

Development of Laparoendoscopic Single-Site Surgery (LESS) Partial Nephrectomy without Ischemia for Small Renal Tumor

Introduction and Objectives: Laparoendoscopic single-site surgery (LESS) is one of the development types of the minimally invasive surgery, which indwelling multi channel port at single-site. Therefore we have developed LESS partial nephrectomy (LESS-PN) without ischemia which seeks simplicity and less invasion, overcoming the weak point of LPN and taking the advantage of LESS.

Materials and Methods: We performed LESS-PN without ischemia for five cases of exophytic isolated renal tumor less than a diameter of 4 centimeters by March, 2011 from December, 2010. Using a multichannel port, the CILS port (Covidien), two cases were transperitoneal approach and the other three cases were retroperitoneal approach. The port position is the costal arch bottom and anterior axillary line in transabdominal approach and is the costal bottom and mid axillary line in retroperitoneal approach. Operators have articable instruments (Roticulator Endo Dissect; Covidien, Mansfield, MA) in their left hands and regular sealing device which is used in conventional laparoscopic surgery in their right hands. LESS-PN without ischemia is performed with a microwave tissue coagulator "Microtaze OT-110" (Malfresa, Tokyo, Japan) and needle-type monopolar applicator. Along the line 5 mm from the tumor edge, the renal parenchyma was punctured with the electrode and tumor is resected.

Results: Because the applicator of microwave tissue coagulator did not have flexibility, additional 5mm port was necessary in previous three cases. In the case with retroperitoneal approach, LESS-PN without ischemia was converted to conventional LPN with four ports due to control of bleeding. In the fourth operation, we used flexible applicator of microwave tissue coagulator, we could coagulate along the line 5 mm from the tumor edge from multiport channel at single-site and tumor could be resected without additional port. Operation time and blood loss of the fourth surgery was 3.3 hrs and 40ml. The postoperative serum creatinine level in all cases was 0.9~1.0mg/dl and renal function was kept. Postoperative pain was low.

Conclusion: Flexible applicator of microwave tissue coagulator and forceps could be ready and appropriate choice would be performed; LESS-PN without ischemia would become one of the surgical procedures for a small renal tumor.

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