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## Minimal Invasive Recipient Surgery

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To overcome a shortage of deceased organ donation, living donor liver transplantation (LDLT) has been developed and accepted as an alternative to deceased donor liver transplantation (DDLT) for patients with end-stage liver disease. Unlike DDLT, the safety and requirements of the live donor should also be considered in LDLT. As experience grows and surgical techniques evolve, pure laparoscopic hepatectomy has become a new option considering the donor's increasing cosmetic and functional demands. Since introducing flexible 3-dimensional laparoscope into liver surgery in 2015, laparoscopy-assisted technique was more frequently used in donor hepatectomy and in November 2015, first pure laparoscopic donor right hepatectomy was performed. We performed pure laparoscopic donor hepatectomy in selected donors with no anomalies of the bile duct or portal vein until February 2016. However, since March 2016, with accumulation of experience and introduction of indocyanine green (ICG) near-infrared fluorescence camera for real-time demarcation and cholangiography, more than 90% donor hepatectomies were performed using pure laparoscopic method without any special selection criteria. Our center, Seoul National University Hospital, has performed more than 400 cases of pure laparoscopic donor hepatectomies, most of which are right hepatectomies, and more than 2300 cases of LT including about 1600 cases of living donor liver transplantation (LDLT). Based on the experience of the surgeon and the team, we have initiated a minimally invasive LDLT program since March 2020 and successfully performed pure laparoscopic explant hepatectomy and graft implantation using upper midline incision as the first step of the program. As for the next stage of the program, we successfully performed pure laparoscopic LDLT including both explant hepatectomy and reconstruction of the vessels and bile duct. And then robotic system was introduced for arterial and biliary anastomosis. This operation is still experimental but in near future it might be standard surgery in LDLT.