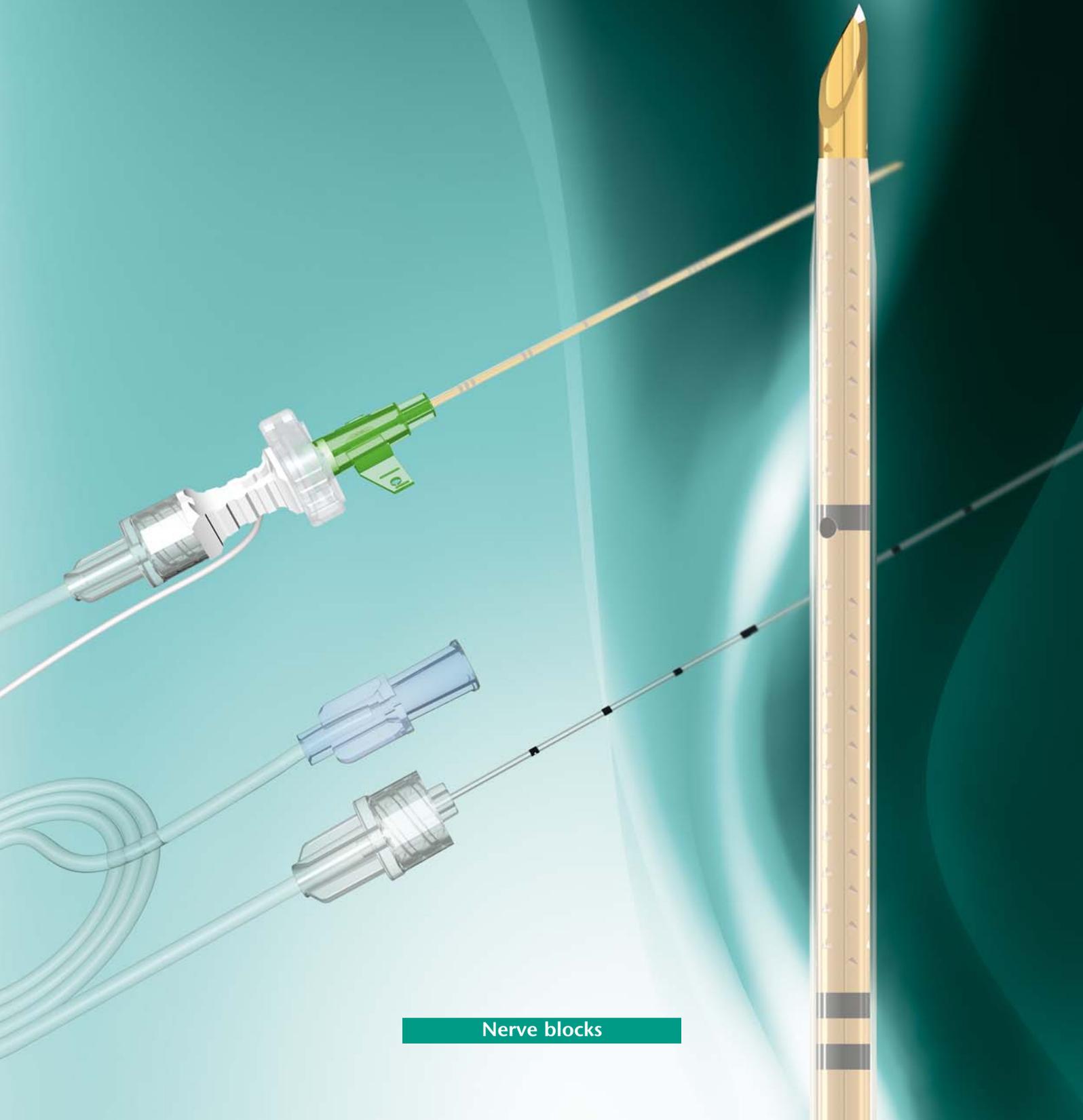


PAJUNK®

E-Cath according to Tsui
The revolutionary technique
for continuous peripheral
nerve blocks



Nerve blocks

Simple, safe, quick¹

Continuous peripheral regional anaesthesia with E-Cath

E-Cath, a joint development from Dr. Ban Tsui and PAJUNK®, gives new impulses for regional anaesthesia. This set is as easy to use as the Single Shot Technique and the positioning of the catheter can be carried out by one person in a few work steps.²

In addition the outstanding visibility of cannula and catheter under ultrasound monitoring as well as the option for combining with electrical stimulation (dual guidance) increases the safety of precise nerve localization.³

¹ Shakespeare, Tsui, Catheter-over-needle method ..., 2013; 60: 948–949

² Ip, Tsui, The catheter-over-needle assembly ..., 2013; 693

³ Ip, Tsui, The Safety of an interscalene ..., 2013; 68: 774–775

Procedure

➔ Puncture with the SonoPlex cannula and indwelling catheter connected with the FixClip

➔ The indwelling catheter is uncoupled by a 90° twist and the SonoPlex cannula is retracted



The advantages of E-Cath at a glance:

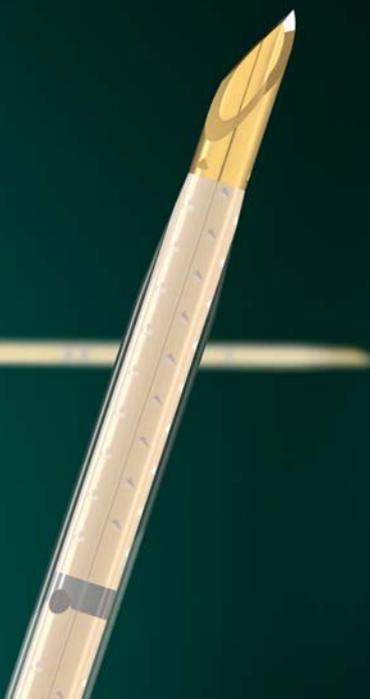
PATENT PENDING

- 1 *Positioning is as easy as the Single Shot Technique*
- 2 *Echogenicity of cannula and catheter: The ultrasound visibility is increased due to the SelfPriming System*
- 3 *Electrical stimulation can optionally be used alone or in combination with ultrasound (dual guidance)*
- 4 *Soft catheter tip for more comfort and safety*
- 5 *“Catheter over Needle” Technique reduces the risk of leakage and dislocation to a minimum*
- 6 *Double layered design of E-Catheter and indwelling catheter enables an unhindered flow of the anaesthetic*
- 7 *The combination of a lateral and central opening of the E-Catheter also ensures the continuous flow*
- 8 *E-Catheter with integrated injection tube and Luer Lock Connection replaces the clamping adapter*

PATENT PENDING

➔ The E-Catheter is introduced over the indwelling catheter

➔ and fixed in the indwelling catheter via the Luer Lock Connection



As easy as the Single Shot

The E-Cath puncture technique

The main advantage of the Single Shot Technique is that its performance is simple but not time-consuming.⁴ It is exactly these benefits that the E-Cath combines together with simple access for the catheter in a set.

The E-Cath set consists of the following components:

- SonoPlex cannula with indwelling catheter
- E-Catheter with connected injection tube (SelfPriming System)
- Bacteria filter
- FixoLong for filter fixation

NEW: The FixClip ensures a fixed connection between the cannula and the indwelling catheter. In this way the indwelling catheter can be held at the shaft during the puncture.



- ➔ As easy as the Single Shot Technique
- ➔ Outstanding reflection properties due to "Cornerstone" Reflectors and SelfPriming System
- ➔ Double safety thanks to "dual guidance"
- ➔ Few work steps – third hand problem solved
- ➔ NEW: FixClip ensures a fixed connection between SonoPlex cannula and indwelling catheter

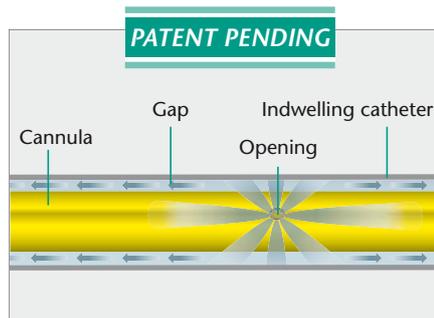
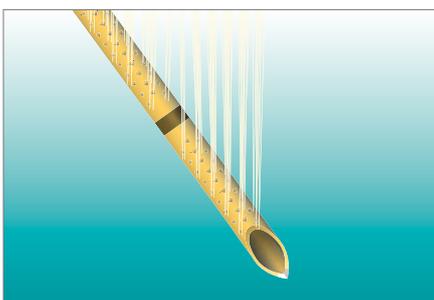


The SonoPlex cannula is introduced with the indwelling catheter and an appropriate solution is injected. Thereby the cannula can – due to FixClip – be held as well at the hub as at the shaft. The localization of the cannula takes place under ultrasound monitoring and can be combined optionally with electric stimulation. The indwelling catheter is subsequently used as an access system for the E-Catheter.

proximal opening



SonoPlex cannula with facet tip in indwelling catheter



“Cornerstone” Reflectors

The distal end of the SonoPlex cannula has two embossed sections of 10mm length each. Accordingly, the ultrasonic waves are reflected over a total length of 20mm.



SelfPriming System

The SonoPlex cannula has a lateral opening. When a solution is injected, it does not only flow through the central opening but also laterally between the cannula outer wall and indwelling catheter. A patent is pending for this SelfPriming System.



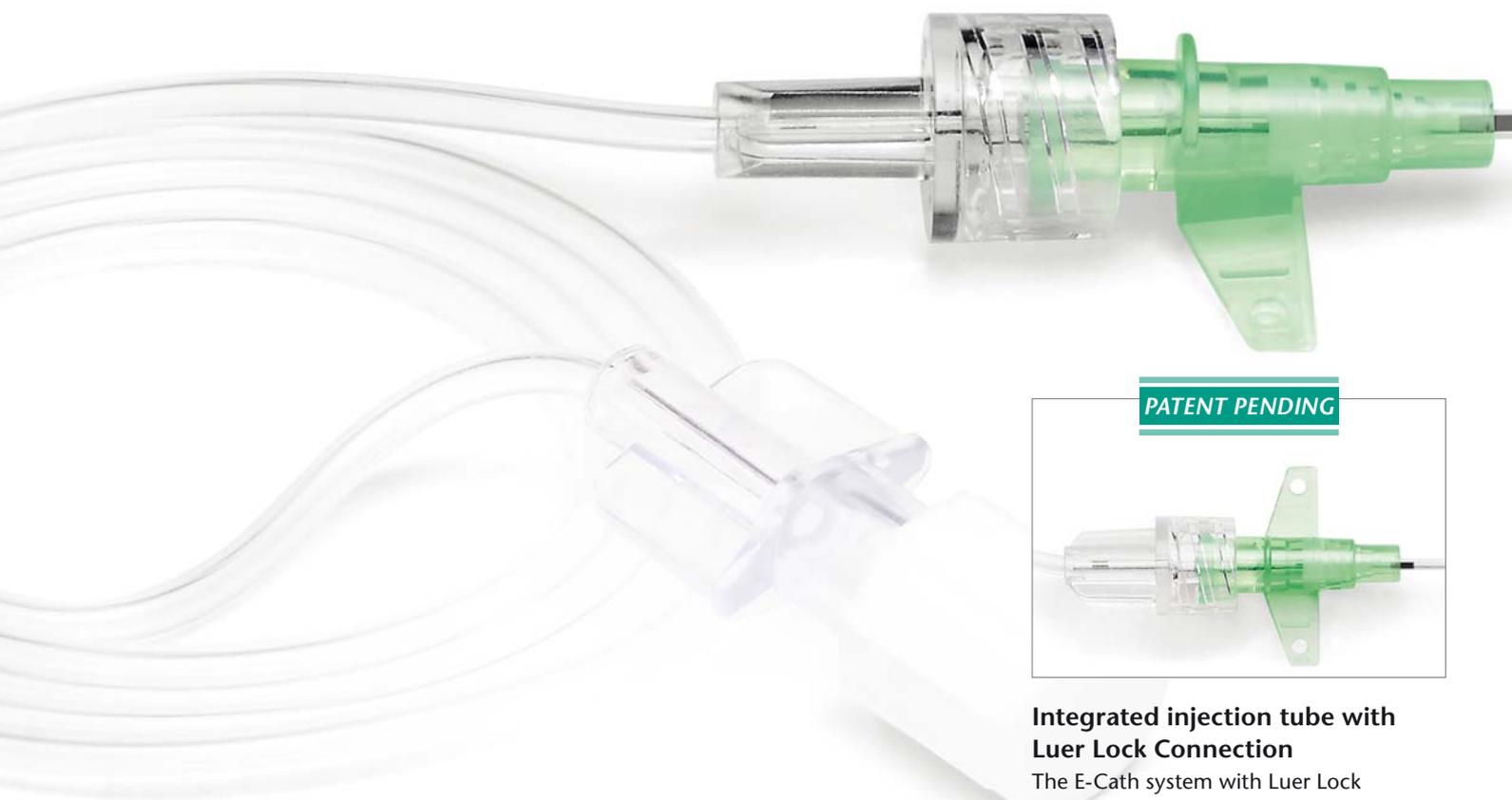
Outstanding visibility

A glance at the ultrasound image clarifies: Thanks to the liquid layer, the “Cornerstone” Reflectors can fully exploit their echogenic properties.

Quickly positioned and safely anchored

The positioning of the E-Catheter

The E-Catheter is positioned through the indwelling cannula in a few work steps.⁵ This ultrasound-guided “Catheter over Needle” Technique (CON-Technique) can be performed by the anaesthetist alone.⁶ As the cannula diameter is smaller than the catheter diameter, the diameter of the insertion point is also smaller.⁷ This involves another positive aspect of this CON-Technique – namely the minimization of the risk of leaks and dislocation.⁸



- ➔ Safe flow
- ➔ Integrated injection tube with Luer Lock Connection
- ➔ No clamping adapter required

Integrated injection tube with Luer Lock Connection

The E-Cath system with Luer Lock Connection (patent pending) enables a direct injection of the anaesthetic through the injection tube.

- ➔ The SelfPriming System is therefore set up.
- ➔ The connection of a clamping adapter is not necessary.



In the second step, the E-Catheter is introduced in the indwelling catheter. Its position is fixed with the aid of the Luer Lock Connection.



E-Catheter in indwelling catheter



Safe flow

The stable design of the E-Catheter is enhanced by the indwelling catheter and increases the flow safety.

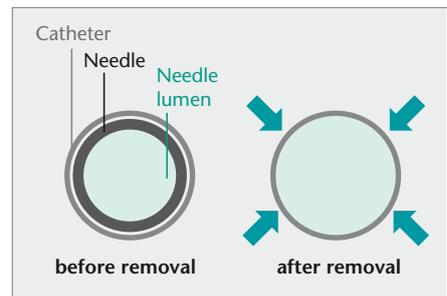
➔ The catheter has a high degree of flexibility during infusion. The unhindered flow of anaesthetic is simultaneously guaranteed.



Soft tip

The catheter has a soft tip.

➔ This means an increase in comfort and safety for the user and patient.



“Catheter over Needle” Technique

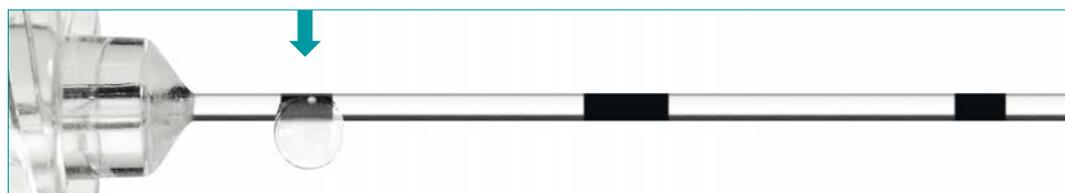
The needle puncture hole is sealed by the “Catheter over Needle” Technique.

➔ This contributes to the minimization of the risk of leakage or dislocation.

Echogenic and reliable **Continuous blocks with the E-Catheter**

What applies for the SonoPlex cannula also applies for the E-Catheter. Its outstanding visibility under ultrasound monitoring means an increase in safety for the anaesthetist during position control.

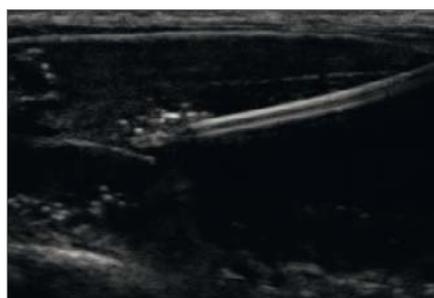
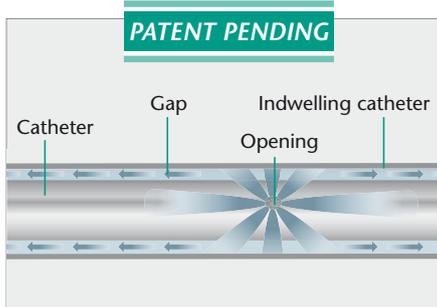
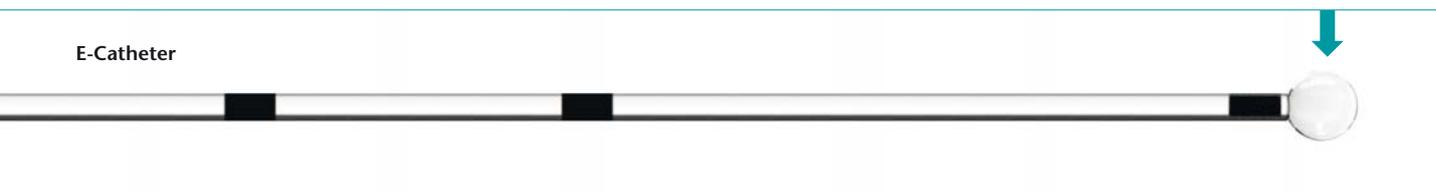
The SelfPriming System (patent pending) is also responsible for this.



proximal opening



- ➔ *Simple handling without assistance*
- ➔ *Ultrasound visibility due to SelfPriming System (patent pending)*
- ➔ *Continuous flow due to central and lateral discharge of anaesthetic*



SelfPriming System

In addition to the central opening, the E-Catheter also has a lateral opening, i. e. when injecting the anaesthetic; it also flows between the outer wall of the catheter and the inner wall of the indwelling catheter.

The E-Catheter has outstanding echogenic properties as a result of this SelfPriming System (patent pending).



Outstanding visibility

A glance at the ultrasound image clarifies: Thanks to the liquid layer between the catheter and indwelling catheter, the E-Catheter also develops optimum echogenic properties so that its position can be clearly identified.

Continuity of the nerve block

As a result of the additional lateral opening, the discharge of anaesthetic is then also guaranteed when the central opening of the catheter is blocked with tissue, for example.

Innovative catheter fixation

FixoLong and FixoCath – ensure mobility

With FixoLong filter fixation and FixoCath, PAJUNK® offers two solutions for more mobility. They prevent especially during the continuous application that the catheter is accidentally pulled out when the patient moves, or the supply of the anaesthetic interferes with an unfavourable position.

FixoLong filter fixation

With FixoLong, the filter near the catheter exit is fixated, which guarantees the patients maximum freedom of movement during all continual applications.



FixoCath (optional)

FixoCath is wound dressing and fixation at the same time and is applied directly at the exit point. Here also a maximum of mobility for the patient is ensured.



Bacteria filter

The 0.2µm bacteria filter prevents the passage of particles.



Optional fixation of E-Cath with FixoCath



1. Adhesive strip of the FixoCath is removed and applied at the patient

2. Catheter is placed at the center of FixoCath

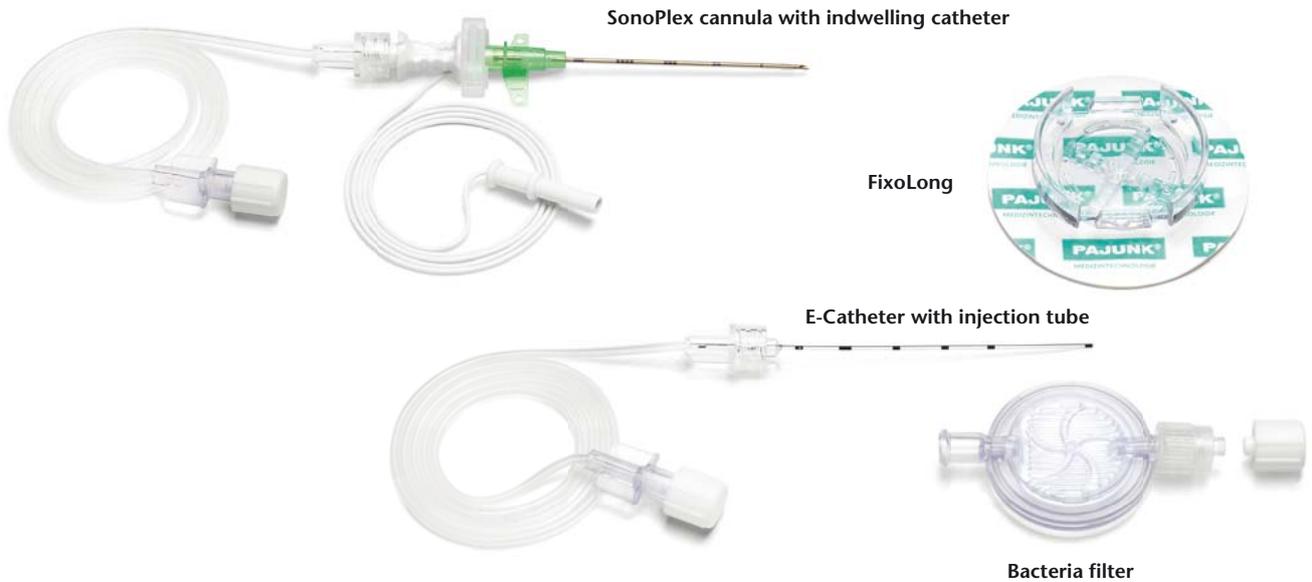
3. Adhesive strip of the overlapping patch is withdrawn and the catheter is fixed

4. FixoCath can be fixed additionally with a translucent patch

Plexus anaesthesia

The systems at a glance

E-Cath according to Tsui



Product	Size	E-Catheter	Indwelling catheter	Item.-No.	PU	0.2 µm bacteria filter	FixoLong
E-Cath							
Set consisting of SonoPlex cannula with facet tip, put-on indwelling catheter and E-Catheter	21 G	20 G	18 G x 51 mm	201185-40E	10	•	•
	21 G	20 G	18 G x 75 mm	211185-40E	10	•	•
	21 G	20 G	18 G x 83 mm	241185-40E	10	•	•
	20 G	20 G	16 G x 132 mm	251185-40E	10	•	•



Product	Item.-No.	PU
FixoCath	001151-37Z	10

*Studies

- **Herring A.A., Liu B., Kiefer M.V., Nagdev A.D., Tsui B.C.H.** Emergency department placement of perineural catheters for femoral fracture pain management, *Am. J. Emerg. Med.* 2014; 32(3), 287: 1–3 *¹

- **Ip V.H.Y., Bouliane M., Tsui B.C.H.** Potential contamination of the surgical site caused by leakage from an interscalene catheter with the patient in a seated position: a case report, *Can. J. Anesth.* 2012; 59: 1125–1129 *²

- **Ip V.H.Y., Rockley M.C., Tsui B.C.H.** The catheter-over-needle assembly offers greater stability and less leakage compared to the traditional counterpart in continuous interscalene nerve blocks: a randomized, patient-blinded study, *Can. J. Anesth.* 2013; 60: 1272–1273 *²

- **Ip V.H.Y., Tsui B.C.H.** Lower interscalene approach for elbow surgery, *Can. J. Anesth.* 2013; 60: 600–601 *²

- **Ip V.H.Y., Tsui B.C.H.** The catheter-over-needle assembly facilitates delivery of a second local anesthetic bolus to prolong supraclavicular brachial plexus block without time-consuming catheterization steps: a randomized controlled study, *Can. J. Anesth.* 2013; 60: 692–699 *²

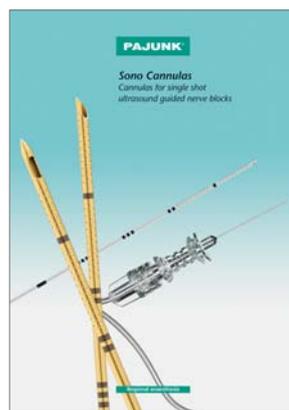
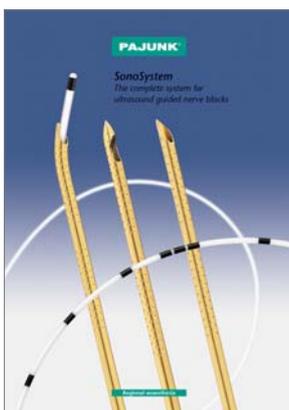
- **Ip V.H.Y., Tsui B.C.H.** The safety of an interscalene catheter-over-needle technique, *Anesth.* 2013; 68: 774–775 *²

- **Shakespeare T.J., Tsui B.C.H.** Catheter-over-needle method facilitates effective continuous infraclavicular block, *Can. J. Anesth.* 2013; 60: 948–949 *²

- **Tsui B.C.H., Tsui J.** Less leakage and dislodgement with a catheter-over-needle versus a catheter through-needle approach for peripheral nerve block: an ex vivo study, *Can. J. Anesth.* 2012; 59: 655–661 *²

*¹ E-Cath is called E-Catheter in this study

*² E-Cath is called Multi-Set in this study



PAJUNK® GmbH
Medizintechnologie
Karl-Hall-Strasse 1
D-78187 Geisingen / Germany
Phone +49 (0) 77 04/92 91-0
Fax +49 (0) 77 04/92 91-6 00
www.pajunk.com