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Letter to the Editor

Retrieval of self-knotted and unraveled guide wire in the femoral artery: Focus on point-of-care ultrasound (POCUS)

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Sir

Invasive blood pressure monitoring plays an important role in recording beat-to-beat variability of blood pressure.[1] It is generally a low risk technique, but sometimes, serious complications may develop during or following after arterial cannulation.[2,3,4] In this correspondence, the authors would like to report a rare complication, in which during femoral artery cannulation, there was self-knot formation and uncoiling of the guidewire which was managed with the help of point-of-care ultrasound (POCUS).

After obtaining consent, we would like to report, an American society of anaestheisa physical class (ASA)-1, 19-year-old female patient, posted for craniotomy and excision of posterior fossa epidermoid. On the day of surgery, she was shifted to operation room and general anesthesia was induced. After induction, arterial cannulation was attempted in the left radial artery, but failed, and then arterial cannulation was subsequently attempted in the right radial, bilateral dorsalis pedis and posterior tibial artery. However, all the attempts went in vain. Thus, decision was made to cannulate the right femoral artery as the last option with the help of a 5F triple lumen central venous catheter (Certofix Trio Paed S 513, B. Braun, Germany) by the Seldinger technique. By POCUS and Rupp's rule,[5] the femoral artery was punctured in a single attempt and a guidewire (with j-tip) was threaded smoothly up to 10-cm mark; then, some resistance was felt and the guidewire could not be inserted further. Thus, a decision was made to withdraw the guidewire and needle en bloc. While removing, the guidewire was stuck; on gentle traction, the guidewire started to uncoil (Fig. 1). Anticipating injury to the artery, no further attempts were made to remove the guidewire. Immediately POCUS was performed, which revealed the guidewire was not within the lumen of the artery (Fig. 2). It seemed to be stuck at the wall of artery. Finally, a small incision was made on the puncture site by the surgeon and dissection was made until the femoral artery was reached; the guidewire was stuck to the tunica adventitia of the artery and was removed with a knot at its tip (Fig. 3). The patient was continuously monitored by pulse oximetry on the right great toe for the next 24 hour, and further course was uneventful.

In this patient, the femoral artery was selected as the last choice after multiple failure attempts at other sites. A 5F catheter was selected because of its smaller diameter and lesser chance to injure the arterial wall. Although intravascular knot formation and uncoiling of the guidewire during central venous cannulation has been reported multiple times, literature regarding knot formation while cannulating the artery in one attempt is scarce.[6] This complication has been frequently reported during subclavian vein cannulation, most likely due to the curved path of the vein over the first rib.[7] The possible cause of this complication could be the malleability of the pediatric guidewire and forced threading of the guidewire through the introducer needle despite its significant resistance.[7] As arterial cannulation requires more precision and skill, it should ideally be performed under ultrasonography guidance avoiding repeated attempts to insert the guidewire which can injure the artery leading to increased risk of vascular complications. Timely identification and intervention plays a significant role in prevention and management of these complications. This correspondence signifies the use of POCUS, starting from identification and successful puncture of femoral artery to the identification of the knot of

Fig. 1. Uncoiled guidewire.

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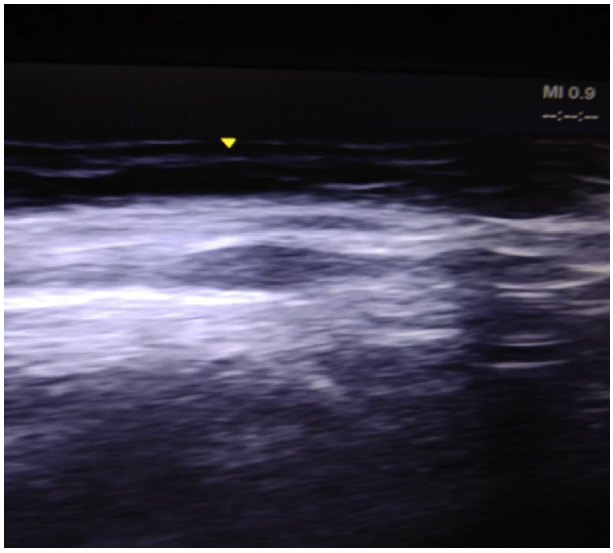

Fig. 2. USG image showing the absence of the guidewire within the lumen of the femoral artery. USG, ultrasonogram.

Fig. 3. Guidewire with the knot.

the guidewire within the arterial wall and its uneventful removal. Because of POCUS, unnecessary shifting of an intubated patient to interventional radiology suite for retrieval of the guidewire was avoided.

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Authors' contribution

A.K.B has helped in acquisition of data and writing the manuscript P.G. has helped in conception and design analysis, interpretation of data, editing of manuscript, and final approval of the manuscript R.A has helped in acquisition of data J.C. has helped in writing and editing of the manuscript

Declaration of competing interest

There is no conflict of interest.

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