Intraoperative monitoring during peripheral nerve surgery under ultrasound guided selective nerve block anesthesia.

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Introduction

Intraoperative monitoring during hand surgery using WALANT (wide awake, local anesthesia, no tourniquet) is a powerful technique which is now utilized worldwide. However, when performing peripheral nerve surgery, tumescent injection of lidocaine with epinephrine into the area surgical field will also block the objective peripheral nerve adjacent to the injected area and is not an ideal method when the peripheral nerve is preferred to be intact and un-anaesthetized.

Here, we report a novel ultrasound guided selective nerve block for ‘Intraoperative monitored peripheral nerve surgery’.

① Enucleation of Schwannoma arising from median nerve

Anesthesia method
Radial nerve, Ulnar nerve, Musculocutaneous nerve, Medial cutaneous nerve of the forearm was blocked under guide of Ultrasound Imaging System. 0.15% ropivacaine 4ml was used for each nerve block. Palmer cutaneous branch of the median nerve was blocked under direct vision. 1:100,000 epinephrine was injected into the surgical field. No tourniquet was used. MEDIAN NERVE WAS LEFT INTACT.

The intact median nerve enabled us to monitor the appearance of numbness or pain during incision of the nerve sheath until enucleation. The patient could feel the tactile sensation, when an intact fascicle was touched. This lead us to minimize the damage to the nerve fascicles and there was no neurological deficit postoperatively.

② Decompression of ulnar nerve in Cubital tunnel syndrome patients

Anesthesia method
Radial nerve, Ulnar nerve, Medial cutaneous nerve of the forearm, Medial cutaneous nerve of the arm was blocked under guide of Ultrasound Imaging System. 0.15% ropivacaine 4ml was used for each nerve block. 1:100,000 epinephrine was injected into the surgical field and no tourniquet was used. ULNAR NERVE WAS LEFT INTACT.

During operation, elbow flexion test was performed to ascertain the degree of decompression. The extent of ulnar nerve release was determined by the diminished symptom by elbow flexion test.

Conclusions
Peripheral nerve can be monitored intraoperatively with our novel ultrasound guided selective nerve block anesthesia. Our technique enables more precise and safer surgery on peripheral nerve.