Objectives

To compare outcomes of LDLT to DDLT by performing a systematic review and meta-analysis and assess:

- Patient and graft survival
- Pre- and post-LT outcomes
  - PELD score at LT
  - Time on waitlist
  - Biliary and vascular complications
  - Rate of acute rejection

Methods

- A systematic literature review was conducted to identify all studies published between January 2005 and December 2019.
  - Inclusion criteria were: studies with full text available, comparing LDLT and DDLT recipients, primary liver transplant alone recipients, age < 18 years, reporting the primary endpoint of patient survival at ≥1-year post-transplant.
  - Studies including adult patients, multi-organ/re-transplant recipients, or those with overlapping cohorts were excluded.
  - The institutional dataset from the University of Alberta was also queried.
  - All variables reported in ≥3 studies were included in the meta-analysis.

Results

Figure 1: Prisma Diagram summarizing results of the systematic review.

- A total of 1,626 LDLT and 6,326 DDLT recipients were included in the meta-analysis.

Figure 2: Number of liver transplantation by graft type.

- LDLT and reduced size graft recipients were younger (2.54±4.24 and 2.98±3.65 year, respectively) than whole graft recipients (5.34±6.05 year, p<0.001). 50.5% of recipients were female (43.6% of LDLT vs 50.7% of DDLT, p=0.48).

Figure 3: Distribution of liver disease requiring liver transplantation.

- LDLT and reduced size graft recipients had a lower risk of acute rejection (15.30% vs 20.30%, respectively, p<0.001).

Figure 4: Comparison of graft survival between LDLT and DDLT at a) 1-year, b) 5-year, and c) 5-year post-LT.

- While LDLT requires technical expertise, it presents several biliary and vascular complications.

Figure 5: Comparison of weight at LT between LDLT and DDLT.

- LDLT had a lower mortality, transplantation occurring prior to significant clinical deterioration and less rate of acute cellular rejection post-LT.

Figure 6: Comparison of time on waitlist.

- In summary, these data support the continued expansion of LDLT for pediatric LT candidates, even in regions where LDLT is currently predominant.

Figure 7: Comparison of vascular complication between LDLT and DDLT.

- LDLT results in better patient and graft survival compared to both whole liver and reduced size graft recipients, whereas LDLT had a lower risk of acute rejection than DDLT.

Figure 8: Comparison of biliary complication between LDLT and DDLT.

- LDLT had a lower risk of vascular and biliary complication between LDLT and DDLT recipients, whereas LDLT had a lower risk of acute rejection than DDLT.

Figure 9: Comparison of risk of biliary complication between LDLT and DDLT.

- LDLT and DDLT showed comparable time on waitlist, risk of vascular and biliary complication while LDLT had a lower risk of acute rejection.

Figure 10: Comparison of risk of acute rejection between LDLT and DDLT.

- Analysis stratified by deceased graft type showed that LDLT had superior graft and patient survival compared to both whole liver and reduced size graft recipients.

- Analysis of pre-operative variables showed that LDLT recipients had a higher PELD score than DDLT, a lower weight while there was no difference in time on waitlist.

References