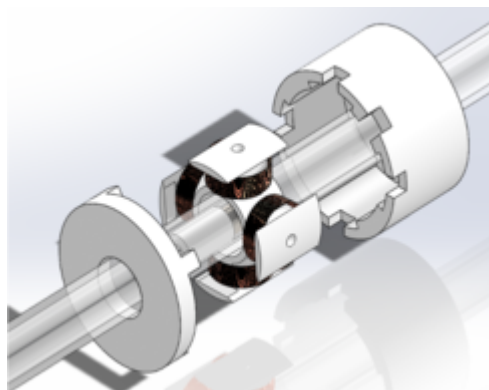




Vitrector Device

TECHNOLOGY NUMBER: 2019-179



OVERVIEW

An inexpensive, hand-held, disposable device to sample vitreous humor

- Use of a small gauge rotating needle with cutting action to collect sample
- An improvement over existing devices in diagnosing infections of the urea or globe

BACKGROUND

Vitrectomy is a type of eye surgery that involves removing the gel-like substance in the middle of the eye known as the vitreous, vitreous gel, or vitreous humour. Liquid biopsies are increasingly being utilized in diverse medical contexts as a minimally invasive approach to provide real-time information about a patient's disease status. By extracting and analyzing a sample of a given biological fluid, clinicians gain information about the tissue with which that fluid was in contact. Liquid vitreous biopsies are gaining attention as a potential diagnostic tool for a wide variety of conditions affecting the eye. The samples can be analyzed by a variety of different diagnostic tests to diagnose disease and guide treatment plans. These types of biopsies have historically been reserved for the most severe vision-threatening cases due to the risk of dangerous side effects like retinal detachment. As such, a need exists for improved technologies to evaluate vitreous gel safely and effectively.

INNOVATION

Researchers at the University of Michigan have invented the Vitrector, an inexpensive, hand-held, disposable device designed to remove a 250 μ L sample of vitreous that can then be analyzed for diagnostic purposes. This device uses a small-gauge internal rotating needle with cutting action that is actuated through a magnet to extract a minimal fluid volume and requires

Technology ID

2019-179

Category

Medical Devices
Life Sciences

Inventor

Alan Cruz
Anant Bhamri
Hakan Demirci
Jeffrey Sundstrom
Justin Holmer
Lauro Ojeda
Minghui Huang
Phuoc Nguyen
Russell Miller
Thomas Gardner

Further information

Katherine Pollard
kpollar@umich.edu

Learn more



no infusion component. These design features permit simplicity of use for the operator and provide a safer mechanism for liquid vitreous biopsy in the clinical setting. The main procedural mechanisms of the vitrector include a small-gauge (26 gauge) needle that cuts and "liquifies" tissue and facilitates extraction of a minimal volume of liquid for diagnostic analysis. The device facilitates an improvement upon existing devices and could prove to be a very useful diagnostic tool for infection of the uvea or globe. Additionally, the device could provide a liquid biopsy that leads to personalized medical treatments. This approach can also provide better access to the retina for surgical repairs, remove scar tissue, or replace cloudy or hardened vitreous.