
Abstract:

BACKGROUND: Infraclavicular approach of the subclavian veins is commonly used for central venous access. However, aberrant catheter tip locations are frequently quoted for this approach. It was hypothesized that with the shoulder pulled downwards, the angle between the internal jugular and subclavian veins may increase, directing subclavian catheters into the internal jugular vein. This prospective study assessed the influence of the shoulder position on proper placement of right infraclavicular subclavian catheters.

METHODS: Patients who required subclavian central venous catheterization for major neurosurgical and thoracic procedures were randomly divided into two groups: neutral (n=180) vs lowered (n=181) shoulder position. The right shoulder was placed and maintained in the neutral or lowered position during venipuncture and guidewire insertion. Postoperative chest radiographs were obtained to identify the location of catheter tips.

RESULTS: There were no differences in gender, age, body weight, and height between the two groups. There were five failures in the neutral position [5/180 (2.8%)] and eight failures in the lowered shoulder position [8/181 (4.0%)] (P=NS). The occurrence of immediate complications such as pneumothorax or arterial puncture was not different. Aberrant placement of the catheter tips was more frequent in the lowered shoulder position [2/173 (1.2%) vs 14/173 (8.1%)] (P<0.01).

CONCLUSIONS: The neutral shoulder position minimizes the number of needle passes and the incidence of catheter misplacement during the infraclavicular approach of the right subclavian vein catheterization.