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Posterior Approach and Needle enhancement technique for Central venous catheter insertion

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Case Study: To ensure patient safety and catheter function, the clinician recommends ultrasound-guided puncture for central venous catheters. When we perform vessel access with an anterior approach, there is a risk of unexpected intramuscular bleeding or catheter kinking because of the location of the internal jugular vein under the clavicular head of the Sternocleidomastoid muscle. We present a case in which a posterior approach puncture with an in-plane view minimizes this risk.
We performed a new tunneled dialysis catheter placement on a 50-year-old male and a new non-tunneled infusion central venous catheter on an 82-year-old male. With a needle enhancement technique and in-plane view, we could perform an internal jugular vein puncture with a well-visualization of the needle tip and shaft. Through this method, we punctured safely, avoiding muscle injury, and successfully deployed the catheter while reducing the risk of kinking and catheter dysfunction by securing a gentle curve of the catheter.
The posterior Approach could prevent bleeding or catheter insufficiency by avoiding accidental intramuscular hematoma and securing a gentle catheter angle. In addition, not only dialysis catheter but infusion catheter placement with a posterior Approach can help comfortable patient's neck movement and reduce the risk of infection. This method can be selected as a safer and less complication-free method for a beginner due to well-visualized needle progress. Furthermore, although future research is needed, it is expected that compared to subclavian puncture, it will not be inferior in catheter-related infection in patients who have undergone tracheostomy or excessive sweating compared to subclavian puncture.

Figure (A) Non-tunneled Infusion Catheter with Posterior Approach (B) Tunneled Dialysis Catheter Placement with Posterior Approach (C) Posterior Approach with the in-plane view and needle enhancement (D) Plain chest radiograph after TDC insertion