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## 간담체 PP-I-1

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### The first case of ABO incompatible liver transplantation in local transplant center: Case report

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**(Purpose)** The ABO incompatible living donor liver transplantation (ABOi LDLT) has been recommended only for emergency case because of the risk like antibody-mediated rejection (AMR). However, various managements for prevention of AMR have improved the graft and patient survival rate. Herein, we introduce our first ABOi LDLT case although the patient has been into nadir. **(Methods)** At June 2013, the first ABOi LDLT for recipient with liver cirrhosis (child C) related viral hepatitis B (HBV) was performed in our center. Our institutional perioperative protocol of ABOi LDLT consisted of Rituximab, plasma exchange (PE, target isoagglutinin titer  $\leq 1:2$ ), Basiliximab and intravenous immunoglobulin (IVIG). We also performed the splenectomy during LDLT. **(Results)** The ABO blood type of 53-year old male recipient was Rh+ O (O+). He was planned to ABOi LDLT with allograft from a related 31-year old male donor with Rh+ B (B+). The Initial anti-blood type isoagglutinin titer of recipient was checked 1:32. The recipient was treated with Rituximab for lowering titer at 2 weeks ago before operation, followed by total 6 times of PE. The recipient underwent the modified Right lobe (MRL) transplantation plus splenectomy. On operation day and postoperative 4 day, we performed the PE for preventing AMR. And we encountered intra-abdominal hemorrhage concomitant with coagulopathy. We needed to implement the transfusion and re-exploration for hemostasis. After control of hemorrhage, PE was not performed because titer was maintained below 1:2.

The recipient recovered without other hemorrhage, rejection and graft loss. **(Conclusion)** The new ABOi-LDLT protocol using Rituximab, PE, basiliximab, and IVIG is the pivotal and safe strategies. However, the PE for predetermined too low ABO titer level ( $\leq 1:2$ ) is considered to result in the peri-operative hemorrhage following the coagulopathy in our first ABOi LDLT case.

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## 간담체 PP-I-2

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### Successful resuscitation of 30-Minutes' cardiac arrest during liver transplantation

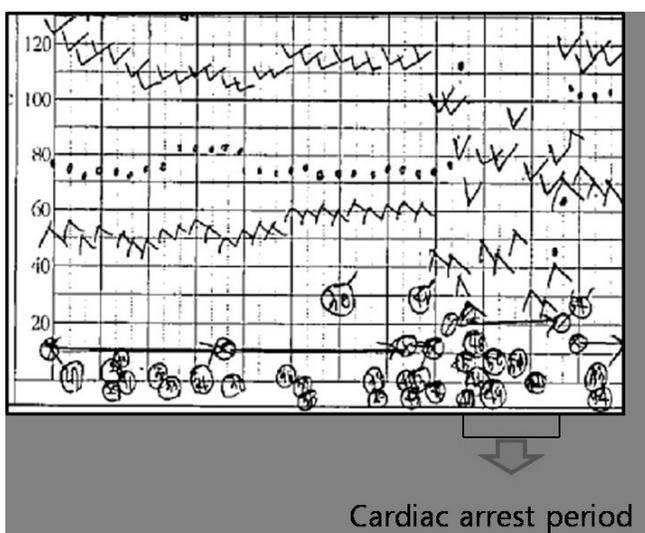
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**(Purpose)** Intraoperative cardiac arrest (ICA) during non-cardiac surgery is a devastating event and is reported to occur in 4.3 per 10,000 with immediate survival rate of 46%. In liver transplantation (LT), the incidence rate of ICA is relatively high, 1% to 5.5% with 29% intraoperative death rate and 50% hospital death rate. Two well-known causes of ICA in LT are post-reperfusion syndrome (PRS) and pulmonary thromboembolism. The authors experienced a case of ICA due to PRS during deceased donor liver transplantation (DDLT), which was successfully resuscitated with advanced life supports including transdiaphragmatic cardiac massage for 30 minutes and report here. **(Methods)** A 53-year-old (61-kg, 163-cm) man underwent DDLT for HBV-related liver cirrhosis. Model for End Stage Liver Disease score was 15. Preoperative EKG and echocardiography were within normal limit. A donor liver with mild fatty changes had been harvested from a 42-year-old man who died of cerebral hemorrhage.

Recipient hepatectomy was uneventful, and the donor liver was transplanted using a total IVC clamping technique without venovenous bypass. **(Results)** During the anhepatic phase blood pressure was kept stable, at 110/60 mmHg with heart rate of 74 beats/minute. Within 3 minutes after reperfusion of the new liver, however, the heart came to a standstill suddenly. It took 7 hours and 30 minutes from incision to reperfusion and the cold ischemia time was 9 hours. This patient required 30 minutes of resuscitative supports including injection of epinephrine, lidocaine, NaHCO<sub>3</sub>, and calcium gluconate together with transdiaphragmatic cardiac compressions and ventilation with 100% oxygen to regain sinusoidal rhythm. During transdiaphragmatic cardiac massage, the usual/lowest systolic and diastolic blood pressure was 80/60 and 45/30 mmHg (Fig. 1). Fortunately, there was no specific organ or graft damage and the patient was discharged 25 days after LT and is doing well now 37 months after the surgery. **(Conclusion)** In conclusion, during intraoperative cardiac arrest, the collaboration between the surgical and anesthesia teams is crucial to overcome cardiac arrest. In an open abdomen, transdiaphragmatic cardiac compressions were effective in keeping acceptable blood pressure and effective circulation during advanced life support.



**Fig. 1.** Anesthetic record during cardiac arrest and resuscitative periods.

## 간담체 PP-I-3

### Initial experience of liver transplantation in PNUYH

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**(Purpose)** Our team started liver transplantation (LT) program in a new Hospital, Pusan National University Yangsan Hospital (PNUYH) in May 2010. Although beginning LT program has almost always accompanied by lots of trial and error and time consuming, we can overcome this problem through some efforts. Three of our five LT surgeons were trained in a major liver transplantation center in Korea for two to four years, and many faculties and nurses related to LT were also educated for one month in the same center. As a result we performed over 100 LTs for 3 years successfully. **(Methods)** From May 2010 to August 2013, 120 LTs were performed in PNUYH and we reviewed them retrospectively. **(Results)** 75 cases of living donor LT (LDLT) and 45 cases of deceased donor LT (DDLT) were performed. All cases underwent without portosystemic shunt. We commonly used caudal middle hepatic vein preserving right lobe from May 2012. 30% of LDLT was carried out without transfusion and all donor operations were also performed with no transfusion. No living donor mortality was encountered and morbidity occurred in 5.3%. All donors recovered to their normal activity after discharge. 54% of recipients were combined with HCC and it was mainly related with hepatitis B (77%). Their one year survival rate was 94.2% and recurrence free survival was 83.5%. Recurrence rate was 4.7% in inner Milan criteria and 27% in above Milan criteria. About 40% of recipients had acute liver failure and acute on chronic liver failure. Their one year survival rate was 81.8%. One recipi-

ent that had biliary cirrhosis developed hepatic artery thrombosis after LDLT. The patient underwent cadaveric retransplantation and recovered well. Outflow problem occurred in 12.5% and biliary complication was accompanied in 13.3%. **(Conclusion)** Our team experienced many LT cases for relatively short period and early results were comparable with other major centers. It might be a result of dedicated efforts and excellent teamwork.

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### 간담체 PP-I-4

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#### Patients in intensive care unit were given a careful consideration to LDLT

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**(Purpose)** A high model for end-stage liver disease (MELD) score ( $\geq 35$ ) was closely associated with poor posttransplantation outcome in patients who underwent living donor liver transplantation (LDLT). Additionally, there is little information regarding which factor would negatively impact the survival of patients with high MELD scores. The aim of this study was to identify factors associated with the in-hospital mortality of patients after LDLT. **(Methods)** We retrospectively analyzed 774 patients underwent adult LDLT using right graft between 1996 and 2012. Exclusion criteria were retransplantation, children, left graft, and inadequate medical recording. Preoperative variables were retrospectively and statistically analyzed. **(Results)** The overall 3 months survival rate was 92% for patients. Acute progression of disease, severity of hepatic encephalopathy, Child-Pugh class C, hepatorenal syndrome, use of continuous renal replacement therapy, use of ventilator, ICU care before transplantation, and MELD scores  $\geq 35$  were identified

as potential risk factors by univariate analysis. However, only ICU care before transplantation and MELD scores  $\geq 35$  were independent risk factors for 3 months mortality after LDLT. **(Conclusion)** Patients with high MELD score were often managed in ICU prior to transplantation. LDLT in these patients should be cautiously considered as treatment.

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### 간담체 PP-I-5

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#### A new liver autotransplantation after In-Situ graft hepatectomy for huge hepatocellular carcinoma involving IVC

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**(Purpose)** Curative resection of liver is impossible in patient with huge hepatocellular carcinoma (HCC) involving hepatic vein and inferior vena cava (IVC). The aggressive techniques including the Ex-vivo liver resection or hypothermic ante-situm resection followed by autotransplantation have been introduced. However, when the extension of tumoral thrombus into suprahepatic IVC is identified, the ex-vivo or ante-situm resection techniques by previous reports have the possibility of spread of tumor thrombus during the liver mobilization. **(Methods)** We presented a 40 year old man with a huge HCC which was extended surpahepatic IVC through right hepatic vein and the invasion of middle hepatic vein. The hepatic mass occupied his whole right lobe. We could not detect the extrahepatic metastases by laboratory and imaging studies and Child A liver cirrhosis was also confirmed. **(Results)** As the first step of treatment, the modi-

fied extended left hepatectomy was performed and the middle and left hepatic veins were reconstructed with Dacron graft and cryopreserved iliac vein during Bench-work. Supra-and infra-hepatic IVCs were clamped after meticulous dissection and total inflow occlusion was also performed with the concomitant extracorporeal veno-venous bypass. The complete thrombectomy of IVC after total hepatectomy of remnant liver with HCC was performed. The implantation of the explanted left lobe was performed by means of the technique of living donor liver transplantation. His postoperative course was uneventful except medically controlled ascites. **(Conclusion)** We introduce the new technique of liver autotransplantation after In-situ hepatectomy for huge hepatocellular carcinoma involving supr-hepatic IVC and this procedure will be valuable in selected cases in our opinion.

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### 간담채 PP-I-6

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#### Protective effect of SPA 0355, a thiourea analogue, on post-Ischemic liver injury in mice by inhibition of NF- $\kappa$ B activation

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**(Purpose)** SPA 0355 has been found to be a potent NF- $\kappa$ B suppressor. Liver ischemia/reperfusion injury is associated with rapid activation of NF- $\kappa$  B signaling, but the role of NF- $\kappa$  B in hepatic ischemia/reperfusion injury remains controversial. Here, we examined whether SPA 0355 inhibited or aggravated hepatic ischemia/reperfusion injury by mediated the NF- $\kappa$  B signaling pathway. **(Methods)** We injected SPA 0355 into intraperitoneal cavity of

mice for 3 days before ischemia procedure. Mice underwent 90 min of partial hepatic ischemia by ligation of the portal vein, hepatic artery and bile duct just above the right branch and then reperfusion. **(Results)** Mice subjected to ischemia/reperfusion injury showed an increased NF- $\kappa$  B activation, as evidenced by phosphorylation of I $\kappa$ B $\alpha$  and nuclear translocation of NF- $\kappa$  B subunits. As expected, prior injection with SPA 0355 mice were attenuated NF- $\kappa$  B activation. In addition, serum aminotransferases, hepatocellular apoptosis and necrosis, and hepatic neutrophil infiltration were markedly decreased. **(Conclusion)** These results suggest that inhibition of NF- $\kappa$  B activation by SPA 0355 prevented partial hepatic ischemia/reperfusion injury. Understanding how the NF- $\kappa$  B pathway plays a role in directing a clinical outcome may lead to better prospects of more rational approaches to reduce post-ischemic liver injury.

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### 간담채 PP-II-1

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#### A long term survival case of hepatic metastasis of thymoma

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**Junho Sohn, Jong Hoon Park\***

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**(Purpose)** Thymoma is a neoplasm of the epithelial cells of the thymus gland, accounts for up to 40% of all mediastinal tumors. Thymoma is a slow growing tumor and its prognosis depends on its histological characteristics, infiltrative natures, extends of disease and paraneoplastic syndromes such as myasthenia gravis and pure red cell aplasia. Hepatic metastasis of thymoma is a very rare condition and its prognosis is still unknown. We experienced a long-term survival case of hepatic metastasis of thymoma and we present our case. **(Case Report)** A-57 year old women was admitted to our hospital suffering from