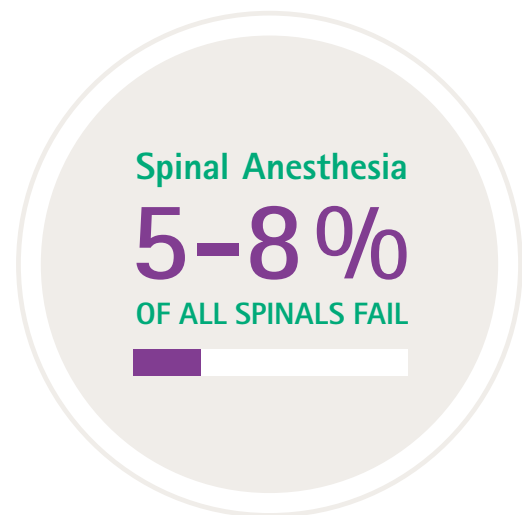


It's all about



Choose Pencan® –
because needle design
matters in Spinal Anesthesia



The role of needle design in Spinal Anesthesia success

Spinal anesthesia is a trusted technique used in millions of procedures worldwide. Yet, 5–8% of spinal anesthesia attempts fail¹, often requiring conversion to general anesthesia – leading to delays, discomfort, and an increased risk of complications such as post-dural puncture headache (PDPH).

While multiple factors influence the success of spinal anesthesia, needle design plays a critical- and often underestimated role in both precision and safety.²

Pencan®: The preferred choice for Spinal Anesthesia and lumbar puncture

Clinical guidelines and systematic reviews consistently endorse atraumatic, pencil-point needles as the superior option for spinal anesthesia and lumbar puncture.³ The atraumatic, ogival tip of Pencan® separates dural fibers rather than cutting them, reducing cerebrospinal fluid (CSF) leakage and tissue damage. Compared to traditional cutting-tip designs, Pencan® significantly lowers the risk of post-dural puncture headache, enhances patient safety, and improves overall procedural outcomes.^{4,5}

General benefits of Pencan® compared to cutting needles

- Reduced risk of post-dural puncture headache (PDPH)
- Less tissue trauma
- Lower risk of bleeding and swelling
- Enhanced procedural control: Designed for rapid CSF appearance

Atraumatic needles: Design details can make a difference

It is well established that atraumatic needle designs help reduce the risk of PDPH. However, atraumatic needles vary significantly between manufacturers in terms of tip geometry, orifice length, and eyelet positioning⁶ (Fig. 2). These differences can impact performance, safety, and user experience.⁷ Needle design should therefore be considered when selecting a needle, as differences in design features may influence performance, safety, and user experience.

Our goal: Improve precision and help to reduce the risk of failed blocks

To deliver anesthetic effectively, the spinal needle must pass through several anatomical layers: skin, subcutaneous tissue, ligaments, and the dura mater. Success is confirmed by the appearance of cerebrospinal fluid (CSF) in the needle hub. However, needle design affects how reliably and safely this confirmation occurs. Partial placement can occur when the orifice lies between the subarachnoid and epidural space. This can lead to incomplete drug delivery and therefore might increase the likelihood of failed blocks (Fig. 3). Small orifices are geometrically less likely to be placed in both spaces.

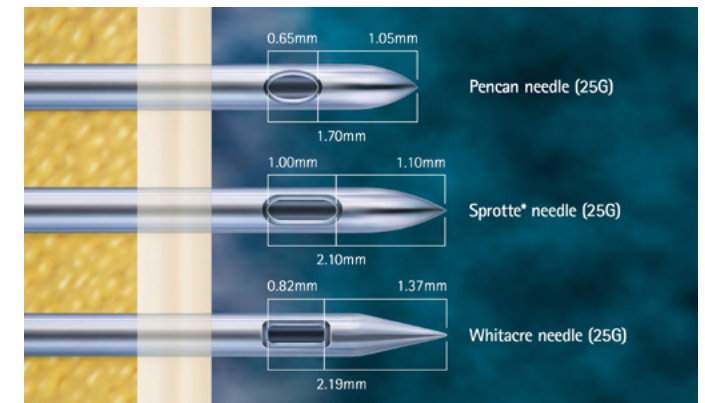


Fig. 2: Comparison of common needle tip designs
Illustrations and dimensional values are schematic and intended for comparative purposes only (based on a 25G needle). Actual dimensions may vary depending on manufacturing tolerances and measurement methods and do not represent exact product specifications. *SPROTTE® is a trademark of PAJUNK GmbH Medizintechnologie.

Advancing a needle too deep into the spinal space might increase the risk of nerve contact and the chance of paresthesia⁹ (Fig. 4). A shorter tip-to-back-of-eyelet distance can help minimize the insertion depth of the needle tip into the subarachnoid space. It can also enable faster CSF return for better control during placement.

Pencan® atraumatic needle design – combining advanced engineering with clinical insights

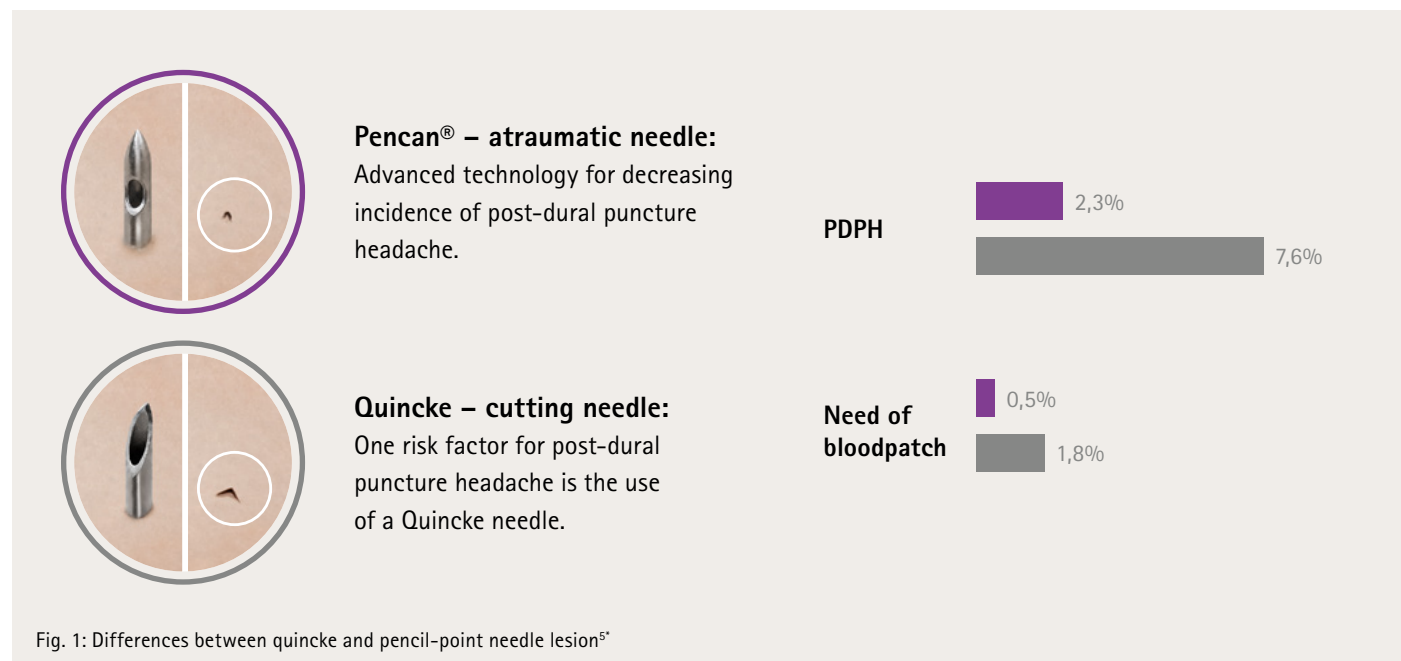
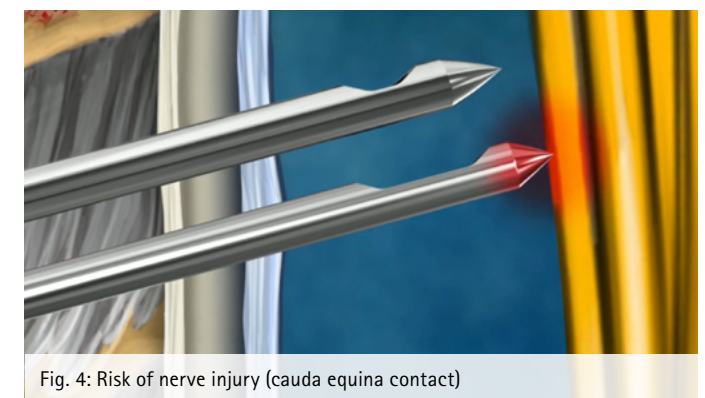


Fig. 1: Differences between quinke and pencil-point needle lesion^{5*}

References

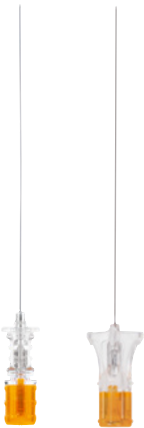
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Why choose Pencan® as your atraumatic needle?

- ✓ **Short lateral orifice**
Designed to support full intrathecal delivery to reduce the likelihood of partial or incomplete anesthesia.
- ✓ **Geometry matters**
In the narrow spinal space the risk of cauda equina contact should be avoided, especially in pediatric patients. A short orifice-to-tip distance needs less penetration depth in the spinal space.
- ✓ **Eyelet positioning close to needle tip**
Eyelet position designed for faster CSF flashback, which can help with correct and quicker placement of the needle.
- ✓ **Blunt atraumatic tip**
Provides a clear “dural pop” for tactile feedback, helps minimize nerve contact, and promotes a clean dural tear associated with lower PDPH rates.

Spinal needles

Pencan®	Color code	Size (G) / Length (inch)	ø / Length (mm)	Units per box	Art. code (REF) NHD Luer	Art. code (REF) OHD Luer	Art. code (REF) NX Luer	Art. code (REF) NX NRFit®
		27 x 3 1/2"	0.42 x 88	25	4502027-01	4502027	4532702	4532702N
					4502051-13*	4502051* (w. Introd)	4532703*	4532703N*
		25 x 3 1/2"	0.53 x 88		4502019-01	4502019	4532503	4532503N
					4502043-13*	4502043* (w. Introd)	4532504*	4532504N*
		22 x 3 1/2"	0.73 x 88		4502035-13	4502035	4532201	4532201N
Long Length								
		27 x 4"	0.42 x 103	25	4502124-13*	4502124* (w. Introd)	4532704	4532704N
							4532705*	4532705N*
		27 x 4 3/4"	0.42 x 120		4502132-13	4502132	4532706	4532706N
							4532707*	4532707N*
		25 x 4"	0.53 x 103		4502116-13*	4502116* (w. Introd)	4532505	4532505N
							4532506*	4532506N*
		25 x 4 3/4"	0.53 x 120	20	4502120-13	-	4532507	4532507N
							4532508*	4532508N*
		25 x 6.1"	0.53 x 156		-	-	4532510*	4532510N*
Pediatric use								
		27 x 2"	0.42 x 50	25	4502175-13	4502175	4532701	4532701N
		25 x 1"	0.53 x 25		4502167-13	4502167	4532501	4532501N
		25 x 2"	0.53 x 50		4502159-13	4502159	4532502	4532502N

*with Spinal Introducer (Luer compatible)

Spinal introducer

Spinal Introducer Needles (for Spinocan® and Pencan®)	Size (G)/ Length (inch)	ø / Length (mm)	Units per box	Art. code (REF) Introducer OHD (Luer)	Art. code (REF) Introducer NHD (Luer)	Art. code (REF) Introducer NX (Luer and NRFit®) **
For Spinal Needles 27 G to 29 G						
	22 x 1"	0.73 x 25	25	-	-	4552201
	22 x 1 3⁄8"	0.73 x 35		4500059	4500059-13	4552202
	22 x 1 3⁄4"	0.73 x 45		-	-	4552203
For Spinal Needles 24 G to 26 G						
	20 x 1"	0.90 x 25	25	-	-	4552001
	20 x 1 3⁄8"	0.90 x 35		4505000	4505000-13	4552002
	20 x 1 3⁄4"	0.90 x 45		-	-	4552003

** can be used with Spinal Needles NRFit® but does not have a NRFit® connector.

Note: All Introducers are Luer-compatible. For Pencan® NRFit®, only NX Introducers are available.