

The Fibuscope® – a novel device for flexible airway endoscopy

Innovation: The Fibuscope®

A new system for carrying out endoscopic examinations of bronchi and lungs was developed at the Institute for Anesthesiology at the Heidelberg University Hospital. According to the concept the Fibuscope® is an endoscopic device in flexible design which for the first time allows the visual examination of the airways while simultaneously applying artificial respiration.

The Fibuscope® consists of an endotracheal tube which walls contain optical fibers as an integral part as well as mechanical fibers to guide the endoscopic tip. The inside of the endoscopic tube can optionally be equipped with channels for surgical tools or suction tubes. Because of the integration of the optical fibers in the wall of the tube, unlike the currently used approach of fibers being introduced within the tube, the tube remains free for the air to flow. A hand piece is attached to the endotracheal tube, which allows control of a range of functions like camera, guidance of the endoscopic tip, oxygen flow, and suction. Via a 2D monitor that is also integrated in the hand piece, it is possible to observe endoscopic images in real time while simultaneously applying artificial respiration. This leads to advantages in diagnosis and therapy for many applications in the areas of anesthesiology and intensive care, for example during ear, nose and throat and thoracic surgical interventions.

An animation of the product idea together with a detailed description can be viewed at <http://www.tlb.de>

Disadvantages of conventional bronchoscopy

- The endoscope is usually introduced through the endotracheal tube and thus limits or even prevents respiration, which results in a rapid decline in the oxygen levels of blood. Thus the endoscopy can only be carried out safely during a short period of time without danger of brain damage as a result of the intervention.
- Artificial respiration is only possible once the endoscope is removed. Continuous respiration during the endoscopy is not possible.
- When the anatomical circumstances are unfavorable, e.g. insufficient opening of the mouth or insufficient mobility of the neck vertebrae, it may be impossible to perform surgical procedures with the rigid bronchoscope.
- Endoscopic surgery on bronchi is currently only possible with rigid endoscopes and under simple anatomical conditions.

Secure your innovation advantage!

- By means of the flexible Fibuscope® it is for the first time possible to apply artificial respiration at the same time as undertaking endoscopic investigations. This allows endoscopy for unlimited time without the danger of brain damage occurring due to lack of oxygen.
- Furthermore, the flexible Fibuscope enables tracheal surgery even for patients with anatomically unfavorable conditions.
- Since the most expensive part, the hand piece, can be disconnected from the tube, it can be used with a variety of tubes. The tubes can be produced in a wide range of sizes and shapes to suit different circumstances either as single-use items or as sterilisable multi-use parts.
- This novel procedure is both less traumatic and safer for the patient.
- Further diagnostic and therapeutic advantages result from the fact that it is possible to maintain visualization during respiration, suction of secretions, and surgical interventions even in areas that are anatomically difficult to reach.

Fields of use

- Ear, nose and throat/thoracosurgical procedures
- Anesthesiology/Intensive care medicine

Technology Transfer

The Technologie-Lizenz-Büro GmbH has been encharged with the commercialization and it now offers companies opportunity of obtaining a license to exploit this new and promising technology.

Patent Situation

A patent application with the German Patent Office and international PCT application have been filed.

For further information about the Fibuscope®, please contact:

Dr Iris Kräuter

ikraeuter@tlb.de

Technologie-Lizenz-Büro (TLB)

der Baden-Württembergischen Hochschulen GmbH

Ettlinger Straße 25, D-76137 Karlsruhe, Germany

Tel. +49 721 79004-0, Fax +49 721 79004-79

For other technology offers, please visit www.tlb.de

The concept of Fibuscope® in detail

