

de Hauteclocque A.¹, Sarrazin J.², Faessel M.², Michiels C.¹, Bensadoun H.¹, Bladou F.¹, Robert G.¹, Capon G.¹, Grenier N.³, Bos F.², Ferrière J-M.¹, Bernhard J-C.¹

¹CHU Pellegrin, Dept. of Urology, Bordeaux, France, ²IUT Bordeaux, Technoshop, Bordeaux, France, ³CHU Pellegrin, Dept. of Radiology, Bordeaux, France

Introduction & Objectives: Conservative surgery of high-volume kidney tumors has several goals: optimal sparing of healthy parenchyma, free margin tumoral excision and avoidance of extended ischemia. The objective of this video was to display tips and tricks concerning a multiple-modality management of a highly-complex tumor.

Materials & Methods: 3D modeling of the tumor was performed using Synapse 3D (Fujifilm). This modeling allowed to select clamping points for 3rd and 4th order arteries in order to avoid global ischemia during resection. TilePro function of the DaVinci Si robot was used to access 3D model during surgery. Intraoperative US was used to delimitate tumor's margin before resection. Indocyanine green was injected intraoperatively to control exact devascularization area before tumor resection. Clinical data, collected after consent, were extracted from the french national database on kidney cancer UroCCR.

Results: The patient, a 61 year-old female, presented with a 6.6cm equatorial tumor of the right kidney. It was rated as a moderately complex tumor regarding RENAL (9a) and highly complex regarding PADUA (10a). Pre-operative screening of two third and fourth-order tumor-feeding arterial branches ensured to plan their clamping with a minor ischemia on the healthy parenchyma. The tumor limits were compared with the pattern of ischemia using an intra-operative doppler ultrasound with a supplementary verification thanks to indocyanine green injection. Once the tumor-feeding arteries were clamped, a minimal margin tumor excision was performed. The length of surgery was 209 minutes and blood loss was insignificant. Pathologic examination confirmed a benign tumor, namely an oncocytoma, with complete excision. The patient was discharged on post-operative day one without any complication. Post-operative month 3 CT-scan showed no evidence of tumor recurrence and a harmonious enhancement of the spare kidney, renal function was normal with a serum creatinine of 80µmol/L and GFR 64mL/min.

Conclusions: Target-devascularization technique for partial nephrectomy resulted safe and feasible. This approach combines best healthy parenchyma preservation with an anatomic control of the extent of ischemia and excessive bleeding. It allows to perform nephron sparing surgery in the case of large masses without compromising oncological and functional outcomes.