

Sub-mastoid approach for internal jugular vein cannulation: A novel technique

Dear Editor,

The internal jugular vein (IJV) is a popular site for central venous cannulation due to easy accessibility, less learning curve with ultrasonographic guidance and fewer complications.

We present a case of a 55-year-old female patient (body mass index: 22 kg/m²) who presented to the casualty with severe breathing difficulty and type-2 respiratory failure. She was diagnosed with right-lung pneumonia with adult respiratory distress syndrome. She was started on intravenous piperacillin/tazobactam (4.5 g) and lung-protective mechanical ventilation after endotracheal intubation. Given her clinical status, she was planned for central venous access and a possible tracheostomy. The conventional site for IJV cannulation will be close to the tracheostomy site, which can pose problems for positioning and securing both (a) the tracheostomy tube and (b) the central venous catheter in the neck. Close proximity to the tracheostomy site will also increase the central venous catheter infection risk. Any unwinding of the tracheostomy tape is likely to affect the fixation of the central venous catheter.^[1] Thus, a sub-mastoid approach (high approach for IJV cannulation) was considered [Figure 1]. The neck

was turned to the left side to expose the area on the right side of the neck for cannulation. Under aseptic precautions, 2 mL of 2% lignocaine was infiltrated at the sub-mastoid area. Sonosite X-Porte ultrasound machine (Sonosite: Bothell, United States) with HFL 50 linear array transducer (15-6 MHz) was used, and IJV was identified below the mastoid process (below the sternocleidomastoid muscle and above and lateral to the carotid artery). The needle was inserted at 75–85° in an out-of-plane approach. The vein was punctured at 1.5 cm from the skin's surface, passing through the sternocleidomastoid muscle. Seldinger's technique was used, and the catheter was satisfactorily introduced into the vein.

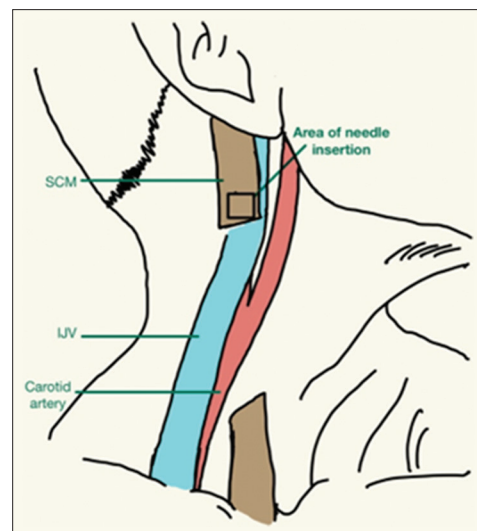


Figure 1: Site of needle insertion for internal jugular venous cannulation. SCM – Cut sternocleidomastoid muscle; IJV – Internal jugular vein

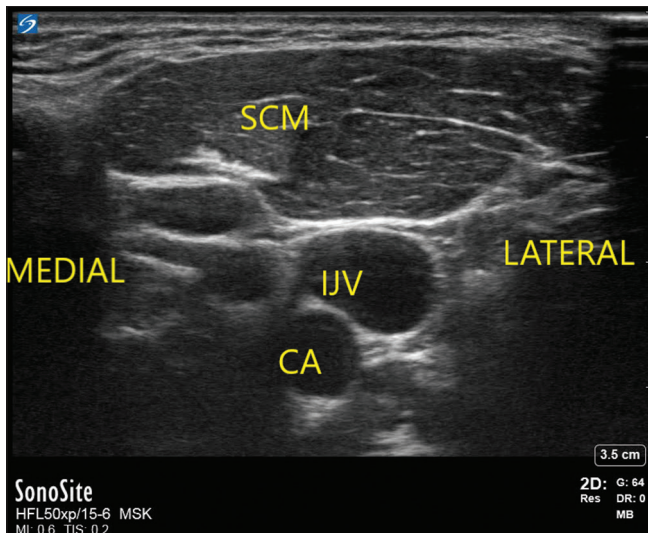


Figure 2: Ultrasonography of the sub-mastoid approach. SCM – Sternocleidomastoid; IJV – Internal jugular vein; CA – Carotid artery

The sub-mastoid approach ensured that it was less likely to interfere with the elective tracheostomy [Figure 2]. As in this approach, the catheter passes through the sternocleidomastoid muscle, which is well-anchored and stable. At this level, the carotid artery is medial and below the vein; thus, the chances of arterial punctures are minimal. There are few rare reports of high approaches; however, they were slightly different from our technique.^[2,3] This is likely to invite a similar problem as IJV in tracheostomised patients.^[4] The ultrasound-guided sub-mastoid approach to IJV cannulation is thus feasible in tracheostomised patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate consent forms. In the form, the patient's attendants consented to the images and other clinical information to be reported in the journal. They understand that their names and initials will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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Conflicts of interest

One of the authors is in the editorial board and the same author has no interference in the decision of the article.

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