

Abstract:

Background: The background of this study was to explore the success rate and early complications concerning the implantation of totally implantable venous access devices (TIVADs) by percutaneous venipuncture and management strategies for early complications.

Materials and methods: This was a retrospective study of 1923 patients who received TIVAD implantation by percutaneous venipuncture (mostly via the supraclavicular route). The percutaneous access sites were internal jugular vein (810 patients; right/left: 158/652) or proximal right internal jugular vein, brachiocephalic vein, and proximal subclavian vein (1113 patients). Success rates and early complications related to TIVAD placement techniques were summarized, and strategies for managing complications were also analyzed.

Results: In 627 patients, TIVAD implantation was first performed by interventional radiologists using a “blind” approach relying on anatomical landmarks, having a 91.9% success rate. In contrast, there was a 100% success rate among the remaining 1296 patients who received ultrasound-guided implantation, a difference which was statistically significant ($P < 0.05$). Ultrasound-guided implantation was also successful for the 51 patients for whom the first attempt failed using the blind technique. Further, we found that the incidence of early complications was 5.41% (104/1923) and that the occurrence of immediate complications was significantly higher in the blind technique group compared to the ultrasound-guided group (37 vs. 12; $P < 0.05$).

Conclusions: It is safe and feasible to implant TIVADs by supraclavicular venipuncture. Ultrasound guidance combined with X-ray monitoring during operation significantly improves the surgery success rate and reduces the risk of early complications. Unclear anatomical landmarks and vascular variation are the main factors affecting success using a blind (nonguided) technique.

Reference:

Bai XM, Wang J, Zhou Y, Sun XW, Cheng L, Gu XS, Yuan Q, Jing J, Zhang J, Gu LY, Jin Y. Totally implantable venous access devices: The supraclavicular percutaneous approach and early complications. *J Cancer Res Ther.* 2020;16(7):1575-1581. doi: 10.4103/jcrt.JCRT_1082_19. PMID: 33565502.