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IMAGES IN PAEDIATRICS

Easily constructed and low-cost ultrasound-guided pericardiocentesis simulation model

Modelo fácilmente reproducible para simular pericardiocentesis ecoguiada

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In recent years, there is growing interest in the training of paediatricians in the fields of sonography and clinical simulation.[1] The development of simulation models for ultrasound-guided invasive procedures that are cheap, easy to use and reproducible for workshops or courses would be relevant because they could be widely available, contrary to expensive and complicated high-fidelity models.

A material like firm tofu can endure repeated puncturing for a long time, is cheap (2 euro), quick to prepare and cleaner than other materials, such as gelatine.[2]

The most recent international guidelines recommend the use of point-of-care ultrasound (POCUS) for diagnosis of pericardial effusion and to guide pericardiocentesis in infants and children (quality of evidence B, strong recommendation) on account of its widespread availability, greater rate of success, decrease in the incidence of complications and identification of the best possible insertion site.[3]

Pericardiocentesis is an infrequent and high-risk procedure, and simulation can provide a comfortable, low-stress and conducive learning environment for the training clinicians in ultrasound-guided techniques. Simulation contributes to patient safety by preventing the poor practice of carrying out a technique without the necessary skill or experience while also avoiding other ethically questionable practices, such as practicing in animals.

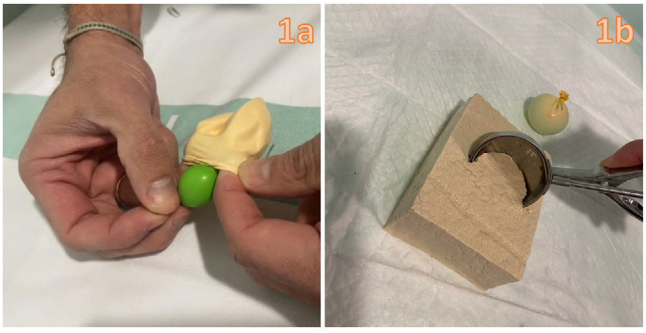

Figure 1 Construction of the ultrasound-guided pericardiocentesis model using tofu. (a) Fill a small balloon (5 cm diameter) with saline solution and insert it in a larger one (8 cm diameter), fill this second balloon with saline using a 50 mL syringe. (b) Open a package of firm tofu and make a hole with an ice-cream scoop.

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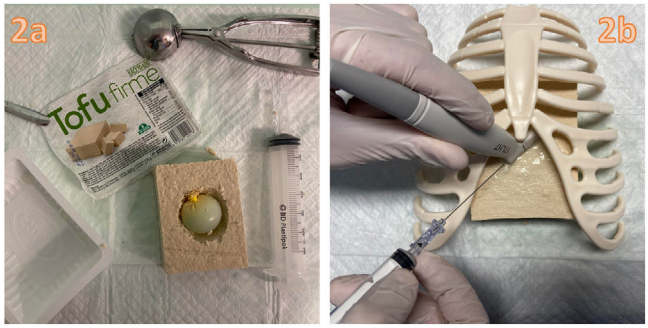

Figure 2 Construction of the ultrasound-guided pericardiocentesis model using tofu. (a) Model materials. (b) Paediatric size thoracic skeleton (20 cm long) from the *El cuerpo humano* collection, linear ultrasound probe and pericardiocentesis needle.

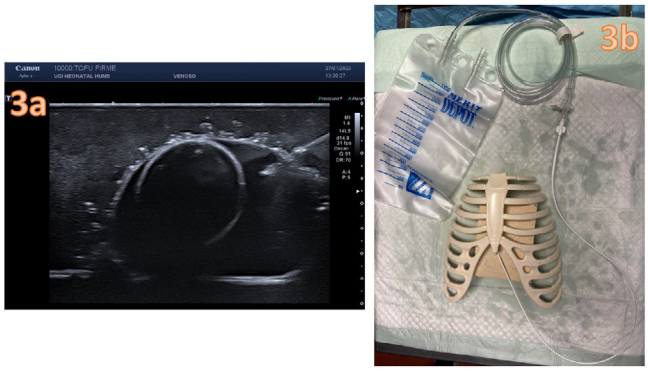

Figure 3 Construction of the ultrasound-guided pericardiocentesis model using tofu. (a) Ultrasound-guided pericardiocentesis. (b) Completely set-up pericardiocentesis kit.

We describe a model that is easy to reproduce, simple, quick, low-fidelity and inexpensive (approximately 10 euro) to provide training on this inherently complicated technique (Figs. 1–3).

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