

BJUI Surgical simulators in urological training – views of UK Training Programme Directors

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To discuss the current situation on the use of simulators in surgical training. To determine the views of UK Urology Training Programme Directors (TPDs) on the availability and use of simulators in Urology at present, and to discuss the role that simulators may have in future training. An online-questionnaire survey was distributed to all UK Urology TPDs. In all, 16 of 21 TPDs responded. All 16 thought that laparoscopic simulators improved the quality of laparoscopic training. The trainees of 13 TPDs had access to a laparoscopic simulator (either in their own hospital or another hospital in the deanery). Most TPDs thought that trainees should use simulators in their free time, in quiet time during work hours, or in teaching sessions (rather than incorporated into the weekly timetable). We feel that the

What's known on the subject? and What does the study add?

The role of surgical simulators is currently being debated in urological and other surgical specialties. Simulators are not presently implemented in the UK urology training curriculum. The availability of simulators and the opinions of Training Programme Directors' (TPD) on their role have not been described.

In the present questionnaire-based survey, the trainees of most, but not all, UK TPDs had access to laparoscopic simulators, and that all responding TPDs thought that simulators improved laparoscopic training. We hope that the present study will be a positive step towards making an agreement to formally introduce simulators into the UK urology training curriculum.

current apprentice-style method of training in urological surgery is out-dated. We think that all TPDs and trainees should have access to a simulator, and that a formal competency based simulation training programme should be incorporated into the urology training curriculum, with

trainees reaching a minimum proficiency on a simulator before undertaking surgical procedures.

KEYWORDS

simulation, urology, surgery, training, skills

INTRODUCTION

Surgical simulators are in common use in many branches of surgical training, and have been incorporated into some specialties' training programmes, such as The National Laparoscopic Colo-Rectal Programme in England [1]. A recent randomised control trial compared the effects of laparoscopic simulator training to standard clinical training on gynaecology registrars' technical performance of laparoscopic salpingectomy [2]. That study found that those who underwent the simulator-training programme were rated as having higher technical proficiency, and took half the time to do the actual operation, than those in the control group [2]. In urology, there were >100 publications on a MEDLINE search for 'urology simulators', and the subject has been debated in detail, including a dedicated Key Session at the

BAUS meeting 2011, but surgical simulators are not incorporated into urological training. Obstacles that are likely to be encountered in the introduction of simulators into the UK urology training programme include funding the equipment, and selecting and retaining suitable faculty. The issue of incorporating simulation was elaborated on in a recent publication by Arora *et al.* [3] from Imperial College, London. Their article and others have highlighted the modern challenges to laparoscopic surgical training, such as the reduction of training hours by the European Working Time Directive, the high costs of operating theatre time and pressure for increased productivity and efficiency. It has been described how surgical simulators could be incorporated into the early, intermediate and late stages of urological training, e.g. with cystoscopy simulation using Uro-Mentor™ (Symbionix, Cleveland, OH, USA),

laparoscopic virtual-reality simulators, then simulation-based crisis management modules, respectively. Non-technical skills, originally described in the aviation industry and modified and applied to laparoscopic surgery, have been well documented to be influential in improving surgical performance, including the reduction of adverse events. These non-technical skills include cooperation, leadership and managerial skills, situation awareness, decision making, communication and interaction [3–5].

Surgical simulators are currently being incorporated into urological training in some centres in the USA [6]. A questionnaire-based study of USA Urological Programme Directors reported substantial access to laparoscopic simulators (76%), with lesser availability of endoscopic and percutaneous simulators (8–21%) [7]. The vast majority of

FIG. 1. (A) Access and (B) availability of laparoscopic simulators.

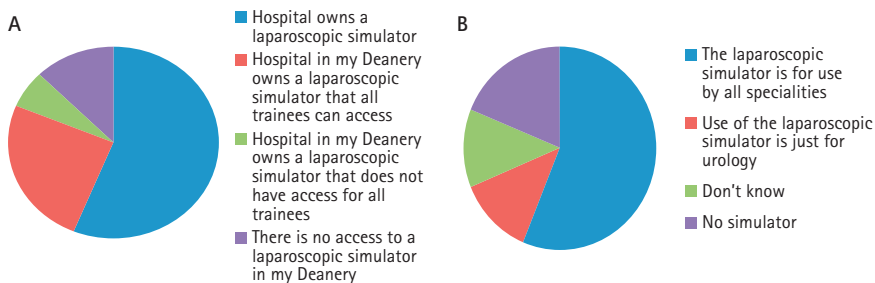


TABLE 1 TPDs opinions of when trainees should use simulators

When should trainees use the laparoscopic simulator (more than one response is allowed)?	Number of respondents
In their free time outside of working hours	9
In their free time during working hours (e.g. admin/quiet on-call)	10
In teaching sessions	10
Incorporated into weekly timetable	5

USA Programme Directors thought that laparoscopic simulators were: a good educational tool, realistic, and easy to use (81, 62 and 88%, respectively) [7]. In the present study, we asked UK Training Programme Directors (TPDs) to complete an on-line questionnaire to gain insight into their experiences of the current availability and use of surgical simulators, and their views on how simulators may be used to train and assess urological trainees in the future.

SUBJECTS AND METHODS

A 10-point questionnaire was developed to assess the availability of laparoscopic simulators to UK Urology trainees, and to investigate the attitudes of UK TPDs towards the roles of simulators in modern training. The questionnaire is provided in the Appendix. The questionnaire was internally validated as follows:

- (a) Content validity: acceptability of the questions was assessed from piloting the questionnaire across a small group of urologists who had used the simulator. When analysing the final results, the spread of responses was visually assessed and seen to be acceptable. There was no missing data.
- (b) Construct validity: the questionnaire study that was used as the reference standard was the paper by Le *et al.* [7].

(c) Reliability: reliability of the questionnaire over time (test-retest reliability) was confirmed in the pilot study, where the questionnaire was completed on two separate occasions 1 week apart by the same pilot respondents.

The questionnaire was created and data collated using the online survey software SurveyMonkey™. UK Urology TPDs were identified from information on the Joint Committee on Surgical Training website (http://www.jcst.org/sac_members/urolopd.html), accessed April 2011. An e-mail containing a link to the on-line survey was sent to the TPD of each training region. Responses were analysed using Microsoft Excel™ software.

RESULTS

Of the 21 UK TPDs in Urology, 16 returned fully completed questionnaires. Nine responders sub-specialised in endoscopic/laparoscopic urology, five in oncology, one in andrology and one in female/reconstructive urology. Their experience of the availability of laparoscopic simulators is shown in Figure 1. Most available simulators were laparoscopic (13), with lesser availability of cystoscopic (three) and ureteroscopic simulators (three). All 16 respondents thought that laparoscopic simulators improved the quality of

laparoscopic training. For the views on the necessity of simulators in urological training, two TPDs thought that they should be compulsory, 13 thought that they are desirable for all trainees, whereas one thought that they are desirable only for trainees interested in laparoscopic urology/endourology. The minority of TPDs thought that simulator training should be incorporated into trainees' weekly timetable (five respondents), with most stating their use should be as part of teaching sessions or in trainees' free time (Table 1). Finally, we asked TPDs if performance testing on a laparoscopic simulator should be incorporated as a station in the Fellowship of the Royal College of Surgeons (FRCS) Urology examination. In all, 13 thought that there is a possible future role for this; one thought that they should be used now, and two thought that there would never be a role for laparoscopic simulators in the FRCS (Urol) examination.

DISCUSSION

We think that the current apprentice-style method of training in urological surgery is out-dated. There is increasing pressure that trainees become adequately trained to practice surgery safely and independently upon completion of their training, with a simultaneous reduction in training hours. Training using surgical simulators has been shown to reduce the clinical training time to achieve higher competencies, and improve the speed of operating, effectively advancing the trainee through the early 'learning curve' [2]. The Chief Medical Officer recently reported on the integration of surgical simulators into training programmes, stating that 'simulation training in all its forms will be a part of building a safer healthcare system' [8].

The present study showed that the view amongst UK urology TPDs was that simulators should be introduced into training, with 15 of the 16 responders (94%) considering that urological simulators should be compulsory or are desirable for all urological trainees, and all 16 responders thought that laparoscopic simulators improved the quality of laparoscopic training. Two of the 16 TPDs did not have access to a simulator. We feel that the next steps should be to ensure that all TPDs and trainees have access to a simulator, and that

a formal competency based simulation training programme should be incorporated into the urology training curriculum, with trainees reaching a minimum proficiency on a simulator before undertaking surgical procedures.

Contemporary urology training is moving out of clinical practice and simulation is increasingly used to provide a safe and supportive learning environment for learning and maintaining skills. Simulation is therefore seen as a growing opportunity in surgical training, and BAUS has taken the decision that urology should be at the forefront of such developments to look at both technical skills and non-technical skills acquisition in urological training, and to harness those that are already active locally regionally in this field. It is very apparent that we have to look at developing a national strategy for the development of simulation in urological training, both before and after Certificate of Completion of Training (CCT).

Recently, the UK Urology Specialist Advisory Committee (SAC) decided to include elements of simulation into the urology syllabus and curriculum, with the launch of SimUrol, a national simulation training program in urology. This project was presented at the BAUS 2011 meeting in Liverpool [<http://baus.meeting.org.uk/index.php?p=1&t=9&g=0>]. However, controversy remains over its usefulness for training and predictability in relation to future outcomes. There is a paucity of good quality studies in the surgical literature and it is hoped that this program will provide a validated simulation training model for both technical skills and non-technical skills acquisition for doctors in training.

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CONFLICTS OF INTEREST

None to declare.

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Abbreviations: TPD, Training Programme Director; FRCS, Fellowship of the Royal College of Surgeons; CCT, Certificate of Completion of Training; SAC, Specialist Advisory Committee; SimUrol, Simulation in Urology.

APPENDIX – THE QUESTIONNAIRE

1. In which Deanery are you Training Programme Director in Urology? (free text answer).

2. What is your main sub-speciality interest? (i) Endoscopic/Laparoscopic Urology; (ii) Oncology; (iii) Female/Reconstruction; (iv) Andrology; (v) General Urology; (vi) None/unsure.
3. Which best describes your place of work? (i) Teaching hospital; (ii) Large District Hospital (6 or more consultants); (iii) Small District Hospital (5 or fewer consultants); (iv) Other (please specify).
4. This question relates to the availability and accessibility of Laparoscopic Simulators. Does your: (i) Hospital own a laparoscopic simulator; (ii) Hospital in my Deanery owns a laparoscopic simulator that all trainees can access; (iii) Hospital in my Deanery owns a laparoscopic simulator that does not have access for all trainees; (iv) There is no access to a laparoscopic simulator in my Deanery; (v) Other (please specify).
5. If your trainees do have access to a Laparoscopic Simulator, is it: (i) Just for Urology; (ii) Just for General Surgery; (iii) For all specialities; (iv) Don't know; (v) Other (please specify).
6. If your trainees do have access to a Simulator, which of the following simulated procedures are available (tick all that apply): (i) No access; (ii) Laparoscopy; (iii) Cystoscopy; (iv) TURP/TURBT; (v) Ureteroscopy; (vi) PCNL.
7. Do you think that the availability of a Laparoscopic Simulator should be: (i) Unnecessary; (ii) Desirable – for all trainees; (iii) Desirable – only for trainees interested in lap/endo urology; (iv) Compulsory.
8. Do you feel that laparoscopic simulators: (i) Improve the quality of laparoscopic training (and I have used one); (ii) Improve the quality of laparoscopic training (but I have not used one); (iii) Do not improve the quality of laparoscopic training (and I have used one); (iv) Do not improve the quality of laparoscopic training (but I have not used one).
9. When should trainees use the laparoscopic simulator (tick all that apply): (i) In their free time outside of work hours; (ii) In their free time during work hours (e.g. admin/quiet on call); (iii) In teaching sessions; (iv) Incorporated into weekly timetable; (v) Other (please specify).
10. Do you think that performance testing on a Laparoscopic Simulator should be incorporated as a station in the FRCS (Urol) exam? (i) Yes; (ii) Never; (iii) Not at present, but possibly in the future.