

TRANSPLANTATION SURGERY

TS001

RENAL CELL CARCINOMA IN THE RENAL ALLOGRAFT

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Although development of cancer after transplantation is well recognised, de novo renal cell carcinoma (RCC) within renal allografts (RA) is rare. Only 31 cases had been reported to the Cincinnati Transplant Tumor Registry up until 2000, and only five of 1634 (0.3%) renal transplant failures reported to the Australian and New Zealand Dialysis and Transplant registry in the 10 year period 1995–2004 were due to malignancy in the RA. Proposed aetiological factors include acquired cystic kidney disease, exogenous growth factor administration, and BK virus infection, in addition to host immunosuppression. Growth rates of RA RCC appear to be varied. Treatment options depend on the size and extent of the RCC, location within the RA, and RA function. Treatment modalities have included percutaneous cryo-ablation, radio-frequency ablation, partial transplant nephrectomy, and transplant nephrectomy with cessation of immunosuppression. Three cases treated at the Royal Melbourne and Royal Children's Hospitals will be presented. With increasing recipient and graft survival, increasing use of older live- and deceased-donor kidneys, and more potent immunosuppression, the occurrence of de novo RCC in RA may increase.

TS002

MANAGEMENT OF POLYCYSTIC KIDNEYS

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Patients with adult polycystic kidney disease (APKD) comprise up to 10% of patients with end-stage renal failure. The management of the native polycystic kidneys prior to transplantation is controversial. Unilateral nephrectomy may be used to remove a kidney with complications or to make space prior to transplantation. Bilateral nephrectomy is associated with significant morbidity and mortality up to 5%. Bilateral nephrectomy may prevent septic complications post transplant but it is inconclusive whether graft and patient survival is affected.

The management of the polycystic kidney before and after transplantation will be discussed.

TS003

A NINE-YEAR EXPERIENCE WITH LAPAROSCOPIC DONOR NEPHRECTOMY

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Purposes First performed in 1995, laparoscopic live donor nephrectomy has become a standard of care in the US. Yet distinct donor advantages could be offset by the possibility of impaired graft function. Inherent is the potential for serious morbidity in a population that will accept none.

Objective To examine the results of laparoscopic donor nephrectomy (LDN) performed from 1996–2005 by a single surgeon, with attention to donor safety and recipient outcome.

Methods Prospective databases were reviewed for 439 donors who underwent LDN. Donor demographics, medical history, and hospital course were noted, along with immediate graft function. Donors were followed between one month and 3 years after surgery.

Results 56% were female, and 44% male. Mean age was 40. Left kidneys were procured in 86%, and right kidneys in 14%. Immediate graft function was similar to that after conventional harvest. Graft survival was 98.6%, and acute tubular necrosis occurred in 2.2%. Intraoperative complication rate was 1.9%, most commonly bleeding. Warm ischemia time averaged 3.4 minutes and operative time 3.4 hours. Conversion rate was 1.6%. Median hospital stay was one day. Postoperative donor complications were seen in 2.8%. Mean donor creatinine at two weeks was 1.5. Delayed complications were

rare, and included testicular swelling (7), extremity pain or paresthesia (5), pneumonia (3), urinary tract infection (2), rectus hematoma (1), incisional hernia (1), hypertension (1), and transient acute renal failure (1) due to prostatic obstruction.

Conclusions LDN can be performed safely with very low morbidity. Recipient outcomes remain indistinguishable from the open experience.

TS004

STUDY OF COLD PRESERVATION INJURY IN A RAT LIVER PERFUSION MODEL

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Background Preservation injury, characterized with the presence of rounded and/or detached sinus lining cells (SLCs), is a major cause of morbidity and mortality in orthotopic liver transplantation. Studies have shown that cold preservation injury is caused by the activation of angiogenic mechanisms and anti-angiogenic agents (minocycline, interferon alfa-2b, and fumagillin) could improve SLC integrity and viability, graft functions and survival rate. A number of studies including ones undertaken by us have shown shark cartilage (SC) is a potent anti-angiogenic agent. The aim of this study was to investigate if SC could protect liver from cold preservation injury.

Methods and Results Rat livers were perfused with cold Euro-Collin's preservation solution, and then explanted and stored in the same preservation solution for 8 hrs. H&E staining of the liver samples showed that a larger number of SLCs became rounded and detached in the livers preserved for 8 hrs compared to those in unpreserved livers. Similar findings were observed with transmission electron microscopy. There was no significant difference between the percentage of SLC detachment in the livers preserved in SC supplemented preservation solution at the concentrations of 0.5 and 1 mg/ml and that in the livers preserved in control preservation solution, indicating that SC failed to protect SLCs from cold preservation injury in rat explants.

Conclusion We demonstrated in this study that SLCs became rounded and detached from the hepatocyte plate at the end of cold preservation and SC failed to prevent the cold preservation injury at two concentration levels.

TS005

ROLE OF THE TRYPTOPHAN METABOLISM IN RAT MODELS OF TRANSPLANTATION TOLERANCE

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Background & Purpose The enzyme Indoleamine Dioxygenase (IDO) catalyses the rate-limiting step in the degradation of the Tryptophan. IDO Expression is implicated in achieving transplant tolerance by depriving alloreactive T cells of Tryptophan. PVG–LEWIS liver transplants (LTX) and PVG–DA kidney transplants (KTX) are rapidly rejected (REJ). PVG–DA KTX with donor leukocyte infusion on day 0 and PVG–DA LTX both exhibit tolerance (survival >100 days). The role of IDO in rat allograft tolerance models (TOL) was examined.

Methods IDO mRNA expression in the spleen and allograft was analyzed using RT-PCR. In TOL LTX, splenocytes from animals on d3 were separated to measure IDO expression in macrophages and B and T lymphocytes. TOL LTX was treated with the IDO inhibitor 1-Methyl-Tryptophan (1-MT) to determine if Tryptophan degradation by IDO plays a functional role in tolerance.

Results There was significantly greater increase in the expression of IDO in spleens of TOL compared to REJ recipients. In TOL LTX, almost all IDO expression was associated with the B cell population. 1-MT treatment of TOL LTX reduced survival from >100 days ($n = 6$) to 63, 70, 76, 83 and >78 days $\times 2$ ($P = 0.02$). The animals that died, all exhibited evidence of severe chronic rejection.

Conclusion Early increases in IDO expression in lymphoid tissue are associated with allograft tolerance. The B cell population appears to account for this early IDO up-regulation. Preliminary follow-up of 1-MT treatment confirms the functional role of IDO in achieving tolerance in vivo. The potential therapeutic role of IDO in experimental and clinical transplantation will be discussed.

TS006 QUALITY ASSESSMENT OF DONOR RETRIEVAL PROCESS

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A single deceased donor organ procurement service (DDOPS) co-ordinated by the Organ Donation Network (ODN) was established in NSW in 2003 to simplify retrieval of intra-abdominal organs for transplantation in 9 NSW units and interstate. An organ retrieval report form (ORRF) was created as a communication tool between the ODN, retrieving and transplanting teams.

The aim of the ORRF was to identify and rectify systemic problems in the retrieval process as assessed by the transplanting unit, from time of declaration of death to donor organ delivery.

Method A roster of surgical teams from 2 multi-organ transplant units was established. ORRF were distributed with each kidney, liver and pancreas and returned to ODN data co-ordinator. Identified problems were collated, reviewed by a medical advisor and addressed by ODN and DDOPS.

Results 188 organs from 62 donors were transplanted in 12 months from July 2004. 62% of ORRF were returned within 5 days and another 36% after further follow-up. Retrieving surgeons reported iatrogenic injury in 8% of donors, all kidney vasculature, and no concerns with cardiothoracic teams. Transplanting teams reported problems in an additional 34% of donors. 6% of organs had preservation, packaging and identification concerns. Structural injury occurred in 12% of retrieved kidneys and 2% of livers ($P < 0.05$).

Conclusions The ORRF provided a valuable quality tool for productive and positive communication between transplant teams and was responsible for development of uniform disposable packaging and strengthening of retrieval protocols. Better ORRF return compliance from interstate and smaller units would be beneficial, particularly to assess measures to reduce kidney injury.

TS007 PRELIMINARY EXPERIENCE WITH RIGHT LOBE SPLIT LIVER ALLOGRAFTS

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Introduction The aim of this retrospective study is to review our experience with Right lobe split (RLS) liver allografts in adult recipients versus whole (W) allografts.

Methods Data on all adult liver transplant recipients from 7/2002–6/2005 inclusive was reviewed. Statistics were by SPSS.

Results 29/157 (18%) RLS allograft procedures were performed. Of these 25 (86%) were extended right grafts [seg 4 included] and 4 were right lobes. The majority, 86% were from in-situ splitting. Median recipient follow up was 21 months. Vascular complications were higher in the RLS versus W recipients at 24% versus 15% respectively [$P = 0.9$]. The overall biliary complication rate was also higher in the RLS versus the W recipients (41% versus 24%, $P = 0.06$). Bile leakage was more common in RLS recipients versus W recipients (27.6% versus 4.7% respectively, $P = 0.0007$). In the RLS recipients 50% of cases of bile leakage involved the cut edge of the allograft.

No RLS recipient required retransplantation versus 3.9% of the W recipients required retransplantation. One year allograft survival was 89.7% in RLS recipients versus 86.7% for W recipients ($P = 0.41$).

Conclusions There is a higher incidence of biliary and vascular complications in recipients of RLS liver allografts versus W allografts. However 1 year liver allograft survival is comparable between RLS and W recipients, although longer term follow up is required.

TS008 MERKEL CELL CARCINOMA IN RENAL TRANSPLANT RECIPIENTS – A POOR PROGNOSIS AT DIAGNOSIS

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Objective Merkel Cell Carcinoma(MCC) is a rare cutaneous malignancy and little is known about outcomes in the transplant population. The purpose of this study was to report the outcomes of patients with MCC who have undergone renal transplantation.

Method A retrospective chart review identified 6 of 1625 renal transplant recipients with the diagnosis of MCC between July 1991 and December 2004. Clinicopathological variables were recorded and patients were staged according to the Memorial Sloan-Kettering Cancer Centre (MSKCC). These are compared to a contemporary series of MCC from our institution.

Results Of the six patients, all were male and median age was 58 yrs. The median time from transplant to diagnosis of MCC was 150 months. Three patients had MSKCC stage 1 disease at presentation the others had MSKCC stage two. Two stage 2 patients had an unknown primary. All six patients were on immunosuppression at the time of diagnosis. All stage 1 patients were treated with wide local excision and adjuvant radiotherapy. Stage 2 patients underwent lymph node dissection with 2 of 3 having adjuvant radiotherapy. All patients developed recurrence. The median time to recurrence was 10 months. Median survival after recurrence was 2 months.

Conclusions Following renal transplant, patients who develop Merkel cell carcinoma may experience early recurrence and demonstrate a poorer than expected outcome for stage.