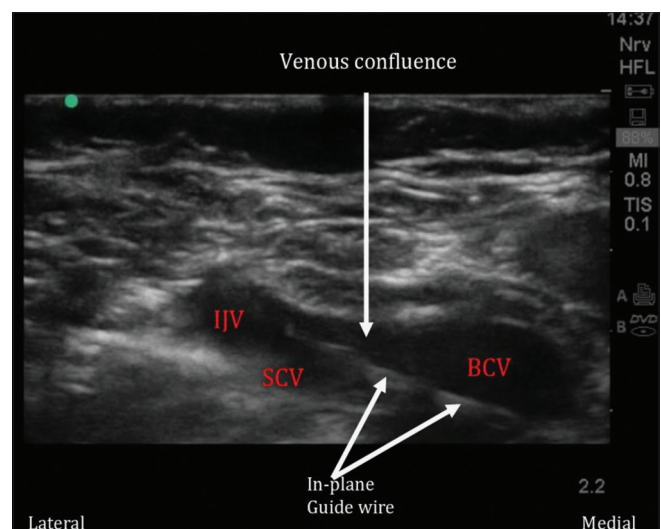


## Difficult central venous cannulation in Cushing's syndrome: Ultrasound-guided brachiocephalic vein cannulation to the rescue

Sir,

Central venous cannulation is always challenging in paediatric patients. The brachiocephalic vein (BCV) is a large vein that which may be accessed for percutaneous cannulation, and it is easier to visualise with ultrasonography (USG) in small children due to its superficial location. USG-guided in-plane BCV cannulation has the advantage of visualisation of the entire path of the needle and guide wire<sup>[1]</sup> and lowers the risk of accidental pneumothorax due to distant location of BCV from the pleural dome as compared to the subclavian vein (SCV).

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**Figure 1:** Sonoanatomy of brachiocephalic vein (BCV) cannulation in Cushing's syndrome

There are no standard algorithms for difficult central venous cannulation in children. However, cannulation of the internal jugular vein (IJV) with real-time US guidance is now standard practice in the paediatric age group. Here,

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we report a paediatric case with difficult central venous access. A 9-month child having Cushing's syndrome with facial moaning, buffalo hump, and proximal subcutaneous fat was posted for magnetic resonance imaging. Peripheral cannulation was attempted but was unsuccessful even with the aid of the vein viewer. We planned for IJV cannulation, which was unsuccessful due to subcutaneous fat and short neck. Finally, we planned for BCV cannulation for which we placed the linear USG probe (M-Turbo, Fujifilm Sonosite, Inc, Bothell, WA, USA) in the left supraclavicular fossa parallel to the medial end of the clavicle. The probe was tilted caudally to obtain the in-plane view of BCV and the venous confluence of three vessels, IJV, SCV, and BCV [Figure 1]. Doppler was used to differentiate subclavian and other arteries from the vein. Under all aseptic precautions, BCV was punctured using a puncture needle. The needle was inserted in-plane to probe from lateral to medial direction. We successfully cannulated central venous catheter inside the left brachiocephalic vein in a single attempt.

The BCV cannulation is useful in patients having small-diameter IJV, volume-deficient patients, patients with a history of multiple cannulations and in whom subclavian puncture is contraindicated.<sup>[2]</sup> Unlike the internal jugular, the size of the BCV does not vary with breathing or with external compression or movement of adjacent tissues, which facilitates the introduction of the needle. Breschan *et al.*<sup>[3]</sup> stated that the USG-guided cannulation of right BCV is technically more difficult due to the shorter course, sharp angle, and caudal turn of the vein. This may be of greater importance in smaller patients, especially as the left BCV is apparently larger than the right in preterm babies.<sup>[4]</sup> Kumar *et al.*<sup>[1]</sup> described three different sites of BCV puncture with the associated risk of pneumothorax. The incidence of contamination during BCV cannulation is lower as compared to the internal jugular, subclavian, or femoral central lines.<sup>[5]</sup> In this case, we have punctured BCV through the lateral wall of lower IJV. A difficult central venous access algorithm should be devised and BCV cannulation should be given a thought as the first option in the situation of difficult central venous access.

### Consent

Taken from the patient's parents.

### Declaration of parental consent

The authors certify that they have obtained all appropriate consent forms. In the form the Parent's has/have given his/her/their consent for his/her/their child's images and other clinical information to be reported in the journal. The parents understand that

their child's names and initials will not be published and due efforts will be made to conceal their child's identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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## REFERENCES

1. Kumar A, Sinha C, Kumar A, Kumar N, Singh JK. Ultrasound-guided left brachiocephalic vein cannulation: Where to puncture the vein? *Indian J Anaesth* 2019;63:327-8.
2. Saini V, Sardana DK, Samra T, Sethi S. Trouble shooting a small sized IJV. *Indian J Crit Care Med* 2017;21:335-6.
3. Breschan C, Platzer M, Jost R, Stettner H, Beyer AS, Feigl G, *et al.* Consecutive, prospective case series of a new method for ultrasound-guided supraclavicular approach to the brachiocephalic vein in children. *Br J Anaesth* 2011;106:732-7.
4. Eifinger F, Briskn B, Roth B, Koebke J. Topographical anatomy of the central venous system in extremely low-birth weight neonates less than 1000 grams and the effect of central venous catheter placement. *Clin Anat* 2011;24:711-6.
5. Jordan JR, Moore EE, Haenel J, Burlew CC. Ultrasound-guided supraclavicular access to the innominate vein for central venous cannulation. *J Trauma Acute Care Surg* 2014;76:1328-31.

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