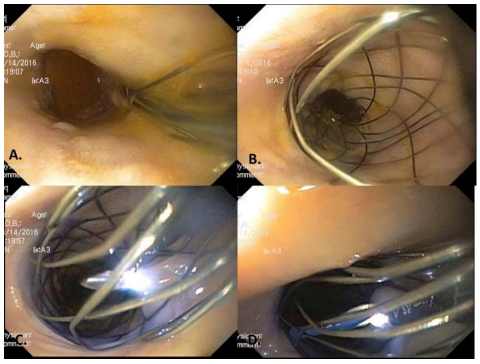
TECHNOLOGY

Device and Technique for Placement of Tracheoesophageal Prosthesis Using a Flexible Esophagoscope

OVERVIEW

Following a laryngectomy, lung-powered voicing is achieved through placement of a one-way valve voice prosthesis using a rigid esophagoscope. This technique for prosthesis placement confers poor visualization. It can also be difficult or impossible to perform on patients with stenosis of the pharynx or esophagus, a small pharynx, or with reduced neck extension. The rigidity of the esophagoscope itself can induce scarring and cervical spine mobility issues. A device was developed to allow the procedure to be performed more safely. It also allows the surgeon to quickly perform the puncture and placement of a voice prosthesis using a flexible esophagoscope. The device assists with the performance of a tracheoesophageal puncture by stenting open the esophagus and delivering radial force to prevent the esophagus from collapsing, preventing posterior esophageal wall injury. This device and technique provide a safer, faster way to place a prosthesis and can potentially be used in an ambulatory outpatient clinic. It may also be used in patients previously precluded from the procedure due to scarring, cervical spine disease, and narrowing of the esophagus.

The distal end of the device is made of an expandable braid and the device is inserted into the trachea using the working channel of a flexible endoscope. Upon being exposed in the esophagus, the device expands, preventing the lumen wall from collapsing. This distended position reduces the risk of puncturing the posterior wall of the esophagus while inserting and withdrawing a needle and introducing, trapping, and withdrawing a voice box wire (see figure). The use of a flexible esophagoscope offers superior visualization and allows the procedure to be performed on patients precluded from undergoing a procedure with a rigid esophagoscope. Additional, related iterations of devices and methods for expanding the esophagus, as well as supplementary channels, have been fashioned.



APPLICATIONS

Approximately 100,000 laryngectomies are performed worldwide each year, most as part of the management of advanced laryngeal cancer. However, many patients are unable to undergo this procedure due to the use of a rigid esophagoscope, which is contraindicated in patients with radiation fibrosis, stenosis, and cervical mobility issues. The use of a flexible scope during this procedure would expand the number of patients eligible to undergo it. There are currently no devices on the market that allow the placement of a prosthesis via a flexible esophagoscope and no other patents related to this, making this a first-in-class device. This device would allow the placement of the prosthesis to be performed in an outpatient setting instead of an operating room, greatly decreasing health care costs associated with the procedure. Furthermore, this device could be used to perform transoral or transnasal esophagoscopy.

ADVANTAGES

Superior visualization and increased safety

Allows use of flexible esophagoscope for prosthesis placement

STAGE OF DEVELOPMENT

First generation prototypes of this technology manufactured and its performance tested during secondary tracheoesophageal punctures on more than five fresh cadavers. The prototype device and technique using a flexible esophagoscope allowed for visualization of the puncture, protection of the esophagus, and trapping and withdrawal of t tula creation. Second generation prototypes have been built a

(Updated 01/31/2019) - MEW

LICENSING POTENTIAL

Available for licensing

CONTACT INFO

Office of Technology Transfer
620 W Lexington St., 4th Floor
Baltimore, MD 21201
Email: ott@umaryland.edu
Phone: (410) 706-2380

Additional Information

INSTITUTION

University of Maryland, Baltimore

PATENT STATUS

JW-2015-097 WO2016/191419 A1, JW-2017-004 PCT application, US 2017/0135699 A1

LICENSE STATUS

Available for licensing and commercialization

CATEGORIES

- Devices
- Surgical devices

INVESTIGATOR(S)

Jeffrey Wolf

ATTACHMENTS

- Download JW-2015-097 Marketing Sheet 01_31_2019.pdf

JW-2015-097