

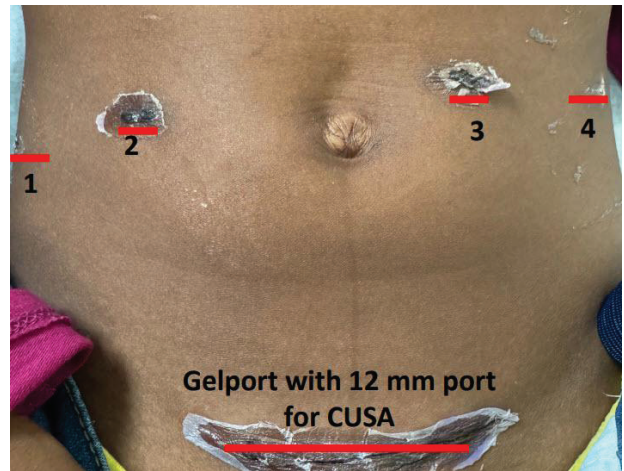
DISCLOSURES: X. Li: None. S.Y. Ohara: None. C.C. Jadowiec: None. K.S. Reddy: None. A.K. Mathur: None. M.C. Nguyen: None.

Abstract #: P157

Building a Pediatric Robotic Hepatobiliary Surgery Program at Columbia University Hospital Nathaly Llore, Alexis Schizza, Peter Liou, Mercedes Martinez, Steven Lobritto, Jean Emond, Tomoaki Kato, Jason Hawksworth. *Columbia University Irving Medical Center, New York, NY.*

Background: Open surgery is the traditional approach for complex pediatric hepatobiliary (HB) conditions. Our transplant group has extensive experience in robotic hepatobiliary, transplant and living donor surgery. We recently established a pediatric robotic program at Morgan Stanley Children's Hospital. **Methods:** Patients were assessed by pediatric hepatologists and transplant surgeons and deemed to be surgical candidates if >10 kgs with HB disease. Diagnosis and cross-sectional imaging were reviewed in multidisciplinary conference for surgical planning. We replicated the operating room set up that was used in our adult program to allow for cross training of surgical staff. Surgical rehearsals were held before cases with surgeons and OR staff to maximize safety and efficiency. Liver 3-D reconstructions were created and used intraoperative during hepatectomies. All cases were performed by a team of transplant & HB surgeons with experience in robotic surgery. **Results:** Since August 2023, we performed 10 pediatric cases ranging in complexity (Table 1). We began our experience with lower complexity cases (i.e: diaphragmatic hernia repair in a post-liver transplant patient, hepaticoduodenostomy, splenectomy) to develop the different port placements necessary to use the DaVinci XI in patients as small as 10 kilograms. We then performed a series of 5 hepatectomies ranging from non-segmental hepatectomy to extended left hepatectomy with hepaticojunostomy. During hepatectomy we modified placement of the 12mm assist port to facilitate CUSA utilization (picture 1). We have performed increasingly complex cases including a robotic splenorenal shunt in a 3-year-old male. Cases in this early experience were completed with a median operative time of 271 minutes and length of stay of 3.5 days. No cases were converted to open and no cases required blood transfusion or re-operation. **Conclusion:** We report the first North American experience of establishing a robotic pediatric HB program. Following the same principles utilized in adult robotic HB surgery, the robotic platform can be adopted to the pediatric population.

Subject	Age (yr)	Weight (kg)	Diagnosis	Operation	Operative Time (min)	EBL (ml)	Post-op Complication (Clavien Dindo Classification)	Length of Stay (days)
1	2	12	Post-OLT Diaphragmatic Hernia	Diaphragmatic hernia repair w/ mesh	211	10	Re-insertion of chest tube (Grade III)	6
2	16	68.7	Portal vein thrombosis w/ failed splenorenal shunt with recurrent variceal hemorrhage	Splenectomy	251	10		3
3	4	17.5	Cholelithiasis (Type I)	hepaticoduodenostomy	242	10		3
4	15	44	Cholelithiasis (Type I)	hepaticoduodenostomy	386	70		6
5	6	17	EBV associated-smooth muscle tumor	Non-segmental hepatectomy (segments 4b-5) + CCY	242	30		2
6	4	18	Cholelithiasis (Type IV)	Left hepatectomy + caudate + resection of cholelithiasis + Bili HI, CCY	545	50		2
7	10	34.8	Cholelithiasis (Type IV)	Left hepatectomy + caudate + resection of cholelithiasis + Bili HI, CCY	554	100	PNA (Grade 2)	5
8	11	63	Hepatocellular Adenoma	Extended left hepatectomy + CCY	226	90		14
9	9	32.8	Hepatic Focal Nodular Regeneration	Extended left hepatectomy + CCY	378	30		4
10	3	13.7	Noncirrhotic portal hypertension variceal bleeding	Splenorenal Shunt	292	10		3



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Abstract #: P159

DCD Liver Transplantation- Contemporary US Experience with NRP and NMP Tiffany Maksimuk², Carlos Goncalves¹, Syed Shahyan Bakhtiyar¹, Madhukar Patel¹, Rocio Lopez Moscoso¹, Susana Arrigain¹, Trevor Nydam¹, Bruce Kaplan¹, Elizabeth Pomfret¹, Jesse Schold¹, James Pomposelli¹, Yanik Bababekov¹. ¹University of Colorado Anschutz Medical Campus, Aurora, CO; ²University of Colorado School of Medicine, Denver, CO; ³University of Texas Southwestern Medical Center, Dallas, TX.

Introduction: Donation after circulatory death (DCD) liver transplantation (LT) is expanding given the rise of normothermic machine perfusion (NMP) and normothermic regional perfusion (NRP). However, outcomes of DCD LT in the modern era are unknown. We assessed long-term patient and graft survival in DCD LT via NMP or NRP compared to donation after brain death (DBD) LT. **Methods:** Using the United Network for Organ Sharing (UNOS), we identified adult LT recipients between 09/2021-03/2024. Recipients were grouped by DBD or DCD. DCD was classified as NRP (>40 mins from circulatory death to aortic cross-clamp), NMP, or direct procurement with static cold storage (SCS). One-year patient and graft survival are presented as Kaplan-Meier curves for each group. Risk-adjusted hazards of mortality were calculated using Cox proportional hazards models and are reported as hazard ratios(HR) with 95% confidence intervals(CI). **Results:** There were 19,717 LT (n=1,257(6%) DCDs). Of DCD LT, 348(14%) were procured via NRP, 983(39%) via NMP, and 1,191(47%) via SCS. The frequency of DCD LT increased from 711(9%) in 2022 to 1,278(14%) in 2023 and 352(15%) in the first 3 months of 2024(Figure 1A) and there was regional variation by technique(Figure 1B). Compared to DBD recipients, NRP were older(59vs56y, p<0.05), more likely to have a pretransplant disposition of home (80%vs54%,p<0.05), and had a lower median MELD(18vs25,p<0.05). Compared to DBD recipients, NMP were older(58y vs 56,p<0.05) and had a lower median MELD(19vs25,p<0.001). One-year patient and graft survival were not different for DBD versus NRP(HR0.67,CI 0.29-1.5 and HR0.72, CI0.30-1.7, respectively) and NMP(HR0.84,CI 0.58-1.2 and HR0.82,CI0.55-1.2, respectively)(Figure 2). **Conclusions:** DCD LT is increasing in the US. Although SCS for DCD LT was the most common modality during the study period, DCD LT via NMP is the most common for the last 15 months. There is wide regional variation in NMP(15%-74%) and NRP use(0%-38%). NRP utilization may be underestimated as a discrete NRP variable in UNOS does not exist. Despite differences in DCD LT practice, there are similar 1-year outcomes between DBD and DCD LT. Contemporary data support adoption of perfusion technologies to improve DCD LT utilization.

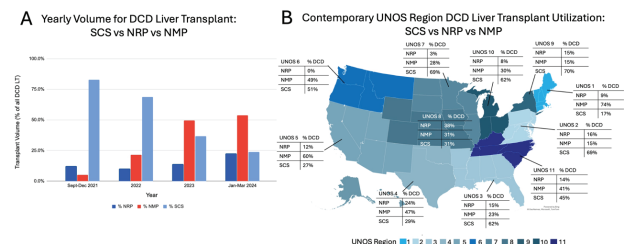
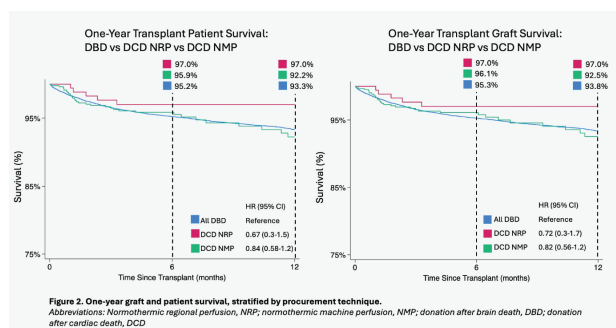


Figure 1. National trends in DCD Liver Transplant by Procurement Method
A. Yearly DCD LT transplant volume by procurement method, represented as percent of all DCD LT.
B. Percent utilization of DCD LT by procurement method and UNOS Region.
Abbreviations: Normothermic regional perfusion, NRP; static cold storage, SCS; normothermic machine perfusion, NMP

POSTER SESSIONS



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Abstract #: P161

Expedited Placement of Late-Turndown Livers - Efficiency at the Price of Equity? Lauren Matevish, Madhukar Patel, Brian Jafari, Andrew Shubin, Christine Hwang, Jigesh Shah, Arjmand Mufti, Parsia Vagefi. *University of Texas Southwestern Medical Center, Dallas, TX.*

Introduction: In an effort to increase liver graft utilization, United Network for Organ Sharing (UNOS) enacted a policy for expedited placement of late turn-down livers in March 2021. It remains unknown how the policy has impacted efficient and equitable placement of these organs. **Methods:** We analyzed UNOS match run data, identifying all livers placed from 3/2021-9/2023 with a bypass code indicating expedited placement (EP). Bypass offers were examined with regards to placement patterns and organ quality. Outcomes of bypassed and non-bypassed candidates were assessed using Mahalanobis metric matching. **Results:** An EP bypass code was used on 3,762 livers; 2,660 (70.7%) were ultimately transplanted representing 10.5% of all liver transplants. Importantly, most listed patients (42,234; 91.9%) were bypassed at least once during the study period. Eight OPOs (14.0%) contributed to nearly one-third of EP placements (893 livers). Similarly, only 20 of 132 centers (15%) made up nearly 50% of acceptances (1,373 livers). EP livers were allocated to recipients significantly lower on the waitlist than recipients of matched non-EP grafts (median waitlist rank 132 vs. 9; $p < 0.001$). Compared to matched non-EP grafts, EP livers demonstrated slightly better 1-year patient (94.7% vs 93%; $p < 0.01$) and graft (92.9% vs 91.4%; $p < 0.01$) survival. Indeed, bypassed candidates were more likely to still be waitlisted (21.9% vs. 6.5%; $p < 0.001$), and more likely to be removed from the waitlist due to deterioration (6.0% vs 4.9%; $p < 0.01$) compared with patients never bypassed. **Conclusion:** The new EP policy has resulted in the efficient placement of select livers, achieving excellent 1-year graft and patient outcomes. However, most waitlisted candidates are bypassed at least once, and only a minority of centers appear to benefit from utilization of these orphan livers. In the era of increased use of perfusion technologies obviating the relevance of cold ischemia time, convenient out-of-sequence placement should not eclipse equitable distribution of a scarce and shared resource.

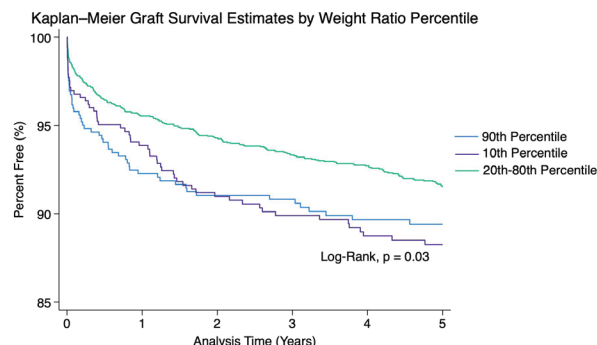
DISCLOSURES: L.E. Matevish: None. M.S. Patel: None. B. Jafari: None. A.D. Shubin: None. C. Hwang: None. J.A. Shah: None. A. Mufti: None. P.A. Vagefi: None.

Abstract #: P163

The Impact of Donor-Recipient Weight Ratios on Pediatric Deceased Donor Liver Transplantation Patrick McGeoghegan, John Miggins, Megan Crawford, Evert Sugarbaker, Abbas Rana. *Baylor College of Medicine, Houston, TX.*

Grafts from undersized and oversized donors have shown worse clinical outcomes. However, donor-recipient size (DR) mismatch is an understudied metric in pediatric deceased donor whole liver transplantation (DDLT). Here, we analyzed the utility of DR weight ratio (WR) in predicting outcomes among pediatric DDLT recipients. We also performed subgroup analyses for patients with biliary atresia (BA) and for other diagnoses with ascites to account for increased abdominal domain in these patients. We identified 5,286 UNOS patients < 18 years who underwent primary DDLT and divided them into five groups based on increasing DR WRs (< 10th percentile, 10th-20th percentile, 20th-80th percentile [reference], 80th-90th percentile, and > 90th percentile). Subgroup analyses were performed for patients with BA and other diagnoses with ascites. A Cox proportional hazards model adjusted for both donor and recipient factors identified associations between WR percentiles and graft survival, patient survival, and length of stay (LOS). Kaplan-Meier curves and log-rank test compared time-to-event among percentiles. The < 10th WR percentile (WR ≤ 0.70) and > 90th WR percentile (WR > 2.0) both had higher risk of graft failure and death. The < 10th percentile WR hazard ratio (HR) for graft survival was 1.40 (95% confidence interval [CI] 1.08, 1.80, $p = 0.01$). The > 90th percentile WR for graft survival was 1.55 (95% CI 1.18, 2.05, $p = 0.002$). Bottom 10th WR percentile for patient survival was 1.38 (95% CI 1.07, 1.77, $p = 0.01$), while the > 90th WR for patient survival was 1.54 (95% CI 1.18,

2.03, $p = 0.002$). Only the > 90th percentile WR (HR 0.86, 95% CI 0.75, 0.94, $p = 0.002$) was associated with increased LOS. The relationship between WR and outcomes did not hold in patients with BA or other diagnoses with ascites ($p > 0.05$). DR WR is a significant predictor of adverse outcomes among pediatric DDLT recipients. The utility of size-matching metrics is decreased in patients with BA or significant ascites. Transplant surgeons should exercise caution if they encounter a WR ≤ 0.70 or > 2.0.



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Abstract #: P165

Early Versus Standard Liver Transplantation for Alcohol-Associated Liver Disease in High-Acuity Liver Transplant Recipients Andrea Meinders, Ashton Connor, John Ontiveros, Ahmed Elaileh, Khush Patel, Jason Todd, Danika Nottage, Elizabeth Brombosz, Linda Moore, Caroline Simon, Yee Lee Cheah, Mark Hobeika, Constance Mobley, Ashish Saharia, Tamneet Basra, Sudha Kodali, David Victor, III, A. Osama Gaber, R. Mark Ghobrial. *Houston Methodist Hospital, Houston, TX.*