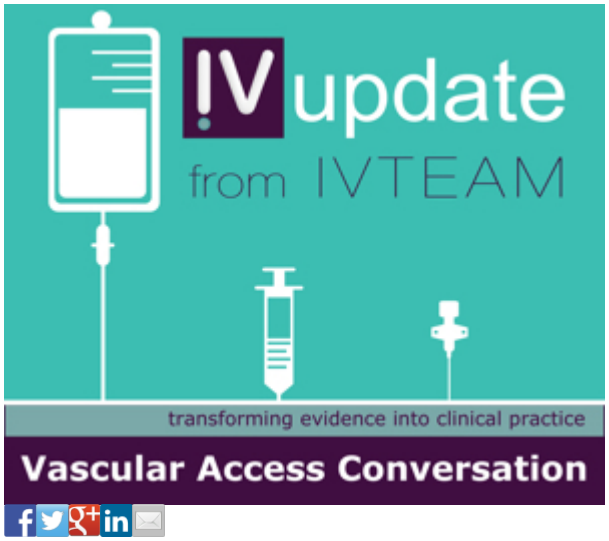

Here we introduce a novel SPC, named Very Short Peripheral Catheter(VSPC), that was designed to minimize biomechanical irritation and improve blood flow" Weiss et al (2018).

Abstract:

BACKGROUND: Short peripheral catheters (SPCs) are the most common intravenous device in today's medical practice. Short peripheral catheter thrombophlebitis (SPCT) occurs in up to 80% of hospitalized patients. symptoms appear on average 3 days after catheter insertion and can lead to extended hospitalization and increased related costs. Here we introduce a novel SPC, named Very Short Peripheral Catheter(VSPC), that was designed to minimize biomechanical irritation and improve blood flow.

OBJECTIVE: The goal was to test the performance of the novel catheter in-vivo for reduction of thrombophlebitis.

METHODS: VSPC prototypes were inserted into swine ear veins (n=12). Verification to the catheter conformation in-situ, and blood perfusion was performed using Echo-Doppler. SPCT development rate was measured using MRI 4 and 12 days after catheter insertion, and analyzed by means of edema and inflammation intensities. Blind histopathology analysis was performed on the veins post-mortem. Clinically-available SPC was used as a reference.

RESULTS: Operation of the VSPC devices did not require any special skills over what is used

to for the clinically-used SPC. Echo-Doppler imaging confirmed that in contrast to the traditional SPC, the VSPC avoided contact with the vein wall and allowed better blood perfusion. The MRI analysis revealed twice-fold inflammation and edema rates (~80%) in the veins cannulated with the commercial SPC, while only ~40% were evidenced for the novel VSPC. Similar trend was noticed in the histopathology analysis.

CONCLUSIONS: The results indicate that the novel catheter design significantly reduced SPCT rates, and was demonstrating proof of concept to our biomechanical approach.

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Reference:
Weiss, D., Yaakobovitch, H., Tal, S., Nyska, A. and Rotman, O.M. (2018) Novel Short Peripheral Catheter Design for Prevention of Thrombophlebitis. Journal of Thrombosis and Haemostasis. December 2nd. .

doi: 10.1111/jth.14350.