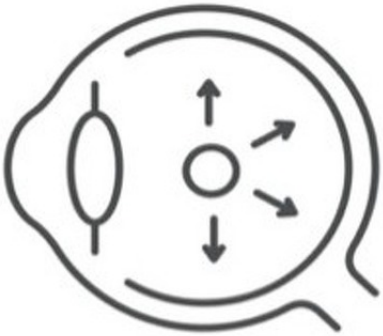
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

A Powerless, Optical Microsensor for Monitoring Intracranial Pressure

TECHNOLOGY NUMBER: 4138



Technology ID
4138

Category
Medical Devices
Life Sciences

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OVERVIEW

Innovative intracranial pressure (ICP) monitoring device using implantable microsensor

- Reduces infection risk, allows long-term monitoring, MRI compatible
- Neurological patient care, brain injury monitoring, postoperative monitoring

BACKGROUND

Current methods for monitoring intracranial pressure (ICP) in patients suffering from brain injuries or neurological conditions have significant limitations. Traditional devices, which often involve invasive procedures, carry a high probability of causing infections. Additionally, these devices typically do not support long-term ICP monitoring and are not compatible with MRI, restricting their utility in ongoing patient care and comprehensive diagnostic processes. Due to these shortcomings, there is a pressing need for an improved device that minimizes infection risks, facilitates continuous monitoring, and integrates seamlessly with advanced imaging technologies like MRI. Such advancements would enhance patient outcomes by providing reliable, long-term data critical for managing and treating conditions.

INNOVATION

University of Michigan researchers have developed a novel system for intracranial pressure monitoring that utilizes an implantable microsensor device, which is powered by an external light source. The device features a microlens and a deflectable membrane sensitive to pressure changes within the patient. An array structure within the device emits different wavelengths of light in response to these pressure changes, allowing for precise monitoring. This innovative design eliminates the need for an internal or external power supply and is fully compatible with MRI, enabling comprehensive diagnostic imaging. Real-world applications include neurological patient care, brain injury and postoperative monitoring, and long-term management of neurological diseases.