An Improved Stent for the Treatment of Hydrocephalus Offering Lower Failure Rates and Fewer Risks

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a device that provides improved treatment of hydrocephalus, the accumulation of cerebrospinal fluid (CSF) in the brain.

OVERVIEW

An estimated 70,000 patients a year are discharged from hospitals in the United States with the diagnosis of hydrocephalus. Hydrocephalus is caused by injury or trauma to the brain and can sometimes be present at birth. When left untreated, CSF accumulates and can result in lethal internal pressure.

The main treatment for hydrocephalus has been the surgical insertion of a ventriculoperitoneal (VP) shunt, a tube to drain CSF from the brain into the abdomen, where it is reabsorbed. However, shunts have a failure rate of 60-70 percent over time due to clogging, bacterial infection or faulty pressure or one-way valves.

Alternatively, an endoscope can be used to make a hole in the floor of the third ventricle, allowing CSF to flow freely from within the brain. While this procedure is usually successful initially, the hole often closes over time, requiring either a re-opening or a shunt. A new method is needed with lower failure rates and fewer risks.

THE INVENTION

A UW-Madison researcher has developed a stent designed to drain CSF by holding the third ventricle hole open, analogous to ear tubes used to treat fluid in the middle ear. No such stent is commercially available.

The stent can be deployed down a side channel of an endoscope, a tool commonly used to make the third ventricle hole. A blunt probe inserted through a channel of the endoscope can make an opening in the floor of the third ventricle in the brain. After the opening is made, the stent is inserted to keep the opening permanent.

The stent device is composed of two winged anchors. Before being inserted into the third ventricle hole, the device has a tubular appearance with the membrane located at the center or “waist.” After lining up the membrane with the hole opening, the anchors are
flared up, sandwiching the tissue between the anchors on either side of the opening. This final configuration secures the membrane from moving and gives it an eyelet appearance. This new stent design forces the hole to remain open and lacks the common problems associated with other techniques.

APPLICATIONS

• Treatment of hydrocephalus

KEY BENEFITS

• Reduces relapse of hydrocephalus
• Prevents closure of third ventricle hole
• Eliminates failure risks associated with shunt valves
• Simpler and less obtrusive than currently used shunts

ADDITIONAL INFORMATION

Tech Fields
Medical Devices - Neurological devices

CONTACT INFORMATION

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846.