



Liver transplantation for Paediatric Acute Liver Failure – a contemporary South African experience

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Background

- Paediatric Acute Liver Failure (PALF) carries a high morbidity and mortality burden
- Spontaneous recovery (i.e. survival without transplantation) remains between 15-20% despite improvement in intensive care management
- Liver transplantation as a curative modality has markedly improved prognosis of children with ALF
- Ongoing shortages of donor livers limits the number of livers available for transplantations in South Africa (SA)

Background

- Wits Donald Gordon Medical Centre (WDGMC) is a private academic hospital within the Faculty of Health Sciences teaching complex at WITS
- One of two transplant centers in SA with an established paediatric liver transplantation program since 2005
- Liver transplant service provision model, which offers liver transplantation to both private and state sector patients in SA
- Unique unit in Sub-Saharan Africa by providing a living-donor liver program since 2013

Objectives

- To describe the number, characteristics and treatment received of children admitted with acute liver failure who received a liver transplant at WDGMC.
- To determine outcome at 1 year

Method

- **Study design**

- Descriptive study, conducted through a review of medical files from 2005 to December 2018 at WDGMC

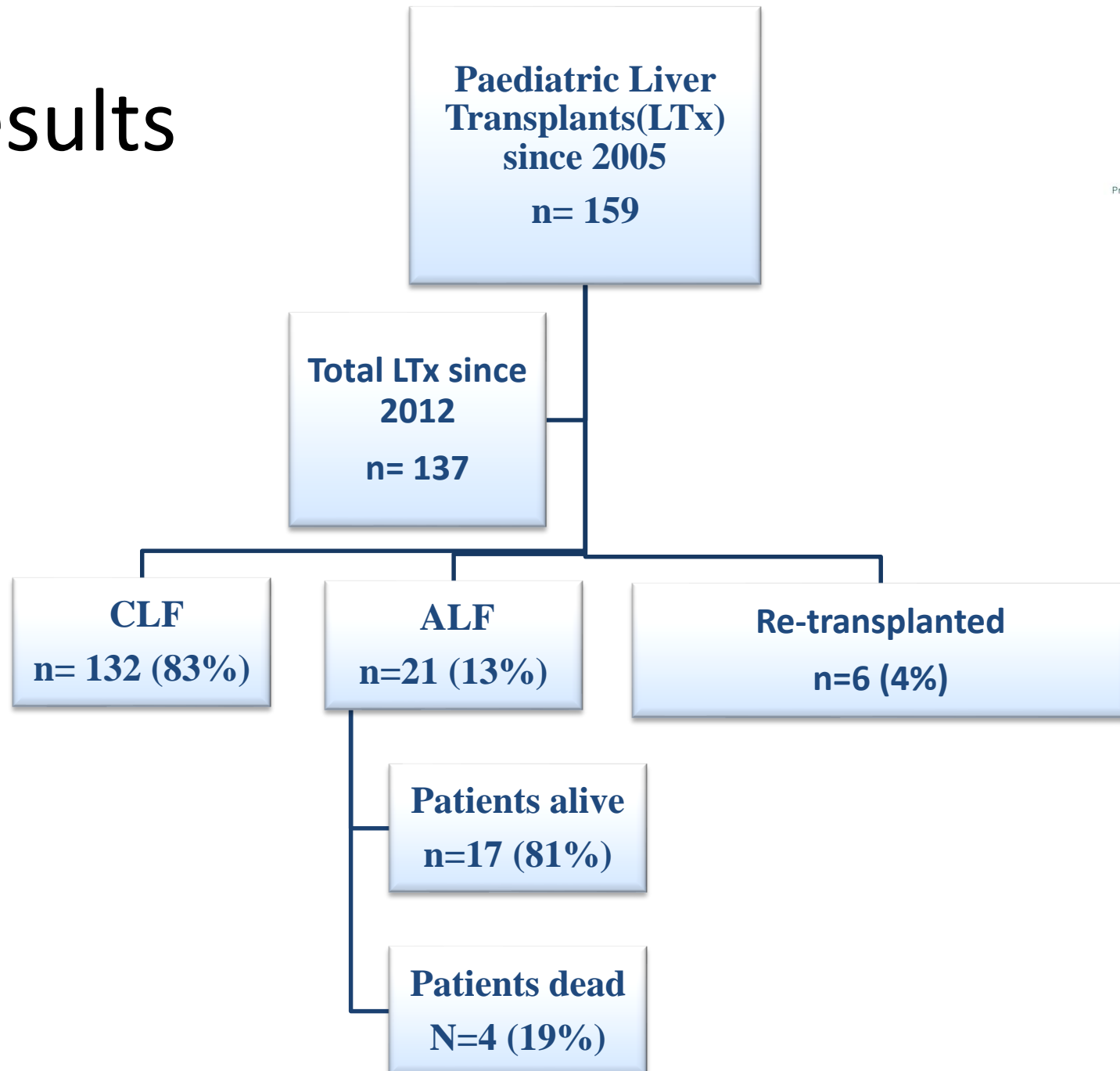
- **Study population**

- All children <16 years of age with acute liver failure who received a liver transplant at WDGMC
- PALF defined as:
 - Biochemical evidence of acute liver injury
 - Liver associated coagulopathy not corrected by vitamin K, defined as:
 - A Prothrombin time (PT) ≥ 15 s or INR ≥ 1.5 in the presence of Hepatic Encephalopathy (HE)
 - A PT ≥ 20 s or INR ≥ 2.0 in the absence of Encephalopathy
 - No previously recorded liver disease
 - Criteria fulfilled within 8 weeks of the onset of illness

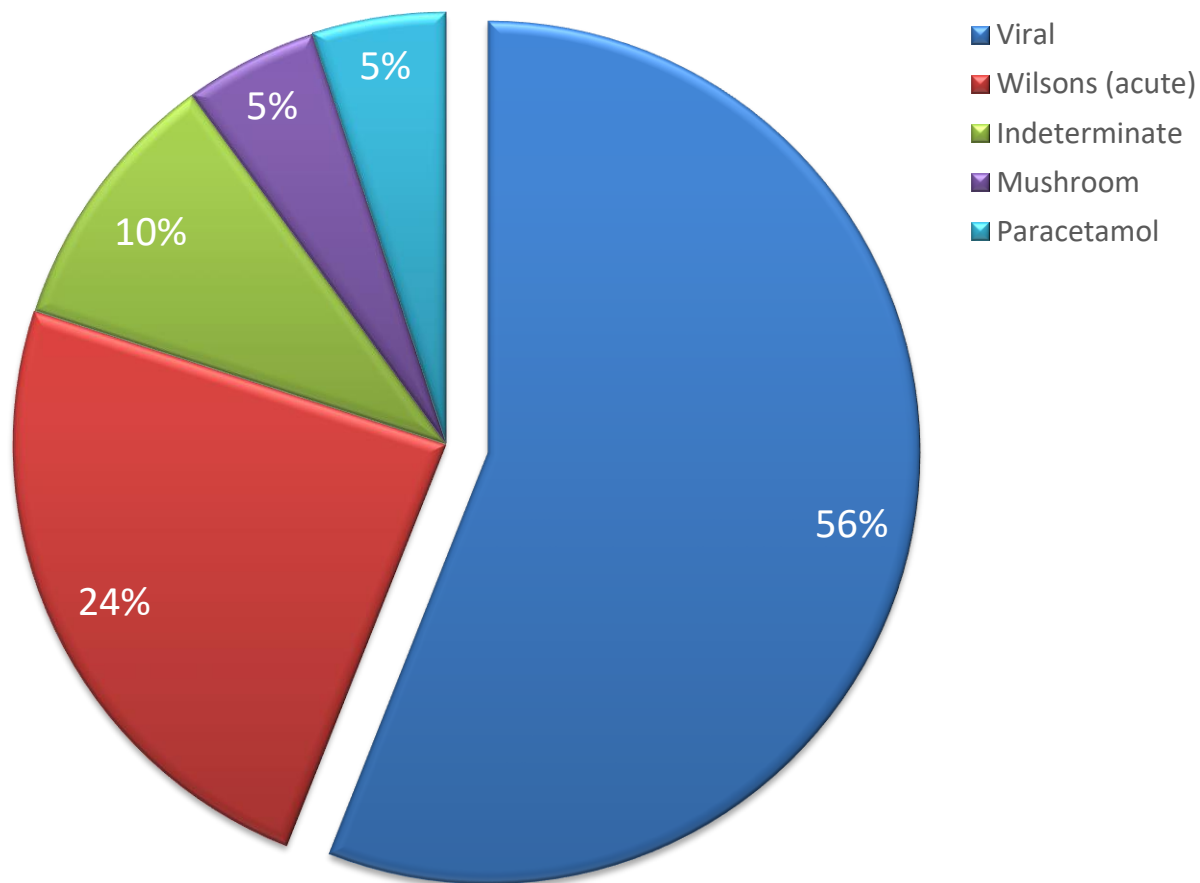
- **Data Collection**

- Data collected and analysed included demographic details, clinical features of ALF, biochemical results, transplant details, post-operative complications and short term outcome.

Results



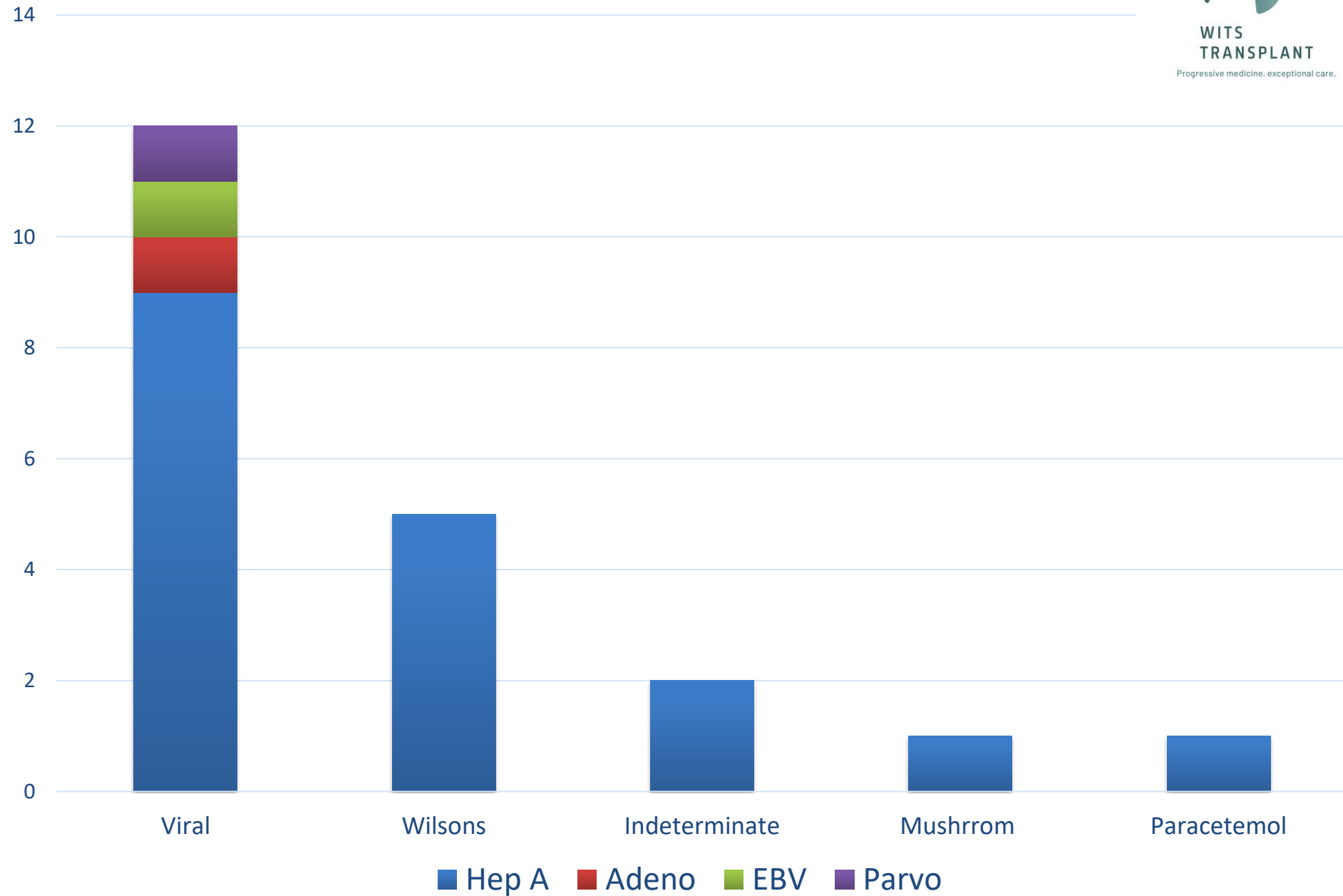
Overall Aetiology



All Cause ALF



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Demographic Data

Variable	Category	All Patients
Age (Years) (median(IQR))		3.7 (1.8-8.5)
Weight (Kg) (median(IQR))		15 (12.2-26)
Weight Z-Score (median(IQR))		-0.55 (-0.95 – 0.0)
Sex	F	8(38%)
	M	13(62%)
Race	Black	11(52%)
	Mixed race	7(33%)
	Indian	2(10%)
	White	1(5%)
Healthcare sector	Public	12(57%)
	Private	9(43%)
If Public sector, referral source by Province	Gauteng	8(68%)
	North-West	1(8%)
	Western Cape	1(8%)
	Kwazulu-Natal	1(8%)
	Unknown	1(8%)

Biochemical characteristics before LTx

Variable	n	Median	IQR
ALT (nv < 45 IU/l)	21	2468	1433-4386
AST (nv < 80 IU/l)	21	2921	1212-5638
Bilirubin (nv<20.5 µmol/L)	21	418	339-601
INR	21	6.5	5.0-10
Ammonia (nv<47µmol/l)	19	135	78.9-175
Lactate (nv<2)	19	4.4	3.1-7.0
HGT (mmol/L)	17	2.3	1.3-3.0

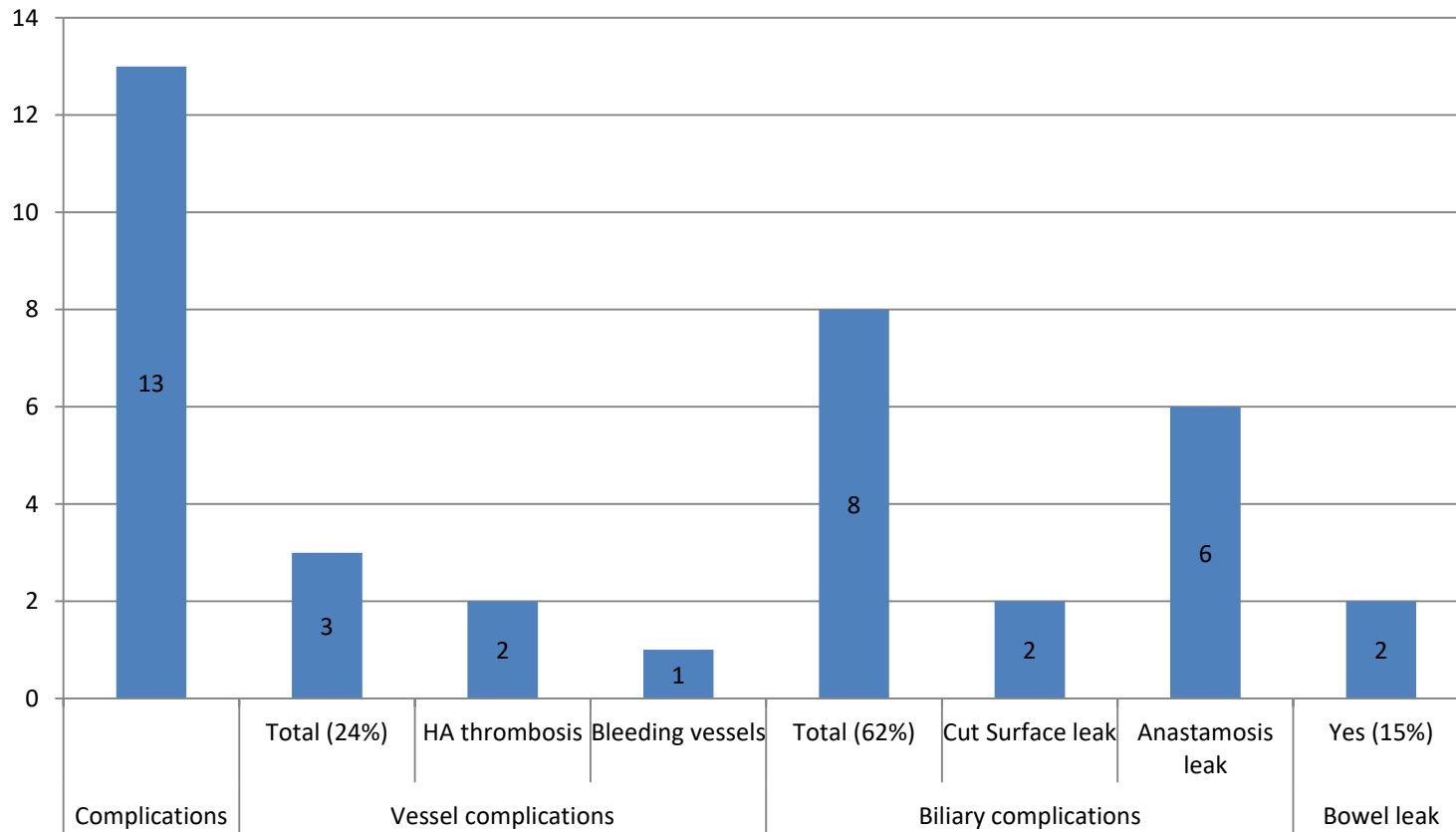
Clinical Characteristics

Variables	Category	Patients (%)
Neurological characteristics		
HE grade (n=20)	0- 2	4(20)
	3- 4	16(80)
Renal characteristics		
Dialysis	No	20(95)
	Yes	1(5)
CVS characteristics		
Haemodynamic instability (n=15)	No	8(53)
	Yes	7(47)
Respiratory characteristics		
Intubated (n=16)	No	4(19.5)
	Yes	15(71)
	Unknown	2(9.5)

Transplant details

Variable	Category	All Patients (median(IQR))	Patients (%)
PELD/MELD at transplant (n=19)		36 (29-40)	
KCC criteria	Fulfilled		21(100)
Blood type matching	Identical		12(57)
	Compatible		7(33)
	Incompatible		2(10)
Graft type	Living related donor		11(52)
	Cadaveric technical variant		8(38)
	Cadaveric whole		2(10)

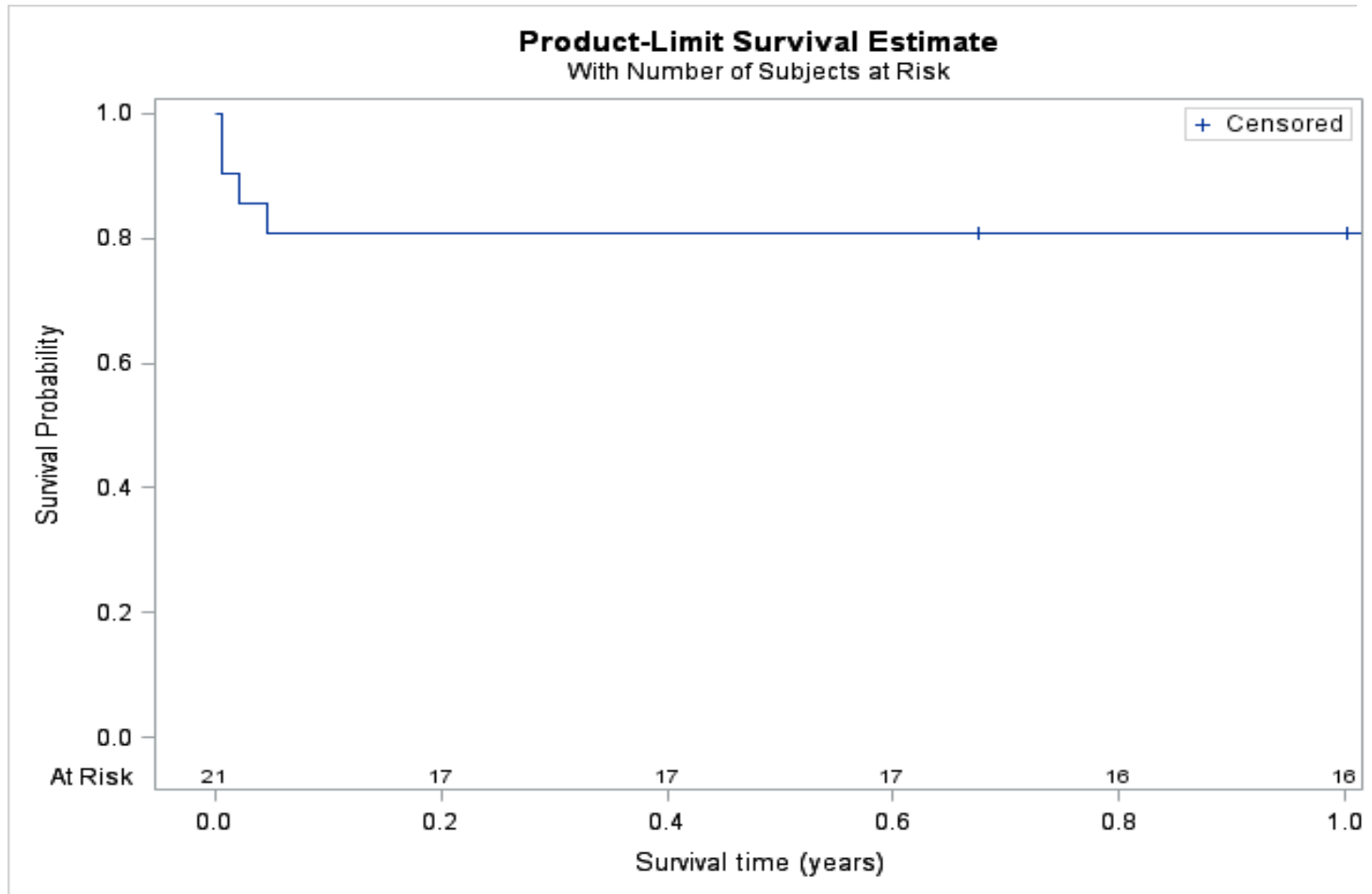
Outcome - Morbidity



Outcome - 1 Year survival

Variable	Category	All Patients (%)
Patient survival	No	4(19)
	Yes	17(81)
Cause of death (n=4)	Graft failure	1
	Pericardial tamponade ruptured atrium	1
	Sepsis	1
	Shock of unknown cause	1

Post-transplant Survival



Kaplan-Meier graph demonstrating 1-year patient survival

Conclusion

- PALF is a devastating disease with predominantly viral aetiology as leading cause in our centre
- Early postoperative complication can be high due to the emergent need for the liver transplant
- Since cadaveric LT is uncertain in SA which could prolong waiting time to transplant and lead to a worse outcome, LDLT is a valuable treatment option.
- One year survival after liver transplantation at WDGMC is comparable to international standards



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