

Picola Brau N.<sup>1</sup>, Rivero Belenchón I.<sup>2</sup>, Mercader Barrull C.<sup>3</sup>, Benfante N.<sup>4</sup>, Vigués Julià F.<sup>1</sup>, Apatov S.<sup>4</sup>, Russo P.<sup>4</sup>, Coleman J.<sup>4</sup>, Touijer K.<sup>4</sup>

<sup>1</sup>Bellvitge University Hospital, Dept. of Urology, Barcelona, Spain, <sup>2</sup>Virgen del Rocío University Hospital, Dept. of Uro-Nephrology, Seville, Spain,

<sup>3</sup>Clinic Barcelona University Hospital, Dept. of Urology, Barcelona, Spain, <sup>4</sup>Memorial Sloan Kettering Cancer Center, Dept. of Urology, New York, United States of America

**Introduction & Objectives:** Multifocal synchronous renal cancer on a solitary kidney represent a challenging clinical scenario. The complexity of imperative nephron-sparing surgery in this setting resides in ensuring complete excision of cancer with the maximal preservation of renal function. We aim to present a case of multiple partial nephrectomy (MPN) for multifocal synchronous renal cancer in a patient with a solitary kidney and discuss our experience of imperative partial in this setting.

**Materials & Methods:** We present a case of a 76 years old man with a past medical history of hypertension, chronic obstructive pulmonary disease, peripheral vascular disease, left radical nephrectomy for renal mass (2006) and a right renal artery stent placement for renal artery stenosis. During his surveillance, computerized axial tomography (CAT) scan showed 3 enhancing renal masses (2.2cm, 1.5cm and 1cm, respectively). Biopsy of the largest mass was consistent in clear cell renal cell carcinoma (ccRCC). Preoperative level of creatinine was 1.4mg/dL and estimated glomerular filtration rate (eGFR) 50ml/min/1,73m<sup>2</sup>. After ablative therapy was deemed unsafe, a MPN was planned.

**Results:** A multifocal excision of the 3 masses was successfully performed. The arterial blood supply of each mass was selectively clamped with the following selective warm ischemia time: 15, 15 and 19 minutes respectively. Blood loss was 300cc and urine output was 500cc. No intraoperative or postoperative complications were encountered. Final pathology was consistent with ccRCC nuclear grade 3 with negative surgical margins in all 3 masses. In the immediate postoperative course, serum creatinine rose to 3.5mg/dL but quickly returned to baseline and remained stable after 2.5 years of follow-up. After 18 months, magnetic resonance imaging (MRI) showed no signs of recurrence.

We performed MPN on 34 patients with solitary kidney between 2000-2019. Surgeries were done through an open, laparoscopic or robotic approach. Mean age at surgery was 60.5 (55-68.4). Clear cell histotype was the most common (22 (64.7%)) followed by papillary (3 (8.8%)). Concordant tumor histology was seen in 31 (91%) of the patients. Positive surgical margins were seen in 7 patients (21%). Pre-operative eGFR was 53.2ml/min/1,73m<sup>2</sup> (42.4-67.7), postoperative eGFR was 40.5ml/min/1,73m<sup>2</sup> (28-50.7) at 6 months and 40ml/min/1,73m<sup>2</sup> (32.5-58.3) at one year.

**Conclusions:** Multiple partial nephrectomy in one setting on a solitary kidney is a high-risk operation. Our results show good oncological and functional outcomes. However, this technique requires a good surgical plan, profound understanding of renal anatomy and it should be carried out by experienced surgeons and centers.