

Intracranial Catheter for Delivery of Therapeutic Agents to the CNS

Researchers at the University of South Florida have developed a novel catheter system and method of use to effectively deliver therapeutic agents to specific regions of the central nervous system.

The tight regulation of the blood brain barrier (BBB) often restricts the transport of various drugs and therapeutic agents between the bloodstream and neural tissue, which increases the potential for systemic adverse side effects. Therefore, direct delivery mechanisms and devices are desired to penetrate the BBB and lower the overall invasiveness of neurosurgery. Various designs have been developed to address this need, as well as minimizing the resulting trauma and scarring.

Our inventors developed a catheter assembly allowing for the precise insertion of drug delivery ports in the cranium, while avoiding extensive damage to the internal tissues. By affixing them to pumps, the catheters can be adjusted to target different regions of the brain while maintaining or switching between flows of therapeutic drugs. Upon removal of the device post-procedure, no lasting damage was observed on test subjects, providing another measure of safe implementation. This is particularly of note when discussing the use of the design in humans. This will greatly enhance the delivery of treatments in animal models and will also serve as a platform for the development of targeted drug delivery tools for use in humans.

ADVANTAGES:

- **Highly specific injection site reduces risk of side effects**
- **Allows for prolonged or simultaneous infusion of multiple therapeutic agents**
- **Catheter size minimizes trauma/scarring**

Improved Design for Intracranial Catheter Device



Two Identical Models Simultaneously Used in Live Model

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