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Journal scan

Beckett A, Savage E, Pannell D, Acharya S, Kirkpatrick A, Tien HC. Needle decompression for tension pneumothorax in tactical combat casualty care: do catheters placed in the midaxillary line kink more often than those in the midclavicular line? *J Trauma* 2011;71(5 Suppl 1):S408–S412.

Tactical Combat Casualty Care (TCCC) is a system of prehospital trauma care designed for the combat environment. Needle decompression (ND) is a critical TCCC intervention, because previous data suggest that up to 33% of all preventable deaths on the battlefield result from tension pneumothoraces. There has recently been increased interest in performing ND at the fifth intercostal space in the midaxillary line to prevent complications associated with land marking second intercostal space in the midclavicular line site. The authors developed a model to assess whether catheters placed in the midaxillary line for decompressing tension pneumothoraces are more prone to kinking than those placed in the midclavicular line because of adducted arms during military transport. To simulate ND, authors secured segments of porcine chest walls over volunteer soldiers' chests and placed 14-gauge, 1.5-inch angi catheters through the porcine wall segments which were affixed to either the midaxillary or midclavicular location on the volunteers.

Then they assessed for occlusion and kinking, by flow of normal saline (NS) through the angi catheter in situ. The angi catheter was then transduced using standard arterial line manometry, and the opening pressures required to initiate flow through the catheters were measured. The opening pressures were then converted to mmHg. They also assessed for catheter occlusion after the physical manipulation of the patient, by simulated patient transport. The authors observed that there was a significant pressure difference required to achieve free flow through the in situ angi catheter between the fifth intercostal space mid-axillary line vs the second intercostal space midclavicular line site (13.1 ± 3.6 mmHg vs 7.9 ± 1.8 mmHg). This study at Canadian Field Hospital suggests that the 14-gauge, 1.5-inch angi catheter used for ND in the midaxillary line may partially and temporarily occlude in patients who will be transported on military stretchers. The pressure of 12.8 mmHg has been documented in animal models as the pressure at which haemodynamic instability develops. The authors concluded that this may contribute to the reaccumulation of tension pneumothoraces and ultimate patient deterioration in military transport.

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