BRONCHOSLEEVE

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JOHNS HOPKINS
BIOMEDICAL ENGINEERING

One-lung ventilation (OLV) is a critical component of over 600,000 cardiothoracic and pulmonary surgeries annually in the US alone. However, the current workflow has considerable drawbacks and complications.

98%
of pulmonary surgeries involve OLV[2]

40%
rate of failure for current OLV devices[1]

220,000+
patients globally are effected by the complications of OLV annually[3]

These complications can lead to problems during surgery, longer hospital stay and recovery times, increased costs for the patient and insurance companies, and reduced mobility levels post-surgery.

Design Features

Anesthesiologists need a way to ventilate the entire lung during one-lung ventilation in order to prevent patient airway damage, hypoxemia, and tension pneumothorax. We establish six design requirements to fill this need:

- complete lung separation
- bronchoscope compatible
- easily insertable
- reduces dislodgment
- repositionable
- provides suction

The **Bronchosleeve** has all these features and more

Applications

The Bronchosleeve is applicable to all OLV procedures including:

- Thoracic trauma
- Procedure involving compromised airways
- Standard OLV procedures

Improved OLV

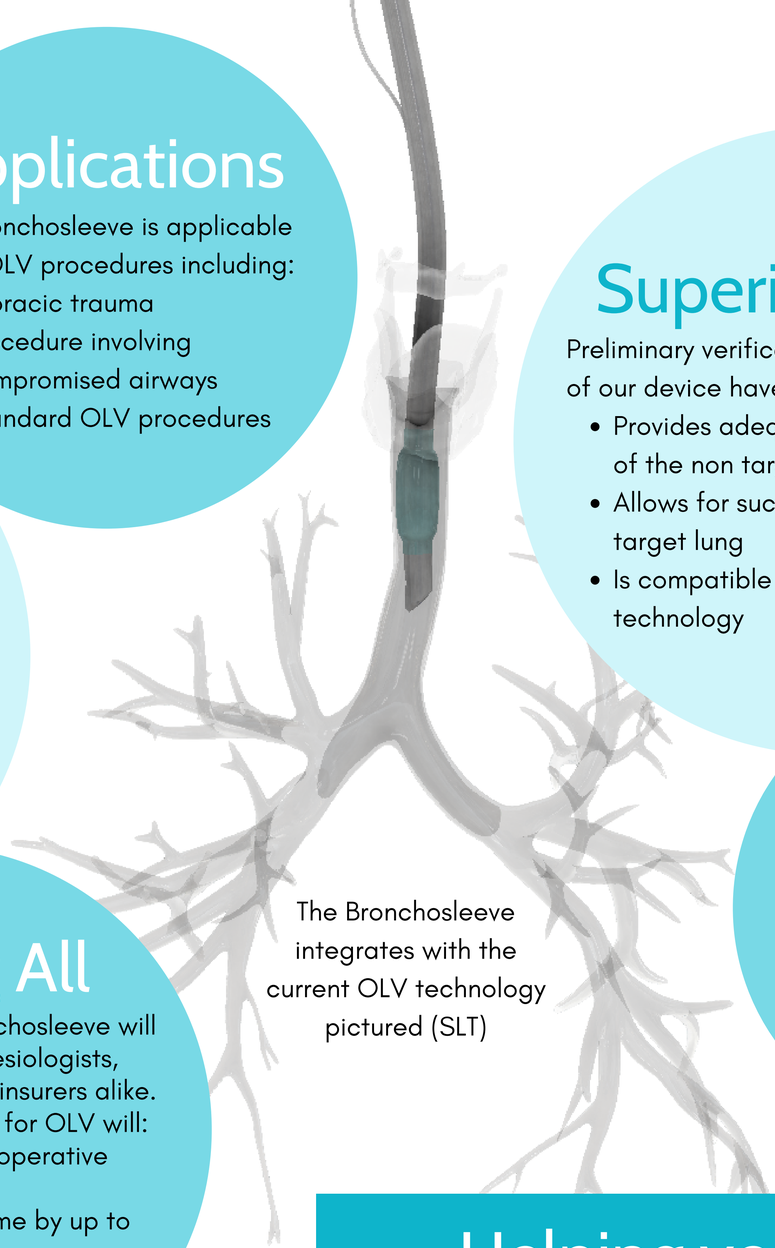
The optimized lumen dimensions of the Bronchosleeve provide various benefits over existing OLV devices:

- Easy Insertion
- Consistent Target Lung Visualization
- Lung Isolation
- Effective Ventilation
- Minimized Dislodgment

Helping All

The features of the Bronchosleeve will benefit patients, anesthesiologists, surgeons, hospitals, and insurers alike. Using the Bronchosleeve for OLV will:

- Reduce patient postoperative complications
- Decrease surgical time by up to 40%
- Save hospitals up to $45K per patient



The Bronchosleeve integrates with the current OLV technology pictured (SLT)

Superior Results

Preliminary verification and validation testing of our device have confirmed that it:

- Provides adequate space for ventilation of the non target lung
- Allows for suction and deflation of the target lung
- Is compatible with current bronchoscope technology

References

1. Mehrotra, M., & Jain, A. (2021). Single Lung Ventilation. In StatPearls. StatPearls Publishing. http://www.ncbi.nlm.nih.gov/books/NBK538314/
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3. Grand View Research. (n.d.). Minimally Invasive Thoracic Surgery Market Size, Share & Trends Analysis Report Analysis By Type (Lobectomy, Wedge Resection, Pneumonectomy, Others), By Region, And Segment Forecasts, 2018–2025.

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