extension are the cause of frequent misdiagnoses, being confused with other shoulder chronic pain syndromes.

DSN lesions have been described in the context of trauma to the brachial plexus or entrapment syndromes, in which they are a relatively common cause of shoulder dysfunction. However, may be because of difficulty in diagnosing if not specifically searched for, DSN injuries have never been described as a direct complication of an ultrasound-guided interscalene block. In this context, a lesion, likely due either to direct needle trauma or to intraneural injection, seems to be not only possible, but also likely relatively frequent (even if not reported), if DSN and LTN are not preliminary systematically identified, in order to choose the safest needle trajectory.

Hanson and Auyong demonstrated that DSN and LTN can be identified by ultrasound in the majority of patients (Fig. 1). We encourage this practice in all patients undergoing an ultrasound-guided interscalene block.

Declaration of interest
None declared.

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Navigation-assisted peripherally inserted central catheter’s insertion performed by university degree nurses: technical report of two cases

Editor—Although central catheters inserted peripherally under ultrasound guidance is a common procedure used worldwide, only recently, navigation systems received a CE mark in Europe. So far the interventional nurses and physicians, in the field of vascular access in Europe, have been using the ECG method, fluoroscopy, and/or anthropometric methods in order to locate the position of the tip in the cavo-atrial junction. This point is considered to have a certain advantage when it comes to intravascular therapy.

We present, for the first time ever in Europe, two instances where a new navigation system was used for advancing a peripherally inserted central catheter (PICC) (VasoNova, Arrow International, Reading, PA, USA).

The device uses real-time internal physiological parameters that are unaffected by the patient’s cardio-pathophysiological condition as it is designed to achieve optimal placement of the catheter in the lower third of the superior vena cava and specifically at the cavo-atrial junction.

In both cases, the basilic vein was punctured under ultrasound guidance.

With further advancement of the catheter for about 20 cm, a red signal came up as the catheter entered the internal jugular vein which was neither compressed nor observed using the ultrasound device for identification. After confirming that the PICC had advanced in the internal jugular, the catheter was pulled back and re-advanced. In total, the PICC was advanced 46 cm from the entrance point (48 cm had been estimated using anthropometric methods). As the PICC reached the optimum point, the maximal P showed up on the navigation device and the bull’s eye appeared on the screen (Fig. 1).

The procedure in the second patient (an 84-yr-old woman suffering from osteomyelitis who needed to receive i.v. antibiotics and fluid administration for more than 2 months) was performed by a trainee. The whole procedure lasted about 15 min and the advancement of the catheter lasted 3.5 min.

At first glance, this navigation system appears to have the feel of a computer game. There is no need for simultaneous ultrasonography of the internal jugular vein. In the unlikely

![Fig 1 Bull’s eye appearance, indicating that the tip of the catheter is at the cavo-atrial junction.](https://example.com/fig1.jpg)
event when the turning of the head towards the ipsilateral side as the lower jaw touches the anterior chest wall will not work effectively, the catheter can be easily pulled back and be re-inserted.

We would support the development of this technology in two sectors: to increase the production and potential cost reduction, and the development of sensors that can be re-sterilized.

**Declaration of interest**

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**Training for tracheostomy**

Editor—The 4th National Audit Project (NAP4) has highlighted several important areas for improvement in airway management. Some of its inspirational closing words read ‘Airway management is a fundamental anaesthetic responsibility and skill; anaesthetic departments should provide leadership in developing strategies to deal with difficult airways throughout the entire organisation’. One of the key findings was the significant morbidity and mortality from displaced tracheostomies in intensive care unit patients. This has quite rightly led to a focus on teaching and training to optimize management of these rare but potentially devastating emergency situations.

Aside from these critical incidents, anaesthetists routinely encounter tracheostomies in the theatre and critical care environment. In addition, adverse events not only present as acute emergencies from blocked or displaced tubes, but also more insidiously, because of inappropriate weaning strategies. It is therefore essential that anaesthetists of all grades possess a basic level of knowledge and familiarity with the day-to-day care of tracheostomies. Indeed, one would imagine that it is this core experience that would lead to increased confidence in managing emergencies when they arise.

The 2010 intermediate level training curriculum of the Royal College of Anaesthetists (RCoA) recommends that learning objectives include indications, anaesthetic principles, and management of the obstructed/misplaced tracheostomy. In addition, the 2010 RCoA Higher Intensive Care Medicine curriculum identifies percutaneous tracheostomy insertion as a core competency and lists elective changing of tracheostomy tubes as an objective. However, there are no formal learning objectives for other important aspects such as the process of weaning in tracheostomy patients and the equipment involved in daily management. We believe this to be a vital but often overlooked area of training.

We undertook a survey of our trainees investigating their perceived level of knowledge, training, and confidence with tracheostomy patients. The second part of the survey consisted of 17 true–false questions regarding tracheostomy equipment and weaning, based on the Trust Tracheostomy Policy. The results that we obtained were surprising to us and we imagine are not unique to our School of Anaesthesia.

Of the 49 responding trainees, 39 out of 49 stated that they had received no formal tracheostomy training. Fifteen out of 49 felt ‘not at all confident’ in caring for patients with tracheostomies and 21 out of 49 felt ‘not at all confident’ in making decisions regarding tracheostomy weaning. As expected, the level of confidence did vary appropriately with grade of trainee (Fig. 1). However, there were still a significant proportion of senior trainees with low confidence in these situations.

The anaesthetic registrars who were also training in intensive care medicine (ICM) (five trainees) were far more likely to have received formal training (4/5 vs 6/44). This was reflected in their increased levels confidence in both caring for tracheostomy patients and making weaning decisions (none of the dual ICM trainees felt ‘not at all confident’ in either of these situations).

There was an average overall score of 10/17 for the true/false questions regarding tracheostomy equipment and weaning. This average incremented appropriately with grade and experience. However, these answers revealed some striking deficiencies in the knowledge and understanding of the details of tracheostomy care. Alarming, 29 out of 49 trainees believed a trial of speaking valve could be considered before a trial of cuff down. Thirteen out of 49 trainees did not realize that frustrated tubes were no longer used within the Trust, and 12 out of 49 trainees did not know that humidification was an essential component of tracheostomy care.

Our findings would suggest that training in tracheostomy care remains a worrying deficiency in the current curriculum, particularly for those trainees who are not on the ICM training programme. This is apparent in the levels of confidence among the trainees. It may contribute, if left unaddressed, to further adverse incidents. Our strategy to deal with this lack of confidence and training has been to develop and run a comprehensive training day. In addition to rehearsing emergency algorithms, there was a focus on general tracheostomy care and equipment. There was input from the physiotherapists and speech therapists, to ensure that communication,