Retractable Step Cannula For Brain Delivery Of Therapeutics

Tech ID: 27503 / UC Case 2015-049-2

INVENTION NOVELTY

An adjustable step cannula to minimize therapeutic agent leakage and maximize on-target drug delivery. This new cannula design improves brain drug delivery over current fixed-length step cannulas.

VALUE PROPOSITION

Cannulas allow surgeons to overcome the blood brain barrier and directly deliver therapeutic agents, including chemotherapeutic agents, to a targeted brain region or solid tumor. However, delivery of a therapeutic agent into specific brain region through a cannula is hampered by backflow and leakage of the infused drug. Convection-enhanced delivery (CED) and “step”-design cannula with an abrupt transition from a wider stent to a narrow tip help prevent backflow but even with these improvements, the set length of the chosen cannula can lead the step being placed either outside or inside the targeted brain structure. This misalignment in step to tip length can lead to off-target or incomplete delivery of the drug, respectively, and thus causing less than ideal drug treatment. Here, UCSF researchers have designed a new adjustable cannula that overcomes this issue and allows for optimal placement of the cannula tip in the center of the target brain region and the step at the border of the brain region. This leads to less off-target delivery of the potentially toxic drug and more optimal drug dosing.

TECHNOLOGY DESCRIPTION

UCSF researchers have designed an adjustable step cannula that allows for optimal placement of the cannula tip and step in relation to the targeted brain region. This customizable cannula can be adjusted to accommodate the actual geometry of the brain structure or tumor as visualized during the infusion procedure. Optimal cannula placement minimizes drug leakage and backflow and maximizes the exposure of the targeted brain region to the therapeutic agent.

APPLICATION

Improved delivery of therapeutics to specific areas of the brain

LOOKING FOR PARTNERS

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OTHER INFORMATION

KEYWORDS

Medical device, cannula, retractable cannula, step cannula, adjustable cannula, convection-enhanced delivery, CED, central nervous system, brain cancer, drug delivery

CATEGORIZED AS

- **Medical**
  - Devices
  - Disease: Central Nervous System

RELATED CASES

2015-049-2

To develop and commercialize the technology as a medical device for delivering therapeutic agents into the brain

STAGE OF DEVELOPMENT

Pre-clinical

DATA AVAILABILITY

Prototype designs and patient data available under CDA/NDA

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,758,264	09/01/2020	2015-049

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