

## Renal function outcomes in patients with reduced nephron mass undergoing percutaneous renal cryoablation

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**Objectives:** To report our experience in percutaneous cryoablation (PCA) of renal masses in patients with solitary kidneys and history of prior renal surgery focusing on functional outcomes.

**Materials and Methods:** We reviewed the records of consecutive patients undergoing PCA at our institution between 2005-2009. Patients with solitary kidneys or prior kidney surgery were included in the present analysis. Demographics, radiological and functional outcomes (serum creatinine, glomerular filtration rate [GFR], chronic kidney disease classification) were evaluated. Preoperative and postoperative (at 6±3 months) serum creatinine levels were recorded. GFR was estimated using the MDRD formula, CKD was defined according to the NKD guidelines.

**Results:** We found 25 patients matching our criteria (10 solitary kidney, 15 with prior surgery). Median age was 58, 76% were Caucasian, 72% males. Median BMI and lesion size were 28.9kg/m<sup>2</sup> and 1.9cm, respectively. Median preoperative and postoperative serum creatinine were 1.45 and 1.5 mg/dL respectively (p=0.246) with a median change of +0.1mg/dL. Preoperative and postoperative CKD classifications remained stable in 83% of the patients and progression of CKD was observed in 8.7%. Subgroup analyses of solitary kidneys yielded similar results.

**Conclusions:** PCA is a minimally invasive treatment option for renal masses and, in the setting of solitary kidney or prior kidney surgery offers excellent functional outcomes.

variable	Single kidney	Hx of kidney surgery	Entire cohort
number	10	15	25
Age (years)	59 (31-87)	47 (22-82)	58 (43-67)
Race			
Caucasian	7	12	19
Other	3	3	6
Gender			
Male	7	11	18
Female	3	4	7
BMI (kg/m <sup>2</sup> )	28.0 (21.9-35.2)	32.1 (21.6-46.2)	28.9 (26.0-32.1)
AACCI	6 (1-8)	5 (2-8)	5 (3-7)
Lesion size (cm)	2.1 (1.2-4.2)	1.9 (0.8-5.7)	1.9 (1.6-3.1)
Multiple tumors	2	5	7
Pre sCr (mg/dL)	1.55 (0.6-1.8)	1.25 (0.9-4.8)	1.45 (1.1-1.7)
pre CKD category			
1-2	3	5	8
3	7	8	15
4	0	1	1
5	0	0	0
Post sCr (mg/dL)	1.70 (1.0-2.0)	1.30 (1.0-4.0)	1.5 (1.2-1.8)
Post CKD category*			
1-2	2	6	8
3	6	7	13
4	1	1	2
5	0	0	0
Mean change in sCr (mg/dL) *	+0.2 (-0.2 - +0.6)	+0.0 (-0.5 - +0.4)	+0.1 (-0.1 - +0.2)
Change in CKD category*			
-1	1	1	2
0	6	13	19
+1	2	0	2

Table 1: Patient characteristics

Hx = history • BMI = body mass index • AACCI = age-adjusted Charlson comorbidity index • Pre sCr = preoperative serum creatinine • CKD = chronic kidney disease • \* data available on 9 and 14 records in single kidney and previous renal surgery, respectively