

## **Incidence of Solid Renal Masses in Transplanted Allograft Kidneys**

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**INTRODUCTION AND OBJECTIVES:** Renal transplantation is the gold-standard treatment for end-stage renal disease (ESRD). It is known that transplant patients are at an increased risk of developing de-novo malignancy; however, there is a paucity of data on the incidence of solid renal masses (SRMs) in the transplant allograft kidney (TAK). The aim of this study was to review the available literature exploring the incidence of SRMs in allografted kidneys.

**METHODS:** A literature review using key word searches in PubMed was performed. An abstract review was then performed to identify pertinent studies. Article references were used to further identify all relevant published articles.

**RESULTS:** Overall, 56 studies, since 1988, exploring solid renal masses in transplanted allograft kidneys were identified: 1 multi-center case series, 19 single-institution case series, and 36 case reports. A total of 174 SRMs (163 patients) in TAK were identified with a mean tumor size of 2.75 cm (0.5-9.0 cm). Tumor histology was available in 164 tumors: clear cell (45.7%), papillary (42.1%), chromophobe (3%), and others (9.1%). Fuhrman grade (FG) designation was reported in 127 (73%) tumors: FG1 (18.9%), FG2 (63.7%), FG3 (15.7%), and FG4 (1.6%). While the majority were pT1a (87%) tumors, 9%, 1.3%, and 2.6% were pT1b, pT2a, pT3a, respectively. Tumors were managed by partial nephrectomy (67.5%), radical nephrectomy (19.4%), percutaneous radiofrequency ablation, (10.4%), and cryoablation (2.4%). Of the 131 patients who underwent nephron-sparing interventions, 7.6% returned to dialysis and 5.3% developed tumor recurrence, during a mean follow-up of 2.85 years. Of those who had partial nephrectomy, 3.6% developed local recurrence, requiring subsequent complete transplant nephrectomy. During a mean follow-up of 3.12 years, 9 patients were deceased, of which 2 were cancer-specific mortalities.

**CONCLUSIONS:** Current management of SRMs in transplant allograft kidney mirrors management of renal masses in the average population. Compared to the non-transplant population, the incidence of papillary RCC in the transplanted allograft is much higher (42% vs. 10-15%). While papillary RCC is known to have an increased incidence in ESRD native kidneys, the majority of the transplant allograft kidneys were healthy at time of transplant. As life expectancy improves for renal transplant patients, SRMs will likely become more prevalent. Proper surveillance of this subpopulation is imperative, as acceptable oncological outcome of allograft tumors is achievable.