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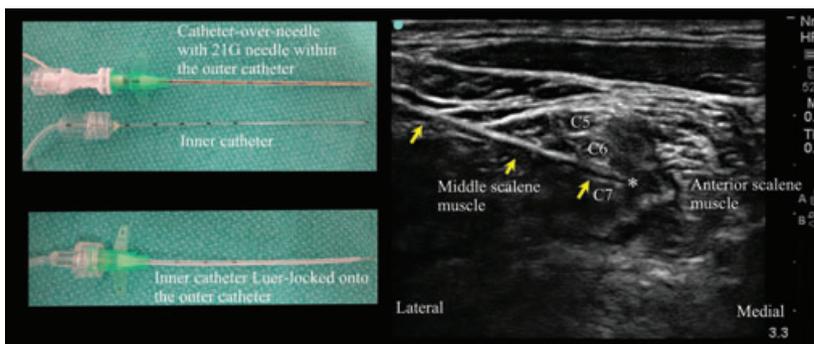
## The safety of an interscalene catheter-over-needle technique

We read with great interest the case report by Yanovski et al. [1], and the accompanying editorial by Fredrickson et al. [2], reporting the death of a patient following local anaesthetic bolus through an inter-

scalene catheter whose tip was in an intrathecal position. We previously reported a case where the interscalene catheter tip was situated near the phrenic nerve in an asthmatic patient who suffered respiratory embarrassment [3]. Together, these reports reinforce the problem of the traditional catheter-through-needle insertion technique: over-feeding of the catheter beyond the needle tip to compensate for subsequent removal of the needle. This can lead to unpredictable catheter tip placement, even under ultrasound guidance.

To overcome this problem, we introduced a refined catheter-over-needle (CON) technique [4]. We have been using a Pajunk MultiSet 21156-40E CON assembly (Pajunk, Geisingen, Germany) for almost a year and, since its introduction, we have been able to ascertain the final catheter tip position for multiple peripheral block locations, including interscalene, supraclavicular, infraclavicular, femoral and popliteal. The CON technique

is relatively simple and relies on two major components: an outer catheter sheath and a flexible, kink-resistant inner catheter (Fig. 1). For interscalene block, a 21-G needle, housed *within* the outer catheter and with its distal, electrically conductive end protruding, is used to position the distal catheter tip between C6 and C7 nerve roots, just adjacent to the scalenus anterior muscle. A 13-6 MHz high frequency linear ultrasound transducer (HFL 38, M-Turbo; SonoSite, BotHELL, WA) provides real-time ultrasound guidance. Subsequently, the needle is withdrawn and the inner catheter, whose length is similar to that of the needle, is inserted into the outer catheter. Thus, the inner catheter literally replaces the needle without the need for overfeeding and enables the inner catheter tip to be in the desired position. The outer catheter provides support, allowing the inner catheter tip to adopt a linear structure that can be observed clearly on the ultrasound screen (Fig. 1). Furthermore, the



**Figure 1** The Pajunk MultiSet 21156-40E catheter-over-needle assembly showing the 21-G needle within the outer catheter alongside the inner catheter (top left) and the inner catheter Luer-locked in place onto the outer catheter (bottom left). The ultrasound image (right) shows the visibility of the inner catheter within the outer catheter (yellow arrows). Importantly, the tip of the inner catheter (asterisk) can be observed clearly under ultrasound.

risk of leakage and dislodgement [5] are substantially lower because the needle puncture hole is smaller than the outer catheter diameter.

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## Frova introducer and double-lumen tubes

We read with interest the report of a fragment of a Frova intubating introducer (Cook Medical, Brisbane, Australia) becoming dislodged in the airway after use with a double-lumen tube (Covidien-Mallinkrodt, Mansfield, MA, USA) [1] and the reply from the manufacturer [2]. We recently reported the same complication that occurred on two occasions with the same two pieces of equipment [3]. The second incident occurred some time after the first and despite efforts to inform department staff not to use the Frova intubating introducer with double-lumen tubes.

As we described in our report, we have added a bright pink label with the instruction 'NOT FOR DOUBLE LUMEN TUBE' to the outside of the packaging of the Frova intubating introducers. Posters have been placed in the appropriate operating theatres advising of this problem and suggesting alternative ways to manage the patient with a difficult airway who requires a double-lumen tube to be placed. We have also bench-tested the other bougies available in our department.

We are concerned that, despite literature reports and product information recommendations, the Frova intubating introducer continues to be used for double-lumen tube placement by clinicians unaware of the possibility of fragments' being deposited in the airway. We suggest that the packaging should display this contraindication.

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## Short-term heart rate variability in healthy adults

A decline in heart rate variability (HRV) is associated with increased cardiovascular morbidity and mortality [1] and may predict patient outcome in the peri-operative period [2].

Heart rate variability analysis has been proposed as a diagnostic and prognostic tool for peri-operative risk stratification [1]. Heart rate variability over a 5-minute period at rest in the supine position can be used to assess cardiovascular autonomic function [3], and its application in research and clinical practice remains a topic of discussion [4, 5].