Innovative Living Liver Donor, Split-Liver Transplantation Procedures at Baylor Dallas Help Ease Organ Shortage for Adults and Children

By Deborah Paddison

For years, a woman has watched her mother struggle with liver disease. The older woman is on the transplantation list, but there is a shortage of donor livers and—although her disease is debilitating—she’s not sick enough to be placed at the top of the transplant list. However, her daughter knows her mother’s liver could fail at any time.

In the meantime, the liver waiting list gets longer every day, while the pool of donor livers remains fairly constant. According to the United Network for Organ Sharing (UNOS), approximately 19,000 people nationwide are currently on the waiting list for a donor liver, but only about 5,000 liver transplants occur annually. In north Texas, about 500 people are currently waiting to receive a new liver. Unfortunately, many will die while waiting.

Today, however, surgeons at Baylor University Medical Center (Baylor Dallas) are using innovative techniques to combat this shortage.

Living Liver Donors
To help her mother, the daughter in the above situation could decide to donate a portion of her own liver. In this new surgical technique, surgeons remove the right lobe of the liver from a living donor for transplantation into the recipient. The livers for both patients regenerate in approximately two to six weeks, and the right lobe functions as a full liver for the recipient. The donor’s own liver and the transplanted portion both regrow to become fully functioning livers.

“The availability of adult-to-adult liver transplantation has the potential of eventually providing a significant...
number of livers and relief to patients waiting for a liver transplant,” says Goran Klintmalm, M.D., Ph.D., director of transplantation services on the medical staff at Baylor Dallas. “The procedure has already accomplished that goal in isolated pockets of the country.”

Dr. Klintmalm says there are still many unanswered questions about living donor liver transplantation.

“We have to study the long-term results, the impact of recurrent disease and many of the technological details,” he points out. “I expect, though, that we will get the answers we need and the technology will more and more accurately find its place in the overall transplantation program.”

Two-for-One
A second technique that is providing more patients with renewed liver is the non-living donor split-liver transplant, which Baylor Dallas surgeons have performed for about two years now.

“We split a donor liver from a cadaver into two separately functioning parts,” Dr. Klintmalm says. “Once implanted into the recipients, both parts grow to 95 percent of normal size within about six weeks.” Two people, instead of one, get a second chance at life as a result of someone’s decision to be an organ donor.

“When we take a single donor liver, split it and transplant each portion to two recipients, it makes the donor organ supply go twice as far,” Dr. Klintmalm adds. “In some areas of the country, split-liver transplants have already had a dramatic impact even on the adult waiting list, but the most important part is that children are better supplied with donor livers now than they ever were in the past.”

Previously, many children died waiting for liver transplants because the donor organ had to be size-matched to fit into a child’s body. Adult livers were just too big. But now that surgeons can split a donor liver, creating larger and smaller sections, more children can receive the transplants they need.

So far, Dr. Klintmalm says, about 10 split-liver transplants using non-living donor livers have been performed at Baylor Dallas, providing new livers for 20 people.

A “Bridge” to Transplant
While kidney failure patients can rely on dialysis to replace part of their kidney function, no such treatment yet exists to support patients in liver failure. So doctors are crossing new frontiers in the search for ways to keep liver patients alive longer while they await transplant, or even help some patients recover and avoid transplant completely.

Marlon Levy, M.D., assistant director of transplant services on the medical staff at Baylor Dallas, is coordinating two FDA Phase I clinical trials of liver cell perfusion, a new interventional technique for patients with both acute and chronic liver failure. In the first trial, cells from a pig liver are infused into the spleen of patients with acute liver failure. Patients may be kept alive for hours, days or weeks, giving their own livers enough time to recover.

In the second trial, patients with chronic liver failure from cirrhosis or other long-term causes will receive human liver cells. “Our goal is to see whether the new liver cells can ‘set up shop’ and start working to provide liver function,” Dr. Levy says. This “bridge” to transplant may buy the patient more time while waiting for a donor liver to become available.

All of these new liver techniques are true milestones, Dr. Klintmalm says. “As we do more of these, we will be able to save the lives of many patients who might otherwise die waiting for an organ.”

Organ Donation: The Gift of Life

Have you thought about becoming an organ donor, but weren’t sure what to do? It’s easy. Once you’ve made the decision, tell your family.

“Even if you’ve signed a donor card or have ‘organ donor’ on your driver’s license that’s not enough, because your family ultimately needs to give consent,” says Pam Silvestri, spokesperson for Southwest Transplant Alliance, the non-profit program that coordinates organ and tissue procurement for Baylor University Medical Center.

While the driver’s license and organ donor card are fine to have, should a tragic event occur they may not be readily accessible in time to see that your wishes are followed. But your family will be with you, and knowing what you wanted in advance will offer them some peace of mind.

“If donors have shared their decision with their families, when we ask about donation they say, ‘Yes, he wanted that. What do we have to do?’” Silvestri says. This offers families some sense of control in the midst of their helplessness, and the comfort of knowing that they can do something to give others a second chance at life.

For more information about organ donation, contact the Southwest Transplant Alliance at 1-800-788-8058 or www.organ.org.