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## Oblique-axis view should be the preferred view for ultrasound-guided internal jugular vein cannulation in intensive care unit

Sir,

In our view oblique-axis (OAX) plane should be the standard approach for ultrasound-guided internal jugular vein (IJV) puncture in critically ill patients. It combines the benefit of both short-axis plane (SAX) and long-axis plane (LAX). Short-axis plane (SAX) is more traditional approach and is used more commonly in teaching practice. The short-axis approach (SAX) allows simultaneous visualization of both artery and vein, but can make needle tip control difficult.<sup>[1]</sup> The course of the guidewire also cannot be followed by this approach. The long-axis approach (LAX) can optimize needle visualization, but it can be challenging to perform owing to certain anatomical limitations (such as neck length). In addition, LAX only displays the vein in the ultrasound image (unless the artery lies directly underneath) and if the operator strays medially, accidental arterial cannulation can occur.<sup>[1]</sup>

In intensive care unit (ICU) we get multiple patients with history of long-term prior central line catheterization and multiple times central line catheterization. In these patients there is possibility of thrombus formation in the central vein.<sup>[2,3]</sup> We report here a case with easy puncture of IJV, but difficulty in the insertion of guidewire due to IJV thrombus. A 68-year-old male post-renal transplantation was admitted to our ICU with breathlessness. He was diagnosed with end-stage renal disease 10 years back and had undergone renal transplantation. Currently, he was showing features of graft-rejection and respiratory infection. His deranged investigations were serum urea –104 mg/dl, serum creatinine –3.5 mg/dl, and total leucocyte count –18,000. Patients respiratory rate was 23/min and arterial blood gas pH 7.55,  $paO_2$  – 58,  $pCO_2$  – 22,  $HCO_3$  – 21. He was put on noninvasive bilevel positive airway pressure ventilation (inspiratory positive airway pressure: 15, expiratory positive airway pressure: 7). His urine output

was also on lower side, so it was planned to give fluids and antibiotics from central venous line. Nephrologist suggested that dialysis may be required in the patient, so we planned to insert a hemodialysis catheter in right IJV. We routinely use ultrasound for the procedure in our ICU. After adequate aseptic and analgesic preparation, we localized right IJV by ultrasound in SAX view and immediately punctured the vein, but guidewire could not be negotiated beyond 7 cm. We rotated the probe for long-axis view but due to short neck and less space it was difficult to visualize and do the procedure. So we kept midway, i.e., oblique-view and tried to insert the guidewire and were able to localize the point beyond which guidewire was not moving. There was a partial thrombus in IJV. We abandoned the procedure for right IJV.

In OAX view if we face resistance in guidewire insertion, after successful puncture of the vein, we can successfully negotiate the guidewire under ultrasonic view without creating a new puncture.<sup>[4]</sup> We consider that OAX plane approach of IJV cannulation is safe and effective and that it should be encouraged in clinical teaching.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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#### Conflicts of interest

There are no conflicts of interest.

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