

Combined surgical skills and simulation based clinical management during a transurethral resection of prostate (TURP) course.

A single centre experience.

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Background

Repetitive practice involving medical simulation is associated with improved learner outcomes. There are too few published journal articles on the effectiveness of high fidelity simulation (1). Surgical trainees are faced with reduced training time due to changes in working practices and simulators can help fill these gaps (2). In practice we combine operating and clinical skills to select and manage patients. The majority of surgical courses teach technical hands on practical skills only. The importance of human factors training has become apparent and we have designed a course that combines part task trainers for development of surgical skills with the use of high fidelity simulation equipment in a ward based environment to allow human factors training.

Materials & Methods

A TURP course using three different simulators was designed and run. A post-operative TURP scenario was written and programmed in to Sim Man 3G® software. The scenario included recognition and management of post TURP related sepsis and bleeding which are mapped to the urological curriculum. The candidates were expected to manage an unwell patient and an angry partner with interruptions to ensure they could manage themselves in a stressful situation in a professional manner. This is the first time we have combined this simulation training for postgraduates.

Four candidates completed the course. Faculty included three consultant urologists, two urology registrars and one medical registrar. The learning outcomes were set and specific. One hour of talks was delivered followed by one hour at each station performing hands on skills. Learning outcomes and quality assurance was measured through pre and post course MCQs and feedback questionnaires. Formative assessment utilised validated global rating scales. Facilities required included one Sim Man 3G®, catheter model, part task trainers for cannulation and blood gases, a Symbionix® TURP mentor, an AMS® green light simulator, a Bristol TURP model®, stack, diathermy, disposable prostate, a Storz® and Olympus® resectoscope and 3 teaching rooms.

Results

Candidates ranged from CT1 to ST4. Three of the four candidate improved on their post course MCQs by at least one mark, one scored equally (88%)(Table 1). On the OSATS – G assessment all candidates passed (Table 2). On our GAUES rating scale candidates mostly scored between 3 – 5 (Scales: 1 low, 5 high). Trainer and trainee scores were well matched suggesting good levels of self-reflection and insight. Candidates scored between 4 – 5 (1 = poor, 5 = excellent) for the scenario and overall assessors were happy to allow the candidate to care for their family.

Candidate feedback showed that 4 was a good number of candidates for the course, length of the course and hands on opportunity was correct. All rated 5 (Scales: 1=poor, 5 = excellent) for the simulated scenario and use of the simulators.

Realism of the simulators varied from 3 to 5. The Bristol model® was noted to feel the most realistic. Comments included 'Fantastic course', 'Excellent course, very successful simulation both machines & Sim Man, Very grateful to faculty input & feedback, would do course again', 'Well organised, informative & interactive'.



Fig 1. Bristol TURP model simulator

MCQs					
Candidate	Level	Pre course	%	Post course	%
1	ST4	15	88.23529	17	100
2	CT1	13	76.47059	14	82.35294
3	CT2	15	88.23529	15	88.23529
4	CT2	9	52.94118	11	64.70588

Table 1. Pre and post course MCQ results



Fig 2. AMS Green light laser TURP simulator

OSATS-G assessment		Score 1 Low - 5 High	Trainers score						
Candidate	Level	A respect fo B Time & I C Instrumen D Knowle E Use of a F Flow of G Knowle	Pass/ Fail						
1	ST4	4	4	4	N/A	4	4	pass	
2	CT1	3	4	3	3	N/A	4	4	pass
3	CT2	4	4	3	4	N/A	4	4	pass
4	CT2	3	3	4	4	N/A	3	3	pass

Table 2. OSATS G results for TURP simulator

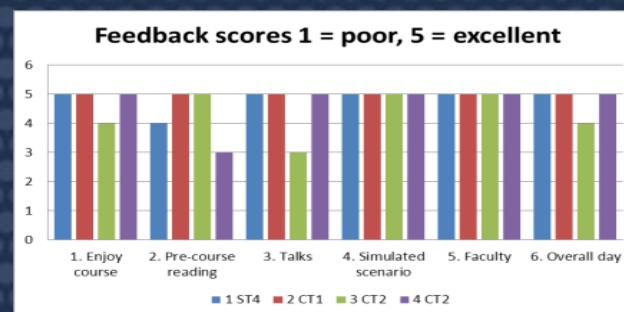


Fig 3. Bar chart to demonstrate post course feedback from the 4 candidates.

Further feedback

Things candidates did not like:
Fumes Bristol model
Bristol model too small

What did we do well:
Fantastic course, will definitely use simulators again
Excellent course, very successful simulation both machines & sim Man, Very grateful to faculty input & feedback, would do course again.
Good layout of course, good faculty, more feedback on TURP performance. Green light supervised by urologist rather than rep.
Well organised, informative & interactive

Improvements:
Larger Bristol TURP model

Conclusions

We feel that this combined use of surgical simulators and the Sim Man 3G® offers an excellent opportunity to develop skills required to holistically manage a patient having a TURP. We are pleased that all candidates felt the scenario was useful and did not take away from surgical skills simulation. We have demonstrated the importance and benefit of a 1:1 ratio of candidate to faculty. We plan based on this positive experience to fully integrate clinical scenarios in to each of our surgical simulation days that are linked to specific learning outcomes related to the operation or procedure. We will continue with data collection and sharing of results and experiences.

References

1. McGaghie et al. Effect of practice on standardised learning outcomes in simulation – based medical education. Medical Education 2006; 40: 792 – 7
2. Blackmur J.P., Clement G.E. et al. Surgical training 2.0: How contemporary developments in information technology can augment surgical training. The Surgeon 2013; 105 - 112