Among the three anti-thrombogenic peripherally inserted central catheter technologies, the chlorhexidine-peripherally inserted central catheter had the smallest fibroblastic sleeves...” Sylvia et al (2018).

Abstract

PURPOSE: This study compared an antimicrobial and anti-thrombogenic peripherally inserted central catheter treated with a chlorhexidine-based technology, a peripherally inserted central catheter with bulk distributed fluoro-oligomers, and a poly 2-methoxyethyl acrylate-based peripherally inserted central catheter to an untreated peripherally inserted central catheter (control) in an ovine model at 14 and 30 days post-implant.

METHODS: One of four types of peripherally inserted central catheters was surgically implanted into the left jugular vein of each of 18 sheep for 14 or 30 days. Blood analysis consisted of complete blood counts, serum chemistries, and coagulation (fibrinogen, prothrombin time, and partial thromboplastin time) profiles. Sheep were sacrificed to examine the vein and thorax. Histological analysis was performed on serial catheter sections using standard microscopy on hematoxylin and eosin-stained tissues.

RESULTS: All catheters developed fibroblastic sleeves at both 14 and 30 days. The chlorhexidine-peripherally inserted central catheter showed a 64% lower mean fibroblastic sleeve weight and a 66% shorter mean fibroblastic sleeve length compared to the untreated
control at 14 days. By 30 days, compared to untreated control, the chlorhexidine-peripherally inserted central catheter showed 81% lower mean fibroblastic sleeve weight with 75% shorter mean fibroblastic sleeve length, the fluoro-oligomer-peripherally inserted central catheter showed 54% lower mean sheath weight with 40% shorter mean fibroblastic sleeve length, and the poly 2-methoxyethyl acrylate-peripherally inserted central catheter had 41% lower mean fibroblastic sleeve weight with 57% lower fibroblastic sleeve length.

CONCLUSION: Among the three anti-thrombogenic peripherally inserted central catheter technologies, the chlorhexidine-peripherally inserted central catheter had the smallest fibroblastic sleeves, followed by the fluoro-oligomer-peripherally inserted central catheter, poly 2-methoxyethyl acrylate-peripherally inserted central catheter, and control peripherally inserted central catheter.

Reference:
