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**Cadaveric study of the anatomical relationship between femoral artery and vein with implications for catheter placement**

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Knowledge of the anatomical relationship between femoral artery (FA) and vein (FV) is essential to minimise complications in procedures involving catheterisation of either vessel. Inadvertent puncture of the FA while cannulating the FV for catheter ablation in the treatment of atrial fibrillation may lead to pseudoaneurysm formation with life-threatening rupture. Typically, the FV is described as entering the apex of the femoral triangle (FT) posterior to the FA, and ascending to lie medial to the FA at the inferior border of the femoral sheath. However, *in vivo* ultrasound studies and reviews of computed tomographic scans suggest that this arrangement is inconstant. This study aims to investigate the relationship of the femoral vessels in 40 cadavers. The femoral sheath was opened to expose the femoral vessels, and the origin of the profunda femoris artery (PFA) was also identified. The following measurements were taken using calipers: from the inguinal ligament (IL) to the distal point of the PFA origin; and from this point to where the FV lies posteriorly to and is entirely overlapped by the FA. Results showed that in all cases, the FV lay medial to the FA at the IL. At a mean distance of 107mm (SD=20mm) from the IL, the FV lay deep to the FA, although in 4/40 (10%) cases the vessels ran parallel to each other throughout the femoral triangle. The PFA branched laterally from the FA at a mean distance of 58mm (SD=16mm) from its origin, although in one case, it arose directly from the external iliac artery and ran parallel to the FA below the IL. In conclusion, this cadaveric study confirms the typical arrangement of the femoral vessels, with a small number of cases where the FV did not lie posteriorly to the FA at the apex of the femoral triangle. We suggest an optimal vascular access window within 40mm of the IL, both to avoid the area of overlap between FA and FV, and to minimise confusion between FA and PFA. It is recommended that ultrasound visualisation should be performed prior to attempting catheter placement into the femoral vessels.