

Title: Renal Mass Biopsy: An Under-utilized Tool to Prevent Overtreatment of Benign Renal Masses

Introduction and Objective

The increased utilization of abdominal imaging has resulted in higher rates of detection and intervention for renal masses. Management options for incidentally found renal masses include active surveillance, ablation, or nephrectomy (partial or radical). Renal mass biopsy (RMB) rarely precedes surgical therapy, despite prior studies reporting that around 20% of cT1 lesions reveal benign findings on post-surgical pathology reports. Renal mass biopsy is a safe tool that should be utilized to reduce overtreatment of these benign lesions. Our research examines the utility of renal mass biopsy in the prevention of unnecessary procedures and surgeries.

Methods

A retrospective chart review of patients within the LSU Health Sciences network who presented with evidence of a renal mass on imaging and underwent a subsequent renal mass biopsy (RMB) between the years of 2015 and 2022. Data was analyzed using chi-square or student's t test.

Results

We identified patients undergoing RMB between the years of 2015 and 2022. 252 patient biopsies total were analyzed. 12 of these patients had some type of complication. Complications were as follows: two episodes minimal perinephric bleeding (Clavien I), clot retention (Clavien I), retroperitoneal hematoma (Clavien II), urinary retention (Clavien I), pneumothorax (Clavien IIIb), two renal hematomas (Clavien II), duodenal perforation (Clavien IIIb), congestive heart failure exacerbation (Clavien I), collecting system extravasation (Clavien IIIb), and pleural effusion (Clavien IIIb). Of the patients who received ablation at the time of biopsy, the rate of complication was 8.42% versus 2.6% in biopsy alone ($p < .05$). The rate of treatment for benign renal masses was 38.8%. Of the 154 who underwent RMB alone, 18.8% were benign and 79.9% were malignant. Of the 123 total patients with evidence of malignancy on biopsy, 9.76% proceeded with ablation, 30.1% proceeded with partial nephrectomy and 32.5% proceeded with radical nephrectomy.

Conclusions

Our findings help to support the utility of renal mass biopsy as a tool for preventing unnecessary surgeries and procedures. Renal mass biopsy is a minimally invasive procedure with low complication rate. One-third of patients who underwent concurrent ablation at time of biopsy ultimately had benign pathology and higher complication rate. Further work evaluating the cost effectiveness of separating biopsy and ablation to avoid overtreatment of benign lesions should be considered.