

A Method to Treat Lymphedema and Edema of Extremities

(No. T4-2270)

Principal investigator

Brian Berkowitz

Faculty of Chemistry

Department of Earth and Planetary Science

Overview

An innovative drainage device that addresses the unmet need for effective lymphedema and extremity edema treatments. The device features an implantable inert porous unit connected to a subcutaneous drainage tube leading to an external suction unit. The design prevents clogging by surrounding tissues and ensures efficient fluid removal, offering a superior alternative to currently available compression garments and massage techniques.

Applications

- Treatment of lymphedema resulting from cancer treatments, surgeries, obesity, infection, or lymphatic dysfunction
- Management of extremity edema caused by chronic conditions or injuries

Advantages

- Targeted Fluid Removal: Effectively alleviates fluid build-up in swollen limbs.
- Biocompatibility: Uses inert, porous materials to ensure minimal tissue reaction and long-term flow.
- Customizable Design: Adaptable sizes, shapes, and suction settings tailored to individual patient needs.
- User-friendly: The user connects the device to a portable suction unit that drains the extra fluid unit whenever convenient.
- Improved Quality of Life: Reduces pain, recurrent infections, and disability associated with lymphedema.

Stage of Development

The device is well-defined, with feasibility successfully demonstrated in in vitro and ex vivo studies using human fat tissue. These tests showed negligible bioburden, biocompatibility, and clinically relevant fluid extraction flow rates. In vivo trials confirmed the device's safety, with no observed animal discomfort, infection, or inflammation. The next steps include preclinical trials to evaluate its long-term safety, efficacy, and clinical applicability in human subjects.

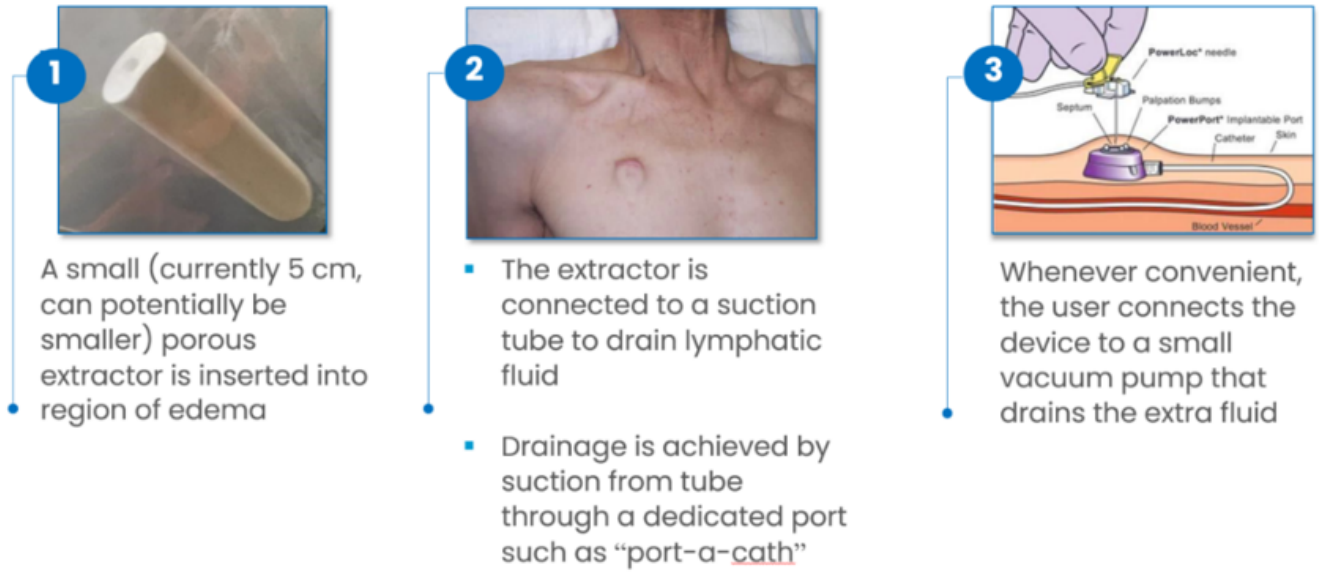


Figure 1 – The Drain Device

Patent Status

PCT Published: Publication Number: WO 2024/209463 A1