INTRODUCTION: Laser tumor ablation is an efficacious, nephron-sparing surgical option in select patients with upper urinary tract TCC. We sought to evaluate the incidence of ureteral stricture formation secondary to laser ablation of ureteral tumors.

METHODS: A retrospective review identified consecutive patients undergoing ureteral tumor laser ablation over a 5 year period at our institution by a single surgeon. Operative histories were reviewed for prior upper tract TCC treatments. The amounts of Ho:YAG and Nd:YAG laser energy used for ureteral tumor ablation was recorded for each treatment episode. All subsequent operative reports were reviewed for documentation of a new diagnosis of ureteral stricture based on endoscopic and/or radiographic findings following >1 ureteral tumor treatment.

RESULTS: A total of 50 patients (52 treated ureters) had complete data available for analysis. Of these, 32.7% (17/52) were eventually diagnosed with a ureteral stricture on either follow-up ureteroscopy and/or retrograde ureterography. Ho:YAG laser was used in all treated ureters, whereas Nd:YAG laser was used in only 28.8% (15/52) ureters. No significant difference in mean cumulative dose of Ho:YAG laser energy was found between strictured versus non-strictured ureters (2.57+/−3.2kJ vs. 2.23+/−3.68kJ, p=0.74). However, strictured ureters received a significantly higher mean cumulative dose of Nd:YAG laser energy compared to non-strictured ureters (7.63+/−7.53kJ vs. 1.5+/−1.69kJ, p=0.025).

CONCLUSIONS: Among patients undergoing laser ablation of ureteral tumors, Nd:YAG was associated with a statistically significant increased risk of ureteral stricture formation compared to Ho:YAG alone. Therefore, we recommend the use of only holmium laser energy for all ureteral lesions.