

## Measuring Success With Ultrasound Guided Peripheral Nerve Blocks: A Two-Year Study Of Over 3,000 Outpatient Orthopedic Blocks In A Private Practice Setting

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The safety and efficacy of ultrasound guided peripheral nerve blocks is accepted, yet routine private practice application appears inconsistent. We sought to establish a process where measurement of success, complications, and outcomes could be reliably documented in a busy orthopedic surgery center performing open and arthroscopic shoulder procedures, open reductions of upper and lower extremity fractures, ACL repairs, and other routinely elective surgeries in adolescent to octogenarian patients. All blocks (interscalene <ISB>, axillary <AX>, femoral <FNB>, and popliteal <PFB>) were performed from Jan 1, 2008 to Dec 31, 2009, routinely utilizing live ultrasound, standardized volumes and concentrations of local anesthetics. Follow-up data was collected at discharge, by one of five anesthesiologists. Duration of single injection nerve blocks, in hours, is defined as patient's first reported need for oral analgesics. Catheter success rate was assessed through daily phone communication. Data is analyzed by a customized data management program, Microsoft Access. We report a very high success rate with single injection blocks (98 - 99.5%), as well as a high rate of catheter success (95 - 99%). Individual anesthesiologist success and complication rate is tabulated, along with data comparing analgesic duration with different local anesthetics and adjuvants. Statistical averages comparing plain 0.5 % ropivacaine to plain 0.5% bupivacaine, with either 100-mcg clonidine or 4 mg decadron, revealed predictable extension of postoperative analgesia with either clonidine or decadron, compared to local anesthetic alone (19 hr vs. 13 hr for ISB and AX, whilst 24.5 hr vs. 13 hr for PFB, and 26 hr vs. 17 hr for FNB). There were no intravascular injections requiring cessation of technique or treatment. A very low neurologic complication rate (combined single and catheter data) is reported (0.12 % for AX, 0.25% for ISB, 0.59% for FNB, and 1.11% for PFB), compared to current literature incidences. All potential neurologic complications were referred to one of two independent neurologists for evaluation and treatment. Reported duration of symptoms, until resolution, averaged 7 to 10 weeks postoperatively. Conclusion: Collection, and analysis of data, is easily accomplished with standardization of technique, and utilization of a nonproprietary, customized database. The effect of practice changes can accurately and reliably be measured.