PAJUNK®

REGIONAL ANAESTHESIA & PAIN MANAGEMENT

NerveGuard

Automatic Injection Pressure Limiter

CLINICAL BROCHURE

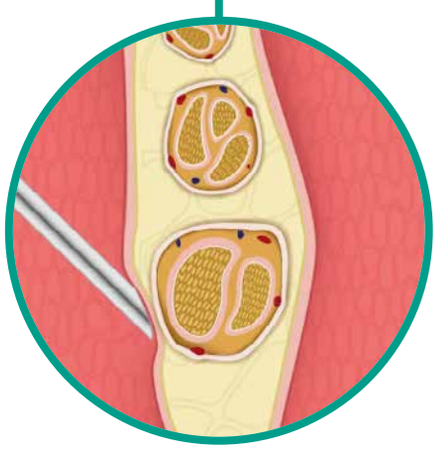
MADE IN GERMANY

Causes and Approaches

Avoiding Nerve Damage During Peripheral Nerve Blocks

Ultrasound-guided localisation of peripheral nerves and the associated real-time visualisation provide crucial benefits in Regional Anaesthesia.[1] However, it is clear that this does not reduce the incidence of permanent nerve damage.[2] Even in combination with nerve stimulation, intrafascicular injections cannot be ruled out.[1,3,4] The causes include incorrect needle position along with exceeding critical injection pressures.

Neurological complications during peripheral nerve blocks



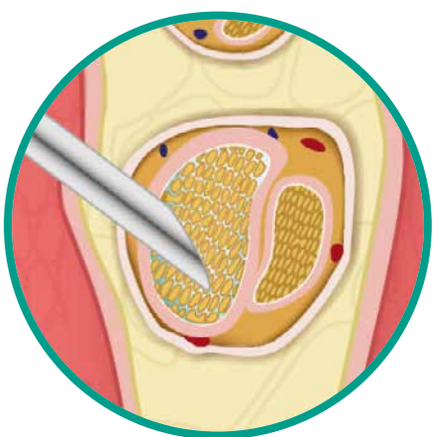
Needle-Fascia Contact

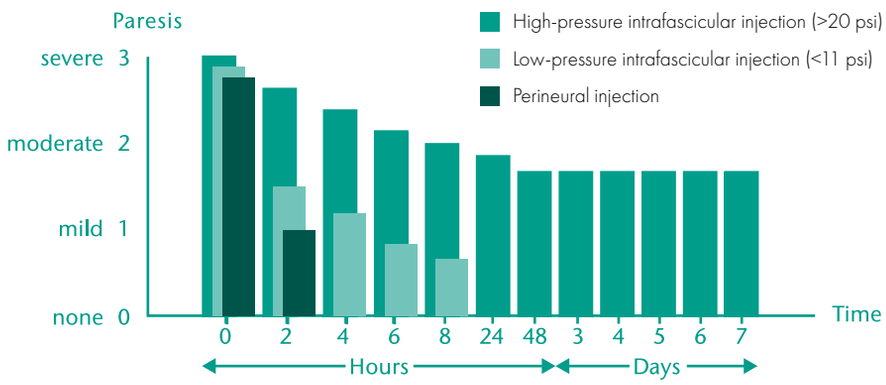
Effects: Injections administered in the wrong tissue layers can cause anesthesia failures. A high opening pressure may indicate occlusion of the tip of the needle due to the fascia in front of it.[8]

→ One approach to avoid misinjections into wrong nerve tissue structures is to limit the opening pressure.

Intrafascicular Injections

Effects: In the case of intrafascicular injection at high pressure lasting several hours, the microvascular blood supply of the nerve is severely restricted, which can lead to degeneration of nerve structures.[6,11]





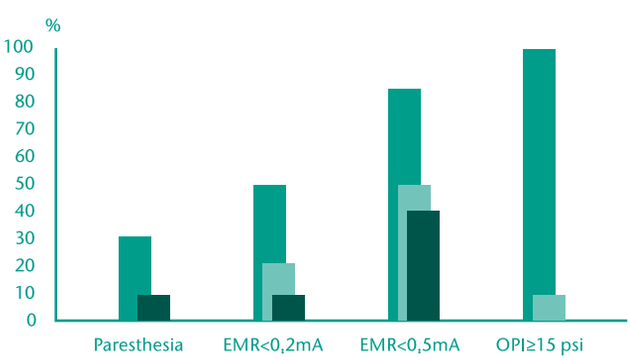
The higher the injection pressure is during injections in the intrafascicular space, the more severe and longer lasting the resulting paresis is.[5]

If the pressure during intrafascicular injections exceeds a critical threshold of 15 psi, such injections may lead to severe long-term neurological complications.[5,6,7] (Kapur 6: > 20 psi, Hadzic[6]: > 25 psi, Hasanbegovic[7]: > 15.9 psi)

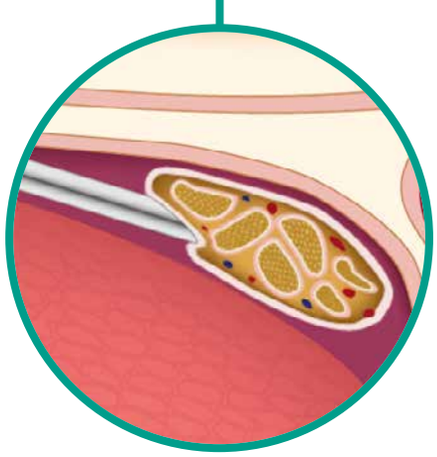
Needle-Nerve Contact

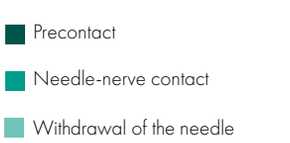
Effects: Direct needle-nerve contact can lead to damage of the neural structures with subsequent transient or permanent neurological impairment.[9,10] Localization control using ultrasound and/or nerve stimulation may not in all cases reliably indicate direct needle-nerve contact. Paresthesia in and of itself is not regularly observed.[9] Avoiding direct needle-nerve contact minimizes the risk of damage to the nerve wall.[10]

→ A reliable indicator of direct needle-nerve contact is a high opening pressure



Incidence of paresthesias, motor evoked responses as well as exceeding the opening pressure threshold in the case of three different needle positions.[9]





EMR = Electrical motor reponse
OIP = Opening injection pressure

NerveGuard

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

→ No additional „eye contact" with the NerveGuard is necessary.

HOW IT WORKS

- Automatically blocks injections when injection pressure exceeds the limit value[12, 13, 14, 15]
- No monitoring and no visual control necessary

Description	Item no.	Item no. NRFit®	PU
NerveGuard / single / sterile / For single shot applications in diameters of 22G / 21G / 22G	001151-38M	001163-38M	10
NerveGuard / single / sterile / For single shot applications in diameters of 24G / 25G	001151-38N	001163-38N	10

Studies

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