

Anesthesiology
 1998; 88:837
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 Lippincott-Raven Publishers

The Use of Brachial Plexus Block for Venous Catheterization in Low and Very Low Birthweight Infants

To the Editor:—The increasing survival rate of extremely preterm, very low birthweight infants with immature gastrointestinal tracts and high requirements for blood products, parenteral nutrition, and antibiotics means that venous access often is a major problem in the neonatal intensive care.¹ Percutaneous insertion of a small diameter silicon central venous catheter through a peripheral vein has been advocated as the best technique.² However, in this population of infants, cannulation of antecubital veins of the forearm or of the dorsum of the hand by a 19-gauge introducer often is difficult and therefore results in high percentage of failure. In addition, the procedure is painful, and movements during the maneuver can decrease the chance of success. Brachial plexus block, *via* the axillary route, produces analgesia, vasodilation, and motor block of the arm. We have, therefore, performed axillary blocks in 35 newborn infants (range of birth weights, 700–2450 g) before the insertion of central catheters into peripheral veins of the upper limb.

The procedure was performed in the intensive care unit with the infant remaining in his or her incubator or cot. The infant was positioned supine with the arm abducted to $\approx 90^\circ$ and with the elbow flexed. After skin disinfection, the operator identified the axillary artery by palpation in the axillary fossa with the index finger of the left hand. The artery was identified by palpating the tissues overlying the humerus at the point of junction of the pectoralis major and the coracobrachialis muscles. With the index finger placed over the artery, a 25-gauge short-bevel needle, with an extension set, was inserted with the right hand immediately above the finger at an angle of 30° to the skin and directed parallel to, and just above, the artery. The needle then was advanced slowly until it started to pulsate. If the artery was penetrated, the needle was withdrawn until blood could no longer be aspirated to deposit the local anesthetic solution close to the nerve. The oscillation of the needle hub caused by transmitted pulsation of the artery was the indication that the needle was correctly placed. After an aspiration test, 0.75–2% lidocaine, 5 mg/kg, was injected.

The central venous catheter (Silastic) was immediately introduced through a vein of the upper limb with a technique similar to that reported by Dalcourt and Bose.³ The axillary block was considered

successful in all cases, as noted by the lack of movement during the venipuncture. Failure rate of insertion was 8.6% (3 of 35).

In our previous experience where axillary block was not used, there was a relative high failure rate of insertion (27%). This was probably was a result of difficulties in finding a suitable vein to receive the large catheter introducer or in advancing the catheter beyond the end of the introducer. In addition, the procedure, without the use of the axillary block, can distress a critically ill infant and is time-consuming. Brachial plexus block results in anesthesia and vasodilation of the forearm and the hand. The vasodilation nearly always makes the small basilica and cephalica veins visible and facilitates venipuncture. In conclusion, this technique is perhaps worthy of further evaluation.

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(Accepted for publication November 4, 1997.)