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Please cite this article as https://doi.org/10.4097/kja.20513
To,
The Editor

**Sub:** Submission of Manuscript for publication

Dear Sir,

We intend to publish an article entitled “Point-of-care ultrasonography as rescue for popliteal artery cannulation in prone position” in your esteemed journal as Letter. All authors have read and approved the submission of the manuscript to ICHE. On behalf of all the contributors I will act and guarantor and will correspond with the journal from this point onward.

- Prior publication: NIL
- Support: NIL
- Conflict of interest: NIL
- Permission: NIL

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Thanking you,
Yours’ sincerely,
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Type of article: letter to the editor

Title of the article: Point-of-care ultrasonography as rescue for popliteal artery cannulation in prone position.

Running head (short title): POCUS as rescue for popliteal artery cannulation.
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Total number of Figures: one
Word count for the Text: 525
Source(s) of support: Nil
Conflicting Interest : Nil.
Point-of-care ultrasonography as rescue for popliteal artery cannulation in prone position

- Letter to the Editor -

The prone position is among the many positions used during various neurosurgical and orthopedic surgeries (posterior fossa tumors, spine). Complications associated with prone positioning include stroke, upper airway obstruction, endotracheal tube dislodgement, brachial plexus injury, and so on. Displacement of the arterial cannula during positioning or in the middle of an ongoing major surgery is a nightmare to the anesthesiologist, due to the difficulties of accessing commonly used arteries for arterial cannulation. It becomes even more challenging when extremities were not available for cannulation in polytrauma patients. The popliteal artery can be a very useful option in this situation. Point of care ultrasonography (POCUS) has made vascular structures easily accessible for diagnostic and therapeutic purposes which were previously not possible with blind technique [1,2]. It can be an invaluable tool for cannulation of popliteal artery due to its deeper location and presence of popliteal vein above it [3].

A 60-year-old female with a history of fall from a height of six meters, posted for pedicle screw fixation of L1 vertebrae fracture. She also had bilateral upper limb fractures along with right metatarsal fracture. She was a known diabetic and hypertensive with irregular medications. In view of intraoperative hemodynamic instability and difficulty in the measurement of non-invasive blood pressure, arterial cannulation (over the needle technique) was performed in left dorsalis pedis artery. During the intraoperative period, the arterial cannula was displaced which was indicated by dampening of arterial wave tracing. After repeated failed attempt to cannulate the left posterior tibial artery, we decided to cannulate the left popliteal artery. The left popliteal fossa was cleaned and draped. An ultrasound image of the popliteal artery with the vein lying above and nerve bundle
below should be obtained (Fig. 1). Color doppler was used to improve identification of the artery. The artery is just below the vein from the roof of the popliteal fossa. Hence, it cannot be punctured perpendicularly. The vein needs to be bypassed by puncturing the artery from the medial or lateral side via the Seldinger technique (Fig. 1).

The popliteal artery is accessed in the popliteal fossa, which is bound by biceps femoris, plantaris and lateral head of gastrocnemius laterally; semitendinous, semimembranosus and medial head of gastrocnemius medially. The floor is formed by knee joint and roof is formed by skin, subcutaneous, and fascia lata [2]. The popliteal artery has an average diameter of 7.4-9.5 mm [3]. The popliteal artery and vein are present in a common sheath, and the vein crosses the artery from lateral to medial as we go from above to below. Easy accessibility in the prone position, reliable anatomy, and large diameter were advantages of the cannulating popliteal artery. But, because of its deep location and adjacent placement to the popliteal vein, only ultrasound-guided placement is feasible, and the Seldinger technique is a better option than over-the-needle technique.

There is a paucity of published literature regarding popliteal artery cannulation. Villeli et al. reported the popliteal artery cannulation for Digital subtraction angiography in the prone position in three patients without any complications [4]. Bala et al. reported popliteal artery cannulation in a patient with severe ARDS in the Intensive care unit [5]. Our patient was followed up in the postoperative period after the removal of the arterial cannula with USG for the patency of the popliteal artery.
References


Figure legends

Figure 1: Ultrasound image depicting the anatomy of the popliteal artery (color doppler) and the cannulation of the popliteal artery with guidewire in situ (right).