Results

- 713 patients were reviewed with 56% female (n=398) and 44% male (n=315) patients.
- The average age was 51.3 years with a range from 14 to 92 years.
- 126 patients were unavailable by phone during the 48 hours postoperatively
- Out of the 713 cases, 4 adverse events were identified (0.6%, 95% CI range)
  - At the postoperative telephone call, one patient reported “shivering when the nerve block wore off”, but reported no complaints at the first postoperative visit.
  - Another patient noted paresthesia at the postoperative telephone call, with no subsequent complaints at the first postoperative visit.
  - 2 patients reported an incomplete block with inadequate pain control. One patient reported that the block wore off immediately after surgery in the PACT. Neither of these patients reported complaints at the first postoperative visit.
  - 8 patients (1.1% 95% CI range%) reported an excessively long block lasting 30 hours or more.
  - Additionally, 3 patients (0.4% 95% CI range%) noted residual finger paresthesia or numbness at the first postoperative visit within two weeks after surgery. It is unclear if these reactions are attributable to nerve block, the surgery, or their underlying pathology.

Discussion

- This study represents the first report to demonstrate no clinically significant pulmonary or neurovascular complications associated with the use of USG nerve block techniques within a single ASC.
- In addition to decreasing the rates of pneumothorax associated with peripheral nerve blocks, the utilization of ultrasound guidance offers the potential advantages of a more rapid block onset, reduced procedure time, decreased procedure related pain, improved block success rates, and the prolongation of anesthetic delivery.
- There are several limitations to this study. Block duration data relied on patient recall at the postoperative telephone call, thus the possibility exists of recall bias confounding our findings here.
- Of note, the reported rates of complications refer to clinically symptomatic cases. The possibility of asymptomatic cases cannot be excluded, nor can complications that presented outside our observed follow-up window.

Anesthesia Technique

- All nerve blocks for the upper extremity were performed via the supraclavicular approach with USG guidance.
- All blocks incorporated 0.5% ropivacaine, and over 67% of all blocks utilized 2 mg of dexamethasone. After an appropriate time out was performed the patient was sedated utilizing 2 mg midazolam and 100 mcg of fentanyl intravenously, unless there were significant contraindications.
- All blocks were done with the “in-plane” technique approaching the brachial plexus in a lateral-to-medial fashion.
- 20 cc of 0.5% ropivacaine was then infiltrated around the plexus under direct visualization in 5 cc increments using negative aspiration to rule out intravascular injection, with interval checks for intravascular needle placement.
- Communication was maintained continuously with the patient throughout the procedure, and if pain was reported, the injection was immediately halted and the needle tip position was altered.

Introduction

- The utilization of peripheral nerve blocks in orthopedic surgery has increased in popularity as the anesthetic of choice for the management of perioperative pain.
- An adequate peripheral nerve block can exhibit effects up to 24 hours postoperatively.
- The appropriate use of ultrasound guided (USG) assistance in block placement has been reported to increase overall surgical efficiency, improve patient satisfaction, reduce postoperative narcotic use, decrease the duration of facility admissions, while increasing overall cost effectiveness.
- Despite the reported overall safety associated with the use of supraclavicular nerve blocks, iatrogenic vascular punctures, transient sensory deficits, laryngeal nerve palsy, and hemidiaphragmatic paresis are major known complications.
- To date, limited data exists regarding the safety of supraclavicular blocks when utilized for common hand surgery procedures performed in a high volume Ambulatory Surgery Center (ASC), as the precise rate of neurologic and vascular complications remains unknown.
- The purpose of this retrospective study is to determine the complication rate of supraclavicular nerve blocks and confirm the safety of its use within the ASC setting.

Methods

Study Design

- With institutional review board approval, all regional anesthesia cases of outpatient upper extremity surgery, performed by three board certified orthopedic hand surgeons at a single ASC were retrospectively reviewed over a consecutive period of 2 years.
- Per our facility guidelines, hemodialysis patients, patients with cardiopulmonary defibrillator implants (ICD), pregnant patients, or patients with a history or family history of malignant hyperthermia were excluded from surgery at our ASC.
- After consultation with the patient, surgeon, anesthesiologist, and appropriate specialist, these patients were either deemed appropriate for regional blockade, or were offered a general anesthetic only.
- Two anesthesiologists who routinely staff our ASC performed 75% of the blocks. The remaining 25% were performed by a total of 4 other anesthesiologists.
- Records were analyzed for all included patients who were monitored during the immediate postoperative recovery and step-down phases at the surgical center, and contacted by phone or evaluated within two weeks at their first postoperative visit.
- Adverse outcomes related to the regional block anesthesia were identified via phone interview or post-operative surgical visit.

Anesthesia Technique

Figure 1: Probe position relative to the first rib and the pleura.

Figure 2: Supraclavicular block with in-plane approach, lateral-to-medial needle orientation.

References