

Emergency cervical cerclage training: a simple simulator.

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Background

Cervical cerclage is a core curriculum requirement for specialist training in Obstetrics and Gynaecology however there is limited opportunity to learn this skill due to its relative infrequency in clinical practice; a problem further compounded by necessity to attain a certain level of surgical skills prior to embarking on this high risk procedure. It is well known that the use of simulation decreases the time to deliberate practice and facilitates mastery learning for a number of clinical skills¹. There are courses available that teach cervical cerclage on high fidelity manikins however these are expensive and not available in all units. We present a simple, economical, and re-creatable alternative for simulation based training in emergency cervical cerclage.

How to build the simulator

We used two clinical examination gloves, one within the other.

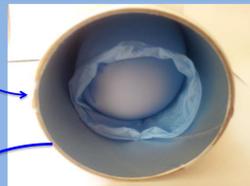
The first glove was filled with water or air and tied in a knot at the wrist to simulate amniotic fluid within a bulging bag of membranes.



This was then put inside of the second glove which we used to create the 'cervix'. The water-filled glove was positioned so that the palm area was visible at the wrist aperture of the second glove thus giving an appearance of bulging membranes at an effaced cervix.



This was then placed in a rigid tube (we used empty crisps tube) to restrict ease of movement to create authentic feel and mimic the difficulty of the procedure.



All of this was placed in a pelvic manikin and held in place by an assistant.



Insertion of the cervical sutures can then be attempted with standard cerclage principles and equipment.

Results

In our hospital, we delivered emergency cervical cerclage training to the specialist trainees using this simulation model. The training model was received with enthusiasm and earned positive feedback. It has been attended by different grades of doctors from Foundation Year 2 to O&G consultants (fig. 1).

As confirmed by our feedback forms there is indeed very little exposure to cervical cerclage in clinical practice; with 75% of doctors indicating minimal experience prior to simulation. O&G consultants were the only group who classed their previous experience above 1 (fig. 2).

The participants find the simulator helpful in illustrating the basic concepts of the cervical cerclage, with two thirds rating it as useful or very useful (fig. 3). All of the doctors agreed that the simulator was advantageous in letting the novice practice the technique (fig. 4).

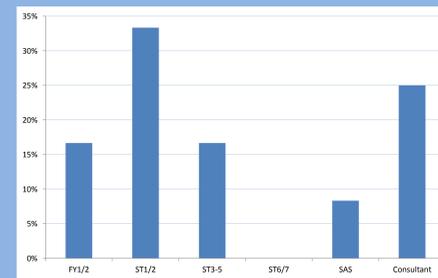


Fig. 1. Grades of doctors attending the training

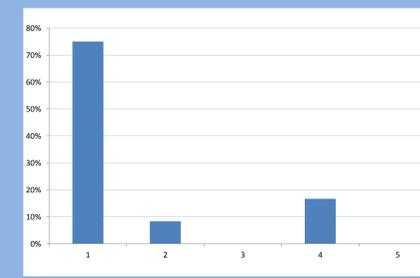


Fig. 2. Level of previous experience of cervical cerclage; where 1 = minimal, 5 = extensive

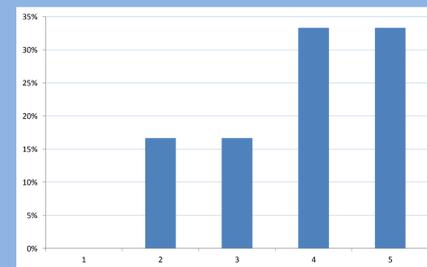


Fig. 3. Usefulness of simulator to illustrate the basic concepts; where 1 = not at all useful, 5 = very useful

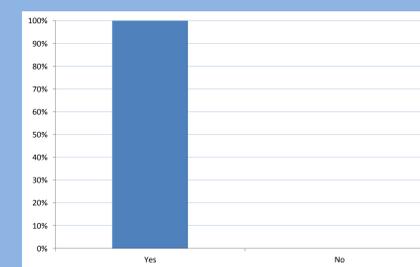


Fig. 4. Is this simulator useful in letting the novice practice the basic technique

Our aim was to create simple and replicable simulator and so we are very pleased to see that the majority of the participating doctors would be able to make the simulator themselves to continue the practice (fig. 5).

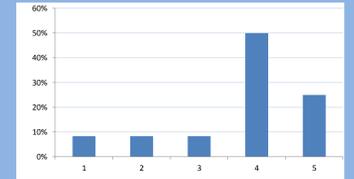


Fig. 5. Confidence in making a simulator (1 = not confident, 5 = very confident)

The success of simulation based training in cervical cerclage is illustrated below (fig. 6 and 7) As portrayed on the graphs there was significant increase in confidence level in all participants.



Fig. 6. Confidence in performing cervical cerclage prior to use of the simulator
Fig. 7. Assumed confidence in performing cerclage (with appropriate supervision) after using the simulator where 1 = not confident at all, 5 = very confident

Conclusion

This is an easily-replicable, economical, and accessible model which can be used in most clinical units for simulation-based education in emergency cervical cerclage. Although this will not replace the need for clinical exposure, it can give trainees an introduction to the principles, techniques, and skills involved in this potentially difficult procedure to maximise the learning opportunities from future clinical encounters.

References

- McGaghie et al. A critical review of simulation-based medical education research: 2003–2009. Medical Education. 2010 Jan; 44(1): 50-63.