

Initial Content Validation Results of a New Simulation Model for Flexible Ureteroscopy: The Key-Box

Study Purpose

We sought to test the content validity of a new training model for flexible ureteroscopy: the Key-Box.

Material and Methods: Sixteen medical students were randomized to undergo a 10-day training consisting of performing 10 different exercises aimed at learning specific movements with the flexible ureteroscope, and how to catch and release stones with a nitinol basket using the Key-Box (n = 8 students in the training group, n = 8 students in the non-training control group). Subsequently, an expert endourologist (O.T.) blindly assessed skills acquired by the whole cohort of students through two exercises on ureteroscope manipulation and one exercise on stone capture selected among those used for the training. A performance scale (1-5) assessing different steps of the procedure was used to evaluate each student. Time to complete the exercises was measured. Mann-Whitney Rank Sum test was used for comparisons between the two groups.

Results: Mean scores obtained by trained students were significantly higher compared with those obtained by nontrained students (all $p < 0.001$). All trained students were able to complete the two exercises on ureteroscope manipulation within 3 minutes, whereas two students (25%) were not able to finish the exercise on stone capture. Conversely, four (50%) and six (75%) nontrained students were not able to finish one out of the two exercises on ureteroscope manipulation and the exercise on stone capture, respectively. The mean time to complete the three exercises was 76.3, 69.9, and 107 and 172.5, 137.9, and 168 seconds in the trained and nontrained groups, respectively (all $p < 0.001$).

Conclusions: The K-Box[®] seems to be a valid easy-to-use training model for initiating novel endoscopists to flexible ureteroscopy.

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Coloplast Key Takeaways

- Students in the trained (K-Box®) group achieved higher final examination scores compared to students in the non-trained (no K-Box) in regards to respect for surrounding environment (+2.57 greater score; 137.4% improvement), hand movement (+2.44; 122.0%), handling of endoscopes (+2.68; 143.3%) finesse in the procedure (+2.35; 125.7%), knowledge of the procedure (+2.91; 166.3%), use of assistants (+2.61; 142.6%) and basket handling (+2.71; 167.3%).
- Students in the trained (K-Box) group accomplished each of the three tasks in an average of 76.3, 69.9, and 107.0 seconds compared to an average of 172.5, 137.9, and 168.0 seconds for students in the non-trained (no K-Box) group. This represents a difference of 96.2, 68.0, and 61.0 seconds and 55.8%, 49.3%, and 36.3% difference respectively in favor of the trained group.
- All students (n=8) in the trained (K-Box) group were able to complete two exercises of ureteroscope manipulation within 3 minutes. Four students (50%) in the nontrained (no K-Box) group were not able to complete one of the two ureteroscope manipulations within 3 minutes
- Two students (25%) in the trained (K-Box) group were not able to finish the exercise aimed at capturing the stone with a nitinol basket compared to six students (75%) in the non-trained (no K-Box) group.
- The authors of the article conclude that the K-Box seems to be a valid easy-to-use training model for initiating novel endoscopists to flexible ureteroscopy.

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