Repair of Damaged Central Venous Catheters is Safe and Substantially Prolongs Catheter Survival in Patients on Home Parenteral Nutrition

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ABSTRACT

BACKGROUND: Repeated central venous catheter loss due to complications, including material breakage, compromises the options to obtain adequate vascular access in home parenteral nutrition (HPN) patients. It remains unclear whether repair of damaged catheters is an effective strategy to extend catheter survival, to avoid surgical replacement and maintain venous access. The aim of this study was to evaluate the efficacy and safety of catheter repair in our cohort of intestinal failure patients.

METHODS: We performed a retrospective analysis of all catheter repairs that were performed between 2006 and 2017 at our tertiary referral center for intestinal failure. Primary endpoint was the additional median catheter survival after catheter repair, as calculated with Kaplan-Meier analysis. Survival of repaired catheters was compared with undamaged catheters. Secondary outcomes included risk for catheter-related bloodstream infections (CRBSIs) after repair (30 days or whole catheter period, pre- versus post-repair) and risk factors for catheter damage, as calculated with Poisson regression analysis.

RESULTS: A total of 58 repairs in 41 CVCs of 35 HPN patients were included in the analysis. The median time to first repair was 452 days (interquartile range (IQR) 206–1134). After repair, catheter survival increased by 316 days (IQR 96–804). Incidence rates were 1.23 and 1.26 CRBSIs/1000 catheter days for the 30 days pre- and post-repair periods, respectively (relative risk, 1.03; 95%CI, 0.11–9.88; P>0.99). For the whole pre- and post-repair catheter period, incidence rates were 0.12 and 0.59 CRBSIs/1000 catheter days, respectively (relative risk, 4.73; 95%CI, 1.46–19.98; P=0.006). The overall CRBSI incidence rates in undamaged versus repaired catheters were 0.84 and 0.31 CRBSIs/1000 catheter days, respectively (relative risk, 0.37; 95%CI, 0.22–0.61; P<0.001). Both age at catheter start and femoral catheterization were independently associated with an increased risk for catheter damage.

CONCLUSION: Repair of damaged catheters is often successful, and an effective and safe strategy to prolong venous access in HPN patients. Both physicians and patients should be aware of this relative low-cost strategy to maintain venous access. The identification of two risk-factors for catheter damage may help to prevent future catheter damage.