

Ear Tube for Easy Removal of Blockage (2017-047)

Ear tube design allows for removal of blockages, eliminating need for surgical procedures

Market Overview

This ear tube design, called AuriClear, has a removable film which allows for blockages to be removed non-invasively during a routine doctor visit. About one in five children will need ear tubes before the age of 10. Out of the one million procedures performed in the United States in 2016, 85 percent were children under the age of two. Currently, ear tubes are placed within the eardrum which often leads to blockage. When this occurs, additional surgical procedures may be required. In an effort to eliminate preventable surgeries, Clemson University researchers developed AuriClear. The inner layer of AuriClear is a removable film which can be removed when a blockage forms. This allows the external tube to remain in place and function properly once the blockage is removed with the inner film. AuriClear allows a physician to remove the blockage in a non-invasive manner, reducing the cost of treatment and risk of hearing loss and surgical complications.

Application

Medical device

Stage of Development

Prototype

Advantages

- Utilizes a large conical shape design, optimizing fluid flow from the middle ear
- Features an inner film with accessible tab for removal, enabling easy and non-invasive blockage removal
- Prevents blockages from forming while ear tube is inserted, eliminating need for surgical procedures and reducing healthcare costs for the patient

Technical Summary

This ear tube is inserted in the tympanic membrane of patients to allow fluid drainage from the middle ear to the outer ear. Commonly, ear tubes become blocked with wax, blood, and other mucous which prevents fluid flow through the tube. With the design of a conical feature and removable double layer film, AuriClear will help prevent and treat blockages by allowing a physician to remove the blockage in a non-invasive manner during a routine doctor visit. AuriClear's design includes a conical ear tube made of polytetrafluorethylene (PTFE), an inner film lining the inside of the tube and flange made of PTFE, and a POEGMA adhesive to hold the film in place. When the tube becomes blocked with wax, mucous, or other bodily fluid, a physician

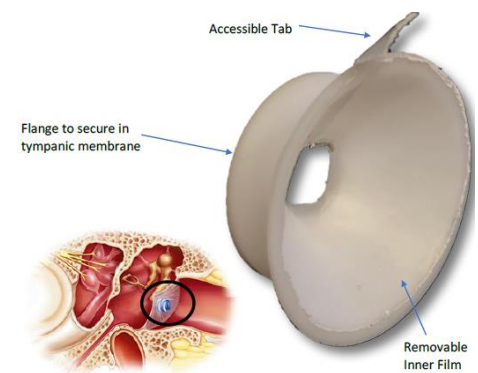


Figure 1: AuriClear ear tube design

will grasp the tab with a hook and pull it down and outward. This will detach the tab from the film and close off the proximal tube lumen, enclosing the blockage. The tab is then pulled further to detach the film from the ear tube. The film is then removed from the distal opening of the tube, along with the blockage.

App Type	Country	Serial No.	Patent No.	CURF Ref. Number	Inventors
Provisional	United States	62/478,161	NA	2017-047	Matthew Roach, Seth Perryman, Jeannette Rodriguez Gonzalez, Taylor Gustaveson, Kelsey Palsgrove

About the Department

The Bioengineering Department at Clemson University is widely recognized as a pioneer in the field of biomaterials science and engineering. One of the oldest in the world, Clemson's bioengineering program was started in 1963. The Society for Biomaterials (SFB), the premier professional society for the field, began at Clemson in 1974 after a series of annual symposia. The SFB annually recognizes three outstanding researchers in the field through its Clemson Award for Contributions to the Literature, Clemson Award for Basic Research and Clemson Award for Applied Research. Clemson's Department of Bioengineering is also the curator of the C. William Hall Biomaterials Documentation Center, an international database of archived documents in biomaterials.

For More Information

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