

Evaluating Patient Comfort and Outcomes with Ureteral Stent Extraction String Management: To Tape or Dangle?

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Introduction

Ureteral stents with extraction strings emanating from the urethra are a commonly used practice following ureteroscopy. Attendings have developed preferences about taping this string to the patient or letting this hang free. While prior research has addressed the risk of dislodgement associated with stents with strings, patient comfort with these strings, and the risk of adverse events such as dislodgement based on the method, has received limited attention. We did a quality improvement project with detailed chart review to understand this.

Methods

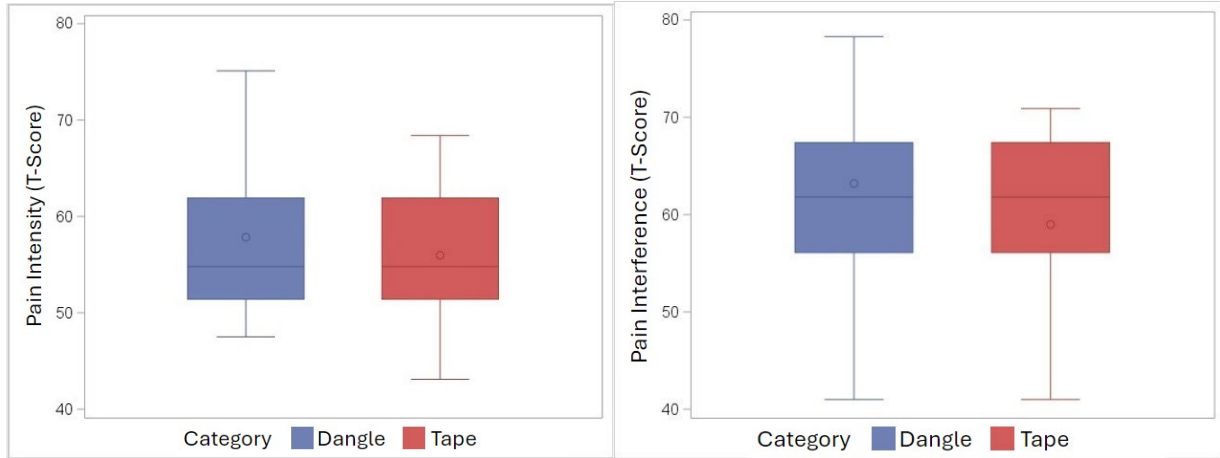
We used the Michigan Urological Surgery Improvement Collaborative (MUSIC) registry to identify ureteroscopy procedures with patient-reported outcomes (PROs) that resulted in ureteral stent placement with extraction strings completed at the University of Michigan between September 2016 and July 2023. These cases were stratified by attending: one who leaves the string free without tape (dangle cohort) and one who always tapes the string (taped cohort). Patients completed online questionnaires of PROMIS[®] Pain Intensity and Pain Interference at 3 time points. Our primary outcome was to compare patient-reported Pain Interference and Intensity one week after ureteroscopy. Our secondary outcome was incidence of inadvertent stent removal between the two cohorts. Using multivariable linear regression, we compared PROs after adjusting for pre-surgery score, age, gender, pre-stenting, stone size, stone location, and chronic pain. Reasons for emergency department (ED) visits up to 30 days after ureteroscopy, provided by the registry, were analyzed for accidental stent removal and verified with a chart review of each case.

Results

We identified 286 ureteroscopies, 191 of which were in the dangle cohort and 95 in the taped cohort. The groups were similar in age, BMI, and maximum stone diameter. Pre-stented patients were included for analysis (15 dangle cohort and 25 in the tape cohort). The Intensity of pain (Figure 1A) and Interference of pain (Figure 1B) at 7-10 days postoperatively were not significantly different between the two groups. Post-ureteroscopy ED visit rate was 13.6% (N=26) in the dangle cohort vs. 6.3% (N=6) in the taped cohort. Most ED visits in both cohorts were for flank pain [dangle 53.8% (N=14) vs. tape 33% (N=2)]. Analysis showed that only two patients who presented to the ED in the 30-days post operatively had inadvertent stent removal (one in each cohort).

Conclusions

We found no difference in pain scores measured via PROMIS[®] Pain Intensity and Interference questionnaires at 7-10 days postoperatively between patients with stent extraction strings left to dangle and those taped. Patient outcomes related to inadvertent stent removal on extraction string were not different, whether surgeons tape or dangle.



A

B

Figure 1. PROMIS[®] Pain Intensity (A) and Pain Interference (B) for patients undergoing ureteroscopy procedures resulting in ureteral stent placement with extraction strings completed at the University of Michigan between 9/2016 and 7/2023 by two attendings. Blue represents the attending dangle cohort (N=191), and red represents the attending taped cohort (N=95).