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Commentary: *Mater artium necessitas* (necessity is the mother of invention)

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CENTRAL MESSAGE

Although a word of caution must be provided, the technique herein described is certainly attractive and somehow elegant in its simplicity.

The technique described by Abdullah and colleagues[1] deals with a challenging situation that may occur in patients undergoing extracorporeal life support (ECLS). Indeed, cannula removal or reposition may be necessary for several reasons, of which a rare one has been described by the authors in this report. Intraluminal thrombi, rupture of the cannula, inadequate size, cannula displacement (usually pulled back, particularly for venous cannulas), and other more unusual situations may also happen and require interventions.[2,3] Usually, cannula replacement may present technical and procedural shortcomings due to the need of stopping the ECLS system and support, as well as reintroducing, if the same site is chosen, the obturator and then guidewire.

The technique herein described is certainly attractive and somehow elegant in its simplicity. However, a word of caution must be provided for several reasons: the first, and simplest, is related to potential infective complications induced by puncturing the cannula, but this may be easily (hopefully) overcome. The second one accounts for the need of compressing the groin, once the guidewire is introduced, the original cannula slowly removed leaving the guidewire in place, to avoid the internal bleeding at the arterial entry site. Compressing the groin to avoid bleeding from the hole in the femoral artery may lead to a guidewire kinking, a well-known cause of subsequent inappropriate Seldinger-based cannula implantation. So, in case of the adoption of the proposed technique, the implanter should be fully aware of such a potential complication and ensure that no kinking or resistance exists soon after the original cannula removal and the implantation of the new one (no resistance during the guidewire pull-and-push test). The last shortcoming relates to the time necessary to execute this maneuver and if any complications occurs during its performance. In the case described, the authors report a stable hemodynamic situation throughout the cannula replacement. If the patient is fully dependent on ECLS support and if anything happens during such a guidewire-in-cannula procedure (see the aforementioned guidewire kinking), a dangerous hemodynamic crash, with potential bleeding at the original cannulation site, may occur with difficult control. In our opinion, in these circumstances, material and instruments for a bail-out cannulation at the contralateral side must be prepared and available at the patient bed. Furthermore, the full spectrum of dilators for percutaneous cannula implantation should be

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available and, in case the guidewire presents resistance or potential kinking, the cannulation procedure should be stopped, a percutaneous dilator might be position along the guidewire into the femora artery just for a few centimeters to stop the bleeding (instead of external compression), allowing the operators to have access to the contralateral groin, avoiding the groin compression.

In summary, the technique might be useful, but a word of caution must be provided in this respect, taking into account a few aspects and safety issues. Notwithstanding, puncture of the cannula to introduce percutaneous closure device or catheters for coronary artery interventions has been also previously proposed and performed,[4] somehow confirming the feasibility of such a technique, applicable also in cases of venous cannula management.

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