

Use of Cadaver Models in Teaching Central Line Placement

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Learner Audience: Anesthesia and Medical Student Educators

Needs Assessment: Percutaneous catheterization of the right internal jugular vein (RIJV) is a relatively safe and effective means of establishing access to a patient's central vasculature. However, because the RIJV cannot be visualized or palpated, it is a blind procedure. Serious complications include carotid artery puncture, nerve injury, hematoma, and air embolism. The purpose of our project was to explore and demonstrate the techniques and anatomical considerations involved in cannulation of the RIJV. Dissection of the RIJV is accompanied by small group discussion and hands-on practice in central line insertion.

Curriculum: Anatomic dissection of the anterior neck region was performed on an ethylene glycol fixed female cadaver. A skin incision was made in the midline from the tip of the mental symphysis to the sternal notch. Using blunt dissection technique, ultimately traversing the carotid sheath, the RIJ, carotid artery and vagus nerve were identified. After dissection was completed, the cadaver was placed with the head turned towards the left and the neck slightly extended. Standard anatomic landmarks were identified. Using the standard Seldinger technique, an 18 gauge angiocatheter was advanced until the RIJV was punctured. As the needle was advanced in a cadaver, its course through the skin and SCM into the RIJ was observed by lifting the skin flap created in the dissection. With the needle in place, a guide-wire was advanced through the needle into the RIJV. Using the access created by the dissection, manual manipulation of the wire at its insertion point into the vein aides in smooth passage toward the heart. The central venous catheter is inserted with subsequent dilation of the vein followed by passage of the catheter into the superior vena cava over the guide-wire.

Impact: This experience provides the resident and medical student with a unique opportunity to revisit previously learned anatomy. In addition, it provides a forum through which the instructor can highlight the key anatomy associated with this procedure as well as teach the procedure to novice learners without placing a patient in jeopardy.