

Split liver transplants for young children proven to be as safe as whole organ transplantation

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A new study shows that when a liver from a deceased adult or adolescent donor is split into two separate portions for transplantation—with the smaller portion going to a young child and the larger to an adult—the smaller portion used for the child will last just as long as if the child had received a whole organ from a donor close to his size.

The data, collected and analyzed by a team led by Boston Children's Hospital researchers Heung Bae Kim, MD, and Ryan Cauley, MD, MPH, was published online in *Liver Transplantation*, a journal of the American Association for the Study of Liver Diseases and the International [Liver Transplantation Society](#). Data on graft survival and mortality for adult recipients of split livers is currently being compiled for a separate study to be released soon.

Examining pediatric data provided by the United Network of Organ Sharing (UNOS), the authors researched the mortality and [graft survival](#) of 2,679 patients under the age of two who received [liver transplants](#) between 1995-2010. Of these cases 1,114 involved partial livers and 1,565 involved whole organs. Their research indicates that from 1995-2000 partial grafts had a higher risk of failure, but from 2000-2006 that risk was lower, indicating partial liver transplants became safer as experience with this practice increased. By 2006 both split and whole organs had similarly low rates of both graft failure and mortality, suggesting that their use could be increased to meet the demand for

smaller grafts.

"Infants and young children have the highest risk of death on the liver transplant waiting list, mainly due to the shortage of appropriately sized organs," says Kim, senior author on the study and director of Boston Children's Pediatric [Transplant Center](#). "But based on this new data, split liver transplantation may prove to be the answer to this difficult problem. If more liver donors were made available for consideration as split liver donors it could significantly reduce the number of young children on the waitlist for a liver, potentially reducing the waitlist mortality rate for this highly vulnerable population to near-zero."

Due to their small body size, infants and [young children](#) in need of a liver transplant cannot accommodate a whole graft (donated liver) from a larger sized donor. As a result these patients have three treatment options:

- wait for a whole liver from a similarly sized deceased donor to become available
- receive a portion of liver from a living donor (usually a family member)
- receive a split liver transplant from an adolescent or adult deceased donor

In split liver transplantation, a liver from a deceased donor is surgically separated into two unequal size organs—the smaller portion is used to transplant the child while the larger portion is used to transplant a large child or adult patient.

The process of splitting a liver for transplant and allocating the halves to two different recipients began in the mid 1990s and has become more widespread over time. However, adoption of this technique has met

some resistance due to early data suggesting that split liver transplants have a higher risk of graft failure and death than whole liver transplants. This new research reveals that this is no longer true among pediatric recipients.

"Our study confirms that there is no longer any increased risk of [graft failure](#) and mortality in the very young, regardless of whether or not the patient receives a partial or whole graft," says Cauley, first author on the paper. "We are hopeful that this new data will support ongoing efforts to make modifications in the national [liver](#) allocation policy that makes more livers available for splitting, thereby saving lives and improving quality of life for many children and their families."

More information: "Deceased Donor Liver Transplantation in Infants and Small Children: Are Partial Grafts Riskier Than Whole Organs?" Ryan P. Cauley, Khashayar Vakili, Kristina Potanos, Nora Fullington, Dionne A. Graham, Jonathan A. Finkelstein and Heung Bae Kim. Liver Transplantation; (DOI: 10.1002/lt.23667) Online Publication: May 21, 2013. doi.wiley.com/10.1022/lt.23667

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