What is the rational of the using nerve stimulation for US-guided nerve blocks?

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Methods for nerve location are paresthesia, nerve stimulation and ultrasound guidance. During last two decades ultrasound is widely using for the performing of peripheral nerve blocks. By the direct nerve visualization, it allows more precise nerve block with less amount of local anesthetic. It also improves nerve block success rate and quality, reduces complications, procedural pain, vascular puncture (2). Nerve stimulation combined with ultrasound does not appear to improve block success rate. On the other- hand it can be helpful in cases, when nerves are challenging to view, such as the obturator nerve (1). One of the possible complications of peripheral nerve block is direct nerve trauma by the needle. Unfortunately, ultrasound image quality is not enough to avoid needle-nerve contact. Nerve stimulation can help to minimize nerve injury during the block procedure and at the same time by the nerve stimulation we can confirm, that needle is in enough proximity to the nerve for injecting of local anesthetic. For example, if nerve stimulation with 0.5 mA currency gives visible motor answer, we can confirm that needle is in optimal distance from the nerve. If motor answer continues under stimulation with <0.5 mA currency, needle probable is intraneural and is needing correction of needle position. In some clinical cases patient anatomy can be challenging for nerve visualization by the ultrasound and nerve stimulation became mandatory to use. Also, some deep nerve blocks, such as proximal sciatic nerve block, paravertebral block due to pure and sometimes impossible nerve visibility, is preferable to perform under the dual guidance. On the other hand, nerve stimulation can be a helpful tool for teaching ultrasound-guided regional anesthesia, especially when the nerve's appearance is variable or the trainee is new to the technique.

In TSMU first university clinic practically all peripheral nerve blocks are performing under dual guidance by the using of nerve stimulator and ultrasound machine.

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