

CLINICAL EVIDENCE

Dressing disruption is a major risk factor for catheter-related infections

Jean-François Timsit, MD, PhD et al.

Critical Care Medicine (June 2012); 40 (6): 1707-1714

Abstract

Objective: Major catheter-related infection includes catheter-related bloodstream infections and clinical sepsis without bloodstream infection resolving after catheter removal with a positive quantitative tip culture. Insertion site dressings are a major mean to reduce catheter infections by the extraluminal route. However, the importance of dressing disruptions in the occurrence of major catheter-related infection has never been studied in a large cohort of patients.

Design: A secondary analysis of a randomized multicenter trial was performed in order to determine the importance of dressing disruption on the risk for development of catheter-related bloodstream infection.

Measurements and Main Results: Among 1,419 patients (3,275 arterial or central-vein catheters) included, we identified 296 colonized catheters, 29 major catheter-related infections, and 23 catheter-related bloodstream infections. Of the 11,036 dressings changes, 7,347 (67%) were performed before the planned date because of soiling or undressing. Dressing disruption occurred more frequently in patients with higher Sequential Organ Failure Assessment scores and in patients receiving renal replacement therapies; it was less frequent in males and patients admitted for coma. Subclavian access protected from dressing disruption. Dressing cost (especially staff cost) was inversely related to the rate of disruption. The number of dressing disruptions was related to increased risk for colonization of the skin around the catheter at removal ($p < .0001$). The risk of major catheter-related infection and catheter-related bloodstream infection increased by more than three-fold after the second dressing disruption and by more than ten-fold if the final dressing was disrupted, independently of other risk factors of infection.

Conclusion: Disruption of catheter dressings was common and was an important risk factor for catheter-related infections. These data support the preferential use of the subclavian insertion site and enhanced efforts to reduce dressing disruption in postinsertion bundles of care.