Minimally Invasive Subdural Evacuating System (MISES™) for Treating Subdural Hematomas

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Technology description

Technology:MUSC inventors and surgeons have developed an advanced minimally invasive subdural evacuating system (MISES™) that addresses many of the challenges of treating subdural hematomas. MISES™ improves on the current standard of care, the subdural evacuating port system, with a number of features that are designed to improve outcomes, decrease surgeon time, and minimize risks.

The first key feature of MISES™ is an indicator rod with a blunt atraumatic end running through the center of the device that permits the determination of the distance between the distal port end of the device and the dura mater. Once this distance is determined, the device features a locking mechanism that limits the movement of an inner cannula to this distance. The inner cannula possesses a piercing end at the distal tip that can then be safely depressed through the distal port end of the device to pierce the dura mater with minimized risk to tissues at greater depths. Once the dura mater is safely punctured, the indicator rod and the inner cannula are removed to allow the device to function similar to a standard port system.

Figure 1. Two embodiments of MISES™ are shown above. The first embodiment is a larger profile device with an integrated port for insertion through the skull and evacuation of the subdural hematoma (left). The second embodiment (right) is a thinner device that is adaptable to the existing subdural evacuating port system (in pink above)

Overview:Subdural hematomas continue to be a challenging set of pathology for neurosurgeons given today's aging population. Chronic subdural hematomas have the option to be drained in the operating room with small burr holes, a craniotomy, or at the bedside with subdural evacuating port systems. However, one problem associated with these systems is the inability to ascertain whether the dura has been opened or opened enough to allow for the evacuation of chronic subdural blood. For these systems, it is often recommended to use a needle or small knife to open the dura blindly. Commonly, another port system has to be placed at the bedside to fix a failed one. Sometimes, a patient has to go to the operating room for a craniotomy to drain the subdural if the port system fails. Additionally, brain and intracranial blood vessel injuries are known to be caused by the blind passing of needles or scalpels through these existing devices.

Key Words:Subdural hematomas, subdural evacuating port systems, hematoma, port system

Application area

Subdural hematomas

Advantages

Reduction in risk of complications, improved patient outcomes, reduction in surgeon time

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