A case of brachial plexopathy in a diabetic patient following axillary approach brachial plexus blockade

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A Case of Brachial Plexopathy in a Diabetic Patient Following Axillary Approach Brachial Plexus Blockade

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CASE DESCRIPTION
A 50 year old female, smoker with multiple comorbidities including hypertension, uncontrolled diabetes with ketoacidosis, diabetic neuropathy, coronary artery disease, and COPD presented for incision and drainage of tenosinovitis of left thumb. A preoperative awake real-time ultrasound guided brachial plexus block was performed with 25cc. of 0.5% bupivacaine. No unintentional paresthesia were elicited, and there was no pain or pressure on injection while performing the block. Postoperatively patient developed persistent left brachial plexopathy distal to the axillary nerve origin with sensory and motor deficits. Electromyography (EMG) studies confirmed left brachial plexopathy and revealed the evidence of underlying peripheral neuropathy in both upper extremities.

INTRODUCTION
Permanent neurological impairment following peripheral nerve blockade (PNB) is rare.1 We report a case of persistent sensory and motor block in a diabetic patient following axillary nerve block.

DISCUSSION
The incidence of neurological complications is 3% as per a meta-analysis involving 1.2 million PNBs and permanent neurological injury is rare.1 Multiple axillary blocks or continuous axillary catheter technique does not increase the incidence of brachial plexus neuropathy.2 Inadvertent or intentional paresthesia during PNB is likely to be associated with increased incidence of neurological dysfunction. Though prolonged exposure of local anesthetic is likely to be associated with neuropathy, continuous catheter techniques are not associated with higher risk. Mechanical injury can be minimized by using small bevel blunt needles in an awake patient. Diabetic patients are likely to have clinical or subclinical neuropathy and peripheral nerve stimulation is less likely to be effective in localizing peripheral nerves.5 In such patients postoperative spontaneous progression is likely to occur irrespective of anesthetic technique. In our diabetic patient, preexisting neuropathy, hyperglycemia, and higher concentration of local anesthetic increased the risk.

REFERENCES
1. Anesth Analg 2007;104:965-74

CONCLUSION
Our patient had preexisting underlying neuropathy as per postoperative EMG studies. A detailed neurological examination and risk and benefits of peripheral nerve blockade should be assessed prior to performing such block. The above mentioned risk factors are likely to result in postoperative neuropathy and one should exercise caution while performing the PNB.

NEUROLOGICAL INJURY RISK FACTORS 2, 3, 4
• Preexisting clinical or sub clinical neuropathy
• Traumatic nerve injury from the needle
• Intrafascicular injection
• Local anesthetic neurotoxicity from higher concentration of local anesthetic solution and prolonged exposure
• Ischemic injury from pressure from an expanding hematoma
• Epinephrine containing solutions inducing neural ischemia
• Tourniquet induced ischemia
• Perioperative patient positioning
• Surgical traction
• Hyperglycemia aggravates nerve injury from mechanical trauma or ischemic injury