

Is visualization of dilator also important in central venous cannulation?

To the Editor,

The practice guidelines for central venous access by American Society of Anesthesiologists (ASA) task force^[1] recommends the confirmation of placement of needle, guidewire and the catheter but when the dilator injures the artery, identification gas not been described. At times, it is mandatory for the identification of dilator position also if possible.

A 3-year-old male child weighing 10 kg posted for removal of frontal epidermoid was premedicated with oral midazolam 5 mg and induced with increasing concentrations of sevoflurane. A right sided femoral venous central line was attempted using 5Fr certofix catheter using seldinger technique. After asepsis, venepuncture was achieved in a single attempt. The guidewire was passed through the needle and needle removed over the guidewire. After penetrating the skin and subcutaneous tissue when the dilator was removed bright red arterial blood was seen seeping through the freshly made opening. When pressure was applied and released, a new hematoma was appearing and increasing in size at a faster rate as expected in an arterial puncture. Compression was reapplied over the site for few minutes and the central line was inserted through the guidewire as per the ASA guidelines. The central line placement was confirmed to be in the femoral vein by pressure manometry and the hematoma disappeared after compression for 15 min. The surgical procedure was uneventful, and child was extubated and shifted to high dependency unit. Postoperatively, the perfusion of the right lower limb was reconfirmed using Doppler ultrasonography and the child was discharged on 10th day.

Central lines in children carry many complications even when placed peripherally though carried out in experienced hands. Due to nonavailability of ultrasound in the operating room confirmation of needle placement was done by manometry. Though we could pass the guidewire without any problem, the dilator could still injure the artery. The possibility of needle piercing the artery and then the vein through it was thought of, but there was no hematoma formation till the dilator was gently screwed. Furthermore, the sharpness of the dilator in case of pediatric central line should always be borne in mind during such attempts.

Femoral catheterization has a higher incidence of mechanical complications than subclavian or internal jugular vein access.^[2] Most arterial large bore perforations can be attributed to the unsafe manipulations of the dilators that should only be used

to widen the skin and subcutaneous tissue, but frequently inserted unnecessarily far.^[3,4] Other possible mechanisms of injury include kinking of guidewire resulting in misdirection of the dilator and insertion of wire outside the vessel. However, this had not happened in this case as the guidewire was still in the vein, and it was not bent when removed. Dilators provided in the pediatric central venous catheterization (CVC) sets are thin and sharp-tipped and can henceforth present as such a complication. Several reports suggest the advantages of ultrasonography for risk reduction and improved cannulation success for all access sites in adults and children in different settings. However, a recent survey of the Society of Cardiovascular Anesthesiologists members revealed that 67% never or almost never used ultrasound when performing CVC, with only 15% always or almost always using ultrasound. The dilator position if doubtful can be checked using ultrasound or by a pressure manometry.

As per the ASA guidelines in the pediatric population the confirmation of venous placement is checked for needle, guidewire, and catheter. Using ultrasound for position of dilator is also important in pediatric cannulation as there can be trauma with dilator also. Ultimately, the physician should be cognizant of the many complications associated with CVCs, recognizing that prevention of even most unusual complication becomes a worthwhile initiative.

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