

## Histopathological predictors of renal function decrease after laparoscopic radical nephrectomy

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**Purpose:** Radical nephrectomy is inevitably associated with a variable renal function decrease. We assessed the association of histopathological parameters in nonneoplastic renal parenchyma with the renal function decrease after radical nephrectomy.

**Materials and Methods:** We evaluated 32 male and 17 female patients with a mean age of 55.9 years who underwent laparoscopic radical nephrectomy. Using the Cockcroft-Gault formula we calculated the estimated glomerular filtration rate preoperatively and at last follow-up at a mean of 19.7 months. The study end point was the percent change in the estimated glomerular filtration rate from baseline, defined as (absolute change/baseline)  $\times$  100. Three histological features in the nonneoplastic parenchyma were assessed by a renal pathologist, including global glomerulosclerosis, arteriosclerosis and interstitial fibrosis/tubular atrophy. For glomerulosclerosis assessment the percent of affected glomeruli was determined. Arteriosclerosis or the extent of arterial luminal occlusion was graded into 4 groups, including 1-0% to 5%, 2-6% to 25%, 3-26% to 50% and 4-greater than 50%. However, due to small patient numbers groups 1 and 2, and 3 and 4 were condensed, and AS was statistically evaluated as 0% to 25% or greater than 25%. Interstitial fibrosis/tubular atrophy was evaluated as absent/present.

**Results:** The mean estimated glomerular filtration rate decreased 31% from 122 to 85 mL/minute/1.73 m<sup>2</sup> after surgery ( $p < 0.0001$ ). The percent change in the estimated glomerular filtration rate was associated with glomerulosclerosis extent ( $p = 0.034$ ). For each 10% increase in glomerulosclerosis the estimated glomerular filtration rate decreased by 9% from baseline. The extent of arteriosclerosis or the presence of interstitial fibrosis/tubular atrophy did not correlate with the estimated glomerular filtration rate decrease.

**Conclusions:** Glomerulosclerosis severity in nonneoplastic parenchyma can predict the rate of renal function decrease after radical nephrectomy. This histopathological parameter should be assessed in all tumor nephrectomy specimens, given that preserving renal function is important for quality of life and clinical outcome in patients with renal cancer.

### Editorial Comment

The authors should be congratulated for the pioneer work that demonstrates the relationship between extends of glomerulosclerosis associated with decrease in postoperative eGFR in patients post radical nephrectomy. For every 10% increase in GS there was a 9% decrease in eGFR.

This study supports the idea of nephron-sparing surgery for the treatment of renal masses. The clinical long-term implications should be weighted when discussing with patients all management options, so we can optimize therapy with minimal decrease of quality of life.

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