

Title: CONTINUOUS BRACHIAL PLEXUS BLOCK INTRODUCING CATHETERS THROUGH A TOUHY NEEDLE IN THE AXILLA

Authors: R. Plancarte, M.D.*, C. Amescua, M.D.*, M. Marron, M.D.**,
P. San Miguel, M.D.*, and J. A. Aldrete, M.D., M.S.***

Affiliation: Department of Anesthesiology, National Institute of Cancerology*, the Mexican Institute of Social Security (IMSS) Mexico City, Mexico**, and Cook County Hospital, Chicago, Illinois 60612***

Introduction. Approach to brachial plexus anesthesia by way of the axilla usually results in certain number of unsatisfactory blocks.¹ The supraclavicular and interscalenus approaches, though effective, have been noted to result occasionally in serious complications.² A method of placing a teflon (epidural) catheter, high in the brachial plexus sheath, introduced by via axillar through a Touhy needle is described.

Methods. The study was performed in 50 patients, their ages ranging from 13 to 72 years, with ASA physical status I to II. After obtaining informed consent, the patients received 0.1 mg/kg of diazepam and 0.01 mg/kg of atropine IM 60 mins before surgery. All patients underwent elective orthopedic operations of the upper extremity. With the patients on the supine position, the arm to be operated on was abducted 90° and the elbow was also flexed 90°. The site of puncture was determined by palpating the brachial artery as high as possible in the axilla, just under the pectoralis minor tendon. A 17 g Touhy needle was then introduced and advanced slowly toward the site of palpation of the artery on a 30° angle and with the bevel of the needle upwards. The aponeurotic sheath was penetrated and the arterial pulsation was felt transmitted through the needle. The needle was then positioned parallel to the skin aimed towards the ipsilateral sternoclavicular joint and advanced slowly, while rotating on its axis gently for about two to three cms. The stylet of the needle was removed and 6 ml of lidocaine 1.5% solution was injected, to expand the sheath's compartment. A 22 g epidural catheter was then introduced through the needle from 10 to 12 cms. The needle was removed and the catheter was fixed to the skin with adhesive tape, followed by injection of 20 to 24 ml of the same anesthetic solution. In 10 cases, radiologic studies were performed after injecting 3 ml of Conray's contrast media to determine the distribution of the anesthetic injected within the sheath. Computerized axial tomographies were taken in 3 instances. In 3 patients, the catheter was left for up to 72 hours to provide post-operative pain relief. Repeated injections of the local anesthetic were given as necessary. The onset and duration of the blocks as well as the degree of sensory and motor blockade were determined following Holmen's method.³

Results. The onset of complete anesthesia averaged 25 ± 7.5 mins. Satisfactory sensory blocks were attained in 49 patients (98%) and complete motor blockade was achieved in 43 patients (86%), allowing for execution of the operative procedure

without discomfort to the patients. In the failed case, the injection of contrast media revealed that the catheter and the local anesthetic were outside of the sheath. The time of duration after injection was 53 ± 7.8 mins. Due to the prolonged duration of the operative procedure, it was necessary to administer a second dose of lidocaine of 12.5% ml of 1.5% solution (200 mg) in 42 patient (84%). Sedation with diazepam 0.05 mg/kg IV was used in 25 cases (50%), while 5 received 1.4/kg of fentanyl IV (10%). No injuries to the vascular or neural structures contained within the sheath occurred. Paresthesias were not elicited, either.

Discussion. There are several potential serious complications derived from the supraclavicular and interscalenus approaches⁴; moreover, the partial failures resultant when BPA is approached by way of the axilla justify the search for alternatives. Satisfactory upper arm and shoulder anesthesia can be best ascertained with the former since the radial, circumflex, and musculocutaneous nerves are frequently missed with the latter. The introduction of a catheter through the axilla avoids potential puncture of major cervical vessels and pleura; since its advancement of 10 to 12 cms leaves the distal tip at a level where all nerve trunks can be blocked. Repeated injections can easily be made and reposition of the catheter can be accomplished, if dressed aseptically. The advantages of this approach were more evident in prolonged surgical operations, permitting the "topping up" of insufficient doses, or to repeat a 2nd, 3rd, etc., dosages in the event of protracted operative procedures. When indicated, this technique can produce selectively sympathetic and sensory blockades of the upper extremity, while allowing for normal motion.

References.

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