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Purely laparoscopic ALPPS

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Lecture : Purely Laparoscopic ALPPS Department of Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine Jongman Kim Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) can achieve rapid hypertrophy of the estimated future remnant liver remnant (FLRV). However, because of liver splitting and postoperative severe adhesion of the first stage, the technique has a high morbidity rate (biliary fistulas, infected collections, necrosis of segment IV, high risk of post-hepatectomy liver failure [PHLF]) and a mortality rate between 12% and 27%. Laparoscopy may reduce adhesions. Total or partial use of laparoscopy may be an easy solution for adhesions and difficulties that may be encountered during the second stage.
Plans were made to use the laparoscopic anterior approach ALPPS procedure to induce rapid hypertrophy of the FLR. After appropriate preoperative preparation, the patient was taken to the operating room for stage I of the ALPPS. In the first stage, using a totally laparoscopic technique, a tourniquet was placed around the right Glissonian pedicle after the parenchymal transection via an anterior approach. The patient received general anesthesia and was placed in the left semi-decubitus position with the right side elevated approximately 30 degrees. Generally, 5 ports were used. The first trocar (12 mm) was inserted at the lower umbilicus for placement of a 10-mm flexible laparoscope. Four other trocars were inserted at the subxiphoid position (5 mm), at 5 cm superior to the umbilicus on the midline (12 mm), at 5 cm below the costal margin on the right midclavicular line (12 mm), and 2 cm below the costal margin on the right axillary line (5 mm). After placing all trocars successfully, the operating table was tilted slightly to the reverse Trendelenburg position. Laparoscopy showed apparent nodules in the liver surface. Rt. liver fully mobilized. Rt. transhepatic resection was performed using only energy devices first after the right hepatic artery was temporally clamped and the right portal vein ligated. Next, an 8F catheter was positioned as a tourniquet around the right Glissonian pedicle between the right and middle hepatic veins. Rt. lobe was inserted in the bag.
In the second stage, a totally laparoscopic right hemihepatectomy was performed 7 days after the first-stage operation, which achieved sufficient hypertrophy of the estimated FRLV. The right hepatic pedicle, right hepatic vein, and IVC ligament were transected with a linear laparoscopic stapler (Echelon 60 ENDOPATH Stapler, Ethicon Endo-Surgery, LLC). The tumor was removed from a low midline incision 3-5 cm inferior to the umbilicus.
Purely laparoscopic ALPPS using the anterior approach technique could provide a less invasive procedure. A proper expansion of the indications for the procedure is also safe and feasible in HCC patients with cirrhosis and/or small FRLV.