

Biodegradable and Multifunctional Neural Block Devices

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Biodegradable catheter

Technology Summary

Leveraging a versatile and biocompatible citrate-based material platform, researchers have developed a high-strength, elastic and kink resistant, rapidly degradable biphasic catheter. The citrate-based elastomer material swells when surrounded by body fluid, anchoring the catheter to tissue while eliminating the removal requirement, thus solving the conflicting need to attain device security during treatment and detachment post-treatment. This fully biodegradable, tissue adherent peripheral nerve catheter is also capable of sustained drug delivery without damage to surrounding tissue.

Application & Market Utility

Effective methods of peri- and post-operative pain management are critical to ensuring patient recovery and satisfaction. In contrast to systemic and epidural anesthetic procedures, peripheral nerve block offers specific, localized effects, leading to benefits including reduced consumption of opioids, shortened hospitalization duration, lower drug concentration requirements, and increased physical therapy compliance. Despite these advantages, less than one in five eligible procedures utilizes this technique due to complications arising from extended dwell time and necessary removal of nondegradable catheters. Application of this biodegradable catheter would have clinical applications both in ambulatory surgery and also in procedures that require precise delivery of pharmaceutical agents.

Next Steps

Seeking research collaboration and licensing partners.

TECHNOLOGY READINESS LEVEL

1-3

Seeking

Investment | Licensing | Research

Keywords

- Citrate-Based Material
- Biodegradable Device
- Catheter
- Peripheral Nerve Block
- Pain Management

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