Intracranial Endoscopy System Fiber-Optic Biopsy Needle Minimizes Hemorrhaging Risk

Technology #98141

Electrocautery Reduces the Risk of Hemorrhage from Biopsy

Taking a tissue biopsy to perform diagnostic testing in the medical field is an efficient and effective way of quickly determining the best route of treatment for many illnesses. However, taking a biopsy from an intraventricular lesion deep within the brain is concerning to neurosurgeons since there is a small, but definite risk of intracranial hemorrhage. This biopsy system is comprised of a fiber-optic endoscopic channel which contains the core biopsy needle and a coagulation agent. The coagulation agent, which stops any bleeding that may arise from the biopsy, comes in one of two forms, either electrocautery or thermal ablation. Electrocautery uses an electric current to generate heat conduction to stop the bleeding in small vessels, in essence destroying the tissue the biopsy was taken from. In thermal ablation, the same idea of tissue distruption is applied with thermal lasers. This intracranial endoscopy system prevents or quickly lessens and ends any intracranial hemorrhage that develops due to biopsy. Utilizing electrocautery or thermal ablation to ebb the flow of blood ensures there is minimal, if any, hemorrhaging in the intraventricular cavity.

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** Coagulation Agent with Biopsy System Stops Intraventricular Bleeding **

In previous biopsy systems, the endoscopy introducer, where the fiber-optic scope channel and biopsy device channel were housed, needed to be a minimum diameter. The ‘minimum’ diameter was rather large compared to the delicate spaces in the brain, which made neurosurgeons traversing these spaces uneasy. The reduction of the diameter of the endoscopic channel is important in the intraventricular cavity. The reduced diameter still allows for the utilization of the necessary tools as well as biopsy acquisition. The endoscopy system for the intraventricular cavity is equipped with a fiber-optic channel to allow for flexibility, as well as the innovation of a flexible core biopsy needle. A sharp, hollow cylinder that has a diameter just smaller than that of the endoscopy introducer is what makes up the core biopsy needle. There is no sharp point, or what one would think of as a needle, on the biopsy needle. The endoscopy system has the capability of thermal coagulation, which prevents any post biopsy hemorrhaging. Within the system, the endoscopic device houses separate channels for the endoscopy introducer, the core biopsy needle, and the cautery wire. This enables the surgeon to make one incision to perform the biopsy and introduce all of the instruments required for a successful biopsy through that incision. The intracranial biopsy system is minimally invasive.

** BENEFITS OF THE INTRACRANIAL BIOPSY SYSTEM **
- Compatible with MRIs
- The endoscopy introducer is substantially smaller in diameter than the original 'minimum' diameter
- Electrocautery, rather than high-intensity thermal ablation, reduces risk of hemorrhaging

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• Flexible fiber-optic core biopsy needle is cylindrical and sharp; allows for ablation and endoscopy to proceed simultaneously
• Allows for neurosurgeons to confidently perform third ventricle biopsies in the intraventricular cavity
• Dramatically reduces risk of hemorrhage both during and after the biopsy
• The core biopsy needle, cautery wire, and endoscopy introducer are all in separate channels

**Phase of Development** The concept of an intracranial endoscopy system is established and the detailed workings of the system are available.

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