, causing congested blood flow and progressive scarring in the liver, which led to complications from portal hypertension and liver cancer. Our Fontan team, which includes a pediatric hepatologist, had been following those patients with advanced liver disease for many years, and these were the first to qualify for a heart-liver transplant.

"Only five other institutions offer pediatric heart-liver transplants—even the busiest programs might only perform one a year," says Alexander Miethke, MD, a pediatric gastroenterologist and medical director of the Liver Transplant Center. "There isn't a lot of published literature to inform evidence-based practice, but our experience with heart transplants and liver transplants was helpful."

Transplant teams at Cincinnati Children's have performed more than 700 liver transplants and more than 150 heart transplants total. "Preparing for a combined transplant required us to break with routines performed over the decades," Miethke says. "We had to look at everything, from streamlining the patient evaluation process to simulating parts of the surgery in the operating room to harmonizing immunosuppression protocols. It required tremendous collaboration, trust and communication."

700+Liver Transplants
(1986–June 2020)**150+**Heart Transplants
(1999–June 2020)**3**Heart-liver Transplants
(Through August 2020)

The multidisciplinary Fontan team includes specialists from several programs, including pediatric hepatology, cardiology and, when needed, oncology. This collaborative team performs multi-organ transplants with an en-bloc technique, where the heart and liver from the donor are left intact and transplanted as one bloc. For adult cases, the team works with University of Cincinnati Medical Center experts to provide care.

Hepatology published a study in June 2020 showing that the rate of heart-liver transplants for adult congenital heart disease in the United States is rising dramatically, Miethke says. "The Fontan Management Clinic currently has several patients listed or in evaluation for heart-liver transplantation," he adds. "It's exciting to be part of this emerging field."

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