Author Reply

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In the last 5 years, robot-assisted partial nephrectomy (RAPN) has progressively increased its utilization worldwide for the treatment of renal tumors for 2 reasons: increased number of Da Vinci installed along with incremental experience of Da Vinci users that brought to expand the indications toward larger and more complex cases such as cT1b tumors.[1], [2] Besides the undebatable benefits of the minimally invasive approach, RAPN allows an optimal dissection of tissues and kidney reconstruction thanks to the magnified three-dimensional vision and to the EndoWrist technology (Intuitive Surgical, Sunnyvale, CA), that led to a short learning curve and excellent perioperative surgical outcomes.[3] However, to date no consensus has been reached on the best approach for the treatment of renal masses. Indeed, open partial nephrectomy (OPN), laparoscopic partial nephrectomy (LPN), and RAPN can be used interchangeably, according to the surgeons' experience, for the treatment of cT1 renal tumors, meaning that evidence in favor of one or the other techniques is lacking and strongly needed to shed light on this controversial issue.

Our study represents the first ever-published multi-institutional comparison among the three currently available conservative surgical options in the management of cT1b renal masses. We showed that these renal masses could be safely treated by a minimally invasive approach either by LPN or RAPN in high-volume centers and that RAPN allows for significantly lower warm ischemia time and blood loss compared with LPN. The Editorial Comment[4] above prompt us to evaluate if our conclusions could be extended toward a subgroup of complex cT1b tumors, namely, >50% endophytic or hilar masses, and 89 OPN, 36 LPN, and 49 RAPN with these characteristics were analyzed. RAPN showed a significantly lower surgical postoperative complication rate (2.0%) compared with OPN (16.9%, $P = .01$) and with LPN (16.7%, $P = .02$). Clavien 2 surgical complications (all hemorrhages treated with transfusion) were reported in 10.1%, 8.3%, and 2.0%, and Clavien 3 surgical complications were reported in 5.6% (3 urinary fistulas treated with stenting and 2 reinterventions), 2.8% (1 reintervention), and 0% in OPN, LPN, and RAPN, respectively. Trifecta was achieved in 62.9%, 72.2%, and 77.6%, respectively, with a significant difference reported between OPN and RAPN ($P = .05$).

These results confirmed that RAPN is a safe procedure, allowing significantly lower postoperative surgical complications compared with OPN, even in more technically challenging procedures, as in > 4 cm endophytic or hilar tumors, where the

identification of the intrarenal tumor burdens or tumor resection can be difficult, for its proximity to the hilum and to collecting system.
Finally, we understand the concerns raised in the editorial comment that, besides the advantages of RAPN, OPN represented the most performed surgical technique for the treatment of clinical T1b renal masses (133 of 285 patients, 46.7%) in the RECORd 1 study (2009-2012). Recent series of tertiary referral centers reported an increasing interest for robotic approach also for the surgical management of more complex cases.[5] Nevertheless, the multicenter nature of the RECORd1 study might have increased the external validity of the data compared with the single-center, single-surgeon setting and provided a valid snapshot of the real utilization of Da Vinci platform for the treatment of cT1b renal tumors in a European country in the past 4 years. Indeed, the preliminary results from the RECORd2 project, an observational multi-institutional report on kidney surgery from 31 Italian centers, showed that OPN is still the most adopted approach (n = 101, 46%), compared with LPN (n = 43, 19.5%) and RAPN (n = 76, 34.5%), for the treatment of cT1b renal tumors in the time period ranging from January 2013 to December 2014. However, a subanalysis of the 10 centers where the Da Vinci was available showed that the rate of utilization of the robotic approach raised up to 47% compared with OPN (43%) and LPN (10%). These results suggest that RAPN is extending the benefits of minimally invasive partial nephrectomy to a wider audience of patients with cT1b renal tumors and surgeons making RAPN both the present and imminent future of the conservative treatment of kidney cancer.[6] A solid scientific evidence as well as an increased robotic experience is mandatory to achieve this target.
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