# Split Liver Transplantation in a combined Adult and Pediatric Transplant Program

J Botha, F van der Schyff, B Strobele, S Rambarran, R Britz

**Wits Donald Gordon Medical Center, Liver Transplant Unit, School of Clinical Medicine**
**Faculty of Health Sciences, University of the Witwatersrand, South Africa**

## Introduction

Waitlist mortality continues to be an issue that challenges pediatric liver transplantation worldwide. Split liver transplant (SLT) is an accepted surgical strategy to maximize deceased donor ultilization and decrease waitlist mortality. Unfortunately SLT remains an underutilized resource, with only 3.8% of splittable livers reportedly being split in the USA (Perito E et al Transplantation, March 2019 )

## Objective

The primary aim of the present study was to compare the outcomes of SLT vs LDLT in children since the implementation of a routine SLT policy and a living donor liver transplant (LDLT) program at our center in South Africa in 2013.

## Methods

REDcap prospective databases for the pediatric liver transplant programs were established at our center, with approval from our IRB, the Wits Human Research Ethics Committee. **Recipient variables** collected from the database were the following: Age, gender, weight, MELD/PELD score at transplant, mid-upper arm circumference (MUAC) z-score for children < 60 months of age, BMI z-score for children >60 months of age, ethnicity, acute/chronic etiology, blood type, healthcare sector (public vs. private), waiting time and length of hospital stay (LOS).

**Figure 1: Number of transplants per year**

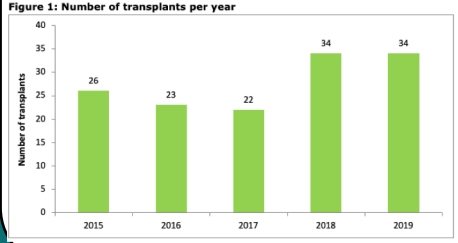



**Table 1: Overview of transplants**

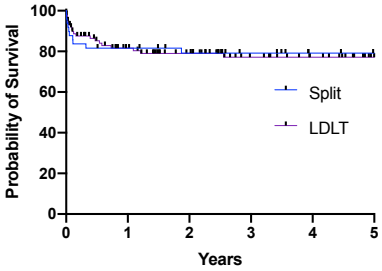
| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Number of transplants | 26 | 23 | 22 | 34 | 34 |
| **Donor type (n)** | | | | | |
| Living donor transplants | 13 | 14 | 8 | 14 | 21 |
| Deceased donor transplants | 13 | 9 | 14 | 20 | 13 |
| *Whole liver* | *10* | *6* | *7* | *7* | *8* |
| *Split liver* | *3* | *3* | *7* | *13* | *4* |
| *Reduced liver* | *0* | *0* | *0* | *0* | *1* |

## Results

Between 2013-2020, 200 children were transplanted. 49 (25%) received SLT allografts, all but 4 received LLS grafts the rest getting a RTS graft. 104 (52%) received LDLT's (all LLS) the remaining 47 (23%) children received either whole grafts or very infrequently a reduced graft. All split procedures were performed by surgeons from our center, there were no 'imported' split grafts. Barring 2 splits, all were done by the ex-vivo technique. There was no difference in outcome between SLT and LDLT recipients for all variables collected and while LOS appeared to be longer in SLT recipients, this was not statistically significant.

| Graft type | median LOS (d) | 95% CI (%) | |
|---|---|---|---|
| Living donor | 26 | 21 | 30 |
| Split (deceased) | 32 | 23 | 38 |

**Survival proportions**




## Conclusion

Despite the significant amount of resources in terms of cost, skills required and logistics needed in order advance SLT, these factors should not be barriers when patients' lives are at stake. We have demonstrated that even in a resource limited setting such as SA, SLT can provide suitable organs for a quarter of the children we transplanted and still have acceptable outcomes.