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Session Title : The State of Art Video in minimally invasive donor hepatectomy

# Laparoscopic donor left hemihepatectomy

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Living donor left hepatectomy is known to be associated with a significant decreased risk of morbidity compared to the right hepatectomy (1). However, the limitation of LDLT to the left lobe appears preferable if a satisfactory ratio of graft volume to estimated standard liver volume can be achieved. Since donor morbidity is essentially related to the amount of the liver mass resected and that overall donor morbidity could be reduced even further if a full laparoscopic technique is applied, we developed the concept of calculated small-for-size graft for LDLT coupled to a full left laparoscopic donor hepatectomy as a way to reduce donor risks further. This ever first case was performed in 2012 (2) followed by other reports (3-4). The selection of the graft must however take into account a balance between the risks of the donor and those of the recipient as any failure in the recipient would still have negative repercussions on the entire procedure even in the absence of complications in the donor. A minimum GRWR between 0.6 and 0.8 is however required and attention must be paid in patients with high MELD and/or portal hypertension. In this case, the evaluation of the hemodynamics of the graft flows and any modulation maneuvers are necessary to optimize the flows. Typically a left graft also includes the middle hepatic vein. Arterial anomalies are often present (a4 from the right hepatic artery) and in any case the left hepatic artery is generally smaller than the right. Once the donor has been selected with 3D software capable of evaluating volumes, segments and vascular axis, as well as a cholangio-MRI for the bile ducts (check if d6-7 is joining the left duct apart), the full laparoscopic operation includes the positioning of 5-6 trocars in the upper abdomen and a Pfannestiel incision for graft extraction. The donor is placed in a supine position with the legs apart. After global evaluation of the liver, the ligaments are dissected with an energy instrument and the Arantius ligament is taken to join the foramen ovalis which is the passage through the IVC and the trunk of middle and left hepatic veins. A loop can be put there to ensure the outflow. Successively, the cholecystectomy is performed then the intraglissonian approach to the left liver vessels is performed in order to dissect the left artery and portal vein as well as the tributaries to the caudate lobe. The use of ICG camera is recommended to have a clear view of the bile duct bifurcation. Usually 1 to 2 ml of i.v. injection of Verdeye is enough for this purpose. The riming could be combined with the negative counterstaining after

clamping the left artery and portal vein in order to have a clear demarcation line through the Cantlie's line. In our experience the CUSA is the main dissecting instrument for liver parenchyma transection. The MHV is preserved on the graft site. After joining the IVC and the confluence of the MHV and the LHV where we put a tape, the position of a Gelport device through the Pfannestiel will prepare graft extraction. No systemic heparin is required. Two or 3 hemolocks are put on the left hepatic artery, and two linear staplers are used to divide and transect the left PV and the MHV/LHV trunk. The graft is therefore extracted through the Pfannestiel and immediately flushed with cold preservation solution. The first warm ischemic time is usually around 6 to 7 minutes. These technique is well standardized and donor hospital stay will be around 3 to 4 days with a very fast recovery and low pain.

1. Roessler F et AL. Ann Surg 2016
2. Troisi RI et Al, AJT 2013
3. Samstein B et Al. Liver Transplantation 2016
4. Fujiki M et Al. Ann Surg 2023