

“Almost all central venous catheters are placed using the Seldinger technique. Despite the introduction of ISO 11070 in 1998, we continue to see mechanical wire failures and their associated complications.” Schummer et al (2014).

Reference:

Schummer, W., Trommer, S., Kleemann, F. and Schummer, C. (2014) Mechanical properties of Seldinger guidewires. The Journal of Vascular Access. August 29th. .

Central venous catheter Seldinger guide wire mechanical properties [http://ctt.ec/331sk+](http://ctt.ec/331sk+@ivteam)
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Abstract:

BACKGROUND: Almost all central venous catheters are placed using the Seldinger technique. Despite the introduction of ISO 11070 in 1998, we continue to see mechanical wire failures and their associated complications.

METHODS: Seven different wire types were tested regarding their tensile strength and eight different types for their flexing performance. For each wire type six wires were assessed. Tensile strength was examined using the test method described in ISO 11070, but the test did not end at 10 N. For flexing performance testing a new apparatus, closely mimicking clinical requirements, was designed. Wires were scanned digitally after testing for measurement and analysis.

RESULTS: All wire types tested, except one, consistently met ISO 11070 requirements for 10 N tensile strength. The maximum tension the wires were able to withstand ranged from 15.06 N to 257.76 N. None of the wires kinked. The monofil wires had no evidence of bending. Two core and coil wires displayed minor bending (angle 1.5°). All other wires displayed bending angles between 22.5° and 43.0°. The degree of bending was also dependent on the angle between the dilator and wire.

CONCLUSION: The mechanical properties of different types of guidewires show considerable differences, not detected with current ISO 11070 based testing. Uncovering those may allow set up of clinical trials to examine whether regular use of wires with high-end mechanical properties could reduce CVC insertion-related complication rates.



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