

ity associated with an interscalene block led to complete obstruction of an already partially obstructed ET, thus creating acute transient hearing loss.

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### *Thyroid cyst puncture during cannulation of the internal jugular vein*

To the Editor:

Central venous cannulation is an important aspect of anesthesia practice. It allows monitoring of central venous pressure and provides intraoperative vascular access for administering fluids, blood products and drugs. It is also used for insertion of pulmonary artery catheters, transvenous electrodes, and for observation and treatment of venous air embolism. The complication rate associated with internal jugular vein (IJV) catheterization may be as high as 10%.<sup>1</sup> There are reports of arterial puncture, hematoma, pneumothorax, malposition of catheter and injuries to the thoracic duct, nerves and trachea. We describe here a case of thyroid cyst puncture during cannulation of IJV.

A 62-yr-old woman with intractable seizures was scheduled for craniotomy and resection of skull base meningiomas. Her past medical history consisted of diabetes and hypertension. General anesthesia was induced without difficulty. The right IJV was selected for cannulation using the landmark method. There

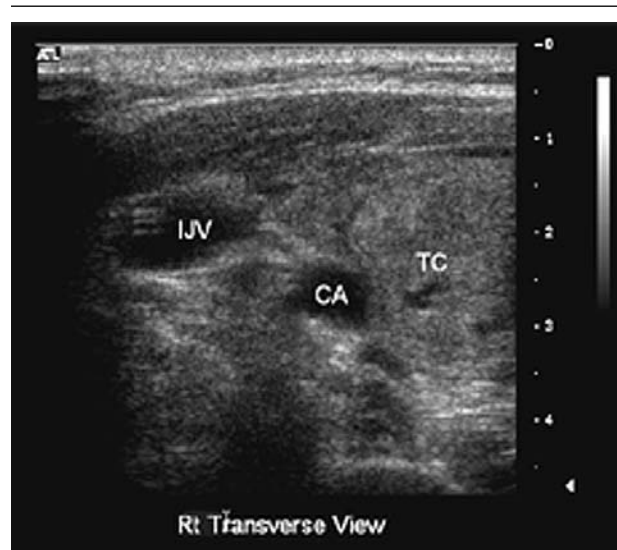


FIGURE The partially cystic thyroid nodule (TC) displaced the carotid artery (CA) posteriorly and the internal jugular vein (IJV) laterally.

were no obvious neck masses or structural abnormalities, except that the carotid pulse was not palpable.

The needle was inserted at the apex of the triangle, defined by the sternal and clavicular heads of the sternocleidomastoid muscle and the clavicle, aiming toward the ipsilateral nipple. Clear viscous fluid was aspirated during insertion (at a depth of approximately 4 cm). No air was encountered, and the needle was withdrawn. Another attempt using a more lateral insertion site encountered venous blood, and the catheter was successfully placed. The patient remained stable throughout the operation. A postoperative ultrasound revealed an enlarged thyroid gland with a partially cystic nodule measuring 3.6 × 3.1 × 1.9 cm. The thyroid nodule containing cysts overlay the right carotid artery. It displaced the carotid artery posteriorly and the IJV laterally (Figure). As a result, it was difficult to palpate the carotid pulse, and insertion of the needle according to the landmarks led to the thyroid cyst puncture.

Ultrasound guidance would have facilitated the procedure, and avoided the puncture of the thyroid cyst. The role of ultrasound for central venous line placement is currently receiving interesting attention in clinical practice and in the literature. Evidence<sup>2,3</sup> has suggested that, compared with the landmark method, ultrasound guidance improved success rate, reduced the number of needle passes and decreased complica-

tions associated with IJV cannulation. The National Institute for Clinical Excellence<sup>4</sup> recommends 2-D imaging ultrasound guidance for insertion of central venous catheters into the IJV. Based upon our experience with this case, we are in favour of pursuing this evolving technology in anesthesia practice.

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### *Antecubital approach for monitoring jugular bulb venous oxygen saturation during carotid endarterectomy*

To the Editor:

Monitoring of jugular bulb venous oxygen saturation ( $SjO_2$ ) is one method used to detect changes in cerebral oxygen saturation during carotid endarterectomy (CEA).<sup>1,2</sup> However, it usually requires direct insertion of a catheter within the operating field to obtain either continuous or intermittent monitoring of  $SjO_2$ .<sup>1–3</sup> We have recently used a novel alternative method for insertion of the catheter which avoided disturbance of the surgical procedure.

The antecubital vein was used to cannulate the jugular bulb. We chose a 5.5 Fr fiberoptic pulmonary artery catheter (Opticath®, Abbott Laboratories, North Chicago, IL, USA). First, a 6 Fr introducer sheath was placed, and then the 5.5 Fr fiberoptic catheter was advanced through the indwelling introducer sheath. A fluoroscopic image guide was essential



FIGURE Successful placement of the fiberoptic catheter at the right jugular bulb on *x-ray* anteroposterior view, which shows the catheter tip situated cranial to a line extending from the atlanto-occipital joint space and caudal to the lower margin of the orbit.<sup>4</sup> The arrow indicates the catheter tip. The catheter line can be traced distally via the clavicle on the film.

to advance the catheter with the arm positioned alongside the body and the head rotated 20 to 30° contralaterally. Usually, several attempts were required to introduce the catheter to the internal jugular vein. Changing the head and arm positions or rotating the catheter tip are additional maneuvers for successful advancement of the catheter based upon our initial experience. The catheter tip is advanced to the appropriate site for monitoring of  $SjO_2$  with the aid of fluoroscopy. The Figure shows successful placement of the fiberoptic catheter at the right jugular bulb. We attempted this method in three patients. The first trial case failed due to our limited experience, but in the next two cases, the catheter was placed successfully.