identify the CTM with ultrasound was relatively short (38 [17.6] s).

In conclusion, when ultrasonography is readily available, ultrasound-assisted identification of the CTM in a non-palpable porcine larynx model resulted in a shorter vertical incision without affecting procedural time and complication rate. Ultrasonography-assisted might be useful when performing a FONA in patients with non-palpable neck landmarks.

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Cannula cricothyroidotomy in simulated cannot intubate-cannot oxygenate scenarios using a live anaesthetised pig model

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Despite limited evidence to guide cannot oxygenate, cannot oxygenate (CICO) management, support is growing for scalpel over cannula-based techniques.[1] The Australian and New Zealand College of Anaesthetists continues to support both techniques and encourages regular CICO training.[2] Our group conducts training where live anaesthetised pigs are used to recreate CICO scenarios. The porcine neck represents an impalpable anatomy model. We report a study of cannula cricothyroidotomy in simulated CICO scenarios using live anaesthetised pigs.

Ethics approval was gained from both institutions, and all participants gave consent for inclusion in the study. Forty two anaesthetists were given comprehensive teaching based on the Royal Perth Hospital (RPH) CICO algorithm[3]. After cadaver training, each candidate was placed into a high-fidelity airway simulation. Under the management of veterinary anaesthetists, pigs were rendered apnoeic. When Spo_2 decreased to 92%, candidates were instructed to gain immediate front-of-neck access after the RPH CICO Algorithm assuming impalpable anatomy (up to three attempts at cannula cricothyroidotomy within 1 min followed by a scalpel–finger–cannula technique).

Percutaneous cannula cricothyroidotomy had a low success rate, with ability to re-oxygenate a hypoxaemic porcine model (SpO_2>90%); highest at first attempt (first=29%). Second and third attempts had a declining ability to re-oxygenate (21% and 12%, respectively) because of critical hypoxaemia necessitating euthanasia. Percutaneous attempts (first, second, third) were started at 44, 84, and 131 s, respectively. With a successful first cannula, average time to re-oxygenation was 110 s. After three failed percutaneous cannulas, all participants performed a scalpel–finger–cannula technique, started at 166 s on average with a 44% re-oxygenate rate. Average pig weight was 16.2 kg (range 11–24 kg) with an internal tracheal diameter of 11 mm (range 9–15 mm).

By following a CICO management algorithm, cannula cricothyroidotomy and scalpel-finger-cannula technique can be used to successfully ventilate and re-oxygenate a hypoxaemic 'impalpable anatomy' pig model. Percutaneous cannula cricothyrotomy can be swift but participants may fixate on performing additional percutaneous attempts at the expense of transitioning to scalpel-finger-cannula. Live animal simulation is an invaluable training tool that may help prepare anaesthetists for this rare, life-threatening emergency.

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Cric-Guide™: a more effective scalpel for surgical cricothyroidotomy

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The scalpel–bougie–tube (SBT) technique for emergency cricothyroidotomy, recommended by the Difficult Airway Society, may fail when the bougie does not follow the scalpel blade into the airway.[1] Cric-Guide™ is a novel scalpel device, designed to replace the standard size 10 scalpel; improving the technique by guiding the bougie into the airway.

The blade is stainless steel, and U-shaped in cross section. The tip is as sharp as a scalpel and flattened to make a 9 mm crescent-shaped incision. Once inserted, the inside of the blade creates a 6 mm wide channel to guide the passage of a bougie into the trachea. The curvature of the blade ensures that the bougie tip slides within its channel preventing a false passage and guiding it into the airway.

The handle is made of a three-dimensional printed Nylon. Depth guards, on each side of the blade, limit insertion to protect posterior structures (Fig. 7). Three sizes of Cric-Guide™ in the pack each have a different depth limit, with choice depending on patient's weight.[2] The insertion technique is available to view on https://youtu.be/bW-GLZjTzVY.

A Cric-Guide™ prototype was evaluated in the obese porcine model. Compared with SBT technique, the Cric-Guide™ required fewer attempts and created fewer false passages.[3] After design modification, Cric-Guide™ was more successful at accessing the airway in obese manikins than SBT 20/28 *vs* eight/28 (p=0.003) compared with slim manikins 27/28 *vs* 25/28.[4]

After Ethics Committee approval was obtained, Crawley and Maini[5] assessed participants using the Cric-Guide™ in 12

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