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Combined Liver/Kidney Transplants Benefit Some Patients

Some patients waiting for a liver transplant also have kidney failure. For these patients, a combined liver/kidney transplant may be the best option. In recent years, the number of combined liver/kidney transplants performed has increased nationwide.

Baylor Dallas Launches Pancreatic Cyst Program

Just as polyps in the colon can be a precursor to colon cancer, up to 20 percent of pancreatic cancers begin as a cyst. Surgery to remove premalignant or early malignant tumors can cure the disease, which causes 36,800 deaths annually.

Study Shows Biomarker May Be Predictive of Islet Graft Function

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Role of Age in Lung Transplant: A Reevaluation

In considering patients referred for lung transplantation, most programs use the age of the patient as one of their criteria for candidacy for listing. The median age for lung transplant recipients is now 55 years old. Traditionally, patients above 65 were considered to be too “old” to have a reasonable outcome following lung transplantation. As transplant physicians and surgeons have developed more experience and expertise, the role of age has been reexamined.
High-Volume Centers Improve Liver Transplant Outcomes

As a result of the shortage of available donor livers for transplantation, nearly 2,000 candidates on the waiting list die each year. In response, U.S. transplant centers have expanded their criteria for donor livers, increasing the use of high donor risk index (DRI) allografts.

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The ideal liver donor is defined as less than 40 years old who died after head trauma, who did not have significant steatosis, chronic liver lesions or other transmissible diseases, and whose donation occurred after brain death. High-volume centers used donors with a higher mean DRI (2.07), more donors who were 60 years or older, more donors who died after a stroke and more donations after cardiac death.

Göran Klintmalm, M.D., Ph.D., FACS, chairman and chief of Baylor Annette C. and Harold C. Simmons Transplant Institute and physician on the medical staff at Baylor University Medical Center at Dallas, said Baylor has used higher-risk donor livers for many years. Baylor is one of the busiest adult liver transplant centers in the nation.

According to the Scientific Registry of Transplant Recipients, Baylor Dallas and Baylor All Saints Medical Center at Fort Worth performed a combined 131 liver transplants in 2010 with a 92-percent and 91-percent, respectively, patient survival at one year.

“It has been well known in the transplant community for many years that higher volume centers have better outcomes, but this is one of the first times someone has made the effort to gather the data,” Dr. Klintmalm said. “Because of our knowledge and experience, we are able to use higher-risk livers and obtain excellent results. We basically know how to make the higher-risk liver work.”

Proponents of using higher-risk organs rather than discarding them argue that the merits of earlier transplantation with these organs outweigh the risks associated with staying on the waiting list.

“The biggest risk for patients is not to receive a liver,” Dr. Klintmalm said. “We would prefer to have a prime liver every single time. But if we cherry-pick donors too stringently, we would have many more patients die on the waiting list because we can’t find a donor for them. There is no way to predict how much the mortality rate on the waiting list would increase, but it would likely be several times higher than it is now.”

Quick Facts

- Over 25 years ago, Baylor pioneered the first liver transplant program in the Southwest.
- One of three programs in the nation to perform more than 3,500 liver transplants.*
- Baylor’s expertise in the areas of hepatitis B and C is internationally renowned.

*Volumes are based on liver transplants at Baylor University Medical Center and Baylor All Saints Medical Center.
Combined Liver/Kidney Transplants Benefit Some Patients

Some patients waiting for a liver transplant also have kidney failure. For these patients, a combined liver/kidney transplant may be the best option. In recent years, the number of combined liver/kidney transplants performed has increased nationwide.

In addition to patients who experience kidney failure as a result of their primary liver disease or infection with the hepatitis C virus, there has been an increase in the number of patients with non-alcoholic steatohepatitis, or NASH. Patients with NASH are expected to outnumber patients with hepatitis C within the next 15 or 20 years.

“In the past, it was uncommon for a patient with liver disease to have hypertension,” said Nicholas Onaca, M.D., a transplant surgeon on the medical staff at Baylor University Medical Center at Dallas. “Now, because of the prevalence of metabolic syndrome in the population, many patients with liver disease have hypertension and/or type 2 diabetes, making them more prone to kidney failure.”

Combined liver/kidney transplants also have increased since the introduction of the MELD score, which has improved access to transplantation for the sickest patients and lowered mortality on the waiting list.

Because one component of the MELD score is creatinine level, more patients with kidney dysfunction—either from or independent of their liver disease—are selected for transplant.

“One of the challenges in choosing patients for a combined liver/kidney transplant is the fact that a patient’s kidney dysfunction may be reversible after liver transplantation. On the other hand, patients who develop kidney failure after a liver transplant and then require dialysis have a much higher mortality rate while waiting for a kidney transplant,” Dr. Onaca said.

“The immunosuppressive medications that are the cornerstone for maintenance post-transplant can damage the kidneys. If a patient has borderline kidney function before transplant, there is the risk he or she might become dependent on dialysis after transplant,” he said.

Dr. Onaca said Baylor takes a conservative approach when establishing who should receive a combined liver/kidney transplant. Patients are evaluated by specialists in hepatology, transplant surgery and nephrology, and must go through two different transplant selection committees.

“Patients who are considered for a combined transplant either already have some degree of kidney failure or are very likely to develop it,” he said. “We are sensitive to the fact that the waiting list for kidney transplantation is quite long, and we don’t want to disadvantage that patient population.”
Baylor Dallas Launches Pancreatic Cyst Program

Just as polyps in the colon can be a precursor to colon cancer, up to 20 percent of pancreatic cancers begin as a cyst. Surgery to remove premalignant or early malignant tumors can cure the disease, which causes 36,800 deaths annually.

Baylor University Medical Center at Dallas will offer a Pancreatic Cyst Program beginning in January to evaluate and treat pancreatic cysts, which occur in up to 13 percent of the population. The program—one of the few such programs in the nation—will fall under the auspices of the Baylor Liver and Pancreas Disease Center.

“Patients have CT scans for all sorts of reasons these days. About 2.5 percent of patients will have pancreatic cysts that are discovered as incidental findings on the scan,” said Scott Celinski, M.D., a surgeon on the medical staff of Baylor Dallas. “Cysts can be benign or cancerous, or have the potential to become cancerous. This program will give physicians and patients a fast and convenient way to have these cysts evaluated and removed if needed.”

Patients referred to the Baylor Dallas Pancreatic Cyst Program will be cared for by a multidisciplinary team that includes gastroenterologists, radiologists, pathologists and surgeons. If it is determined that a patient needs further testing, an endoscopic ultrasound and biopsy may be performed. If the cyst is found to be malignant or pre-malignant, then one of two surgical procedures may be performed.

“Depending on the location of the cyst, we will either perform the Whipple procedure or pancreaticoduodenectomy, in which the head of the pancreas, gallbladder, bile duct and part of the small intestine are removed,” said Dr. Celinski. “If the cyst is in the tail of the pancreas, a distal pancreatectomy is performed, which is usually done laparoscopically.”

All the members of the team have many years of experience in caring for patients with pancreatic disease. This new program will bring all the different specialties together into a multidisciplinary clinic, making it much easier and faster for patients to navigate the system.

To refer a patient to the Baylor Dallas Pancreatic Cyst Program, call 214.820.2055.

Quick Facts

- First facility in the Southwest to be approved by the American Society of Transplant Surgeons as a surgical training program in pancreas transplantation.
- Pancreas patient survival rates at Baylor University Medical Center and Baylor All Saints Medical Center exceeded the national average for one-year survival.
- The program* has performed 220 pancreas transplants.

*Volumes are based on pancreas transplants at Baylor University Medical Center and Baylor All Saints Medical Center.
Study Shows Biomarker May Be Predictive of Islet Graft Function

Given the choice, the majority of patients with type 1 diabetes would prefer islet cell transplantation in place of insulin injection therapy. However, there are still major issues that prevent the use of this treatment as a standard therapy. Poor efficacy of islet isolation is one of the problems. Even though a normal human pancreas contains approximately one million islets, typically only half that number is recovered.

Researchers at Baylor University Medical Center at Dallas and Baylor All Saints Medical Center at Fort Worth are studying the role of a biomarker called HMGB1 (high-mobility group box 1 protein) in islet cell graft function.

Recently, two manuscripts authored by the Baylor research team have been accepted for publication in the journal *Cell Transplantation*.

“We’ve demonstrated that mouse islets contain high levels of HMGB1, and during pro-inflammatory cytokine-induced damage, islets release HMGB1 outside the cell,” said Marlon Levy, M.D., surgical director of transplantation at Baylor Fort Worth and physician on the medical staff at Baylor Fort Worth and Baylor Dallas. “The released HMGB1 is involved in the initial events of early islet loss. In our present study, we hypothesized that low temperature conditions could prevent both hypoxia-induced islet cell damage and HMGB1 release from islets in a mouse model.”

In the study, isolated mouse islets were cultured under normoxic or hypoxic conditions at 37°C, 22°C and 4°C for 12 hours. Islet viability and functionality tests were performed. HMBG1, among other markers, was measured. Results showed that low temperature conditions substantially reduced hypoxia-induced cell death. In addition, low temperature islet culture significantly increased the insulin secretion from islets by high glucose stimulation. All recipient mice reversed diabetes after receiving the hypoxia-4°C islets but not after receipt of hypoxia-37°C or 22°C islets. In addition, the amount of released HMGB1 was significantly reduced in the hypoxia-4°C islets compared to those of the hypoxia-37°C islets.

“It appears that low temperature conditions could prevent hypoxia-induced islet cell damage, inflammatory reactions in islet HMGB1 release and expression, thereby improving the efficacy of isolated islets,” said Bashoo Naziruddin, Ph.D., director of the Islet Cell Laboratory at Baylor Dallas. “The amount of released HMGB1 reflected the degree of islet damage and correlated with the outcome of islet transplantation in mice. Hence, released HMGB1 levels from islets should be a useful marker in evaluating the potency of isolated islets.”

Quick Facts

- North Texas’ first islet cell transplant.
- Baylor’s islet cell laboratory is one of only a few in the country to process cells for transplantation.
- Baylor achieves 100 islet cell isolations.
Temporary VADs Buy Time for Patients with Heart Failure

For patients with severe heart failure or cardiogenic shock, their hearts are too weak to undergo major interventions. Temporary left ventricular assist devices such as the Impella® and TandemHeart® can temporarily support the heart and provide better circulation to the body, so physicians can determine if they are candidates for a longer-term intervention.

“If a patient is too sick or has too many unresolved issues, we can’t clear them for an LVAD or possible transplant,” said Shelley Hall, M.D., medical director of cardiac transplant, LVAD and congestive heart failure programs at Baylor University Medical Center at Dallas. “While the traditional use of the Impella is a few hours of support, we have successfully used it for an extended length of time as a bridge to a decision regarding a more long-term solution.”

Dr. Hall said the Impella may be used in high-risk percutaneous interventions, such as putting a stent into a patient with an unstable heart, and in patients with heart failure who need some unloading but not complete support. The device also may quiet an arrhythmia.

The Impella 2.5, which pumps 2.5 liters per minute, is implanted percutaneously through an incision in the groin. From there, the device is advanced through the patient’s femoral artery until the device sits across the aortic valve, with one end in the left ventricle and the other in the aorta. The pump draws blood from the left ventricle and pumps it into the aorta and the rest of the body. The Impella 5.0, which provides complete support with five liters per minute, requires a cutdown in which the pump is advanced under direct visualization.

In the three years the Impella has been used at Baylor, several innovations have been developed to improve the procedure, including using the axillary vessels rather than the groin vessels. This allows the patient to sit up, walk and participate in physical therapy rather than remain bedbound.

Baylor Dallas is now using a hybrid procedure to insert the Impella. A vascular surgeon performs the cutdown and a transplant cardiologist advances the device to the aorta. Additionally, to improve the stability of the device, the surgeon attaches a Dacron graft to the vessel, which allows the graft to be tied securely to the sheath that contains the Impella. “This technique minimizes bleeding and helps keep the Impella in place,” Dr. Hall said.

The Impella 5.0 is now used at Baylor for the longest short-term support with the Impella, at 27 days. (The record is now 36 days.) Baylor Dallas also was the first medical center to switch a patient from the Impella 2.5 to the Impella 5.0, and had the first patient with an Impella 2.5 go on to receive a heart transplant.

The TandemHeart is a temporary support device similar to the Impella. The major difference is in how it is placed. In a more labor-intensive procedure, the TandemHeart is inserted through the femoral vein into the right atrium, going through the septum. The catheter sits in the left atrium and pumps blood out through external tubing and puts it back into the femoral artery.

“The TandemHeart provides more complete support for the patient, almost approximating what a true LVAD can do, although the Impella 5.0 comes close,” said Ravi Vallabhan, M.D., an interventional cardiologist on the medical staff of Baylor Dallas. “Because we cross the septum, insertion of the TandemHeart is a more risky procedure.”

The TandemHeart is most appropriate for patients at risk for clots in the left ventricle or problems with their aortic valve. If there is a clot, it can easily be dislodged by putting in the Impella, Dr. Vallabhan said.

Both the Impella and TandemHeart can temporarily support patients’ heart function in two major instances:

- The patient is expected to recover after a massive heart attack and emergency angioplasty, but the left ventricle may take a week or two to recover.

- The ventricle is not expected to recover but the temporary VAD bridges them to a more definitive procedure, such as implantation of the HeartMate LVAD or heart transplant.
Role of Age in Lung Transplant: A Reevaluation

In considering patients referred for lung transplantation, most programs use the age of the patient as one of their criteria for candidacy for listing. The median age for lung transplant recipients is now 55 years old. Traditionally, patients above 65 were considered to be too “old” to have a reasonable outcome following lung transplantation. As transplant physicians and surgeons have developed more experience and expertise, the role of age has been reexamined.

In 2003, only 20 percent of lung transplant recipients were above age 60. In the past seven years, the percentage has increased to 30 percent. According to data collected by the International Society for Heart & Lung Transplantation (ISHLT) Registry, in 2000 only 1.6 percent of the lung transplant recipients were age 66 or older; in the first six months of 2010, 12 percent of the lung transplant recipients were above age 66.

“The data still clearly shows that the relative risk of one-year mortality is significantly increased in patients above age 65; but because of our experience and stringent screening criteria, we believe the risk has become acceptable, even though older patients may not have the same favorable outcomes as younger patients. In addition, with the use of the lung allocation score, there are more patients being transplanted who have interstitial lung disease, which occurs more frequently in older patients,” said Randall L. Rosenblatt, M.D., FACP, FCCP, medical director of lung transplantation and chief of pulmonary and critical care at Baylor University Medical Center at Dallas.

Dr. Rosenblatt further emphasized that there is a difference between chronological age and physiological age. “Many of these patients who are considered as ‘older’ only have an end-stage lung disease that markedly impacts their two-year survival but have normal function of their other organs.”

However, to be listed, patients must be free of any other major organ dysfunction which, in the past, was considered to be a normal part of aging. “Older patients many times have a decrease in their renal function that would compromise their status because of the renal toxicity associated with the calcineurin inhibitors, one of the mainstays of anti-rejection therapies. Older patients should also be carefully screened for cancer since immunosuppression is a risk for the development of cancer in all patients undergoing any type of solid organ transplant,” he said.

The age of patients also influences the decision to perform a single or bilateral lung transplant. “Overall, about 72 percent of all lung transplant recipients receive a bilateral lung transplant,” he said. “In our program at Baylor, as well as many others, we will consider older patients for a single lung transplant since the surgery time is shorter, complications are less likely to occur, and the five-year survival is not significantly clinically different from a bilateral lung transplant. In addition, in older patients, the immunosuppressant regimen is somewhat altered because their bone marrow may not be able to tolerate the high doses of medications usually utilized in younger patients.”

The marked increase in the number of lung transplants performed by the Baylor program over the past year reflects this change in donor and recipient criteria and mirrors the increase in lung transplants performed in the world as reported in the ISHLT Registry. In 2009, there were 3,272 lung transplants performed in comparison to 2,216 transplants performed in 2004, a 43% increase in five years. Some of this increase should be attributed to a reevaluation of the criteria used for potential lung donors. Over the last 20 years, the percentage of donors older than 50 and even 60 years of age has increased. The median age of donors for lung transplant is 39 years, but 25 percent of donors are now older than 50 years of age.

Although both the age of the patient and the donor should be considered in determining eligibility for lung transplantation, age should no longer be considered as an absolute contraindication for either organ donation or transplantation.
For More Information, Call 1.800.774.2487.

With one phone call, a physician can request additional information, an appointment for a patient, or a consult. Call 1.800.774.2487 and a representative will assist you.

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