The Journal of Laryngology & Otology

cambridge.org/jlo

Short Communications

Eleanor Wong takes responsibility for the integrity of the content of the paper

Cite this article: Wong E, Davies H, Owens D. The Cardiff TonsillectomEase trainer. *J Laryngol Otol* 2025; **139**:1118–1119. https://doi.org/10.1017/S0022215125102764

Received: 22 October 2024
Revised: 4 April 2025
Accepted: 18 April 2025
First published online: 14 July 2025

Keywords:
medical education; postgraduate education; undergraduate education; tonsillectomy; surgical simulation

Corresponding author: Eleanor Wong;
Email: e.l.wong@hotmail.co.uk

© The Author(s), 2025. Published by Cambridge University Press on behalf of J.L.O. (1984) LIMITED.

The Cardiff TonsillectomEase trainer

Eleanor Wong, Huw Davies and David Owens

Department of Ears Nose and Throat, University Hospital of Wales, Cardiff, UK

Abstract

Objectives. To create a simple simulated tonsil-tying model to help trainees gain surgical skills during limited training opportunities.
Methods. A tonsil-tying trainer was constructed using basic hospital items that are easily attainable in a basic hospital setting. Feedback was obtained from consultants, registrars and senior house officers.
Results. A simple, low-cost and effective low-fidelity model for deep knot tying in tonsillectomy is presented. The model is modifiable for the progressing trainee and allows a degree of objective feedback with the potential for subjective feedback from a trainer. The model is easy to prepare using typical basic hospital ward equipment.
Conclusion. This model provides practice of placing a Boyle–Davis gag, and the use of tools and a head light. It is adjustable for tonsil-tying practice at a variety of depths with different vessel sizes and conditions (e.g. bleeding). Lastly, basic objective feedback without significant technical challenges is possible.

Introduction

Recent challenges for UK surgical trainees, including changes to the training model, staff shortages, service provision, doctor's pay restoration strikes and post-coronavirus disease 2019 pandemic effects, have affected trainees' operating theatre time.[1,2] Rapid resolution of these issues is essential given the current issues with National Health Service provision.

It is crucial that each operating theatre opportunity is maximised in terms of quality for trainees to gain optimal surgical proficiency,[3] thus an emphasis on simulation training of basic surgical skills, outside of the operating theatre environment, has been promoted to enhance operating theatre time.

Tonsillectomy and tonsil tying are often the first surgical techniques learnt by ENT trainees.[4] The National Tonsillectomy Audit recommended that all trainees must be competent in tonsillar ties before learning other techniques,[4] therefore the use of simulation training has become an invaluable tool for learning early skills in the ligation of vessels without compromising patient safety, to enhance productivity in operating theatre time and the training opportunities available.

Simulators for tonsil tying exist, for example basic skills models focusing on tonsil tying (Cardiff cup,[5] tissue box,[6] Birmingham shoe[7]), those of higher fidelity (Nottingham tonsillectomy haemostasis simulator,[8] Yorick's skull,[9] Telford,[10] Bhat, Kaliavaradan, Muruganidhi and Sethu models[11]) and some with intrinsic objective feedback mechanisms.[12] Some simulators are more complex, requiring time and skills to assemble. Some require modification of other non-simulation models (e.g. AirSim Bronchi from TruCorp,[10] model skull[9,12]) or equipment that may be difficult to locate and require time and skill to create circuits.[12] The models focusing on tonsil tying are simple and effective, but may not provide feedback on tension because of tying to paperclips or wires.

We present the TonsillectomEase trainer, a simple, low-cost and effective model for tonsil tying that incorporates a degree of objective self-directed feedback on artery ligation tension, is depth modifiable as the trainee's level of skill progresses and offers training to both dominant and non-dominant hands.

Materials and methods

Equipment

This TonsillectomEase trainer requires the following equipment: urine bottle, strawberry laces confectionary (thick and thin), headlight, tonsillectomy instruments (silk or cotton tie, Boyle–Davis gag, Negus knot pusher, curved scissors, curved Negus forceps, Birkett'

tonsillar artery forceps), endotracheal tube and tape (optional), cotton ball or gauze (optional) and Hibiscrub (optional).

Easy two-step assembly

Step 1

Two holes are made with the curved scissors to the lateral walls of the urinary bottle. The size of the hole depends on the width of the strawberry laces used and the optional use of cotton wool and/or gauze, both of which are inserted into the holes.

Step 2

The Boyle–Davis gag is applied. Optional endotracheal tubing can be taped to the superior inner aspect of the urinary bottle, thereby simulating the need to apply the Boyle–Davis gag whilst being mindful of the airway. See Video for demonstration of assembly and use of the Cardiff TonsillectomEase Trainer (available in the online journal https://www.dropbox.com/scl/fi/rruc7t3z41zopthbmxdlq/The-TonsillectomEase-Trainer-dropbox.mov?rlkey=hnuzmmt691ajpev0eczmrv955&st=l27mwjml&dl=0).

Results

Ready to practice

TonsillectomEase trainer should be taped to a table or held on the lap. The strawberry laces simulate the texture and delicacy of the arterial vessels. As the trainee advances, thinner arteries (thinner strawberry laces) and greater depth of the artery placements can be introduced. Eventually, cotton gauze or wool soaked in HibiScrub can be placed around the artery to simulate a bleeding artery and its slippery texture.

Objective feedback

Trainees will need to apply appropriate tension without (1) cheese wiring the artery, which indicates that tension is too high; (2) losing the artery as the cotton wool simulating the tonsillar tissue is introduced; and (3) slipping off the artery as the HibiScrub is introduced.

Adjustment for progressing beginners

We suggest the following parameters for trainees: (1) beginners: 3 cm depth, large strawberry laces; (2) intermediate: 6 cm depth, thin strawberry laces; (3) advanced: cotton wool or gauze soaked in HibiScrub wrapped around the artery.

The TonsillectomEase trainer can be used to practice at work between operating theatre cases or in home environments.

Conclusion

The TonsillectomEase trainer allows trainees to practice their manual dexterity, and knot tying with tension and texture. This objective feedback potentially allows more rapid acquisition of skills training than its subjective only counterparts. It is simple, easy to make and affordable as it does not require extra equipment. As this model's objective feedback is very rudimentary , there is the potential for more sophisticated audio and visual feedback, which would increase the build complexity.

- With wider issues in healthcare (staff shortages, strikes and the coronavirus disease 2019 pandemic), opportunities to develop surgical skills are limited
- A simple, low-cost and effective tonsil knot-tying trainer was constructed with materials found in the hospital setting
- The trainer is modifiable for the progressing trainee with a degree of objective feedback

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0022215125102764.

Competing interests. None declared.

References

1 Robinson DBT, Luton O, Mellor K, James OP, Hopkins L, Powell AGMT, *et al*. Trainee perspective of the causes of stress and burnout in surgical training: a qualitative study from Wales. *BMJ Open* 2021;**11**: e045150
2 Royal College of Surgeons of England. *2023 UK Surgical Workforce Census Report. Advancing the Surgical Workforce*. London, 2023
3 Rupani N, Evans A, Iqbal M. A quantitative cross-sectional study assessing the surgical trainee perception of the operating room educational environment. *BMC Med Educ* 2022;**22**:764
4 National Prospective Tonsillectomy Audit 2005. In: www.rcseng.ac.uk [6 September 2024]
5 Al-Hussaini A, Addams-Williams J, Tomkinson A. The Cardiff cup: a model for tonsillectomy tie training. *Otolaryngology* 2011;**1**:102
6 Wasson JD, de Zoysa N, Stephens J. Tissue-box tonsillar tie trainer. *Clin Otolaryngol* 2009;**34**:175–6
7 Street I, Beech T, Jennings C. The Birmingham trainer: a simulator for ligating the lower tonsillar pole. *Clin Otolaryngol* 2006;**31**:79
8 Ross SK, Jaiswal V, Jones NS. Nottingham tonsillectomy haemostasis simulator. *Clin Otolaryngol* 2007;**32**:143
9 Raja MK, Haneefa MA, Chidambaram A. Yorick's skull model for tonsillectomy tie training. *Clin Otolaryngol* 2008;**33**:187–8
10 Douglas JA, Senior AJ, Scott A, Douglas J. Telford tonsillectomy tie trainer: an AirSim model modification. *Ann R Coll Surg Engl* 2014;**96**:634
11 Bhat PS, Kaliavaradan S, Muruganidhi N, Sethu PL. Model for hands-on tonsillectomy surgical training of postgraduate residents during COVID-19 pandemic. *Eur Arch Otorhinolaryngol* 2021;**278**:2631–6
12 Evans LM, Owens D. Enhancement of a low-fidelity surgical simulator. Is it possible? *J Laryngol Otol* 2021;**135**:179–81

https://doi.org/10.1017/S0022215125102764 Published online by Cambridge University Press