Acute Arterial Insufficiency of the Upper Extremity after Central Venous Cannulation

David A. Breznick, M.D.†, William C. Ness, M.D.†

SINCE the introduction of Seldinger's ingenion technique of vascular cannulation in 1952, the medical literature has been replete with descriptions of multiple iatrogenic complications associated with intravascular catheters and their insertion. We present a case in which there was a complication secondary to the use of a central venous catheter.

Case Report

A 6.4-kg 10-month-old girl with a medical history significant only for craniofacial asymmetry was admitted to the New York University Medical Center for elective surgical correction of her anomaly. Because this procedure is associated with massive blood loss, it is our policy to monitor arterial and central venous pressures via invasive catheters.

After uneventful inhalation induction of general anesthesia, peripheral intravenous access was established, and her trachea was intubated. The left radial artery was cannulated easily. The surgical fellow then attempted cannulation of the left subclavian vein using the Seldinger technique and an Arrow Pediatric Jugular Puncture Kit (product no. AK-04150-6, Arrow International, Reading, Pennsylvania), which contains a 35-cm long, 0.64-mm diameter spring guide wire with J tip and a 3.8-cm 22-gauge introducer needle. Difficulty maneuvering the guide wire was encountered, and it was withdrawn through the introducer needle while both were still in the patient’s chest. The guide wire was kinked and reduced in length. The arterial pressure wave form decreased in amplitude then became flat. Physical examination of the left upper extremity revealed pallor and pulselessness, which was confirmed by oscillometric blood pressure cuff, pulse oximetry, and poor capillary refill. Normal perfusion of the right upper extremity was verified by similar methods. The patient’s breath sounds were equal, her vital signs were stable, and there was no evidence of a hematoma.

At this point, we realized that the guide wire had fractured, and the distal segment remained in vivo, resulting in arterial insufficiency of the left upper extremity. The underlying causes for this injury were hypothesized to be one of the following: external compression of the subclavian artery by either the retained guide wire or a hematoma; perforation of the subclavian artery, and raising of an ob-

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References