NerveGuard
Automatic system for injection pressure limitation
NerveGuard

Automatic system – blocks high injection pressure

The ultrasound-based localisation of peripheral nerves and the related visualisation in real time creates decisive advantages in regional anaesthesia. It, however, demonstrates that the incidence of permanent nerve damages is not reduced. Even in combination with nerve stimulations intraneural injections cannot be ruled out. Injections with a pressure of more than 15 psi into the endoneural space, lead demonstrably to serious lasting neurological complications.

- Automatically blocks the injection if 15 psi is exceeded
- No monitoring and no visual inspection necessary
- Suitable for single shot and continuous peripheral nerve blocks

* NerveGuard injection pressure limiter

The NerveGuard injection pressure limiter is easily connected with the syringe and the injection tube.

* PAJUNK® cannula

The user can concentrate on the puncture and the ultrasound device.

No additional “visual contact” to the NerveGuard is necessary.

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1 Choquet, Capdevila, Ultrasound-guided nerve blocks ..., 2012 May; 114(5): 929–930
2 Neil et al., The Second American Society of Regional Anesthesia ..., 2016 March–April; 41(2): 183
3 Robards et al., Intraneural injection with low-current stimulation ..., 2009 Aug; 109(2): 673–677
4 Vassiliou et al., Risk evaluation for needle-nerve contact related ..., 2016 Mar; 60(3): 400–406
5 Sites et al., Characterizing novice behavior associated with ..., 2007 Mar–Apr; 32(2): 107–115
6 Kapur et al., Neurologic and histologic outcome ..., 2007 Jan; 51(1): 101–107
7 Hadzic et al., Combination of intraneural injection ..., 2004 September–October; 29(5): 417–423
8 Hasanbegovic et al., Effects of intraneural and perineural injection ..., 2013; 3(3): 248
15 psi

Automatic injection pressure limiter
If the system pressure exceeds the predetermined limit of 15 psi the NerveGuard valve closes automatically and the supply of the anaesthetic is blocked. The blockade is noticeable.

As soon as the injection pressure is decreasing while the cannula is pulled back, the valve reopens.

Potential applications of the NerveGuard

 guarda additional assistance for localisation of the cannula tip

 guarda for avoidance of nerve damage

Cannula-fascia contact
during interscalene blocks
An opening pressure > 15 psi indicates the closure of a cannula tip by a fascia in front.9

Cannula-nerve contact
during femoral nerve blocks
An opening pressure > 15 psi indicates a direct cannula-nerve contact.10
The avoidance of the direct cannula-nerve contact minimises the risk of injuring the nerve wall.11

Damage of the blood vessels
In an intrafascicular injection the microvascular blood supply of the nerve is lasting restricted12, which may lead to a degeneration of the nerval structures.7
The limitation of the injection pressure to 15 psi prevents nerve damages.

9 Gadsen et al., High Opening Injection Pressure is Associated With Needle-Nerve ..., 2016 Jan-Feb; 41(1): 50–55
10 Gadsden et al., Opening injection pressure consistently detects needle-nerve contact ..., 2014 May; 120(5): 1246–1253
11 Steinfeldt et al., Histological consequences of needle-nerve contact following nerve stimulation ..., 2011; Article ID 591851: 0–9
12 Lundborg et al., Nerve compression injury and increased endoneurial fluid pressure ..., 1983 Dec; 46(12): 1119–1124
NerveGuard

All at a glance

NerveGuard

Injection Pressure Limiter, single, sterile

Studies

- Adams A. Injection Pressure Monitoring & Injection Technique in Peripheral Nerve Blockade, Anaesth. J. of the AAGBI 2015 Nov; 70(2)

- Choquet O., Capdevila X. Ultrasound-guided nerve blocks: the real position of the needle should be defined, Anaesth. Analg. 2012 May; 114(5): 929–930


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