

Development of a Detachable Endoscope

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BACKGROUND

Endoscopes are used in many fields of medicine to investigate, diagnose, and treat patients. One common procedure that utilizes an endoscope (known as a bronchoscope), is the procedure of intubation that is conducted over 16 million times in the United States annually. To intubate a patient successfully, a physician needs to insert an endotracheal tube (ETT) into the patient's mouth and secure it in the airway. A delay in securing the ETT into position of greater than 4 minutes can result in permanent brain injury or death of the patient. Malfunction of an indwelling ETT itself or changes in the airway anatomy may lead to emergent need for ETT exchange. The bronchoscope is the gold standard device for confirming the proper placement of an ETT in the trachea and the ultimate method for regaining control. A detachable endoscope design offers additional key advantages potentially allowing the insertion tube portion to be an economical, disposable, single patient use device, eliminating the concern over superbug cross contamination and reducing cost of processing and maintenance.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have come up with an alternative prototype which consists of an elongated insertion tube sensing device. The device includes an insertion tube with a detachable control handle. Channels, electrical connections, and a drive train in the control handle can be quickly and simply detached, preferably by the press of a button. When connected to the handle, operation of sensors and mechanical movements of a distal end of the insertion tube can be controlled via one or more threads in the control handle.

APPLICATIONS

The main application of the invention is elongate insertion tube sensing devices for use that includes medical devices, such as endoscopes, including but not limited to bronchoscopes.

ADVANTAGES

This design allows for separation of the handle from the insertion tube of the endoscope in order to allow for safe exchange of endotracheal tubes for patients in critically ill conditions then reattachment and direct visualization of the airway for confirmation of proper tube placement. Endoscopic visualization of the airway is the gold standard for confirmation of proper placement during these critical conditions. Other detachable endoscopes currently on the market fail to serve both functions of endotracheal tube exchanger as well as endoscopic visualization tool.

STATE OF DEVELOPMENT

Working prototype and experimentation stage.

INTELLECTUAL PROPERTY INFO

The invention is patent-pending and is available for licensing and collaborations

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

Endoscope, sensing device,

intubation, airway tool, airway

visualization, airway management

bronchoscopy, indirect laryngoscopy

CATEGORIZED AS

- ▶ Medical
 - ▶ Devices
- ▶ Sensors & Instrumentation
 - ▶ Medical

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