

STEREOTACTIC BODY RADIOTHERAPY FOR MULTIPLE RENAL CELL CARCINOMA LESIONS IN A PATIENT WITH POLYCYSTIC KIDNEY DISEASE AFTER PARTIAL NEPHRECTOMY

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Challenge:

Not all primary renal cell carcinoma (RCC) patients are suitable for surgery due to the typically late onset of the disease, which is often associated with comorbidities and an increased perioperative risk.

Solution:

Recently evidence has emerged supporting the use of stereotactic ablative radiotherapy (SBRT) in RCC, with promising local control and preservation of renal function.

Case:

Patient	69-year-old male
Presentation	History of RCC (pT1 G3), partial nephrectomy, polycystic kidney disease, Crohn's disease, hypertension
MRI	Four new renal lesions identified in the right kidney (figure 1)

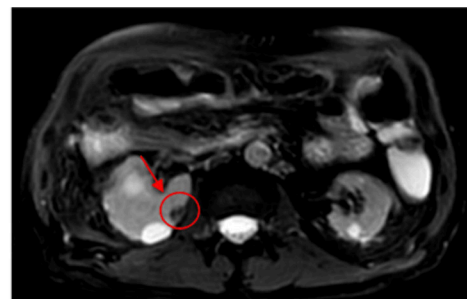
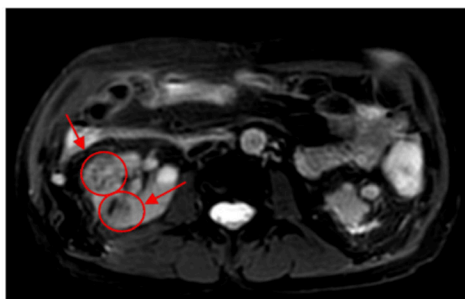
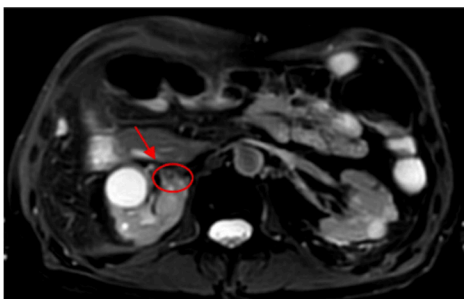


Figure 1: Renal lesions identified on MRIadaptive radiotherapy, and (Conventional Linac) ITV-method

Treatment Details:

Goal	Prioritize renal function preservation and minimize risk of toxicity
Prescription	30 Gy in 5 consecutive fractions
Technology	CyberKnife® System with Synchrony® Lung Tracking™
Fiducials	Four markers placed for real-time motion tracking
Organs at Risk	Small bowel, stomach, spinal cord, liver, contralateral kidney (figure 2)
Planning	3 mm PTV margin; no CTV margin used (Figure 3)

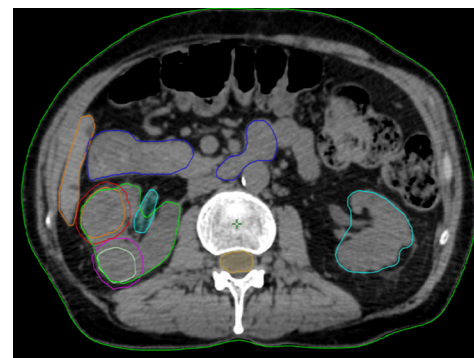


Figure 2: Delineation of the GTVs and OARs on the planning CT scan



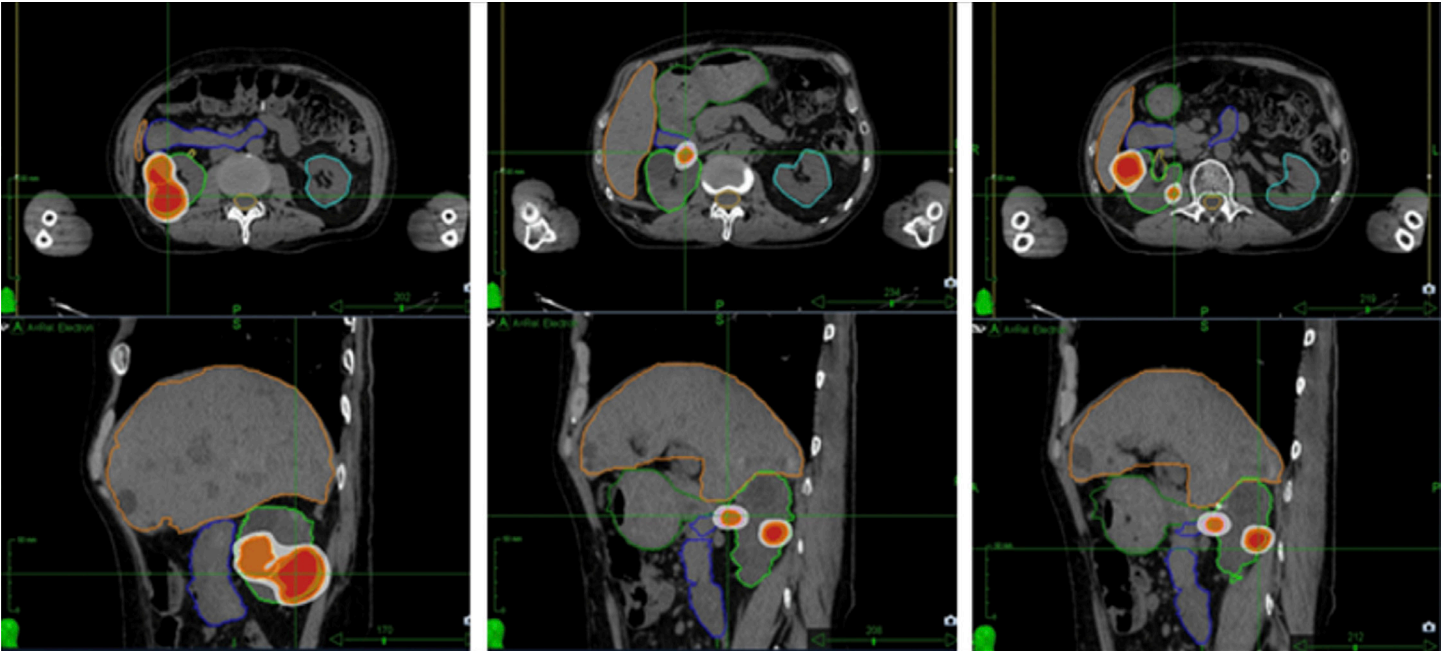


Figure 3: Treatment planning in axial and coronal views for four RCC lesions

Outcomes:

Toxicity	No acute toxicity during or after treatment
Renal Function	Renal function preserved, eGFR improved slightly from 29 to 35 mL/min
Follow-up	Stable disease confirmed by MRI at 29 month follow-up
Adjuvant Therapy	No adjuvant therapy administered

“The integration of precision robotics and image-guided localization, through the Synchrony respiratory tracking system, compensates for tumor motion, making it a highly effective procedure to reduce the irradiated volume for lesions that move with breathing.”

Conclusion:

“SBRT has proven to be a valuable treatment option for our patient with multiple renal lesions from RCC, with contraindications to surgery and pre-existing renal dysfunction.”

“Even with a reduced dose, SBRT achieved long-term disease control and preservation of renal function suggesting its suitability in selected complex cases.”

Further studies and larger cohorts are needed to fully establish the optimal dose-fractionation schedules for SBRT in complex cases with multiple lesions from RCC.

Important Safety Information:
Most side effects of radiotherapy, including radiotherapy delivered with Accuray systems, are mild and temporary, often involving fatigue, nausea, and skin irritation. Side effects can be severe, however, leading to pain, alterations in normal body functions (for example, urinary or salivary function), deterioration of quality of life, permanent injury, and even death. Side effects can occur during or shortly after radiation treatment or in the months and years following radiation. The nature and severity of side effects depend on many factors, including the size and location of the treated tumor, the treatment technique (for example, the radiation dose), and the patient's general medical condition, to name a few. For more details about the side effects of your radiation therapy, and to see if treatment with an Accuray product is right for you, ask your doctor. Accuray Incorporated as a medical device manufacturer cannot and does not recommend specific treatment approaches. Individual results may vary.