SURGICAL SIMULATORS

THESE THREE PAPERS DESCRIBE INGENUOUS METHODS FOR CREATING OR ADAPTING SURGICAL SIMULATORS AT MINIMAL COST.

A simple, low cost construct for suturing practice using adhesive tape and 'collar-and-cuff' foam off-cuts

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A video demonstration showing how to build this device is available at:

<http://youtu.be/epgJ2o9G5GM>

Fabric adhesive tape has been described previously as a low cost method for suturing practice.¹ We also use tape for suturing practice, with the addition of foam off-cuts from 'collar-and-cuff' slings. Woven fabric tape is taped over a section of spare foam, extending past the foam's edges to secure the construct to the work surface. An incision can then be made and closed (Fig 1). The addition of foam is advantageous as it mimics the arrangement of skin and subcutaneous tissue, enables scalpel incisions to be made and allows sutures that require tissue depth such as the vertical mattress to be practised.

Reference

1. Nicholson S. Pink tape for suturing practice. *Ann R Coll Surg Engl* 2012; **94**: 210.

Figure 1 The foam and tape construct used for suturing practice

iSurgery: a contemporary simulator for surgical education

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BACKGROUND

Endoscopic techniques are the modality of choice in many surgical specialties. Trainees are increasingly using simulators to improve skills and augment development safely. Access is limited, which protracts training and delays clinical exposure.

TECHNIQUE

We have developed a contemporary, inexpensive surgical simulator (the iSurgery device) that is easy to build and uniquely incorporates iPhone® and iPad® technology (Apple, Cupertino, CA, US). Three pieces of medium density fibreboard (50cm × 40cm) are used:

- > Piece A (the interface): A rectangular window is cut and a spring latch attached (to secure the iPhone®). Six holes are drilled (ports).
- > Piece B (the stand): A lipped shelf is made, on which the iPad® sits.
- > Piece C (the base): A pair of hinges secure pieces A to C and B to C, enabling the three pieces to fold together. Two latches are secured to each side between pieces A and C, and B and C.

Figure 1 The iSurgery device

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The iPhone® and iPad® are connected via a camera application, with a live video feed recorded on the iPhone® and displayed on the iPad®. Surgical simulation exercises include sugar cube stacking, passing beads between forceps, cutting shapes from latex gloves, inserting a string through hoops, and tying knots and suturing.

DISCUSSION

The iSurgery device (Fig 1) is an inexpensive simulator for developing laparoscopic skills. It is reproducible, transportable and operable in remote areas. Juniors must self-direct their training outside their compliant clinical hours and acquiring skills via simulation improves surgical dexterity.

The Telford tonsillectomy tie trainer: an AirSim model modification

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None of the authors have any commercial interest in any of the products described in this technical note.

BACKGROUND

Junior trainees perform fewer procedures than ever, meaning greater emphasis is placed on simulation. In otolaryngology, early proficiency in tonsillectomy is important. The national tonsillectomy audit showed that cold steel dissection with ties minimises the post-tonsillectomy haemorrhage risk.¹ Tying securely at depth requires regular practice and we describe one simulator to accomplish this.

Other authors have designed simple, inexpensive models.^{2,3} However, our adaptation of the AirSim Bronchi (TruCorp, Belfast, UK)⁴ increases realism, familiarisation with more equipment and the ability to practise other procedures.

TECHNIQUE

A replica tonsil is created from gauze and secured in the oropharynx by a Birkett forceps inserted in the oesophagus. The procedure now occurs using standard equipment, with Draffin rods in pre-existing grooves (Fig 1). A headlamp is recommended to become accustomed to its use.⁵

Figure 1 The complete model with a trainee demonstrating application of silk ligature to inferior pole of tonsil

DISCUSSION

We feel the high initial cost is easily outweighed by many rotating trainees safely acquiring new skills on realistic models.

References

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3. Street I, Beech T, Jennings C. The Birmingham trainer: a simulator for ligating the lower tonsillar pole. *Clin Otolaryngol* 2006; **31**: 79.
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