Role of Adult-to-adult Living Liver Transplantation in PSC

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PSC – Indications for Transplantation

- Cirrhosis with life-threatening complications
- Recurrent cholangitis with or without cirrhosis (intra or extrahepatic PSC)
- Stricture that is clinically significant and difficult to manage endoscopically
- Concern for cholangiocarcinoma
Cholangiocarcinoma

- 1% per year, 30% over 30 years
- Screening, difficulty in diagnosis
- No role for “prophylactic” transplantation
- If advanced, it becomes a contraindication to transplantation
- Requires pre-adjuvant treatment even in early stages
Problem

• MELD score is not helpful in cholestatic liver disease (T. Bilirubin not the driver)
• No significant MELD score upgrade for cholangiocarcinoma
• Difficult to diagnose early – no consistent biomarkers
• What to do if suspect cholangiocarcinoma but no other indications for transplantation
Surgical Anatomy of the Liver

- **Left Lobe**
- **Right Lobe (V, VI, VII, VIII)**
- **Medial Segment (IV)**
- **Left Lateral Segment (II and III)**

- **IVC**
- **RHV**
- **LHV**
- **MHV**
- **Falciform ligament**
- **Left pedicle**
- **Right pedicle**
- **Gallbladder**
- **Main pedicle**
Participating A2ALL Centers

www.nih-a2all.org
A2ALL Prospective Cohort Study

Primary Aims

1. To characterize the differences between LDLT and DDLT in terms of post-transplant outcomes. To quantify the impact of choosing LDLT on the candidate for transplantation.

2. To assess LD outcomes (complications)

3. To determine short and long-term impact on QOL after donation compared to a control population

4. To standardize and assess the role of “informed consent” in affecting the decision to donate and satisfaction after donation
Analysis of Time from Evaluation of Potential Living Donor to Death: Sequential Stratification Approach

Donor Evaluation N=808

DDLT N=249 → Death after DDLT N=54

LDLT N=389 → Death after LDLT N=91

Death without Transplant N=99

New stratum defined

C. Berg et al, Gastroenterology 2007
Cumulative Risk of Death* after Initial Living Donor Evaluation by Transplant Group

* Estimates are adjusted for age, MELD score, and HCC status and apply to a patient with age 50 years, MELD 15, and no HCC.

[Updated from Berg Gatro.]
Conclusions

• Post-transplant survival after LDLT and DDLT in experienced centers is equivalent

• Adult LDLT is associated with lower candidate mortality compared with waiting for DDLT
  – Effect is magnified in experienced centers

• Lower mortality in LDLT recipients is associated with reduced exposure to wait list mortality

• Recipient complications decrease with experience

K. Olthoff et al. *Annals of Surgery* 2005
C. Friese et al. *Am. J. Transplantation* 2008
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The Ultimate Sacrifice

A healthy man gives his brother half his liver—and dies. Should this kind of transplant be allowed?

By CHRISTINE GORMAN

MIKE AND ADAM HUREWITZ GREW UP together on Long Island, in the suburbs of New York City. They were very close, even for brothers. So when Adam’s liver started failing, Mike offered to give him half of his. The operation saved Adam’s life. But Mike, who went into the hospital in seemingly excellent health, developed a complication—perhaps a blood clot—and died last week. He was 57.

Mike Hurewitz’s death has prompted a like bad odds, but there’s more to this ethical dilemma than a simple ratio. The first and most sacred rule of medicine is to do no harm. “For a normal healthy person, a mortality rate of 1% is hard to justify,” says Dr. John Fung, chief of transplantation at the University of Pittsburgh Medical Center. “If the rate stays at 1%, it’s just not going to be accepted.”

On the other hand, there’s an acute shortage of traditional donor organs from people who have died in accidents or suffered fatal heart attacks. If family members fully understand the risks and are willing to
Complications After Living Liver Donation: A Prospective, Multi-center Report

Methods – Clavien Severity Grading System

**Grade 1.** Any alteration from ideal postoperative course with complete recovery, not requiring significant intervention

**Grade 2.** Requiring significant intervention or potentially life-threatening, but without residual disability or persistent disease

**Grade 3.** Any complication with residual or lasting functional disability or development of malignant disease

**Grade 4.** Complications that lead to transplantation or death
Summary

• 231 living liver donors with prospectively collected data using a standardized classification (up to 5-year follow-up)
• 3% incidence of aborted donations
• 29% of patients undergoing living liver donation had at least one complication
• Vast majority of biliary and infectious complications occurred within 30 days
• 4 Grade 3, 0 Grade 4 complications
Conclusions

• These prospective data demonstrate that complications after living liver donation remain common and confirm our previous retrospective observations.

• “Surgical complications” in this prospective cohort occurred significantly less frequently than in the retrospective cohort.
Donor Percent Increase in Size of Lobe by Donor Age

Recipient Percent Increase in Size of Lobe by Donor Age
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<tr>
<th>Center</th>
<th>Location</th>
<th>Principal Investigator</th>
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<tbody>
<tr>
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<td>Ann Arbor, MI</td>
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Conclusions

• PSC has become one of the primary indications for LDLT
  – Low MELD score but need transplantation
  – Suspected cholangiocarcinoma
  – Cholangiocarcinoma

• LDLT is safe and effective once learning curve is conquered (15-20 cases)

• Prevalence and significance of donor complications seem to be improving