VIDEO SESSIONS

Clinical Kidney Surgical technique

BOS308 LAPAROSCOPIC PYELOURETEROSTOMY WITH RECIPIENTS URETER IN A TRANSPLANTED KIDNEY FOR URETERAL STRICTURE

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Introduction: Ureteral obstruction secondary to ischemia is the most common urologic complication of kidney transplantation. Pyeloureteral anastomosis with recipient ureter has shown most satisfactory long-term results in its management. Existing urinary infection and immunosuppression determine the high risk of wound complications. Till last time this procedure has been performed through open surgery, however in 2006 Orvieto M.A. et al. first reported minimally invasive approach using the Da Vinci robotic system.
Method: We have experience more than 30 procedures of ureteral strictures repair after kidney transplantation by open surgery during 20 years. Since February 2012 we used pyeloureteral anastomosis with recipient ureter in two patients by laparoscopic approach. The operations lasted 215 and 275 min respectively.

In both cases the surgery was performed after percutaneous nephrostomy because of deterioration of transplanted kidney function. Internal stent was indwelled laparoscopically. No drain tube was left.
Results: The nephrostomy tubes were removed after 7 and 10 days respectively. The stents were removed after 20 and 27 days respectively. No complications were seen during the surgery and postoperative period. Now serum creatinine level is 0.12 and 0.15 mmol/l after 15 and 12 months after surgery respectively.
Conclusion: In spite of some difficulties related with topographic landmarks and severe tissues fibrosis after transplantation laparoscopic pyeloureterostomy in transplanted kidney is safe and feasible procedure. The main advantage is absence of risk of most serious complications related with wound infection in immune compromised patients.

Clinical Pediatric transplantation Donation and donor types

BOS309 LAPAROSCOPIC APPROACH FOR LIVING DONOR TO PEDIATRIC LIVER TRANSPLANT

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Objectives: Exposure of technical steps of the first case reported in Spain of purely laparoscopic left lateral sectionectomy for adult-to-pediatric living liver donation.
Patients and Methods: The case of a living related donation from aunt to niece is exposed. The recipient had a cholestatic chronic liver insufficiency due to extrahepatic biliary atresia after a failed Kasaii procedure.
Results: A purely laparoscopic approach of the left lateral section of the donor, which had a total volume of 281 cm3 with 3.5 GRWR was performed. Total operating time was 5 hours with no need to perform any Pringle maneuver. Left hanging was carried out to facilitate the transection. The warm ischemia time was 9 minutes. Implantation was performed with caval preservation (piggy-back technique). The donor was discharged on the 4th day and the recipient was favorably discharged on the 16th post-operative day.
Conclusions: In highly specialized units, complex procedures such as major laparoscopic hepatectomies and minimally invasive approach to living donor can be safely performed. In our center, the last 5 adult-to-pediatric living donors have been performed laparoscopically, turning into our standard of practice, as recently reported.

Clinical Kidney Other

BOS310 A MYSTERIOUS PRESENTATION FOR SYSTEMIC LUPUS ERYTHEMATOUS EIGHT YEARS AFTER KIDNEY TRANSPLANTATION

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Case Presentation: We are presenting a 45 years old female patient, who is 8 years' status post living unrelated donor kidney transplant. She was following in another hospital and referred for resistant hypertension and normocytic normochromic anemia. Her primary disease unknown, no information regarding her donor. According to the referral, her creatinine ranged between 160–180 mmol/l and stable around that value for the last years. BP was controlled by 3 antihypertensive medication but she develops massive lower limb edema, for that amlodipine changed with hydralazine. During that period the patients develop thrombocytopenia, investigation failed to show any viral infection. So mycophenolate mofetil was stopped. The patient developed a bilateral occipital headache, not responding to usual analgesic, Magnetic resonance imaging (MRI) showed hyperintense signals in the white matters. The patient was discharged after some improvement of her symptoms. One week later, she presented with a full-blown picture of SLE, with a typical malar rash skin lesion, nephrotic syndrome, pancytopenia, and all serological markers came positive. Kidney biopsy done showed combined class 4 and 5 lupus nephritis. MMF reintroduced again, and hydralazine was stopped with a disappearance of skin rash and marked decrease in proteinuria.
Discussion: The patient presentation is mysteries. Many questions need an answer. Is the initial presentation with resistant hypertension and anemia is a part of SLE or not? Did the addition of hydralazine just unmask SLE, or lead to drug-induced lupus? Which event was the actual trigger for SLE, the addition of hydralazine or the discontinuation of MMF?

So, is this recurrent of undiagnosed primary disease, de novo SLE, or drug-induced lupus?

Clinical Kidney Surgical technique

BOS311 KIDNEY TRANSPLANTATION FOLLOWING EX-VIVO RECONSTRUCTION OF THE RENAL ARTERY ANEURYSM WITH AN ARTERIAL PATCH

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Background: Increasing number of patients with end stage renal disease has led to an expansion of donor selection criteria. The use of kidneys from living donors with renal artery aneurysms(RAA) not only increases the number of organs available for transplantation but also is a treatment option for selected patients having RAA. This video presents a technique of RAA reconstruction with an arterial patch.
Materials and Methods: A 64 year-old male donor with a1.5 cm saccular RAA at the branch of the left main renal artery has undergone a standard 4-port laparoscopic donor nephrectomy. The kidney was transferred to the bench side and perfused with UW solution. Renal artery irrigation distended the aneurysm clearly demonstrating at the bifurcation. The aneurysm was excised carefully. The posterior wall of the defect was repaired with running 6-0 polypropylene sutures. In order to prevent stenosis, "patch" of the anterior wall was decided. Appropriate length arterial segment was excised from the proximal healthy renal artery and used as a patch to reconstruct the anterior surface of the bifurcation with running 6-0 polypropylene sutures. Control irrigation revealed normal renal perfusion with no anastomotic leak or a saccular distention.
Results: The kidney was placed on the iliac fossa of the 28-year-old son. Following the anastomosis of the reconstructed artery in an end-to-end manner to the recipient's internal iliac artery, no anastomotic leak was observed and the kidney was evenly perfused.

Conclusion: Reconstruction of the renal artery aneurysms with various techniques including primary or venous patch repairs preceded with transplantation is an established issue in the transplantation literature. However, use of an arterial segment easily obtained from the proximal renal artery may offer stronger and and durable repair by preventing stenosis risk which may ensue with primary repair as well as complications of venous patches including increased stenosis and aneurysm formation in long term follow up.

Clinical Kidney Surgical technique

BOS312 KIDNEY AUTOTRANSPLANTATION FOR COMPLEX RENAL ARTERY ANEURYSM REPAIR

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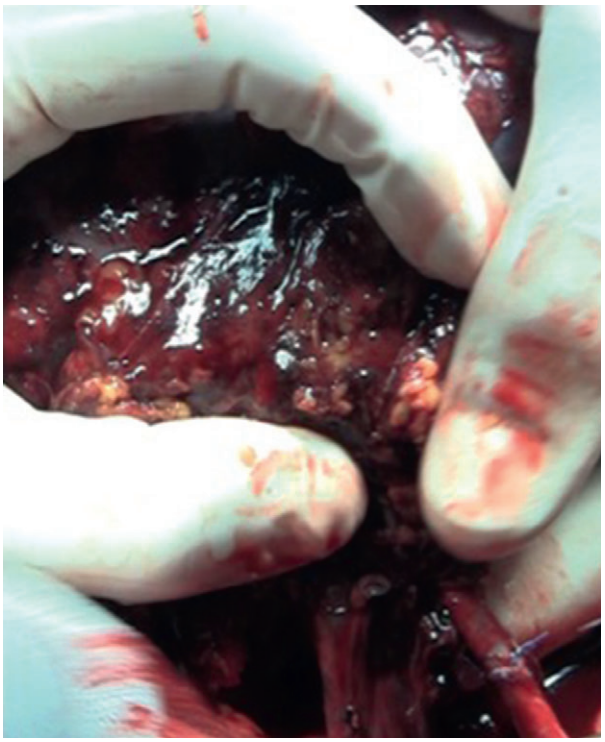
Intraoperative fluorescent imaging using indocyanine green enables vascular surgeons to confirm the location and states of the reconstructed vessels during surgery. Complex renal artery aneurysm repair involving second order branch vessels has been performed with different techniques. We present a case of ex vivo repair and autotransplantation combining the advantages of minimally invasive surgery and indocyanine green enhanced fluorescence imaging to facilitate vascular anatomy recognition and visualization of organ reperfusion.



Clinical Kidney Surgical technique

BOS313 IMMEDIATE GRAFT NEPHRECTOMY AND RE-TRANSPLANTATION OF KIDNEY ALLOGRAFT FOLLOWING ACUTE RENAL VEIN THROMBOSIS

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Background: Renal vein thrombosis (RVT) is usually associated with a technical problem. The dramatic presentation with oliguria, hematuria, and extreme patient discomfort may accompany life-threatening bleeding. In this video we present a case of immediate graft nephrectomy and re-transplantation of a recipient developing acute RVT following two hours after kidney transplantation (KTx).
Materials and Methods: An 18-year-old male recipient with a primary diagnosis of posterior urethral valve and solitary ectopic left kidney was planned for living KTx from a 71-year-old female donor. Laparoscopic left donor nephrectomy was performed and during the preparation of the recipient's right iliac fossa collateral veins were observed which noticed to be thicker than the external iliac vein. A vascular surgery team consultation was made and the iliac vein was prepared and found to be patent. Operation proceeded with vascular anastomosis of end-to-end internal iliac artery and end-to-side external iliac vein.
Results: Two hours following the transplantation there was oliguria, hematuria and severe patient discomfort. Doppler ultrasonography revealed high resistive index, and no flow on external iliac or transplanted renal vein. The patient underwent immediate exploration and the kidney color was noted purple. RVT was extracted with a venotomy and the patient was let bleeding until the kidney achieved its healthy pink color. Following the coloration of the kidney, transplant nephrectomy was performed immediately, the graft was rinsed with cold UW solution and the kidney was transplanted on the left side. Graft function was delayed and the patient was discharged with serum creatinine level of 2.3 mg/dL.
Conclusion: Preoperative evaluation of external iliac vein with Doppler ultrasonography is important. In case of RVT suspicion, prompt exploration and re-transplantation on the other iliac fossa may be an immediate graft saving decision.

Clinical Kidney Surgical technique

BOS314 TECHNICAL ASPECTS OF UNILATERAL DUAL KIDNEY TRANSPLANTATION FROM EXPANDED CRITERIA DONORS

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Background: One option for using organs from donors with a suboptimal nephron mass, e.g. expanded criteria donors (ECD) kidneys, is dual kidney transplantation (DKT). In adult recipients, DKT can be carried out by several techniques. In this video we are going to show the surgical procedure of unilateral dual kidney transplantation (UDKT).
Methods: The procedure begins with the classic Gibson incision, preferably on the right side. After creating an adequate extraperitoneal space, the right kidney is preferably placed superiorly because its renal vein can be lengthened by a segment of inferior vena cava (IVC), with mechanical stapling of both (upper and lower) openings of the IVC segment; moreover the right kidney has a longer artery. The extended renal vein and renal artery of the right kidney are anastomosed end-to-side to the iliac vessels of the recipient. After revascularization of the right kidney, vascular clamps are placed immediately below the venous and arterial anastomoses. The left donor kidney is transplanted distally, allowing the transplanted right kidney to continue to be perfused The left kidney is positioned inferomedially to the right kidney. The renal artery and vein of the left kidney are anastomosed end to-side to the external iliac vessels. Extravesical ureteroneocystostomies are performed separately, according to the Lich–Gregoir technique, with a double J stent for each ureter.
Results: UDKT can reduce the operating time and surgical trauma in comparison to classical bilateral DKT, leaving the contralateral iliac fossa intact for further transplantation procedures; this technique can be performed using kidneys with multiple arteries and veins and is associated with low surgical complications rate.
Conclusions: Extraperitoneal unilateral positioning of two kidneys from ECD donors through a single Gibson incision is feasible and is not associated with an increased risk to the recipient.

Clinical Liver Surgical technique

BOS315 HEPATIC ARTERY RECONSTRUCTION DURING EX-VIVO NORMOTHERMIC LIVER PERFUSION

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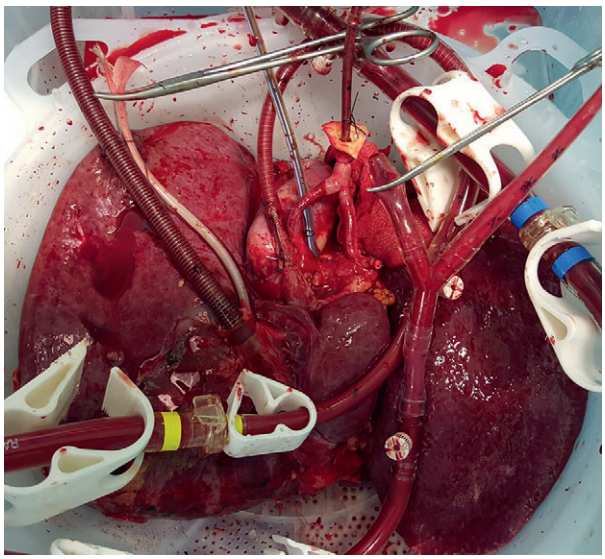
Introduction: Approximately 30% of donor livers will have aberrant hepatic artery (HA) anatomy, with many cases requiring reconstruction either during cold preservation or in situ in the recipient after establishing the main arterial inflow. Normothermic machine perfusion (NMP) involves perfusing a liver with oxygenated blood at 37C in a heparinized circuit. It also offers a medium where a surgical intervention can be evaluated ex-vivo prior to implantation. We report the first case series of ev-vivo NMP arterial reconstruction.
Methods: As part of the COPE RCT of NMP vs static cold storage in liver transplantation, five livers required hepatic artery reconstruction which was performed ex-vivo during NMP. The donor and recipient characteristics are reported along with graft outcomes and complications.
Results: A description of the important features of the five cases is shown in table 1. There were no cases of cholangiopathy or vascular complications reported at 6 months.
Discussion: Ex-vivo HA reconstruction during NMP is safe, feasible and, from our early experience, does not appear to compromise outcomes or increase the risk of vascular complications. This should represent only the first step in a broader exploration of the potential of ex-vivo NMP surgery.



Clinical Kidney Surgical technique

BOS316 SAFETY OF THE LIVING KIDNEY DONOR: WHAT'S TO BE IMPROVED?

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Background: According to the literature postoperative mortality in living kidney donors is 0.031%. In Italy there have never been reports of post-operative deaths, but there were never carried out systematic reviews on the incidence of non-fatal adverse events and possible consequences.
Methods: We are going to present a video of near misses occurred at our center during a laparoscopic living donor nephrectomy. The living donor nephrectomy at our Center is performed by pure laparoscopic technique. The kidney was already loaded in the bag (Endo Catch™), and then lifted with some stretching of the renal vessels; heparin 5000 UI was administered and a vascular endoscopic GIA stapler was used to divide the renal artery. Then a second vascular endoscopic GIA was prepared to divide the renal vein, but unfortunately due to a mechanical problem the renal vein was sectioned without being sutured.
Results: we have immediately performed a midline laparotomy and we have sutured the renal vein. The following post-operative course of the donor was uneventful; as well as the results for the recipient.
Conclusions: To minimize the risks in living donor donation we have to: 1) set standard of practice; 2) establish procedures to analyze information 3) report near misses and disseminate lessons learned.

Clinical Liver Surgical technique

BOS317 SAFETY AND RATIONALITY OF EXTRAHEPATIC GLISSONEAN APPROACH FOR LIVING DONOR HEPATECTOMY

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Background: Two major advantages of extrahepatic Glissonean approach are: (i) To minimize dissection and preserve blood supply around the hilar plate in the remnant liver, leading to prevention of bile duct injury (safety), and (ii) To secure maximum margin of hilar structures by determining of the point of bile duct division preceding isolation of vessels (rationality).
Video Presentation: We demonstrate 4 steps of our extrahepatic Glissonean approach for living donor hepatectomy. 1. Isolation of the Glissonean pedicle. After cholecystectomy, the takeoff of the left and right portal branches is confirmed by ultrasound. The right or the left portal pedicle is isolated altogether with the corresponding caudate pedicle with an umbilical tape for a right or a left-sided (left liver, left lateral section, and left liver with Spiegel's lobe) liver graft, respectively. 2. Identification of hilar structures. Intraoperative cholangiography is performed to identify the point of bile duct division. The artery and portal vein are isolated using vessel loops thereafter and dissected off sufficiently from the hilar plate. 3. Modified liver hanging maneuver. We apply conventional hanging maneuver for right liver and left liver with Spiegel's lobe grafts. For left liver and left lateral section grafts, the confluence of the middle and left hepatic veins, the plate of Arantius, and the umbilical portion ventral to the plate of Arantius is isolated. A tape is passed through the right and middle hepatic veins, along the Arantius' ligament, and finally to the right of the umbilical portion to accurately set the goal of liver parenchymal transection. After completion of hepatectomy, the tape used for isolation of the umbilical

Table 1: Summary of details for ex-vivc arterial reconstruction cases. Key: ET-DRI - Euro-transplant Donor Risk Index; CIT - cold ischaemic time; CHA - common hepatic artery; aRHA - aberrant right hepatic artery; SMA - superior mesenteric artery; SA - splenic artery; GDA - gastroduodenul artery; IA - iliac artery; PBC–primary biliary cirrhosis; HCC - hepatocellular carcinoma; PCLD - poly-cystic liver disease; ALD alcoholic liver disease; MELD - model of end stage liver disease

Donor details				Preservation details		Recipient details				Post-operative details		
Age	Type	ET-DRI	Arterial anatomy	Total pres time (mins]	Details of reconstruction	Age	Cause of liver failure	MELD	*In-vivo* HA an as-torn time *[mins)*	Peak AST (IU/L)	ITU stay (days)	Hospital admission (days)
72	DBD	2.11	CHA + aRHA from SMA	1167	RHA to GDA	53	PBC	13	28	197	2	7
73	DCD	3.09	aRHA from SMA	685	RHA to SA	58	HCC	9	36	1191	4	9
41	DBD	1.38	aRHA from SMA	469	RHA to SA	39	PCLD	9	40	462	2	5
57	DBD	1.70	aRHA from SMA	1277	RHA to SA	65	HCC	11	52	173	1	7
55	DBD	1.51	aRHA from SMA (cut short)	580	IA to RHA and CHA	43	ALD	21	27	144	7	15

portion is repositioned to secure and divide all caudate pedicles branching from the left portal pedicle. 4. Division of hilar structures and graft retrieval.
Conclusion: Extrahepatic Glissonean approach for living donor hepatectomy is safe and rational.

Clinical Liver Surgical technique

BOS318

ESCAPING LIVER TRANSPLANTATION WITH ANTE SITUM RESECTION IN ADVANCED HEPATOBLASTOMA

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Advanced hepatoblastoma (HBL) with tumor thrombi extending into major vessels needs multimodal treatment approaches combining chemotherapy and surgery. Surgical recommendations for pretreatment extent disease (PRETEXT) staging III-IV strongly advocate primary liver transplantation (LT). However, when tumor thrombi infiltrate the inferior vena cava (IVC) and the right atrium, LT might be technically challenging and it is associated with unfavorable survival rates for local recurrence HBL. Therefore, the best surgical approach is not clear and transplant surgeons are exploring technical alternatives.

A 11-months-old boy with serum alpha-fetoprotein(AFP) of 50.795.200 IU/mL and computed tomography showing a right hepatic lobe mass(90x78 mm) suspicious of HBL, with tumor thrombi extending from the right hepatic vein into the IVC up to the right atrium, and bilateral lung lesions (PRETEXT III) was referred. After 8 months of chemotherapy (SIOPEL 2004-high risk Protocol), HBL decreased to 61x64 mm and lung lesions disappeared, but the tumor thrombi was still present. The child underwent ante situm liver resection: en bloc resection of the extended-right hepatic lobe, retro/suprahepatic IVC, tumoral trombi extended into the right atrium. The IVC was replaced with fresh aortic graft from blood-group compatible cadaveric donor. During the resection, the remnant liver (SII-III) was perfused through the portal vein with Celsior at 4°C, cooled with ice, and reimplanted by end-to-side anastomosis of the left hepatic vein to the neo-IVC. The post-operative course was uneventful and after 10 months of follow-up the child is in good clinical condition with normal liver function test, AFP of 1.1UI/mL, free of disease recurrence and with patent aortic graft.

This is the first case of ante situm liver resection combined with hypothermic CPB and IVC replacement for HBL, which is a realistic option to avoid LT for skilled transplant surgeons thanks to the improvement of LT technique.