BOOK of ABSTRACTS *TRANSPLANTATION*

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A heavy metal knocking at the door- Transarterial Embolization with Rhenium-188 as a bridging strategy for treating Hepatocellular Carcinoma

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Background
Bridging strategies are necessary for patients with HCC, who are on a liver transplant waiting list. Few centers have started using TARE as a bridging strategy and Yttrium 90 (Y90) has been approved for use in HCC, however, it is very expensive and not practical to use as standard of care in countries, where there is no universal insurance coverage. 188 Rhenium (188Re) radio labeled lipiodol for the treatment of HCC is an alternative isotope with very similar properties to Y90.

Methods
We did a retrospective review of 3 patients who were treated with 188Re radio labeled lipiodol as a bridging modality and then later on underwent cadaveric orthotopic liver transplant (OLT). Radiological, histopathological (HPE), alpha-feto protein (AFP) levels, survival and recurrence outcomes were analyzed.

Results
First patient had 2 tumors and was transplanted 1 month after TARE. He developed recurrence 8 months post transplant. Second patient had single HCC and had a complete radiological response post TARE. He underwent OLT, 2 months post TARE and HPE also showed complete tumor necrosis. Third patient had 3 lesions and underwent TARE and had a partial radiological response. He underwent OLT, 9 months post TARE. There was a partial response on HPE. Second and third patients are doing well 15 and 11 months post transplant respectively.

Conclusion
188Re radio labeled lipiodol is a very effective bridging strategy for maintaining or down staging HCC in appropriately selected liver transplant waiting list patients.
Complete remission of refractory Hepatoblastoma post liver transplantation in a child with sorafenib monotherapy – a new hope?

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Background
Hepatoblastoma (HB), in children has a good survival chance in standard risk cases, while the prognosis for recurrent HB is guarded. Complete remission of hepatoblastoma with Sorafenib monotherapy has never been documented previously.

Methods
5 year old female child, born prematurely with birth weight of 2030 grams was diagnosed with embryonal epithelial hepatoblastoma of PRETEXT stage 3, was treated with cisplatin and doxorubicin. Inoperability after four cycles prompted therapy with irinotecan followed by liver transplantation 1 year after the initial diagnosis. She had an initial recurrence in pericardium and diaphragm and 9 months later further metastatic lesions in lung, adrenal and mesenteric lymph nodes. Chemotherapy with carboplatin, vincristine and irinotecan were not effective. Metastatic disease following liver transplantation and exhaustion of all feasible chemotherapeutic and surgical options, and based on the fact that the tumor was behaving like a transitional liver cell tumor (older age at diagnosis and recurrence after conventional chemotherapy) single agent chemotherapy with Sorafenib was initiated.

Results
PET-CT done at 14 months later showed complete resolution of lung nodules and with no areas of abnormal uptake confirming complete remission. There were no adverse events noted during 8 months of continuation therapy with good graft function.

Conclusion
This is the first report of complete remission in paediatric hepatoblastoma on sorafenib monotherapy.
Development and results of a novel program of pancreas transplantation

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Background
Simultaneous kidney-pancreas transplantation for patients with type 1 diabetes and end-stage chronic renal disease is widely performed. However, the rate of surgical morbidity from pancreatic complications remains high. The aim of this study was to describe the development of a new program.

Methods
We analyzed 53 simultaneous pancreas-kidney transplants performed over a period of seven years, from 2009 to 2016, with a median follow up of 39 months (range: 1-86 months).

Results
Two patients have died, one patient because of a cardiac arrest immediately after surgery and another patient due to traffic accident complicated with a pneumonia. Among the 51 patients alive two grafts were lost, one due to chronic rejection four years after transplantation and the other one due to arterial thrombosis 20 days after transplantation, being this case the only requiring a transplantectomy. In ten patients one or more surgical reinterventions have been necessary due to the following diagnosis: graft pancreatitis (n=4), small intestinal occlusions (n=4), arterial thrombosis (n=1), abscess (n=1) and hemoperitoneum (n=1).

Patient and graft overall survival rates at 1, 3 and 5 years were 98%, 95% and 95% and 96, 93 and 89%; respectively

Conclusion
This study has shown that the results of new pancreatic transplant program, which rely on previous experience of other groups, do not reflect a learning curve. Adequate personal education and learning, the use of standardized and adequate techniques, should assure optimal results.
Development of portal hypertension and spleen size after orthotopic liver transplantation

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Background
There is limited data whether the splenic sequelae of portal hypertension in cirrhotic patients i.e. splenomegaly and hypersplenism are reversible after liver transplantation.

Methods
Out of 119 adult patients who received a deceased-donor whole-organ liver transplant (LT) at our center between 2012 and 2014, 33 patients were randomly selected. Only patients with cirrhosis were included, those with pretransplant TIPSS placement and retransplantation excluded. Upper GI-variceal status, presence of ascites, and platelet counts were compared pre- and one year post-LT. Change in splenic volume was assessed using the splenic index upon CT or MR imaging obtained before and at varying time intervals after transplant (6, 12, 24, or 36 months).

Results
All 33 patients but one showed complete restitution of their portal hypertension by clearance of their varices and ascites one year after transplant. Mean platelet count increased from 94/nl (SD 62.5) before to 173/nl (SD 58.5) one year after LT. Change in splenic volume was significantly increasing over time: baseline before LT 1106.8 cm³, at 6 months -278.7 cm³, at 12 months -288.9 cm³, at 24 months -384.4 cm³, at 36 months -444.9 cm³. Using a mixed model, the observed change was most significant at 24 months p<0.0001. By 36 months, however, only 5 patients (15%) had regained normal spleen size (<314.5 cm³).

Conclusion
Our study demonstrated a significant recovery of splenomegaly and thrombocytopenia after LT in cirrhotic patients.
Does early tracolimus exposure affect long-term outcome in patients treated de novo with once-daily tacrolimus after liver transplantation?

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Background
BACKGROUND: The aim of our study was to define the influence of early tacrolimus exposure in long-term outcomes of patients treated de novo with once-daily tacrolimus (T-QD) after liver transplantation (LT).

Methods
METHODS: Adult patients who received a LT between April 2008 and May 2012 were studied. Exclusion criteria were: use of induction therapy, retransplantation, combined transplantation. T-QD was started within the first 24 hours. Tacrolimus target trough levels were 5-10 ng/ml during the first 3 post-transplant months, reduced to <7 ng/ml after the first year.

Results
RESULTS: The study cohort consisted of 155 patients with a median follow-up of 52 months (IQR 39-68) divided into three groups according to the mean tacrolimus level within 15 days after LT: 51 (32.9%) had < 7 ng/ml (5.6 ± 0.9), 47 (30.3%) had 7-10 ng/ml (8.5 ± 0.9) and 57 (36.8%) had >10 ng/ml (12.8 ± 2.5). BPAR rate was: 9.8%, 12.8% and 10.5%, respectively (p = 0.88). No differences were observed in HCC recurrence, de novo DM, HTA or de novo tumors. There was no significant difference in mean glomerular filtration rate at 5 years: 81.7, 82.6 and 80.9 ml/min/1.73 m2, respectively (p = 0.11). Patient survival was 86.9%, 97.9% and 82% at 5 years, respectively (p = 0.30).

Conclusion
CONCLUSION: Early tacrolimus exposure after de novo use of T-QD in LT did not influence the rate of BPAR and the long-term renal function. A trend to lower patient survival was observed in recipients with mean tacrolimus trough level >10 ng/ml.
Enteric Drainage of Pancreas Transplantation. Clinical impact of intra-abdominal complications

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Background
To analyze the surgical complications associated with enteric drainage in a single center over a period of 15 years

Methods
From 2000 to 2015, 333 pancreas transplants were performed (SPK:272, PAK:23,PA:3,Retransplantation:35). Systemic vascular drainage was performed with porto-cava anastomosis and arterial anastomosis between superior mesenteric artery or iliac graft artery to right iliac primitive artery. Enteric drainage was performed by side-to-side with handsewn duodeno-jejunostomy anastomosis

Results
Nineteen patients were identified: intestinal obstruction in 7 patients, paralytic ileus in 4 patients, ischemic graft duodenum in 2 patients, ischemic graft duodenum in 2 patients, intestinal fistula without anastomotic dehiscence in 3 patients and anastomotic dehiscence in jejunum after transplantectomy in one case of retransplantation. Fifteen patients required reoperation (lysis adhesions (n=7), pancreas transplantectomy (n=5), primary closure and intestinal bypass (n=1), simple suture (n=1), intestinal resection(n=1). Vascular thrombosis was related with ischemic process of enteric drainage on 15.8% of cases (n=3), with a significant correlation for graft loss in two of the cases

Conclusion
Enteric drainage for exocrine secretion of graft pancreas is a safe and feasible technique with a low rate of complications. Vascular thrombosis associated with intestinal complications is a risk factor for the viability of pancreatic graft, so early detection is important
Evaluation of Safety of Concomitant Splenectomy in Living Donor Liver Transplantation

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Background
In Asian countries, especially in Japan, concomitant splenectomy in LDLT is indicated to modulate the portal vein pressure in small sized graft. While Concomitant splenectomy in deceased donor liver transplantation (DDLT) is almost contraindicated based on western reports of increased mortality and morbidity rate due to septic complications, there are few studies about that in LDLT. Therefore, this retrospective study aimed to reevaluate the risks of simultaneous splenectomy in LDLT by reviewing our institutional series.

Methods
This study analyzed 164 adult LDLT patients between July 2010 and July 2016 at our institution. Patients were divided into those with concomitant splenectomy (Sp Group, n=88) and those without (Nsp Group, n=76).

Results
The two groups showed no statistically significant difference in the patient characteristics, but the splenectomy group showed significantly increased operative time and intraoperative blood loss (P=0.008, P=0.0007), and significantly higher rate of postoperative splenic vein thrombosis and CMV infection (p=0.03, p=0.0162 respectively). However, there were no significant differences between the two groups about incidence of post-operative hemorrhage (p=0.054), post-transplant bacteremia (P=0.38), hospital and infection related mortality rates (p=0.15, p=0.8), acute rejection (p=0.87), patient and graft survival (Log-Rank p=0.66, p=0.67 respectively).

Conclusion
Concomitant splenectomy in LDLT can be safely performed particularly in patients with small for size graft.
Fibrosis progression after liver transplantation by donor and recipient PNPLA3-genotype

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Background
The adiponutrin (PNPLA3) rs738409 genotype has been associated with graft steatosis and fibrosis progression after liver transplantation (LT). The aim of this study was to investigate whether donor and/or recipient PNPLA3 genotypes influence fibrosis progression after LT.

Methods
This study included 426 patients who underwent LT between 1997 and 2015. Recipient genotypes were determined from blood leucocytes, donor genotypes from wedge biopsies. The end-points were histological findings of fibrosis stage F2 or F3 according to Desmet score. Statistical analysis was based on Kaplan-Meier survival curves and cox regression analysis.

Results
426 recipients were genotyped with a G allele frequency of 39%. In 196 of 426 donors the G allele frequency was significantly lower (28%; p<0.05). Recipients with a genotype CC would develop F2 fibrosis sooner than carriers of the G variant of PNPLA3 (p=0.03). In patients transplanted for HCV-cirrhosis, again CC carriers would reach sooner a F2 or F3 fibrosis than their G counterparts (p=0.07 over 5 years, p=0.01 over 17 years for F2 fibrosis and p=0.02 over 5 years and p=0.001 over 17 years for F3 fibrosis). Considering donor instead of recipient genotypes, no difference came to light with regard to fibrosis progression.

Conclusion
In our large cohort of patients, the presence of the G variant of PNPLA3 was not associated with a faster development of fibrosis in the liver after transplantation.
Five Year Overall Survival Following Mayo Protocol for Hilar Cholangiocarcinoma Justifies its Continued Use; the Dublin Experience

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Background
The Mayo Clinic has reported a 5-year survival above 70% following neoadjuvant chemoradiation and liver transplantation for unresectable hilar cholangiocarcinoma (hCCA). Despite these good results it has not been widely accepted, mainly in Europe.

Methods
All the patients affected by hCCA who underwent neoadjuvant treatment and liver transplantation from October 2004 to December 2016 were included in the study. Data were collected regarding patients characteristics, treatment related complications, recurrence and survival.

Results
26 patients with histologically proven, unresectable, hCCA (92% male, mean age 48 years) were included in the study, 24 patients (92%) had a hCCA on PSC. 6 patients (23%) required a Whipple at the time of the transplant and 4 (17%) required a redo transplant. All but 1 patient had a R0 resection, 9 patients (34.6%) had a residual tumor in the explanted liver. Surgical mortality and morbidity were 17% and 38%, respectively. The 3-year overall survival was 63.2% and the 5-year overall survival 51.6%. At the univariate analysis the presence of residual tumor in the explanted liver (p=0.011, OR=25) was the only identified risk factors for disease recurrence.

Conclusion
Long term survival can be achieved in patients with unresectable hCCA using neoadjuvant chemoradiotherapy and liver transplantation with acceptable surgical mortality and morbidity. The presence of residual tumor in the explanted liver is a risk factor for disease recurrence.
Graft-versus-host disease and liver transplantation – It can be survived

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Background
Graft-versus-host disease (GVHD) following orthotopic liver transplantation (OLT) is a rare but deadly complication. Several risk factors have been mentioned by different authors over the past years.

Methods
A 63 year old male presented with fever and fatigue 3 months after OLT. After merely fast progression of the symptoms and worsening of condition despite antibiotic application of Meronem, the patient was transferred to our intensive care unit. The patient developed mucosal lesions as well as a generalized exanthema. After Stevens-Johnson-Syndrome could be ruled out, skin lesions were treated with local steroids and in addition systemic methyl-prednisolone in combination with cyclosporine was administered. Under this regime the patient improved steadily.

Results
The patient could be stabilized and eventually be dismissed from our hospital. Biopsy of skin and colon confirmed the diagnosis of GVHD.

Conclusion
Our case represents one of the few patients described in current literature to actually survive this complication. The prevention of GVHD seems highly important since most treatment regimes are reported as not successful. We have experienced a case of acute GVHD following adult-to-adult OLT with a positive outcome. According to the literature high-dose steroids in combination with calcineurin inhibitors are ineffective in the treatment of GVHD after OLT. Nevertheless, in our case steroids continuously tapered down in addition with cyclosporin seemed to be effective in treating this complication.
Impact of a National Controlled Donation After Circulatory Death (DCD) Programme on Organ Donation: A 10 Year Study

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Background
Organ transplantation is the most successful treatment for some forms of organ failure yet a lack of organs mean many die on the waiting list. In the UK, the Organ Donation Taskforce was set up to identify barriers to organ donation and in 2008 released its first report (ODTR). This study assesses the success since the ODTR and examines the impact of the UK’s controlled Donation after Circulatory Death (DCD) programme and the controversies surrounding it.

Methods
The NHSBT database and Potential Donor Audit database were interrogated for eligible donors from April 2004 to March 2014.

Results
There were 12864 intended Donation after Brain Death (DBD) or DCD donors. When the 5 years preceding the ODTR was compared to the 5 years following, there was a 292% increase in intended DCD donors (1187 to 4656), but only an 11% increase in intended DBD donors (3327 to 3698). Organs retrieved per intended DBD donor remained static (3.30 to 3.26), whereas there was a decrease in DCD (1.54 to 0.99) due to a large rise in donors that didn’t proceed to donation (325 to 2464). The majority of DCD donors who proceeded died in the first 30 minutes from time of withdrawal.

Conclusion
There was an unprecedented increase in activity following the ODTR, however the largest increase was in intended DCD donors of which now the majority do not progress. This study suggests further work on converting eligible referrals to organ donation and exploring methods of converting DCD to DBD donors may improve the situation further.
Laparoscopic approach for living donor to paediatric liver transplantation. A single centre experience of the first 5 cases in Spain.


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Background
An experience from a single Liver Paediatric Transplant Center is presented. Our program has performed more than 170 children's liver transplants. In the last year, the laparoscopic approach has been introduced in this surgery.

Methods
In this study we report our series of five cases of living donor liver transplantation (LDLT), one of them auxiliary, performing left lateral sectorectomy with a pure laparoscopic approach performed in 2016.

Results
The average age of donors was 32.4±3.9 (27-37) years. The mean BMI of the donors was 22.8±3.9 (18.38-27.47). 60% were ASA I and 40% ASA II. Only two donors required Pringle maneuver. The mean age of the recipients was 3.2±4.9 (4-12) months with an average weight of 12.6±10.5 (6.6-31) kg. The aetiology was biliary atresia in 3 of them and metabolic disorders in the other two. The type of graft in the five cases were left lateral sectorectomy (LLS). The surgical time of donor surgery was 386 ± 25.1 (360-410) min and the recipient's time was 439 ± 87.5 (315-560) min. The conversion rate was 0%. The recipient CCI of our series was 15.1 ± 14.7. The mean stay of the recipients was 22.8 ± 7.9 (14-33) days and the donors was 4.4 ± 1.5 (3-6) days.

Conclusion
We can propose the laparoscopic approach in reference centers as "gold standard" due to its minimal complication rate and short hospital stay, performed in specialized centers.
Liver transplantation after complete hepatic artery avulsion secondary to blunt abdominal trauma

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Background
Hepatic artery avulsion secondary to blunt abdominal trauma is a rare cause of massive hemoperitoneum. Ischemic cholangiopathy it is a possible complication secondary to its ligation.

Methods
We report the case of a trauma patient with ischemic cholangiopathy secondary to hepatic artery ligation who required liver transplant (LT).

Results
A 37-year-old man was admitted to the emergency room after falling from a third-floor flat. During surgical exploration, a massive hemoperitoneum secondary to hepatic artery avulsion was observed. Reconstruction of the artery could not be achieved so it was ligated. He was admitted to ICU, improving progressively of his hemodynamic instability and ischemic hepatic failure. MRI, 34 days after surgery, showed diffuse ischemic cholangiopathy. After severe repeated cholangitis he was included for LT that was performed 70 days after surgery using a classic technique due to its huge liver volume (4200 gr). During immediate postoperative period he was reoperated four times due to hemoperitoneum and necrohemorrhagic pancreatitis. On day 36th after LT, he developed a nonsurgical intracranial hemorrhage, dying 2 days after.

Conclusion
Diffuse ischemic cholangiopathy secondary to hepatic artery lesion is an uncommon indication of LT. Traumatized patients with vascular lesions should be transferred to a specialized center.
Liver transplantation for acetaminophen induced acute liver failure - a 10 year retrospective analysis.

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Background
The widespread availability of drugs over the counter (OTC) and rapid development of health consciousness of Polish citizens is associated with broad access to medical information in mass media. It seems that a "new era" of TV commercials treating patients medically has arrived. This is leading to a general conduct of overusing and misusing non-steroid anti-inflammatory drugs and other painkillers such as paracetamol. The consequences of overdosing such drugs may lead to acute liver failure (ALF) which is a life-threatening state treated by liver transplantation.

Methods
Between 2002-2014, 35 (17 females and 18 males) patients were treated due to acute paracetamol poisoning. Their parameters of liver and renal function were continuously monitored. If there was no improvement in the liver function, patients underwent albumin dialysis with the Prometheus system and were qualified for liver transplantation (LT).

Results
26 patients were treated pharmacologically and seven out of nine patients who underwent LTx were dialyzed. Overall, eleven patients had 26 albumin dialysis in total. Four patients died: one post-transplant and three pre-transplant.

Conclusion
Paracetamol is the cause of many poisonings resulting from the lack of public awareness about toxic interactions with alcohol and suicide attempts. Acetaminophen-induced acute liver failure concerns a small percentage of patients but when timing is right it can be successfully treated with albumin dialysis or lastly liver transplantation.
Liver volume regeneration after living donor liver transplantation (LD/LDLTx) depends on segmental perfusion

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Background
The ability for liver volume regeneration after LD/LDLTx depends on liver morphology, function, perfusion and ischemia reperfusion injury.

Methods
Donor and recipient, each n=42.
Preoperative CT-volumetry in donors. Preoperative liver function test (LiMAx) for donor and recipient. LD: right hemihepatectomy (right- lobe graft, RLG). During LDLTx 3 liver biopsies were taken: 0-biopsy, from RL while ischemia and after reperfusion and stained with HMGB1. After LD and LDLTx on 2.POD LiMAx, on 10.POD and after 6 month (6M) CT-Volumetry and LiMAx were performed.

Results
HMGB1-translocation, ischemia time and liver morphology were nearly same in all donors. Liver function in donors is restored on 10. POD (n=14), in recipients on 2. POD (n=14) and increased with 6M (n=10).
Donor remnant liver gained after 6M to approx. 85% of total liver volume (n=12) an the RLG in recipients (adjusted to standard liver volume, SLV) gained to approx. 100% of SLV.
Segmental volume regeneration (SVR) in RLG is mainly related to portal vein segments P7 and P8 and less P5. Regarding venous segments only perfusion region of right hepatic vein is gaining in contrast to more outflow obstructed perfusion areas of middle hepatic and inferior hepatic vein. In donors portal SVR takes place in P2 and P3, venous SVR occurs only via left hepatic vein.

Conclusion
Liver volume regeneration maybe optimized by reduction of outflow obstruction respectively necessary hepatic vein reconstruction.
Livers from brain dead donors with chronic active alcohol abuse for liver transplantation

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Background
Liver grafts from donors with chronic and active history of alcohol abuse are usually discarded for liver transplantation (LT). Our aim is to report our results with those grafts.

Methods
We performed a case control study on 113 LT from 2015 to 2016.
Inclusion criteria for the study group were adult patients transplanted with livers from donors with chronic active alcohol abuse.
The control group consisted in randomly matched LTs with similar recipient (R) and donor (D) age, sex and ischemia time, performed in those two years with standard livers. The ratio of case-to-control was 1:2.
Short term results, biochemical data from day 0 to 30 after LT, complications and survival are reported. Data were compared. P≤0.5 was considered statistically significant.

Results
The study group consisted of 4 LT whereas 8 patients transplanted with standard grafts served as control group.
Mean micro-macro steatosis percentage in livers from donors with alcohol abuse was 36±16%.
Laboratory exams showed statistically significant worse values for Aspartate Aminotransferase and International Normalized Ratio at Day 0, and Total Bilirubin at day 8, for livers from donors with alcohol abuse.
No statistical difference was found in the occurrence of rejection episodes.
All patients of both groups are alive after 347±264 days (range 24-725) from LT.

Conclusion
May be it’s time to reconsider the use for LT of livers from donors with chronic and active alcohol abuse.
Living Donor APOLT-ALPPS: Paradigm shift in the management of irresectable colorectal liver metastases

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Background
Recently, the Norwegian SECA trial suggested deceased donor liver transplantation (DDLT) as promising palliative therapy for patients with irresectable CRLM (i-CRLM) with 5 year OS > 60% notwithstanding early tumor recurrence. The Oslo group reported on one patient with i-CRLM, who underwent Resection And Partial Liver segment 2-3 transplantation from DD with Delayed total hepatectomy (“RAPID” procedure). AIM: To report the first case worldwide of Living Donor RAPID procedure (LD-RAPID).

Methods
A 49-year-old woman with i-CRLM and no extra-hepatic disease underwent first a left hepatectomy followed by implantation of her son’s left lateral segments 2-3 according to the APOLT technique plus transection of the right portal vein (ALPPS concept). At POD 10, completion of right hepatectomy was performed.

Results
Donor’s postoperative course and the long term FUP (POM 12) were uneventful. The recipient had no complications after Stage 1. After stage 2 she developed a slight SFSS and a late bile leak from BDA which spontaneously resolved. At POM 5 extra hepatic tumor recurrence was observed (positive liquid biopsy, bone and small bilateral lung metastases < 5 mm). Systemic chemotherapy and local radiation therapy were started. At POM 12 she is asymptomatic, in good general condition, with stable disease and negative liquid biopsy.

Conclusion
Living Donor APOLT-ALPPS procedure (i.e. LD-RAPID) is feasible and safe for both donor and recipient and may represent a paradigm shift in the management of i-CRLM.
Logistic regression analysis of NK and T-cell content isolated from liver perfusate after procurement procedures in donors after brain death.

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Background
Our study focuses on a cytofluorimetric examination of a monocentric series of consecutive liver perfusates (LPs) after whole graft washout in consecutive series of adult deceased brain donors (DBDs).

Methods
Natural killer (NK), T cells and Mucosal-associated invariant T (MAIT) cells were purified by flow cytometry using CD3, CD4, CD8 and CD56 from LPs and concentrations and phenotypes were matched with DBD characteristics. to determine the relative percentages of T and NK cells.

Results
LPs were collected during the back-table surgical time after the procurement procedures for 47 DBD for adult recipient since 2010 to 2014. NK cell concentration was strictly related to younger donor age (p = 0.003) and higher body mass index (BMI) (p = 0.01). At multivariate analysis, BMI was associated with reduced percentage of NK obtained by LP of DBDs (OR, -0.3% CI, 0.58-0.95, p = 0.01).

Conclusion
Based on our experience a novel potential role of T and NK cells could be determined in IRI in humans, and this might be of high relevance for liver graft procurement management.
Long term survival of liver transplantation for hepatocellular carcinoma meeting milan criteria

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Background
Liver transplantation (LT) is a widely accepted treatment for hepatocellular carcinoma (HCC) survival. The aim of this study is to analyze the long term results of LT for HCC meeting MC at our center.

Methods
Patients transplanted with LT for HCC fulfilling MC between 02/1996 and 07/2013 were included in a retrospective study (prospective data base) and analyzed until July 2015.

Results
346 patients comprised the study group (31.3% of LT) with median follow-up of 6.5 years (1.5-19). Median recipient age was 58 years (31-69). The cause of cirrhosis was HCV in 50.6% and alcohol in 38.4%. Alpha fetoprotein was >400 U/L in 2.6% of LT. Median time on the waiting list was 128.5 days (0-408) and 51.5% received local HCC treatment; 4.6% were down-staged to MC. Perioperative mortality was 0% and retransplantation rate was 4.3%. Analyzing explanted livers, 78.5% met MC and 9.5% USFC; 12% were above them. Recurrence was observed in 9.2%. Survival at 1, 3, 5 and 10 year was 95%, 85%, 78.5% and 65.5%, respectively. HCV recurrence was the most common cause of death (33.5%). There were differences in survival between the etiology of the cirrhosis (p=0.003) showing that HCV had the worse survival at 5 and 10 years, 72% and 54.5%. Analyzing long term survival according to explanted liver criteria, MC, USFC or >USFC, the differences were not significant (p=0.49).

Conclusion
LT in patients with HCC within MC is followed by a low rate of recurrence and a high 10-year survival rate. HCV recurrence is the most common cause of mortality.
Low Platelet Counts After Liver Transplantation: Validation of the 60-5 Criterion

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Background
Platelets play a critical role in hepatic ischemia-reperfusion injury and regeneration. In a single-centre cohort of liver transplanted patients (derivation cohort), platelet counts <60x10^9/L at postoperative day 5 (POD5) (the 60-5 criterion) were shown to be an independent predicting factor for severe postoperative complications and early graft and patient survival. The aim of this study was to validate those findings using a validation cohort containing prospective data.

Methods
The validation cohort comprised prospectively collected data on donors, recipients, perioperative laboratory values, graft function, complications and survival from 285 liver transplantations between 2008 and 2014. The primary outcome was grade IIIb/IV complications, secondary outcomes were graft and patient survival.

Results
Mean patient and donor ages were 57 ±11.6 and 51 ±18.3 years respectively. The average MELD score was 18 ± 10.6. Patients with POD5 platelet counts <60 x10^9/L had higher rates of severe (grade IIIb/IV) complications [27.8% versus 16.8%, odds ratio (OR) 1.9 (95% CI 1.1-3.5), p<0.05] and worse 90-day mortality [6.1% versus 1.3%, OR 5.0 (95% CI 1.0-24.6), p<0.05]. The 1-, 3-, and 5-year graft and overall survival rates were similar in both groups.

Conclusion
This study validates the 60-5 criterion as a predictor of severe complications and 90-day mortality after liver transplantation. These findings may help in developing protective strategies or interventions early after liver transplantation in high-risk patients.
Mediterranean Diet Post-Liver Transplantation: Should it be the Standard of Care?

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Background
Weight gain post liver transplantation is a common problem and can lead to major complications including recurrence/retransplant in case of Nonalcoholic steatohepatitis. There are several reasons for weight gain. Achieving and maintaining a desirable body weight and normal fat mass from a balanced diet is the aim of every nutrition care plan.

Methods
Mediterranean diet recipes will move into the forefront of weight management and liver health programs. The main components of this diet include consumption of olive oil, legumes, unrefined cereals, fruits, vegetables, fish, moderate consumption of non-fat or low-fat dairy products and low consumption of non-fish meat products. Those food items are rich in antioxidants, W3 fatty acids, monounsaturated fats, soluble fibers and low in Trans fats, saturated fats, simple sugars and sodium.

Results
Numerous dietary models have been proposed as the perfect diet post liver transplantation; by far the Mediterranean diet has proved to be of great benefit for those patients compared to other types of diet. Patients have considerably improved their insulin sensitivity, their circulating levels of insulin and their anthropometric measurements only after the Mediterranean diet was started.

Conclusion
This balanced type of food should be the standard of care for patient post liver transplantation, along with a healthier lifestyle (adherence to physical activity, smoking cessation and limiting alcohol consumption).
Monocentric Experience on Hepatitis C-Positive Deceased Liver Donors Procurement in the Mediterranean Basin.

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Background
Our study focuses on a monocentric experience in a series of consecutive liver transplantation (LT) performed in adult recipients using allografts with a moderate degree of fibrosis from hepatitis C virus-positive (HCV+) donors as a plausible therapeutic option to remedy the chronic shortage of organs in our region.

Methods
From 2003 to 2016, at our Institute we performed 10 LT using HCV+ deceased donors. In particular, the pre-LT histological examination in one case showed a framework of moderate steatosis (35% microvescicular and 10% macrovescicular) with micro/macrovescicular steatosis <10% in all other cases. A fibrous framework of 1/6 according to the Ishak score in a single case, and 2/6 in four cases, were highlighted, while there was no fibrosis in the other five cases. A picture of periportal inflammation was still detected in four cases, with no evidence of inflammatory lesions in the remaining cases.

Results
The patient survival was 100% at one and three years, and 85.7% at five years after LT. One-, three- and five-year graft survivals were 100.0%, 88.9% and 71.4%, respectively. Only one patient underwent re-LT after two years because of chronic rejection.

Conclusion
Based on our experience using HCV+ deceased liver donors with a moderate degree of fibrosis, it could represent a good attempt to use the marginal donors as a plausible therapeutic option when facing liver donor shortage.
Normothermic Machine Perfusion Using an Air/Oxygen Mixer: Reconditioning a Marginal Donor Liver

**Background**

The use of marginal livers or extended criteria donors (ECD) represents the concrete possibility of expanding the pool of available organs for transplantation, and reducing the discrepancy between the demand for organs and the number of donations. Sub-optimal grafts are more susceptible to ischemia-reperfusion (IR) injury during static-type cold storage (SCS). In this setting, machine perfusion (MP) is increasingly used as a promising alternative to SCS, offering better preservation of the liver parenchyma compared with the standard method of organ preservation.

**Methods**

In reported cases there is a high incidence of hyperoxia and respiratory alkalosis in the perfusate, with consequent concerns about the toxic effect of oxygen, and alteration of cellular homeostasis. For this reason, we have gradually focused our attention on the use of oxygen during reconditioning of the liver, though with the use of an added latest-generation oxygenator.

**Results**

We present the first reported combined use of normothermic machine perfusion liver assist (LA) and the Sechrist 3500 Air/Oxygen Mixer, aimed at better controlling and regulating the pO2 and CO2 in the process of reconditioning a marginal liver from an ECD.

**Conclusion**

Based on our experience and a thorough review of the literature it seems that the use of a high accuracy fluximeter improves the procedure of reconditioning. Further investigation should be directed to understand the effect of a more physiologic perfusate gas content.
Oncologic outcome of liver transplantation for incidental combined hepatocellular and cholangiocarcinoma: a case match analysis

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Background
Combined hepatocellular and cholangiocarcinoma (cHCC–CC) is a rare tumor of difficult diagnosis. Therefore some patients who underwent liver transplantation (LT) for HCC are eventually diagnosed with cHCC-CC. In this study we aim to evaluate incidence, characteristics, preoperative treatments and post-transplant outcome of patients who underwent LT for incidental cHCC-CC.

Methods
All patients treated with LT from 1991 to 2012 were retrospectively analyzed. Pathologic specimens were reviewed to confirm the diagnosis. Demographics, clinical data, survival and outcomes pre and after LT were compared to patients with HCC with a case match analysis pairing patients 1:2 (cHCC-CC:HCC) by age, sex and tumor characteristics.

Results
24 patients underwent LT for cHCC-CC and 299 for HCC. Patients affected by cHCC-CC were younger (55.9 vs 60.3 years; p=0.01). HCC patients received significantly more pre-LT treatments (p=0.03). No differences in recurrence rate were found between groups (cHCC-CC 22.2% vs HCC 20.4%). Survival at 1 and 3 years were significantly different between groups, (85% and 75% for HCC vs 67% and 60% for cHCC-CC; p=0.04). When cHCC-CC and HCC were paired no differences in recurrence rate and overall survival were observed.

Conclusion
In this study cHCC-CC and HCC have a similar recurrence rate but a different overall survival. After matching the two groups the difference in overall survival was lost. Thus these retrospective data could suggest that LT is a potential treatment for well selected cHCC-CC.
Pancreas retrieval for solid organ transplantation

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Background
We present our technique of selective retrieval of the pancreas for solid organ transplantation.
The first step of the warm phase is the dissection of the hepatic pedicle followed by partial section and flush of the common bile duct.
Once the right gastric vessels are divided the dissection is pursued following the direction of the common hepatic artery on its anterior surface.
The origin of the splenic and gastroduodenal artery are identified and encircled.
The inferior mesenteric vein is canulated.
Gastrocolic ligament is then opened and the pancreas is exposed.
We perform complete mobilisation of the inferior pancreatic border up to the spleen.

Methods
In the cold phase we complete bile duct and gastroduodenal artery section.
Common hepatic artery is completely freed from superior pancreatic border. Splenic artery is divided 1 cm after its origin.
Abdominal aorta is then transected between celiac trunk and superior mesenteric artery.

Results
Portal vein is fully exposed in order to exclude the presence of a right hepatic artery coming from superior mesenteric artery.
Portal vein is then divided in the middle of the hepatic pedicle.
Liver is then harvested. The duodenum is divided proximally and distally with a linear stapler.
The origin of the mesenteric root is identified and then stapled.

Conclusion
The pancreas is fully mobilised on its posterior aspect from its attachment.
The dissection ends with short gastric vessels division and finally the pancreas is removed en-bloc with the spleen.
Techniques such as retroperitoneal graft placement have further improved the ability to reproduce the physiology of the “normal” pancreas. We herein present a video with the pancreas placed into a fully retroperitoneal position with systemic venous and enteric drainage of the graft by duodeno-duodenostomy.

Methods
Back-table preparation was performed prior to transplantation. The donor duodenum was reduced to a length of 8–12 cm. The arterial reconstruction of the graft was created by anastomosis end-to-end between the splenic artery and distal superior mesenteric artery.

Results
In the recipient, a median laparotomy was done for surgical access. The right colon was then mobilized and a Kocher manoeuvre was performed to expose the retroperitoneal site along with the vena cava and iliac vessels. The venous anastomosis was performed end-to-side between donor portal vein and recipient vena cava. The arterial supply for the graft was provided by anastomosis end-to-side between the graft superior mesenteric artery with the recipient common right-iliac artery. For enteric drainage a duodeno-duodenostomy was performed side-to-side by means of a hand-sewn, double-layered anastomosis, at the level between the second and third portions of the recipient's duodenum. A drain was inserted beside the pancreas graft, ending near the duodeno-duodenostomy. Finally, the colon was returned to its original position.

Conclusion
The retroperitoneal placement of the pancreatic graft imitates the physiological position of the organ.
Transplantation: Clinical
P21.01

Pattern of hepatocellular carcinoma recurrence following living donor liver transplantation

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Background
The aim of the present study was to identify the pattern of HCC recurrence after LDLT for early detection and management.

Methods
From April 2003 to October 2014, the record of 60 patients who underwent LDLT for HCC at the National Liver Institute, Menoufia University, Egypt, were retrospectively reviewed.

Results
Seven patients (11.7 per cent) had HCC recurrence after LDLT. Pretransplant α-fetoprotein (AFP) > 1000 ng/mL, tumour grade and microvascular invasion were the incriminated risk factors for recurrence. Three patients (42.8 per cent) had intrahepatic and extrahepatic recurrence (lung and bone), two patients (28.6 per cent) had only extrahepatic recurrence in bones and two patients (28.6 per cent) had only intrahepatic recurrence. Management was as follows: two patients (28.6 per cent) had surgical excision of intrahepatic recurrence and extrahepatic metastasis, two patients (28.6 per cent) underwent radiotherapy for bone metastasis, one patient (14.2 per cent) underwent intraoperative radiofrequency ablation for liver recurrence and two patients (28.6 per cent) received sorafenib as medical treatment. The mean time of recurrence was 19.7 months, and mean survival was 29 months.

Conclusion
The majority of HCC recurrences after LDLT are extrahepatic and occur mainly in the first 2 years; strict follow up is required during this period. A high level of pretransplant serum AFP and microvascular invasion are risk factors for tumour recurrence and should be taken into account when selecting candidates for LDLT.
Predictive factors for biliary stones after donor brain dead liver transplantation

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Background
The aim is to define predictive factors for the onset of biliary stones (BS) after liver transplantation (LT).

Methods
We studied the onset of BS in 390 LTs from 2004 to 2014. The study was limited to 317 LTs with duct to duct biliary anastomosis on a t-tube and 47 hepatico-jejunal anastomoses.
Data concerning the donor, the transplant and the recipient were collected. We performed an univariate analysis, and then a multivariate analysis. P=.05 was considered statistically significant.

Results
BS occurred in 14/364 grafts (3.8%). Predictive factors for BS in univariate analysis were high Donor Body mass Index, hepatocellular disease (vs tumors), hepatic artery thrombosis and biliary stenosis. Only biliary stenosis was statistically significant in the multivariate analysis (p=.0001, OR=17.077, 95% CI 4.222-69.068).
A second analysis involved 51/364 grafts with biliary stenosis, according with the onset or not of BS. Predictive factors for the onset of BS in univariate analysis were recipient female sex and ischemia time > 10 hrs; in a multivariate analysis including also donor sodiemia and hepatic artery thrombosis, female sex (p=0.018, OR 11.297, 95% CI 1.516-84.155) and ischemia time > 10 hrs (p=.028, OR 10.147, 95% CI 1.288-79.961) remained statistically significant.

Conclusion
Biliary stenosis is confirmed as a main risk factor for the onset of BS after LT. In grafts with biliary stenosis predictive factors for BS are recipient female sex and ischemia time > 10 hrs.
Predictors of Outcome of Living Donor Liver Transplantation for Hepatocellular Carcinoma

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Background
The aim of this work is to study the different factors that affect the outcome of living donor liver transplantation for patients with hepatocellular carcinoma (HCC).

Methods
Between April 2003 to November 2014, 62 patients with liver cirrhosis and HCC underwent living donor liver transplantation (LDLT) in the National Liver Institute, Menoufia University, Egypt. The preoperative, operative, and postoperative data were analyzed.

Results
After studying the pathology of explanted liver; 44 (71%) patients were within the Milan criteria, and 18 (29%) patients were beyond Milan; 13 (21.7%) of patients beyond the Milan criteria were also beyond the University of California San Francisco criteria (UCSF) criteria. Preoperative ablative therapy for HCC was done in 22 patients (35.5%), four patients had complete ablation with no residual tumor tissues. Microvascular invasion was present in ten patients (16%) in histopathological study. Seven (11.3%) patients had recurrent HCC post transplantation. The 1, 3, 5 years total survival was 88.7, 77.9, 67.2 %, respectively, while the tumor-free survival was 87.3, 82.5, 77.6 %, respectively.

Conclusion
Expansion of selection criteria beyond Milan and UCSF had no increased risk effect on recurrence of HCC but had less survival rate than patients within the Milan criteria. Microvascular invasion was an independent risk factor for tumor recurrence.
Recipient celiac trunk stenosis is a significant risk factor for early hepatic artery thrombosis after liver transplantation

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Background
Hepatic artery thrombosis (HAT) is a rare but severe complication after liver transplantation (LT). The aim was to study risk factors of HAT, notably a recipient celiac trunk stenosis and a variant anatomy of the recipient hepatic artery, in our single center experience.

Methods
Between 1997 and 2013, a total of 709 LT in 618 patients were performed at our center. Early (<30 days) HAT (EHAT) occurred in 18, late HAT (LHAT) in 12 patients. Patients with EHAT and LHAT were compared to a randomized control group of 100 patients without HAT. Recipient celiac trunk stenosis was assessed on pre-LT imaging by two independent radiologists. Univariate analysis by Fishers exact test and a multivariate logistic regression were used the EHAT group, a descriptive analysis in the LHAT group.

Results
In univariate analysis, stenosis of the recipient celiac trunk, presence of accessory hepatic arteries, retransplantation, use of an aortic conduit and the amount of transfused FFP were significantly associated with the development of EHAT. Upon multivariate regression, only a stenosis of the celiac trunk (p=0.001) and retransplantation (p=0.002) were significantly associated with EHAT. LHAT seemed to be associated with the use of an aortic conduit and retransplantation.

Conclusion
This is the first study to identify a stenosis of the recipient celiac trunk as a significant risk factor for the development of early hepatic artery thrombosis after LT. Patients should be systematically screened.
Revascularisation techniques in liver transplantation for portal vein thrombosis and stenosis

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Background
The prevalence of portal vein thrombosis (PVT) among patients with cirrhosis ranges from 1% to 16%, however the incidence of liver transplants (LTx) performed in PVT patients ranges from 1.2% to 6% [R.F. Saidi et al, 2012; Michael J. Englesbe et al., 2010]. Despite the improved surgical technique and anesthesiological perioperative care the LTx in PVT is associated with non sustainable outcomes. The aim of the study was to evaluate the results of LTx procedures in PV thrombosis and stenosis.

Methods
In a period of 2008 to 2016 445 LTx were performed. The overall rate of LT with portal vein reconstruction was 6.5% (29/445). The PV reconstruction technique depended on PVT grade (Yerdel), age, aetiology, presence of shunts, and were thrombectomy (15/29); cava-portal (6/29) and reno-portal (5/29), transposition; jump- and interposition graft – (2/29), shunt-to-portal anastomosis (1/29).

Results
The incidence of PV rethrombosis was 3% (1/29) compared to 0.7% (3/416) in patients without pre-LT PVT. Hospital mortality comprised 3%.

The groups were compatible in postoperative complications rates, hospital stay (14 (10;17) vs 13 (10;18) in patients with and without PVT correspondingly) and patients’ survival (the overall 5year patient survival after LTx is 78% (eltr.org)).

Conclusion
In our experience the results of LTx in patients with PVT are compatible with patients without PVT. The preoperative thorough examination and preparedness for sophisticated surgery are necessary in case of LTx in patients with PVT.
Role of Allelic Imbalance in Predicting the Risk of Hepatocellular Carcinoma Recurrence after Liver Transplantation

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Background
Hepatocellular carcinoma (HCC) recurrence (HR) after liver transplantation (LT) remains a challenging issue, because HCC size and number tell only a partial tale of the characteristics that predict post-transplant outcomes. We aimed to analyze the allelic imbalance (or loss of heterozygosity) in specific microsatellites, and to assess the risk of HR.

Methods
Seventy-one (71) patients who underwent LT for HCC at ISMETT were included in this retrospective study, 18 of whom developed HR at 5-years post-transplant. Molecular analysis, using 19 microsatellites, was done on whole blood and on the corresponding native liver. The presence of allelic imbalance for a specific locus (presence of loss of heterozygosity) was determined for values outside the normal range (0.66-1.50).

Results
We found a statistically significant association between allelic imbalance and tumor recurrence only in 3 loci (D3S2303, D9S251, and D9S254). The evaluation of fractional allelic imbalance (FAI) cut-point index is associated with HR. ROC analysis indicated that this diagnostic test has good accuracy in terms of HR after LT. FAI index has correctly classified on average 74% of patients, predicted HR within 2 years of LT for 69% of patients, and confirmed the high predictive role of allelic imbalance in D9S251.

Conclusion
Our data suggest that the information obtained by allelic imbalance analysis could have a prognostic application in risk management of HR in patients who have undergone LT, particularly for early HR.
Surgical Duct-to-Duct Reconstruction – a Novel Approach to Biliary Anastomotic Stricture after Deceased Donor Liver Transplantation

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Background
Bilio-enteric diversion is the current standard in patients requiring surgical repair of the biliary anastomosis after deceased-donor liver transplantation (DDLT). In contrast, the aim of this study was to demonstrate the feasibility and safety of a duct-to-duct reconstruction.

Methods
Between 2012 and 2016, we performed a total of 209 DDLT in 193 adult patients. Patients with initial bilio-enteric diversion (n=10) and late re-transplants were excluded. Out of 180 patients with a primary duct-to-duct reconstruction, 34 (18.9%) developed biliary complications. Patients with non-anastomotic or combined strictures were excluded. 11 patients (6.1%) had isolated AS five of which failed endoscopic treatment and underwent relaparotomy. Median time of follow-up was 1034 (360-1535) days.

Results
Duct-to-duct reconstruction was feasible and successfull in all cases. Liver function tests fully normalized and no patient required any form of biliary intervention after surgery. One patient with intraoperative cholangiosepsis was ICU bound for 5 days, one patient with a subhepatic abscess required drainage. There was no perioperative death. The median length of hospital stay was 8 (5-17) days.

Conclusion
Duct-to-duct reconstruction is a feasible and safe option in selected patients requiring surgical repair of anastomotic stricture after DDLT. This approach preserves the biliary anatomy and avoids the potential side effects of a bilio-enteric diversion.
The impact of individual Extended Donor Criteria on short- and long-term outcome after liver transplant in the MELD-score era

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Background
Not all extended donor criteria (EDC) have an equal impact on graft survival after liver transplant (LT). We designed this study to identify a combination of EDC that predicts graft failure in the MELD-score era.

Methods
We analyzed 465 consecutive LTs (no-EDC, n=112; EDC ≥1, n=353) and examined the EDC (donor age >65 years, mechanical ventilation >7 days, aminotransferases >3x normal, bilirubin >3mg/dL, serum-Na+ >165mmol/L, positive hepatitis serology, macrosteatosis >40%, BMI >30, cold ischemia time (CIT) >14h, malignancy-, and drug abuse history). We aimed to identify the most relevant EDC and a combination thereof predictive of primary non-function (PNF), delayed non-function (DNF), short- (90 days), and long-term (5 year) graft failure.

Results
Graft survival did not differ significantly between the LT-cases of no-EDC and EDC ≥1. The multivariate analysis identified macrosteatosis (HR 5.5 95%CI 1.9-16.0, p=0.002), donor age (HR 1.9 95%CI 1.1-3.5, p=0.034), and CIT (HR 2.0 95%CI 1.0-3.9, p=0.052) to be predictive of graft failure. Their combination affected both short- and long-term graft survival (p=0.041 and 0.002), which was also observed after controlling for labMELD with a cut-off value of 20 (p=0.023 and 0.001).

Conclusion
Our analysis identified three parameters that clearly outweighed the rest of the EDC. The combination of fatty liver, older donors and long ischemia time worsens short- and long-term graft survival and also puts the graft at risk irrespective of recipient’s labMELD-score.
Transplantable HCC in resectable cirrhosis – to resect or to transplant?

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**Background**

The role of liver transplantation (LT) versus liver resection (LR) in patients with “transplantable” and „resectable“ hepatocellular carcinoma (HCC) is a matter of ongoing controversy. The aim of this study was to analyze the outcome in these patients in our single center experience.

**Methods**

Between 1998 and 2016, a total of 286 primary LT and 402 primary LR in patients with HCC were performed at our center and prospectively collected in an SPSS database. Selecting patients with HCC inside the Milan Criteria arising in Child A cirrhosis and excluding those with a contraindication to either LT or LR (age, ASA IV/V, vascular invasion, extrahepatic tumor) we identified 61 patients after primary LT (group A) and 49 after primary LR (group B). Secondary „salvage“ LT was attempted for recurrent HCC after primary LR.

**Results**

The perioperative 90-day mortality was 1.6% in group A and 6.1% in group B, respectively. The 1-, 5- and 10-year OS (RFS) was 90 (86)%, 72 (62)%, and 49 (46)% in group A and 88 (61)%, 59 (20)%, and 29 (11)% in group B. „Salvage“ transplant was feasible in 13 (42%) out of 31 patients with recurrent HCC in group B. In this subgroup, the 1-, 5-, and 10-year OS calculated since LR was 100%, 100%, and 83%.

**Conclusion**

For patients with “transplantable” and “resectable” HCC in this retrospective analysis, primary LT offered better overall and recurrence-free survival compared to primary liver resection. Intention-to-treat RCTs are needed.
Update on Liver Transplantation: A Single Center Experience from 1998 to Present

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Background
Liver transplantation is the treatment of choice for patients with liver cirrhosis. The aim of this study is to review all liver transplants performed at the American University of Beirut Medical Center from 1998 to present.

Methods
24 liver transplants were performed at AUBMC. Of these, 17 were adults and 7 were children. Indications for adult transplants: 2 alcoholic liver cirrhosis, 2 hepatitis B, hepatitis C with HCC, 1 sub-acute liver failure, 1 budd-chiari syndrome, 1 biliary cirrhosis secondary to iatrogenic common bile duct injury, 1 multiple hydatid disease of the liver, 5 autoimmune hepatitis, and 1 vanishing bile duct syndrome. Pediatric transplant indications: 3 cryptogenic liver cirrhosis, 1 extrahepatic biliary atresia, 1 familial hypercholesterolemia, 1 familial intrahepatic cholestasis, and 1 congenital hepatic fibrosis. Of the 23 transplants, 7 were living related.

Results
Patient survival was 74% at 1, 5 and 10 years. There were 6 deaths at a median of 9 days (range 1-56) post-transplantation. The causes of death: 2 primary non-functions, 2 intraoperative cardiac arrest, 1 portal and hepatic artery thrombosis, and 1 severe cellular rejection. All 18 survivors are well, with normal liver function tests at a median follow-up time of 93 months (range 10-185) post-op.

Conclusion
Cadaveric organ donations should be encouraged to increase the number of transplants. Living related liver transplant is an important alternative source of organs, but shouldn’t replace cadaveric donation.
Effects of different remote ischemic conditioning protocols in a rat model of arterialized orthotopic liver transplantation

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Background

Ischemic-reperfusion (IR) injury still represents a major concern in clinical transplantation. In the present study we aimed to investigate the effects of remote ischemic conditioning (RIC) in a rat model of arterialized orthotopic liver transplantation.

Methods

Male Lewis-rats were used (Σn=144; 240–340 g) and liver grafts were stored in 4 °C HTK-solution for 8h before implantation. Animals were randomly allocated into three experimental groups: RIC1, RIC2, Control. In RIC1, RIC2 groups conditioning was applied in recipients before liver exclusion or after reperfusion (4x5-5 min IR via aortic clamping), respectively. Animals were sacrificed at 1, 3, 24, 168h post-reperfusion (n=6 recipient/group/time point). Graft injury was evaluated using numerous methods.

Results

RIC1 group showed significantly (p<0.05) improved portal venous flow and microcirculation (Microcirculation, mean ± SD, RIC1-1h vs. Control-1h, 105 ± 13 vs. 70 ± 17 AU). RIC has significantly reduced tissue injury according to the serum levels of ALT, AST, LDH and results of histology. Reduced TUNEL-staining and elevated pBAD/BAD protein ratio was detected in the RIC groups. Supporting findings were obtained from measurements of serum cytokine (IL-10, MCP-1) as well as tissue malondialdehyde and ATP levels. Hemoxygenase-1 mRNA-expression was significantly higher in RIC1 compared to Control.

Conclusion

RIC in the recipient could protect liver grafts in our model against the detrimental effects of IR injury.
Engineering an endocrine Neo-Pancreas by repopulation of a decellularized rat pancreas with islets of Langerhans

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Background
Decellularization of pancreata and repopulation of these non-immunogenic matrices with islets and endothelial cells could provide transplantable, endocrine Neo-Pancreata.

Methods
In this study, rat pancreata were perfusion decellularized and repopulated with intact islets, comparing three perfusion routes (Artery, Portal Vein, Pancreatic Duct).

Results
Decellularization effectively removed all cellular components but conserved the pancreas specific extracellular matrix. Digital subtraction angiography of the matrices showed a conserved integrity of the decellularized vascular system but a contrast emersion into the parenchyma via the decellularized pancreatic duct. Islets infused via the pancreatic duct leaked from the ductular system into the peri-ductular decellularized space despite their magnitude. TUNEL staining and Glucose stimulated insulin secretion revealed that islets were viable and functional after the process.

Conclusion
We present the first available protocol for perfusion decellularization of rat pancreata via three different perfusion routes. Furthermore, we provide first proof-of-concept for the repopulation of the decellularized rat pancreata with functional islets of Langerhans. The presented technique can serve as a bioengineering platform to generate implantable and functional endocrine Neo-Pancreata.
**Experimental Porcine Model in Pancreas Transplantation.**


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**Background**

The aim of this study is to start up an experimental model valid, similar and comparable to humans in order to make it useful in future studies.

**Methods**

Sixty-four pigs took part of this research, the half of them being pig pancreas donor, and the other half being recipient. The recipients became diabetic with two methods, 10 with Streptozotocin (STZ) and 22 with total pancreatectomy. The technique in donor was the extraction of the whole pancreas with the duodenum. The abdominal aorta was dissected above the iliac bifurcation for cannulation. The duodenum-pancreas graft complete with aorta patch was excised. The venous anastomosis was done between the donor portal vein and vena cava. The arterial anastomosis was done between donor aorta-patch and recipient infrarrenal aorta. Satisfactory reperfusion was indicated by a progressive normal coloration of the pancreatic graft. Enteric drainage was performed by duodeno-jejunalostomy anastomosis.

**Results**

Six out of ten pigs treated with STZ died, because of its toxicity in some cases. Nine out of twenty-two with total pancreatectomy died. Once became diabetics and after transplantation, three animals had surgical complications. The rest lived with a normalization of glucose levels until the euthanasia.

**Conclusion**

This research allows establishing a large animal model in pancreas transplantation. STZ has a very high toxicity and mortality. Pancreatectomy seems an effective and safety procedure to make them diabetic.
Which immunosuppressive drugs to be used in hepatocyte transplantation? - An in vitro analysis with primary human hepatocytes

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Background
Hepatocyte transplantation is of great potential for the treatment of various liver diseases. Despite successful animal studies, insufficient engraftment and long-term acceptance of cellular allografts still remain major challenges for clinical application in humans. Aim of this study was to investigate which immunosuppressive drugs efficiently can suppress immune responses induced by primary human hepatocytes (PHH) in vitro, also taking into account their potential hepatotoxicity.

Methods
PHH were isolated from resected liver specimens and co-cultured with allogenic lymphocytes in terms of a mixed lymphocyte hepatocyte culture (MLHC) to characterize the immune response induced. Proliferative alloresponses were determined by flow-cytometry. MLHC was performed in the absence/presence of Cyclosporin, Everolimus, Belatacept and methylprednisolone. Viability of cultured PHH was assessed using the MTT-assay.

Results
Allogenic PHH induce a predominantly CD4+-driven T-cell response in vitro. Immune responses effectively could be suppressed by Cyclosporin, Everolimus and Belatacept. In contrast to the other immunosuppressants, application of Everolimus significantly reduced the viability of PHH in vitro.

Conclusion
Cyclosporin, Everolimus and Belatacept all seem effective immunosuppressive drugs concerning suppression of alloreactivity in MLHC. Nevertheless, Everolimus might turn out disadvantageous regarding cell engraftment and proliferation in vivo due to observed impairment of cell viability in vitro.