Low fidelity versus high fidelity simulators in TURP training.
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Introduction:

Acquisition of the fundamental skills in urology has been shown to be successful when thought in a simulated environment. There is a debate on how complicated these simulated task trainers should be. Our aim in this study was to compare the educational value of low fidelity bench models with high fidelity virtual reality models, particularly in the training of cystoscopy and Prostate resection.

Methods:

A pilot study was conducted in the surgical skills lab of RCSI in March 2016 where two groups were tested. The groups were selected randomly from junior surgical trainees with similar background in training. The LF (low fidelity) (n=5) group were trained at three bench task trainers: 1) Bipolar TURP trainer model (Olympus), 2) Uro-Scopic Trainer (‘apple core’-Limbs and things UK), 3) Flexible Cystoscopy bench model (Limbs and things, UK). The HF (high fidelity) (n=5) group were trained on three stations which included virtual reality bladder navigation and prostate resection with simulated diathermy 1) Uro-Mentor (Simbionix) 2) TURP Mentor (Simbionix) and 3) Green light TM simulator for holmium laser prostate resection. All groups underwent a pre-test and post-test where their cystoscopy/ prostate resection skills were tested with both the Cystoscopy bench model trainer station and the TURP Mentor virtual reality station. These stations used a task check list, OSATS (objective structured assessment of technical skills) and a global score for assessment. Their knowledge was also tested with a urology quiz.

Results:
The overall mean improvement for both groups was 14%. Using a paired t-test when comparing both groups the LF group improved in their cystoscopy skills test by 30 %, their TURP skills test by 21% and their knowledge by 20% (P<.0006). The HF group improved in their cystoscopy skills test by -2%, their TURP skills test by 15% and their knowledge by 17% (P<.01).

Conclusion:

This study demonstrates that the LF and HF trainers performed well in achieving an overall improvement in basic urology skills. The LF group particularly improved their skills in cystoscopy assembly and performance in terms of dexterity and time to perform. Although a much larger study would need to be conducted, we feel a mixture of LF and HF models used together would achieve a more superior educational effect.