This study demonstrated increased catheter survival when the ultralong compared with the standard long ultrasonographically guided intravenous peripheral catheter was used” Bahl et al (2020).

Abstract:

STUDY OBJECTIVE: Ultrasonographically guided intravenous peripheral catheters have dismal dwell time, with most intravenous lines failing before completion of therapy. Catheter length in the vein is directly related to catheter longevity. We investigate the survival of an ultralong ultrasonographically guided intravenous peripheral catheter compared with a standard long one.

METHODS: We conducted a single-site, nonblinded, randomized trial of catheter survival. Adult patients presenting to the emergency department with difficult vascular access were recruited and randomized to receive either standard long, 4.78-cm, 20-gauge ultrasonographically guided intravenous peripheral catheters or ultralong, 6.35-cm, 20-gauge ultrasonographically guided intravenous peripheral catheters. The primary outcome was duration of catheter survival. The secondary outcome was the optimal length of the catheter in the vein to maximize survival. Additional intravenous-related endpoints included first-stick success, time to insertion, number of attempts, thrombosis, and infection.

RESULTS: Between October 2018 and March 2019, 257 patients were randomized, with 126 in the standard long ultrasonographically guided intravenous peripheral catheter group and 131 in the ultralong group. Kaplan-Meier estimate of catheter median survival time in the ultralong group was 136 hours (95% confidence interval 116 to 311 hours) compared with 92 hours (95% CI 71 to 120 hours) in the standard long group, for a difference of 44 hours (95% CI 2 to 218 hours). The optimal catheter length in the vein was 2.75 cm, and intravenous lines with greater than 2.75 cm inserted had a median survival of 129 hours (95% CI 102 to 202 hours) compared with 75 hours (95% CI 52 to 116 hours) for intravenous lines with less than or equal to 2.75 cm, for a difference of 54 hours (95% CI 10 to 134 hours). Insertion characteristics were similar between the groups: 74.1% versus 79.4% first-stick success (95% CI for the difference -2% to 5%), 1.4 versus 1.3 for number of attempts (95% CI for the difference -0.1 to 0.3), and 6.9 versus 5.9 minutes to completion (95% CI for the difference -1.3 to 3.4) with ultralong versus standard long, respectively. There were no cases of
infection or thrombosis.

CONCLUSION: This study demonstrated increased catheter survival when the ultralong compared with the standard long ultrasonographically guided intravenous peripheral catheter was used, whereas insertion characteristics and safety appeared similar.

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