

INTRODUCTION

Supraclavicular block (SCB) is commonly used for elbow surgery anesthesia, but medial elbow coverage can be inconsistent due to overlapping cutaneous dermatomes. In addition, the innervation of the medial elbow is provided by the C8-T1 roots, which are sometimes not well covered by SCB (1-4). We assessed the effectiveness of anesthesia at the medial elbow region after ultrasound-guided, inter-truncal SCB in patients undergoing upper extremity surgery with regional anesthesia.

METHODS

This prospective, observational study was approved by the Human Resources Protection Agency of the University of Pittsburgh (Study 24070135). All patients provided written, informed consent. Patients underwent SCB with 20-22 ml of bupivacaine deep to the inferior trunk and between trunks. We collected scores for pinprick and temperature at the medial and lateral hand, medial and lateral forearm, and the medial elbow (0-2 for each) as well as motor scores (0-2 for finger flexion and extension, elbow flexion and extension) to evaluate block efficacy. The neurologic assessment occurred before the block and 20-25 minutes after completion of the block. Patients then underwent surgery under regional anesthesia with propofol sedation. Our primary outcome was sensory score for sharp and temperature at the medial elbow. Secondary outcomes included the overall block score, pain score in PACU, frequency of supplemental injection by the surgeon, and frequency of conversion to general anesthesia, as well as any nerve block related complications. Descriptive statistics are utilized to report the results.

RESULTS

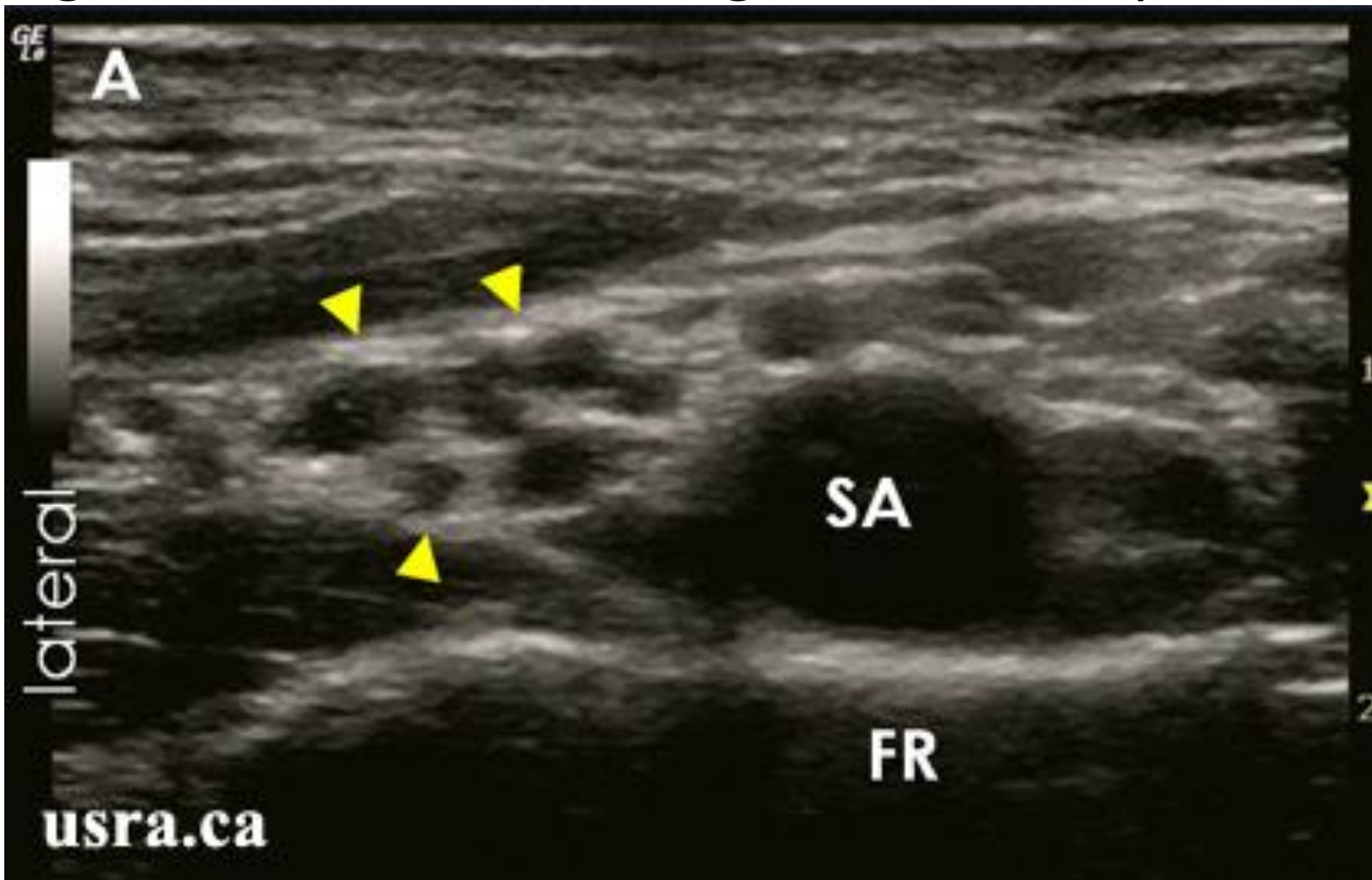
A total of 30 patients who underwent a variety of different upper extremity surgeries comprised the convenience sample for this study (Table 1). Seven patients had an abnormal sensory exam before the surgery, four of these due to ulnar nerve compression. Medial elbow sensation was successfully blocked in 20 of 30 patients (Table 2). Two of six patients (33.3%) undergoing elbow surgeries and 8 of 24 patients undergoing forearm, wrist or hand surgery had inadequate anesthesia at the medial elbow (sensory score of 2 or higher). Two patients required supplementation of local anesthesia by the surgeon at the incision site, and one of these required induction of anesthesia (Table 2).

FIGURES/IMAGES

Age	48.5 (16.2) years
BMI	28.5 (4.4)
Gender (Male:Female)	18:12
Side of Procedure (Right:Left)	16:14
Abnormal Preoperative Neurologic Exam (%)	7 (23.3 %)
Procedure: Finger	4 (13.3%)
Procedure: Hand	6 (20 %)
Procedure: Wrist	11 (36.7 %)
Procedure: Elbow	6 (20 %)
Procedure: Other	3 (10 %)

Table 1: Demographics

Figure 1: Ultrasound image of brachial plexus anatomy (5)



	Surgery at the Elbow (n = 6)	Other Upper Extremity Surgery (n = 24)
Block Success (score < or = 4)	4 (67.7%)	20 (83.3%)
Pain Before Surgery	1 (16.7%)	5 (20.8%)
Mean Elbow Score (0-4)	1.2	1
Elbow Score > or = 2	2 (33.3%)	8 (33.3%)
Required Supplement or GA	2 (33.3%)	0
Reported Pain in PACU	0	0

Table 2. Results (GA = general anesthesia; PACU = post-anesthesia care unit)

DISCUSSION/CONCLUSION

One third of patients who received inter-truncal SCB had evidence of insufficient anesthesia at the medial elbow and two who had elbow surgery required either supplementation or induction of anesthesia. This suggests that if complete medial elbow anesthesia is needed, adding a proximal arm subcutaneous block (specifically for the intercostobrachial nerve) is useful to improve efficacy for this region (4). Limitations include use of a convenience sample, relatively small number of subjects, and existence baseline sensory deficits in several patients due to ulnar compression or other sensory abnormalities (7/30).

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