Southern African Transplantation Society Congress

TOWARDS TRANSPLANT EQUITY

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**Background**
The mortality of patients on the heart transplant waiting list can be significantly reduced by supporting patients with mechanical circulation. Mechanical support options are constantly increasing with different configurations for different clinical needs. This abstract will discuss the latest configurations and approaches specifically in cardiac transplantation at the Christiaan Barnard Memorial Hospital.

**Discussion**
The overall strategy is to improve cardiac output for an extended period until transplantation is possible. In acute situations extra corporeal membrane oxygenation - ECMO can be used as a bridge to transplantation or a long-term ventricular assist device (VAD). This same ecmo device can be used as a LVAD by merely altering the implantation configuration namely left atrial-left femoral left heart bypass. The veno-venous (VV) ECMO configuration which is indicated for pulmonary support can also not be used as right (R) VAD by positioning the outflow cannula distal to the pulmonary artery valve. Therefore RVAD-VV ECMO.

**Materials & Methods**
Over a 17 year period 47 patients (n=47) on the heart transplant waiting list required different forms of mechanical assistance. This included Berlin Heart, Heartware HVAD, VA-ECMO, VV-ECMO, left atrial-femoral left heart bypass, RVAD and VV-ECMO-RVAD. Of these implants 31 implants (63% ) were in the last 5 five years.

**Conclusion**
Due to the rapidly advancing technology in the mechanical support field as well as the ongoing poor number of donor organs these bridging options is now an integral part of cardiac transplantation.
Kidney transplantation is the treatment of choice in patients with end-stage renal disease. Despite using grafts from living and deceased donors, there remains a limited supply of renal allografts. Living donation is often hindered by the presence of donor human leukocyte antigen (HLA)-specific alloantibodies. To optimise allograft availability in these patients desensitisation protocols have been developed. The objective was to assess if desensitisation, in South African setting, offered sensitised patients improved survival rates.

Methods
We performed a retrospective record review of patients who underwent desensitisation for HLA incompatible living donor kidney transplantation in the Department of Nephrology, University of the Witwatersrand, Johannesburg, South Africa. Desensitisation was performed using plasma exchange, rituximab and intravenous immunoglobulin. Demographic data and outcomes were recorded.

Results
From 01 August 2012 to 30 May 2016, six patients underwent desensitisation for HLA incompatible living donor kidney transplantation. The mean class I PRA's were 43% (range 2-100%) with Class II at 40% (range 4-100%). Three patients were T-cell– and B-cell–positive on flow cytometry cross-match. Two were B-cell–positive and one was T-cell positive on flow cytometry cross-match. The mean donor specific antibodies median florescence intensity was 7286 (range 1056-14043). All patients received a standardized desensitisation protocol containing plasmapheresis, rituximab (375mg/m2) and polygam (100mg/m2). Mycophenolate mofetil and tacrolimus were administered with start of plasmapheresis. Transplant induction was with thymoglobulin (1,5mg/kg) and methylprednisone.

Mean follow-up was 39 months with a mean serum creatinine of 109,5ml/min/1,73m2. Two episodes of early antibody mediated rejection transpired in two patients. No graft loss occurred. One patient demised within three weeks of being transplanted from gram negative sepsis. Other infective complications included disseminated HSV2 and BK nephropathy.

Conclusion
Desensitization has been shown to offer an acceptable option for highly sensitized patients. In our series, while limited in numbers, short-term outcomes and graft survival were satisfactory.
Background
Conversion of calcineurin inhibitors to sirolimus has been studied extensively with positive outcomes. A previous study at our institution had shown that early conversion to sirolimus resulted in improvement in renal function and low proteinuria. We performed a further retrospective audit on renal transplant patients switched to sirolimus at Inkosi Albert Luthuli Central Hospital from June 2003 till June 2017.

Methods
Medical records of transplant recipients switched to sirolimus from calcineurin inhibitors following a calcineurin-related complication were analyzed. Twenty four hour protein excretion, estimated glomerular filtration rates (eGFR) and cholesterol were analyzed at the time of conversion, at six months post conversion and yearly thereafter. Descriptive statistical methods and logistic regression analysis were applied.

Results
Thirty two patients, of which 24 males (75%) and 8 females (25%) were included in the study. Results are expressed as a mean ± SEM. The mean age was 50.8±2.5 years. Total Follow up time was up to 14 years. Average twenty four hour protein excretion rates, eGFR and cholesterol at the time of conversion were 0.64g±0.18 g/24hours, 41.83±8.24 ml/min and 5.12±0.37 mmol/l respectively. At 5 years post conversion the average for the above variables were 0.77±0.19 g/24 hours, 47.86±5.76 ml/min and 5.43±0.16 mmol/l respectively. At 10 years post conversion the average eGFR was 44.21±4.95 ml/min. Twenty four hour protein excretion documented for one patient at year 14 was 0.21g/24hours. Average cholesterol at year 6 was 4.99±0.22 mmol/l and at 9 years was 4.81±0.27 mmol/l. The graft survival rate was 69% at 5 years and 42% at 10 years.

Conclusion
Conversion to sirolimus in patients resulted in stable graft function. Patients presenting with minimal proteinuria at the time of switch maintained a stable and relatively low proteinuria. Cholesterol level stabilized late after conversion.
Abstract

**Title**
Analysis of intra-patient variability of Tacrolimus levels among the renal transplant population at Inkosi Albert Luthuli Central Hospital, Durban, South Africa.

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**Abstract**
**Background:**
Few studies have been published from South Africa with respect to Tacrolimus in renal transplantation. Among other causes, high intra-patient variability (IPV) is increasingly recognized as a predictor of poor outcomes in solid organ recipients.

**Objective**
To assess the IPV of Tacrolimus levels associated with demographic and clinical factors.

**Methods**
A retrospective chart review was undertaken from information retrieved from our electronic medical records of all patients with renal transplants and initiated on Tacrolimus-based immunosuppression regimens between the year 2007 and 2017, at Inkosi Albert Luthuli Central Hospital (IALCH). Demographic and clinical characteristics were collected. The Tacrolimus levels were included from the sixth month post-transplant, to approximately thirty months post-transplant. Data was analysed using the IBM SPSS Version 24 program and descriptive statistical methods and logistic regression analysis were performed.

**Results**
Forty-one patients were suitable for analysis. Of these, twenty-three (56%) were found to have low IPV and eighteen (44%) were found to have high IPV. There is no statistically significant difference between the rate of decline of the estimated glomerular filtration rate (eGFR) among the high or low IPV groups. Furthermore, the age at transplant, ethnicity, gender sex and HLA matching were not associated with adverse outcomes among the high or low IPV in both groups.

**Conclusion**
There was inconclusive evidence to show that the rate of decline of eGFR is statistically significant among the high and low IPV groups. A more specific marker of decline in renal function, longer duration of observation, and larger patient cohort may be required to fully delineate the extent of the association between IPV and graft dysfunction.
Introduction
The paediatric liver transplant program at Wits Donald Gordon Medical Centre (WDGMC) has grown dramatically over the past 4 years becoming the largest volume paediatric transplant unit in Southern Africa. This growth has seen a parallel growth in post transplant infections and detailed investigation of these infections was necessary to enhance post transplant management.

Objectives
To evaluate the extent of infections in the first post-operative year and to determine the specific type and number of infections encountered.

Method
This is a quantitative retrospective record/chart review of all the paediatric liver and liver/kidney transplants performed at WDGMC from 2004 to 2015. Patient’s hospital, transplant unit and electronic notes were studied for the 12 month period post transplant. Data were analyzed utilising SAS version 9.4 for Windows. Descriptive statistics and Fisher’s Extract test were performed.

Results
There were 69 transplants in 65 patients. Main indication for transplantation was Biliary Atresia (42%), median age was 49 months and 51% of patients were of black African ethnicity. A total of 245 infections were noted. 75% of patients had at least one or more infections in the first year and the majority of the infections occurred in the first 6 months. The most common infections were bacterial (62% of patients), viral (30% of patients), and fungal (29% of patients). Gram negative klebsiella sp. (51%) and gram positive enterococcus faecium (40%) were the primary bacterial infections seen.

Conclusion
Infections occurred early post transplant and were predominantly bacterial in nature, which correlates with studies across the globe. We recognise the need to carefully monitor for infection and endeavour to provide international gold standard treatment. Review of our clinical practice has resulted in a goal to ensure that robust infection protocols are in place.
Introduction
In developed countries renal transplantation is established as standard of care for end-stage renal disease in children. In South Africa only two paediatric renal units have offered a paediatric transplant service to state patients viz. Red Cross Children’s Hospital in Cape Town and Charlotte Maxeke Academic Hospital in Johannesburg.

Methods
A retrospective review of all paediatric renal transplants performed at Inkosi Albert Luthuli Central Hospital, Durban between May 2015 and May 2017. Patient and donor characteristics, primary diagnosis, morbidity, and short term graft survival are discussed.

Results
7 live-related donor transplants were performed on 7 children aged between 5 and 13 years (mean age 9 years); 5 male and 2 females. All donors were blood relatives that were ABO compatible with HLA scores 4/6 and higher. Primary renal pathology in patients included FSGS (4), obstructive uropathy (2), and RPGN (1). All 7 patients were on renal replacement therapy prior to renal transplant [haemodialysis (4) and CAPD (3)]. Time on renal replacement therapy prior to transplant ranged from 3-19months (mean 9 months). All patients received a standard induction using an IL2 receptor blocker (basiliximab) and triple immunosuppression using tacrolimus, mycophenolate mofetil and prednisone. There were no post-transplant surgical complications. Mean follow up was 12 months (range 4-24). 1 episode of acute biopsy proven cellular rejection developed in one patient following non-compliance. There was full recovery following pulse methylprednisone therapy. 4 of the 7 patients complicated with post-transplant bacterial infections viz respiratory (4) and urinary tract infection (3). Pathogens included Klebsiella pneumoniae (2), Moraxella Catarrhalis (2), E.coli (2) and Enterococcus Faecium (1). Infections were treated with appropriate antibiotics without residual adverse outcomes.

Conclusion
Short-term outcomes of the first 7 paediatric kidney transplants in a resource-limited setting from our institution compares favourably with local and international experience, although long-term graft survival still needs to be established.
Abstract

With the advent of highly active antiretroviral therapy (HAART) for patients living with human immunodeficiency virus (HIV) there has been a paradigm shift in the management and outcome of HIV positive patients undergoing transplant. In this group of patients undergoing kidney transplantation, there is a significant interaction between protease inhibitor regimens and calcineurin inhibitors (CNI’s), resulting in dose reduction of up to 85% of CNI’s. The use of NNRTI/NRTI regimes necessitates doses of CNI being increased by up to 15%.

We used a NRTI/NNRTI HIV treatment regimen to improve the control of the dosing of calcineurin inhibitors in a 21-year old male HIV positive patient undergoing live related kidney transplantation following donation from his 20 year HIV negative old brother. The patient was HIV positive for 3 years and his CMV status was D+/R-; HBsAg and HCV were negative. He shared a 1/6 HLA match with his brother. He was on CAPD for 3 years and had no active infection, AIDS defining illness or malignancy and was compliant with treatment. He was changed from a protease inhibitor based regime to an NRTI/NNRTI regimen consisting of Abacavir, Lamivudine and Efavirenz nine months prior to the transplant. His CD4 count prior to transplant was 426 cells/ul and blood HIV RNA level was undetectable. The patient was given Basilixmab as induction therapy, and commenced on Tacrolimus 0.15 mg/kg/dose in 2 divided doses, Mycophenolate Mofetil (500mg QID) and prednisone 30 mg daily per os as initial immunosuppression. Ketoconazole, isoniazid, valganciclovir, and co-trimoxazole were used as prophylaxis for opportunistic infections. Intra-operatively, a sclerotic external iliac vein (from a previous temporary catheter) required an end to side anastomosis to the common iliac vein. The arterial anastomosis was onto the external iliac artery. He was anuric post-operatively for 4 hours, and urine output thereafter improved gradually with a steady decline in serum creatinin. At 6 weeks post-transplant his CD4 count was 426 cells/ul and the HIV RNA level was undetectable. His tacrolimus level was 8.5 ug/l at a dose of 0.1 mg/kg given in 2 divided doses with a serum creatinine of 101umol/l. There were no features of acute rejection 6 weeks post-transplant.

We report here the first HIV-positive patient undergoing kidney transplant in our institution using an NRTI/NNRTI regimen for better control of CNI levels with stable kidney function with undetectable viral load at 6 weeks follow-up. Renal transplantation in HIV patients is still rare in most developing countries. HIV-positive ESRD patients with stable and controlled disease should be given the benefit of kidney transplantation as it greatly improves quality of life with good patient and graft survival.
Background
The factors associated with worsening of CKD function have been well documented. These include inter alia proteinuria, angiotensin converting enzyme inhibitors (ACEI) and uric acid. The aim of this study was to determine if similar factors were associated with decline in GFR in kidney transplant recipients, or if different factors played a role.

Methods
This is a retrospective cohort study using the medical records of 49 kidney transplant recipients attending the transplant clinic at Inkosi Albert Luthuli Central Hospital for the period January 2012 to January 2014. The patients were followed up at three month intervals for a total of 24 months. Socio-demographic factors, clinical findings (blood pressure, body mass index, proteinuria) and laboratory investigations (including eGFR, haemoglobin, lipid profile and uric acid) were recorded. Treatments included ACEI, statins and immunosuppression drugs. The rate of decline of eGFR (estimated glomerular filtration rate) was measured at the beginning and the end of the observation period divided by the number of months. Linear regression analysis was performed between the rate of eGFR decline and the following factors: age, weight, race, proteinuria, blood sugar, lipids and the use of ACEI. Data analysis using SPSS version 24 (IBM) comprised of descriptive tests and linear regression analysis (expressed as OR (odd ratio) and confidence interval).

Results
No association was recorded between sex and race, however a positive correlation was observed between diabetes and eGFR. A negative correlation was observed between eGFR and the following factors: HDL cholesterol, ACE inhibition; OR -1.26(-1.7 to -0.81), and -1.91(-2.53to-1.29) respectively.

Conclusion
These results suggest that as previously reported in the literature our transplant data confirmed that while HDL cholesterol and ACE inhibition are protective against the rate of GFR decline, diabetes has an opposite effect.
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Abstract

**Title:** LIVER TRANSPLANTATION IN THE SETTING OF ADVANCED MALIGNANCY

**Subtitle:** A retrospective audit of a single centre

**Objective**
Retrospective analysis of all liver transplantations performed at the WITS Donald Gordon Medical Centre (WDGMC) from 2004 to present with histologically confirmed malignancy within the explanted liver demonstrating acceptable outcomes to justify liver transplantation in a select group in an organ scarce environment.

**Methods**
Patient information was retrospectively audited from the transplant unit database. Demographics, pathology, complications and survival outcomes were analysed.

**Results**
Since 2004 the transplant unit at the WDGMC has performed 488 liver transplants (357 adults - 131 children) Malignancies on the explanted liver specimen were found in 43(9%) recipients, 38 adults and 5 children. The mean age for adults was 52 years and children 5 years.

Primary hepatic malignancies made up the majority (88%) of the pathologies seen - hepatocellular carcinoma (27), hepatoblastoma (3), cholangiocarcinoma (4), fibrolamellar HCC (2), and hepatic epithelioid haemangioendothelioma (2). 5 patients with metastatic malignancies to the liver were transplanted (4 colorectal metastases and 1 neuroendocrine)

Only two split grafts were used in the adults (right lobe and a left lobe in a small female following Related Living Donation) compared to children where only two whole liver grafts were used, three splits (two cadaver splits and one RLD left lateral segment). Nine patients developed biliary complications (5 biliary leaks and 4 strictures). Hepatic artery thrombosis occurred in 3 patients who had concomitant biliary complications. These 3 patients were part of the 13 mortalities in the cohort. Six patients had tumour recurrence (peritoneal, lung, and or bone metastases). Overall 1 year survival rate was 76.4%.

**Conclusion**
Liver transplantation at WDGMC, in the setting of hepatic malignancy has an acceptable morbidity and mortality. This study will form part of a pilot study justifying liver transplantation in a highly selected group of patients with advanced hepatic malignancies in South Africa.
Aim
The certification of brain death is based on a set of examinations set out by the Harvard Medical School published August 1968. This was reviewed in 1995 by the American Academy of Neurology. The criteria are still followed today, and although brain death is accepted scientific fact, there is no global consensus in diagnostic criteria.(Eelco FM, Wijdicks MD; J Neuro 2002). Transplant coordinators are referred patients already certified brain dead. Using a standardized checklist with the use of an additional brain stem test (the atropine test) has required reassessment of the diagnosis in 3 cases where brain death had already been declared. The aim of this paper is to explore the utility of the atropine test as a safeguard to protect against errors made by doctors in determining brain death.

Methods
A literature review of brain death certification practices across the world with a focus on the role of atropine testing. A review of 3 cases where the atropine test was positive in patients already legally certified brain dead.

Results
A literature review showed that the administration of Atropine (0.04µg/kg IV) is not universally practiced in the diagnosis of brain death. Spain introduced the Atropine test as part of their brain death testing in 1983. Atropine tests the effect of the vagus nerve (10th cranial nerve) on the heart rate. The Netcare Transplant Division adopted the Atropine test as a part of their brain death certification checklist in February 2011, and since then over 250 donors have undergone Atropine testing. Some countries mandate ancillary testing in addition to the clinical determination of brain death. These include Transcranial Doppler, MRI, EEG, CT angiography, somatosensory evoked potentials and nuclear scan.

Conclusion
Atropine testing has proved to be an effective safety net for errors made in brain death certification. In the absence of clear legal recommendations in RSA, and no South African brain death testing guidelines, should we consider Atropine testing as part of the clinical evaluation of brain stem death testing?
Introduction
With technological advances made surrounding communications and information sharing, transplant communities have been able to educate and raise awareness of organ donation, the benefits of transplantation and the emotional plight of those recipients awaiting organ transplant. Living kidney donation is fast becoming more prevalent as the demand for kidneys far outweighs the supply of cadaver organs. For many, the struggle to find a suitable living donor is real, and there is a trend for recipients to start posting their needs on social media. Facebook in particular, and specific sites are now active platforms for desperate recipients to highlight organ donor awareness and advertise their need for an organ.

Methods
Experience of potential donors contacting the various transplant centers resulted in an active website search. Sites such as “Matching.com” and “Toddneedsaliver.com” to mention but a few were identified. In South Africa “Getmeto21.com” by the Jenna Lowe generated massive interest in organ donation and registrations for organ donation. In many countries there are appeals via the media for patients that are awaiting organ transplant, including large scale advertising on billboards, newspapers and internet websites. Society has now begun using the internet and media to complete business sales, advertise the needs of charity organizations and raise awareness of individual needs to the world.

Results
The Human Tissue Authority of the UK provides guidelines on their website regarding matching websites and social media giving the legal position as well as information for donors and recipients. OPTN/UNOS ethics committee report, it was established that the way in which relationships are developed in society cannot be regulated or restricted, provided that the websites that facilitate matches do not require payment. ELPAT make recommendations on social media solicitation for living donors which includes a strict screening process and paired exchange programs. All countries are faced with ethical and privacy challenges and there is a variety of position statements from the various countries and organ procurements organizations.

Conclusion
Currently South Africa has no guideline on how to deal with the altruistic donations solicited via social media, whether directed or undirected, with no official position statement by the Transplant Society or Dept of Health Ministerial Advisory Committee. Traditionally in SA, organ donation and transplantation has been firmly driven by medical teams and coordinators, but now recipients are taking control of their situation. Highlighting their need for organs on Facebook starts with creating awareness which often results in altruistic offers. Is this acceptable to us as healthcare professionals? Is this new modality making us feel uncomfortable? Social media is here to stay and we need to develop guidelines and issue a position statement as transplant professionals.
Abstract

Title: A 10 year analysis of deceased donor referral trends from a Tertiary Public sector Hospital

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Objective
Review of actual donor data highlights our successes, yet is not able to contextualise the factors responsible for the unsuccessful conversion of referred kidney donors. In an attempt to identify key factors preventing referred donors from becoming actual donors, we analyzed donor referral patterns at our institution over a 10 year period.

Methods
Retrospective descriptive study of consecutive deceased donor referrals at Groote Schuur Hospital (from January 2007 to December 2016), utilizing a regional donor referral registry. Qualitative and quantitative data were collected and presented as descriptive statistics and temporal trends.

Results
861 Possible kidney donors were referred (Figure 1). Donor referrals increased steadily over the observed study period (Figure 2). 514 Referrals (59.7%) were assessed as eligible for kidney donation, with medical unsuitability identified as the most common reason for exclusion at this stage (n=218). 166/514 Families consented to kidney donation (32.3%). Despite the ever increasing number of possible and eligible donors, a statistically significant decline in consent rate was observed over time (p=0.023). Furthermore, an increasing trend in Medical (versus Trauma) (p<0.001) and extended criteria (versus standard criteria) donor referrals (p<0.001) were observed over the 10 year study period.

Conclusion
Donor referral patterns have changed over time, with notable increases in Medical and extended criteria donors. Despite increases in possible and eligible donors, the consent rate has declined. Further qualitative and quantitative research studies are required to understand and address this trend.
Objective
The advantages of minimally invasive live donor nephrectomy have been well documented, with no adverse effect on graft function. The hand assisted technique enables the rapid extraction of the graft, shortening the warm ischaemia time, thus preserving graft function. We report our institute’s initial experience with hand assisted laparoscopic nephrectomy in renal donors for transplantation.

Methods
A retrospective review of kidney donors who underwent hand-assisted laparoscopic nephrectomy at Inkosi Albert Luthuli Central Hospital from May 2015 to June 2017. Technical aspects of the donor surgery, demographics, results and complications are discussed.

Results
Fourteen donors underwent hand assisted nephrectomy. Age ranged from 19 to 42 years (mean 31 years) with a female to male ratio of 1 : 1.8. The operative time ranged from 90 to 210 minutes (mean). Conversion to open surgery was not necessary for any donor. Only the left kidneys were harvested. The length of postoperative hospital stay ranged from 5 to 15 days with an average stay of 7.2 days. Surgical peri/ post-operative complications were documented in 2 of 14 (14.2%) patients with no mortality. The average rise of serum creatinine on post-operative day 5 was 51%.

Conclusion
Hand assisted laparoscopic donor nephrectomy is a safe procedure. A downward trend was displayed for operative times in successive cases. The procedure presented low morbidity and zero mortality.