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SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found in the online version at <https://doi.org/10.1016/j.urology.2019.05.046>.

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study, the authors sought to define the accuracy of UTUC grade prediction based solely on the tumor visual appearance using digital ureteroscopy. While visual appearance of UTUC is not a defined factor for clinical decision-making, there are scenarios where presumptions of tumor risk could be made based on the appearance with little data to support such assessment. Nine expert urologists at multiple European centers graded 64 biopsy-proven papillary tumors depicted on videos of the ureteroscopy. Sessile tumors were excluded. Visual low- versus high-grade assessment was compared to the biopsy grade. Inter-reader and intrareader variability was reported, with the latter assessed by repeating the exercise 30 days after the initial viewing. The median percentage of correctly predicting low and high-grade tumors was 59% and 52%, respectively. These numbers increased slightly at the second viewing (66% for low and 61% for high-grade tumors). These findings should not be a surprise. Urologists are not good at accurately predicting grade and stage of bladder tumors based on cystoscopic impression.^{1,2,3} The current study does not report the pathologic grade from the subset of patients undergoing nephroureterectomy. The gold standard in this study is somewhat flawed and perhaps, a different correlation exists between ureteroscopic impression and pathologic grade.

Nevertheless, this study shows that grade determination by visual inspection alone ought not be used in clinical decision-making. For that matter, any unimodal method is likely to have major pitfalls. Contemporary practice should now be more sophisticated, requiring evaluation of imaging, ureteroscopic architecture, biopsy, and sometimes selective cytology results. A new clinical nomogram even requires hemoglobin, an independent predictor, for accurately stratifying patients. Modern practice thus requires not a highly fallible staging, visual inspection, or reliance on any one single finding, but multimodal risk stratification using either the European consensus guidelines⁴ or a recent validated clinical nomogram.⁵

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EDITORIAL COMMENT



Until recently, risk stratification for upper tract urothelial carcinoma (UTUC) was sparsely performed, often based on only findings of a filling defect or ureteroscopic visual appearance. In this