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ROBOT-ASSISTED ENUCLEATIVE PARTIAL NEPHRECTOMY FOR HIGHLY COMPLEX RENAL MASSES

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Aim of the study

Tumor excision (TE) is a fundamental step during partial nephrectomy (PN), yet underreported in the current series. We recently introduced the concepts of resection strategy (RS, the surgeon's preoperative intent) and resection technique (RT, the actual surgical result) to describe the complexity of TE during PN in a standardized way across published series. In this video we describe in details the technique of robot-assisted partial nephrectomy (RAPN) performed with a pure enucleative RS for the treatment of highly complex renal masses.

Materials and methods

After institutional review board approval, data were prospectively collected from a cohort of 376 patients undergoing RAPN for cT1-T2 renal masses at our Institution between January 2013 and January 2016. Data were retrospectively analyzed. Clinical T1b-T2 and hilar and/or completely endophytic cT1a tumors were defined as highly complex in this study. Demographic, perioperative and pathologic data were collected. RAPN was performed with a pure enucleative RS aiming to develop the anatomic dissection plane between the tumor pseudocapsule and the surrounding healthy parenchyma.

Results

Overall, 115 patients with highly complex renal masses were included in the study. Preoperative, surgical and pathological data are shown in Table 1. 27 (23,5 %), 79 (69,7 %), 7 (6,1 %) and 2 (0,7 %) tumors were classified as cT1a, cT1b, cT2 and cT3, respectively. Median PADUA Score was 9 (IQR 7-11). Among the 99 (86,1%) tumors with clinical diameter \geq 4cm, 28 (28,3 %) had a PADUA score \geq 10 and 71 (71,7 %) a PADUA Score

Discussion

Taking advantage of the key anatomic features of the tumor-parenchymal interface, namely the natural radially-oriented architecture of the kidney parenchyma and intrarenal vasculature, the presence of a distinct fibrous pseudocapsule in the vast majority of renal tumors and the histologic modifications at the tumor-parenchyma interface, the enucleative RAPN technique maximizes the preservation of vascularized kidney while ensuring oncological efficacy. This is of particular importance in case of highly complex renal masses, especially cT1b tumors.

Conclusions

We have shown that enucleative RAPN is safe and achieves optimal perioperative outcomes. We believe the enucleative RS represents a key approach for highly complex renal tumors with optimal cancer control and potential maximal preservation of vascularized healthy renal tissue