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Longitudinal assessment of reprocessing effectiveness for flexible ureteroscope after high level disinfection

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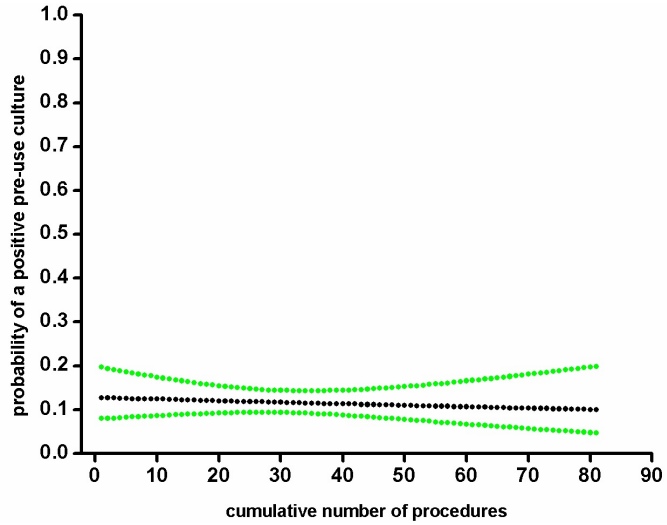
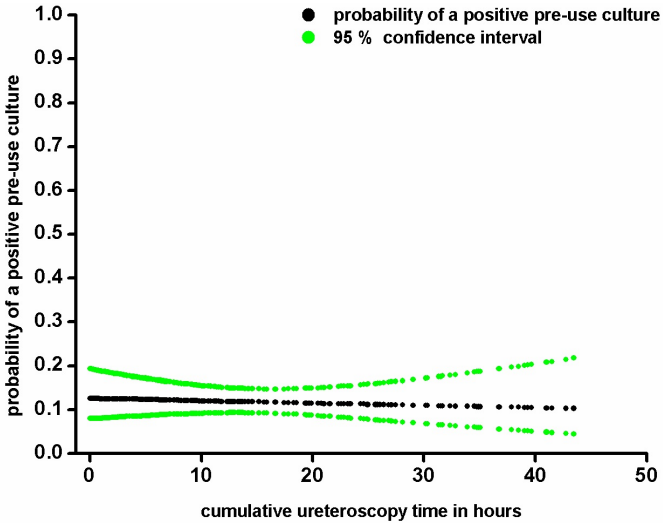
Introduction & Objectives: Reusable flexible ureteroscopes (USc) are reprocessed for subsequent use. So far, little is known about the effectiveness of USc reprocessing, especially with regard to cumulative USc use. We hypothesize that the effectiveness of reprocessing declines with cumulative USc use as USc wear and tear can result in surface irregularities that might form a breeding ground for microorganisms. This study evaluates the frequency of preoperative and persistent microbial contamination of flexible ureteroscopes after reprocessing, and the relation of contamination with cumulative USc use.

Materials & Methods: From December 2015 until December 2017, data on scope use and microbiological cultures were collected prospectively for 20 new USc's (Karl Storz FlexXc and X2, Olympus URF V2 and P6). High-level disinfection with peracetic acid was used for USc reprocessing. To assess pre- and post-operative contamination, two microbiological samples of the USc were taken before and after the procedure (1. stirring the distal USc shaft tip in 10 mL saline, 2. flushing the working channel with 10 mL of saline). All four samples were sent for culture on bacteria and yeasts. The possibility of cross-contamination was evaluated by comparing the postoperative culture with the subsequent preoperative culture of the same USc. A positive culture was defined by ≥30 CFU/mL of skin flora or ≥10 CFU/mL of uropathogens. A generalized estimating equation model (GEE) was used to analyse if cumulative USc use was associated with an increased probability of positive preoperative cultures.

Results: Microbial samples were collected in 389 procedures. Preoperative ureteroscope cultures were positive in 47/389 (12.1%) procedures, of which uropathogens were found in 9/389 (2.3%) and skin flora in 38/389 (9.8%) procedures. In one case, the preoperative culture contained the same bacteria type as the prior postoperative culture. Cumulative USc use was not associated with a higher probability of positive preoperative cultures (figure 1).

Figure 1. Association between cumulative USc use and the probability of a positive preoperative culture (GEE).





Conclusions: Microbial contamination of reprocessed ureteroscopes was found in one eighth of all procedures. Notably, uropathogenic microorganisms were found in a small proportion of all procedures. Cumulative ureteroscope use was not associated with a higher probability of microbial contamination.

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