

## Short Communication

# Double Needle Puncture Technique to Access Femoral Vein in Difficult Situation in the Absence of Vascular Ultrasound

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Getting vascular access is one of the most important step for doing cardiac catheterization or any kind of vascular intervention especially in very small kid or in difficult situation. There are lots of techniques described in the literature to get vascular access comfortably. Ultrasound guided vascular access is well described and standard practice [1]. We have done a study over small pediatric population whom we planned for either diagnostic cardiac catheterization, cardiac intervention or putting femoral venous central line for medical management especially in extremely preterm babies.

The inclusion criteria were:

- Only femoral venous access required for cardiac intervention like balloon atrial septostomy, balloon pulmonary valvoplasty or diagnostic purpose like right heart catheterization
- Extreme premature baby who were failed in putting central line in NICU
- Small baby less than 4 kg
- Chubby baby with increased subcutaneous fatty tissue with difficult anatomical landmark
- Syndromic child with skin laxicity

These are the situations where we did not want arterial line but inadvertent puncture of femoral artery made venous access difficult. It is easy to get arterial access than venous in the mentioned conditions. During routine method of venous puncture, when we get arterial access inadvertently, we do not remove the needle, rather pass 0.018 Terumo wire or steel wire which supplied along with groin sheath is guided in the femoral artery and aorta and the needle is kept in situ to prevent blood oozing. We take another 22 G needle and with the help of in situ needle and guide were as landmark. It helps to get the venous access successfully in the absence of vascular ultrasound.

Removing needle from the arterial puncture site leads to continuous oozing of blood and some time small internal hematoma formation. Internal hematoma might distort the local anatomy further and complicate in getting venous access more. Continuous oozing of blood at the punctured site increases the stress level of the operator and further decreases the confidence level especially in young operator. Putting a small arterial sheath is not desired especially in small babies. Taking a small 22 G venous cannula can also be guided over the wire but we have observed exchanging needle with cannula causes loss of arterial spasm and continuous oozing. In our experience keeping arterial needle with guide wire prevent loss of blood and puncture site clean. It helps by providing landmark for venous puncture in difficult anatomical landmark. It also helps to prevent using another groin.

In a series of 19 patients with mentioned conditions we had to shift to other groin only in one case and none of them had any visible groin hematoma, loss of ipsilateral dorsalis pedis pulse or required heparin infusion. Whereas out of 20 patients who had routine venous puncture, 15 babies developed groin hematoma, 5 had lost same side lower limb pulse and 2 babies required heparin infusion. (Figure 1)

The main key to successful intervention in catheterization lab



**Figure 1:** Left groin showing both puncture needle with guide wire in situ, arterial access was taken inadvertently and venous access taken after that with the help of arterial needle with steel wire through it as landmark.

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is getting percutaneous entry or vascular access. Successful vascular access increases the confidence level of the performer. Benefits of ultrasound guided vascular access over the landmark guided access have been reported by many operators [1-4] but it may not be available with most of the centre or it may not be that convenient to use in extremely small baby like 1 kg. We are describing the technique to access the femoral vein in difficult situations in resource constrain situation where ultrasound machine not available inside lab. It is rather better not to puncture blindly and take help of a landmark which may increase the success rate and protect other groin from injury (Table 1).

**Table 1:** Use of Groin.

Method	Use of Other Groin	Local Hematoma	Loss of Dorsalis Pedis	Use of Heparin
Classical (20)	18	15	5	2
DNPT (19)	1	nil	NONE	NONE

In conclusion double needle puncture technique to obtain femoral venous access is useful technique in difficult situation in the absence of vascular ultrasound facility and it helps to avoid other groin puncture and use of post procedure heparin infusion to maintain vascular patency.

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### Conflict of Interest

There are no conflicts of interest

### References

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