

## Trouble Shooting a Small Sized IJV

Sir,

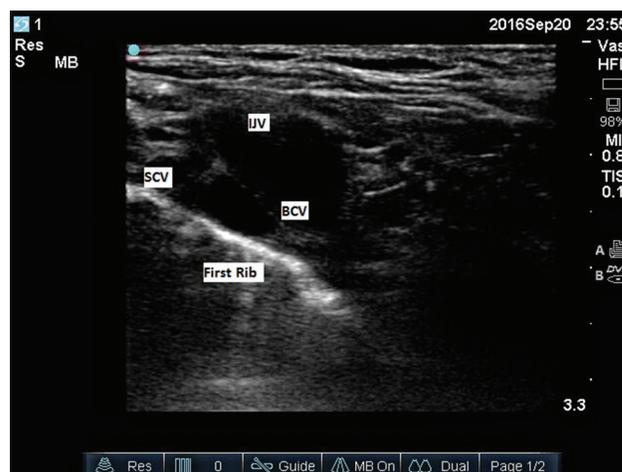
Central venous cannulation (CVC) is an important procedure in the practice of anesthesiology and emergency medicine. Central venous catheters are needed for the administration of fluids, blood products, and vasoactive drugs and for transvenous cardiac pacing and hemodynamic monitoring. The use of ultrasound facilitates the visualization of the various anatomical variations of the internal jugular vein (IJV) with regard to the size and the relation of the IJV with the carotid artery. This has improved the success rates and decreased the complications with IJV cannulations.<sup>[1]</sup>

Parmar *et al.*<sup>[2]</sup> have classified the IJV to be “small sized” if the diameter is <0.7 cm and this significantly decreases the chance of successful cannulation. It is identified in 1% of the patients on the right and 8% of the patients on the left. We describe an alternative puncture site and a novel technique of successfully cannulating the “small-sized” IJV with USG-guided cannulation at the venous confluence of Pirogoff. This technique is needed in cases in which the use of subclavian is contraindicated in view of coagulopathy or thrombocytopenia.

A 30-year-old male with severe septic shock and disseminated intravascular coagulopathy was placed supine with 15° down Trendelenburg position and 30°–45° neck rotation toward contralateral side. A portable ultrasound “SonoSite Micromaxx” machine with 7.5 MHz linear array (vascular) probe was used. The probe was placed in sagittal plane at the level of cricoid cartilage to obtain short axis view of the IJV. The cross-sectional diameter of IJV was <0.7 cm. The probe was thus moved caudally and then rotated to obtain semi-axial view of IJV merging with the subclavian vein (SCV) just above the sternoclavicular articulation [Figure 1]. This point corresponds to the “Pirogoff’s confluence” from where the brachiocephalic vein (BCV) arises. CVC was thus successfully performed after the single attempt of puncture of the confluence of the three veins; IJV, SCV, and BCV.

Semi-axial views of the IJV merging with the SCV at the supraclavicular fossa have been used for USG cannulation of the SCV using hockey stick probes.<sup>[3]</sup>

Supraclavicular cannulation of the BCV has been described in pediatric patients and is advantageous as it is the largest vein accessible for US-guided cannulations. The IJV is small in diameter and gets occluded with minimal pressure applied by the transducer, thus limiting its successful cannulation. Oulego-Erroz *et al.*<sup>[4]</sup> have reported successful cannulation of the BCV using USG-guided supraclavicular technique in six patients with an average weight of 2.1 kg and mean age of 1.9 months. Breschan *et al.*<sup>[5]</sup> have reported successful



**Figure 1:** USG visualization of BCV. SCV: Subclavian vein; IJV: Internal jugular vein, BCV: Brachiocephalic vein

placement of central venous catheters in the BCV in 98.9% of the 183 infants reviewed in their retrospective analysis.

To the best of our knowledge, USG-guided BCV cannulation has not been reported in adult patients. The above-mentioned novel technique can be utilized in situations where we encounter technical difficulties in cannulating the IJV; small diameter, aberrant anatomy, thrombus, etc., USG SCV cannulation is technically more challenging because of the poor acoustic window, anatomical location of the vein, and relative contraindication in patients with coagulopathy. Large randomized trials are required to confirm feasibility and success rate of USG BCV cannulations in adults with small IJV.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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