Pus under pressure: a new part task trainer to simulate the procedure for drainage of a small abscess under local anaesthesia

Gary Rogers, Christine Saul and Nicole Jones de Rooy

Aims: To report on the development and evaluation of a new part task trainer to simulate the procedures for drainage of a small abscess under local anaesthesia.

Background: The drainage of small cutaneous abscesses under local anaesthetic field block is a common and important procedure in primary care and emergency medical practice. Only two reports of the development of simulation methodologies for learning this clinical skill could be located in the literature. Duong and colleagues(1) reported (in an abstract only) the use of a ‘made when needed’ trainer from household materials in 2009, which appeared to utilise plastic shelf liner to simulate human skin, while Heiner reported last year on a method for simulating cutaneous abscesses utilising fresh chicken breast.(2) Both of these approaches have significant limitations. The Duong approach requires significant investment of time – especially where a large number of trainers are needed for undergraduate skills classes – and it appears likely that the fidelity of the skin simulation would be relatively low with this technique. Heiner’s model also requires significant preparer’s time and would have a very limited ‘shelf life’, even under refrigeration.

Methods: We have developed a low-cost, disposable trainer for this procedure utilising a novel elastomeric polymer that closely approximates the feel and texture of human skin. Non-perishable simulated purulent material is injected
during manufacture into a specially shaped moulding of the material, which is attached to a foam backing to allow the injection of simulated local anaesthetic as a field block.

**Results:** The trainer closely approximates both the appearance and the palpatory sensation of a cutaneous abscess. The thickness of the elastomer layer approximates that of limb skin and the transition between it and the underlying foam accurately simulates the ‘needle feel’ of penetrating the dermis to infiltrate the subcutaneum. Incision of the simulated abscess results in realistic drainage of pus under pressure and the trainer also allows for the creation of cruciate incisions or ‘unroofing’, as well as insertion of light packing.

**Discussion:** Formal trials of the trainer with final year medical students are currently underway and final results will be presented at the conference. Preliminary experience with expert practitioners indicates that the trainer accurately simulates the key elements of the procedure. Its low cost, nonperishability and disposable nature appear to overcome the limitations of existing technologies for this purpose.

**Conclusions:** This new trainer appears to provide valuable experience in the management of small abscesses for senior medical students, without risk to patients.

**References:**