

SCM and the clavicle, and is directed 10–20° anterior to the coronal plane to avoid injury to the artery or pleura. The vein is encountered quite superficially, typically at 0.5–1.5 cm depth, with a characteristic appearance as the needle enters the lumen [1–4]. Guide-wire is placed through the needle after puncture of central vein and then SVC clamp is released. Average time period of SVC clamping is 45 s. Then vein cannulation is done. Supraclavicular approach is routinely used for subclavian vein cannulation in my department.

### 3. Discussion

Inadvertently removal of a central vein line is rarely experienced by the cardiac operation team. Pinch-off phenomenon may also develop in patients due to placing of a retractor after sternotomy. Rarely, a new central venous line may be required for inotropic administration or rapid fluid replacement. Reinsertion of a central line in alternative anatomic localizations is much more difficult during open heart surgery. Femoral veins may not be used due to inadequate draping or increased risk of infection. Brachiocephalic vein cannulation requires distension of subclavian veins. Surgeons use reverse Trendelenburg position for brachiocephalic vein distension. Hemodynamic derangement may develop during the reverse Trendelenburg position. I have clamped SVC for brachiocephalic vein distension which facilitates vein puncture. On average, 45 s clamping period is enough for a successful brachiocephalic vein cannulation. I have not experienced any hemodynamic derangement during the SVC clamping period. I usually prefer supraclavicular approach for subclavian vein cannulation which is simple and easy during open heart surgery. In addition, left jugular vein may be also used after SVC clamping. Of course, some learning curve is necessary to obtain adequate experience. Recently, I have punctured subclavian vein by supraclavicular approach in the first attempt while the heart surgery is being carried out.

### References

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### eComment: Superior caval vein clamping

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We read with interest the article by Erkan Kuralay in which a practical catheter insertion technique has been described for the situations of accidental loss of central venous catheters during cardiac surgery procedures [1]. The technique seems effective and promising. However, we believe there are certain points to be discussed about the author's method.

Central venous cannulation is an indispensable component of cardiac surgery. A multi-purpose catheter is inserted before initiation of the procedure and used during and after surgery. However, sometimes the catheter is lost due to various reasons (removal of the central venous line accidentally, pinch-off phenomenon, etc. [1]) during operation or it may not be easy to puncture a central vein. The latter is more frequent for pediatric cases. Clamping of the superior caval vein may not be a big issue in terms of cardiac hemodynamics during adult cardiac surgery as it conveys 1/3 of the whole body venous return to the heart [2]. Literature includes reports of complete resection or reconstruction of the superior caval vein with the use of clamps especially during surgeries of intrathoracic malignancies [3, 4] that usually last longer than a few minutes. Clamping of the superior caval vein may be safely tolerated by older children or adults; however, since the superior caval vein transports at least half of the whole body volume to the heart during the neonatal period, clamping of the superior caval vein for the insertion of catheters during cardiac operations of pediatric cases may not be hemodynamically easily tolerated. Moreover, such maneuver may lead to cardiac failure and inotropic agents may be required [2, 5]. It would be very helpful if the author could provide his experience with the technique in pediatric patients undergoing cardiac surgery.

The other issue that can be discussed is about the vein chosen for insertion of the catheter after clamping. Usually, only the head and neck regions of the body are left uncovered during cardiac surgery and the remaining body is covered with sterile dressings. Undressing the clavicular region may endanger the surgical field which is extremely dangerous when the mediastinum is exposed. Thus, extreme care should be taken to prevent contamination if a subclavian catheter is desired.

Once again, we congratulate the author about the proposed technique. We believe it would be more informative if the above issues are clarified.

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