



## INTRODUCTION

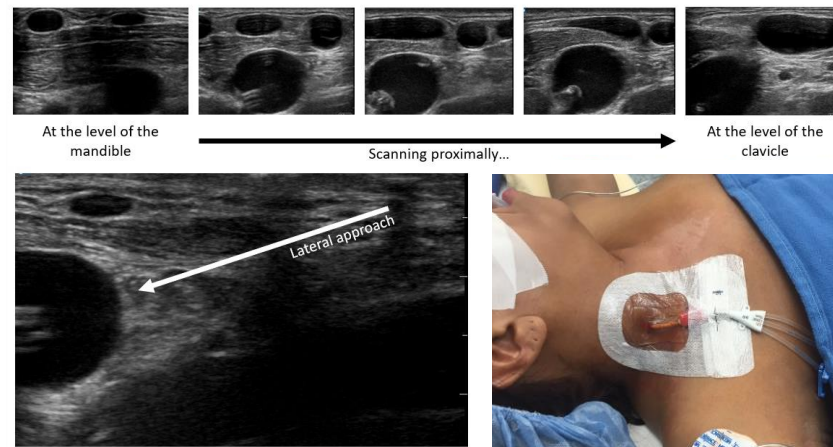
Traditionally, internal jugular central line placement was performed by anatomic landmarks as cephalad as possible to avoid pneumothorax. The advent of the ultrasound led to views of the great vessels in the short axis view with out-of-plane and in-plane technique. The in-plane technique allows for imaging of the entire length of the needle throughout its trajectory but can lead to kinking of the catheter due to sharp angles. Long axis technique can make visualizing nearby structures more difficult.

The lateral oblique approach rotates the probe between short and long axis views using an in-plane approach to allow continued visualization of the needle and great vessels.<sup>1</sup> The needle is inserted at the lateral end of the probe, close to the posterior aspect of the sternocleidomastoid, and the reduced angle of entry allows for improved catheter flow.

## CASE DESCRIPTION

A 53-year-old man with hepatitis C cirrhosis and hepatocellular carcinoma presented for an orthotopic liver transplant. Ultrasound scan of the right neck demonstrated several large external jugular vessels traversing superficially across the course of the internal jugular vein while scanning cephalad to caudad. A very narrow window for out-of-plane short-axis technique was seen. The lateral oblique approach was used to access the vein and successfully place the central line catheter.

## LATERAL OBLIQUE APPROACH



**Figure 1.** (Top) Axial images shown from mandible down to clavicle, with visualization of the superficial external jugular vessels. (Bottom Left) Imaging of the lateral oblique approach. (Bottom Right) Dressings maintain adherence without the gravity of the central line tubing pulling downward.

## DISCUSSION

Multiple studies have shown a higher first-pass success rate with short axis compared to long axis attempts.<sup>2,3</sup> Although the long axis view of the internal jugular vein visualizes the needle throughout, it is more difficult and can lose sight of nearby structures such as the carotid artery. Additionally, patient anatomy can make probe positioning in the neck challenging.<sup>2</sup>

The lateral oblique approach is comparable to other approaches in mean number of attempts and time for attempt.<sup>4</sup> Advantages include continuous needle visualization, increasing the margin of safety against pneumothorax, and avoiding a direct pass when other vessels run superficial to the internal jugular vein, as seen in our case. In addition, this approach allows for more comfortable patient neck movement since it is closer to the clavicle. Central line tubing can be manipulated laterally, and dressings maintain adherence without the gravity of the central line tubing pulling downward.

A disadvantage to the lateral oblique approach would be the danger of piercing the internal carotid artery if the needle tip is not visualized in-plane continuously. A medial oblique approach avoids this risk, but leads to patient discomfort, with central line tubing obstructing the patient's medial neck. The lateral oblique approach should be considered for patient comfort, dressing adherence, and in patients with challenging anatomy.

## REFERENCES

1. Butts C. The Speed of Sound: Avoid Errors Using Oblique Approach for Central Line Placement. *Emergency Medicine News*. 2015; 37(9): 13.
2. Chittoodan S, Breen D, O'Donnell BD, Iohom G. Long versus Short Axis ultrasound guided approach for internal jugular vein cannulation: a prospective randomised controlled trial. *Medical Ultrasonography*. 2011, 13(1): 21-25.
3. Schummer W, Schummer C, Tuppatsch H, Fuchs F, Bloos F, Hüttemann E. Ultrasound-guided central venous cannulation: is there a difference between Doppler and B-mode ultrasound? *J Clin Anesth* 2006; 18: 167-172.
4. Balaban O, Aydin T, Musmul A. Lateral oblique approach for internal jugular vein catheterization: Randomized comparison of oblique and short-axis view of ultrasound-guided technique. *North Clin Istanbul*. 2020; 7(1): 11–17.