

Anästhesie  
Thoraxchirurgie



Dr. Helmut Hager DEAIC

ANÄSTHESIE FORUM



ALPBACH

**REPETITORIUM**

# Bereiche der Thoraxchirurgie



- präoperative Evaluierung
- Lungenteilresektion
  - via Thorakotomie
  - via Videothorakoskopie
  - Pneumonektomie (Entfernung einer Lungenhälfte)
- Thymektomie / DaVinci Chirurgie
- CTEPH (chronisch thromboembolische pulmonale Hypertension)
- Trachealresektion
- Ossäre Eingriffe (thoracic outlet, Trichterbrust,..)
- interventionelle Pulmologie

# präoperative Evaluierung



- kardiale Abklärung
- “Frailty” (funktioneller Status)
- Rechtsherz und Lungendruck Evaluierung
- Lungenfunktion - zu erwartender Verlust daran
- Schmerzmanagement - i.v. vs Regionale (Aufklärung)
- ev. postop ICU



## **Preoperative evaluation in thoracic surgery: limits of the patient's functional operability and consequence for perioperative anaesthesiologic management**

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*Henning Starke<sup>a</sup>, Vera von Dossow<sup>a</sup>, and Jan Karsten<sup>b</sup>*

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# präoperative Evaluierung



**Table 1.** Respiratory risk stratification (related to planned lung resection)

| Risk                                   | Low    | Moderate  | High   |
|--|--------|-----------|--------|
| Components of lung function/assessment |        |           |        |
| Symptoms                               |        |           |        |
| Dyspnea (Grad 0–4)                     | 0–1    | 2–3       | 3–4    |
| Smoking (present)                      | 0      | ++        | +++    |
| Sputum (1–4)                           | 0      | 1–2       | 3–4    |
| Spirometry                             |        |           |        |
| FEV1                                   | >2.0 l | 0.8–2.0 l | <0.8 l |
| FVC                                    | >3.0 l | 1.5–3.0 l | <1.5 l |
| (% = % of target)                      | >50%   | <50%      | <30%   |
| FEV1/FVC                               | >70%   | <70%      | <50%   |
| Improvement after bronchodilation      | >15%   | 1–15%     | None   |
| Gas exchange/oxygenation               |        |           |        |
| pO <sub>2</sub> mmHg (air) at rest     | 60–80  | 45–60     | <45    |
| pCO <sub>2</sub> mmHg at rest          | <45    | 45–50     | >50    |
| DLCO at rest                           | >50%   | 30–50%    | <30%   |

# präoperative Evaluierung



- Erector Spinae Block (ESB)





- Erector Spinae Block (ESB)

Anaesthesia 2020

doi:10.1111/anae.15000



## Review Article

### **The role of serratus anterior plane and pectoral nerves blocks in cardiac surgery, thoracic surgery and trauma: a qualitative systematic review**

**J. M. Jack,<sup>1</sup> E. McLellan,<sup>2</sup> B. Versyck,<sup>3</sup> M. F. Englesakis<sup>4</sup> and K. J. Chin<sup>5</sup>**

1 Fellow, 5 Associate Professor, Department of Anaesthesia, Toronto Western Hospital, University of Toronto, Toronto, ON, Canada

2 Consultant, Department of Anaesthesia and Peri-operative Medicine, Royal Brisbane and Women's Hospital, Brisbane, QLD, Australia

3 Consultant, Department of Anaesthesia and Pain Medicine, AZ Turnhout, Turnhout, Belgium

4 Information Specialist, Library and Information Services, University Health Network, Toronto, ON, Canada

# präoperative Evaluierung



- Erector Spinae Block (ESB)



# präoperative Evaluierung



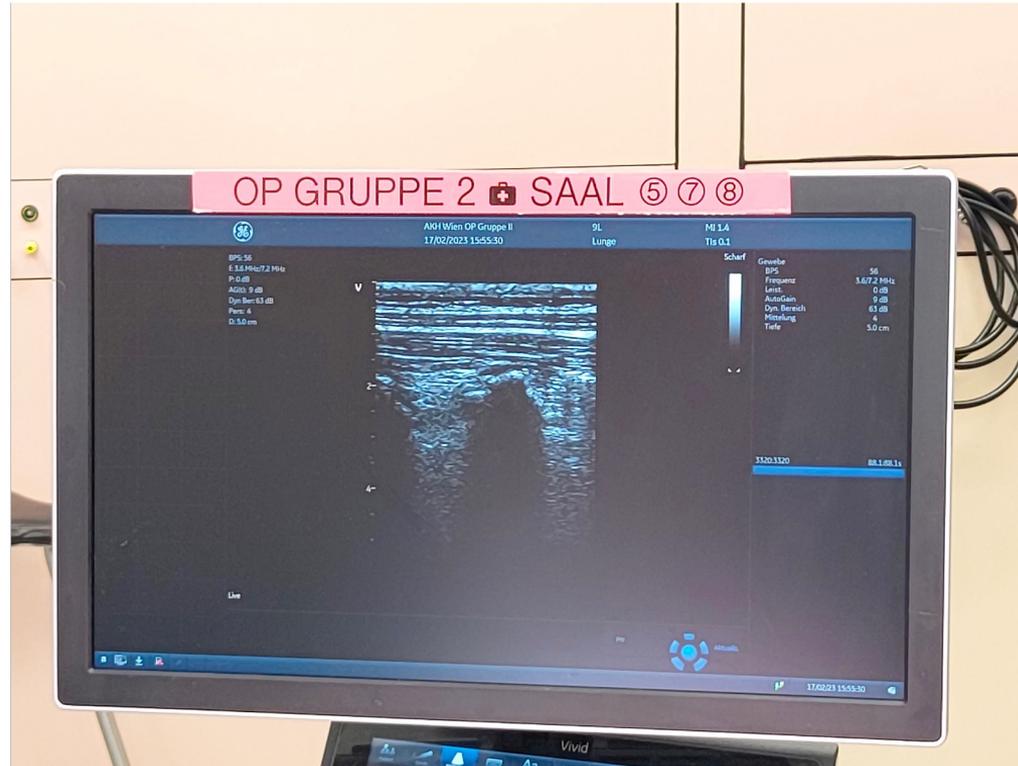
- Erector Spinae Block (ESB)



# präoperative Evaluierung



- Erector Spinae Block (ESB)



# präoperative Evaluierung



- thorakale Epidurale



# präoperative Evaluierung



- Adipositas



# präoperative Evaluierung



- Adipositas



# präoperative Evaluierung



- Adipositas



# präoperative Evaluierung



- Adipositas



# Bereiche der Thoraxchirurgie



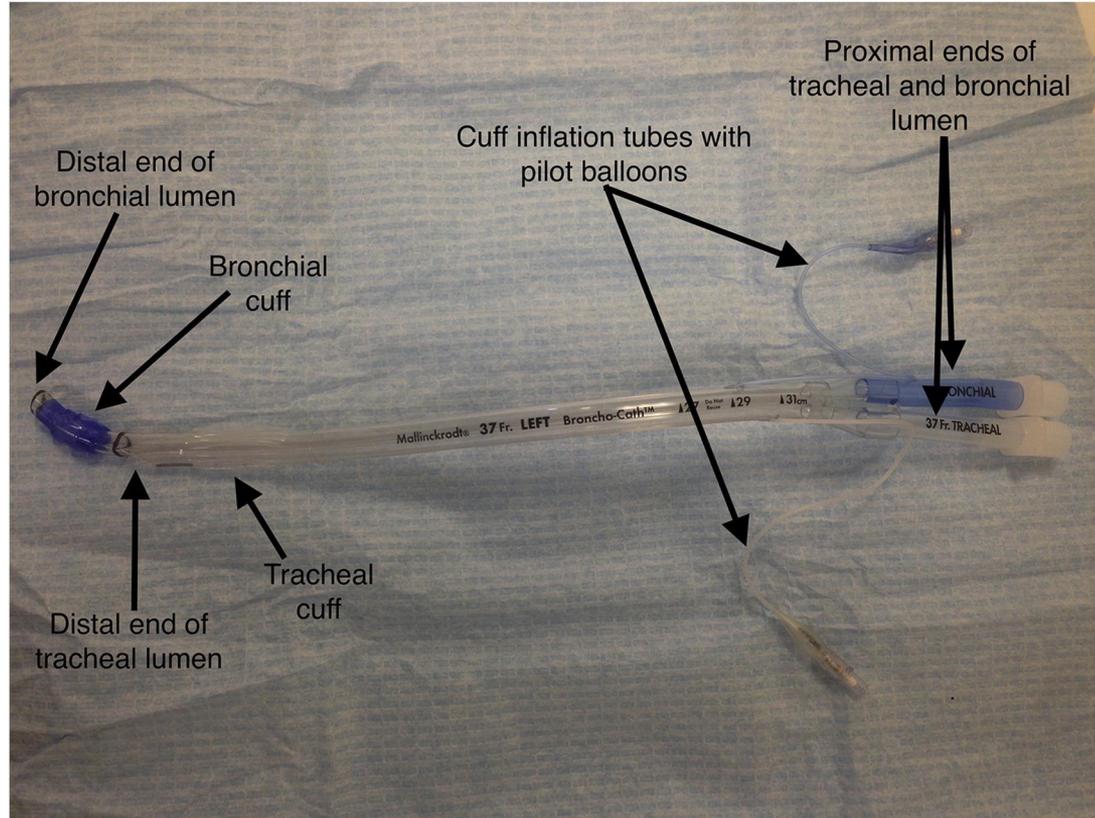
- Voraussetzung:
- Die sichere Ein-Lungen-Ventilation

# Ein – Lungen – Ventilation



- DLT

- [https://www.bjaed.org/article/S2058-5349\(17\)30204-4/fulltext](https://www.bjaed.org/article/S2058-5349(17)30204-4/fulltext)

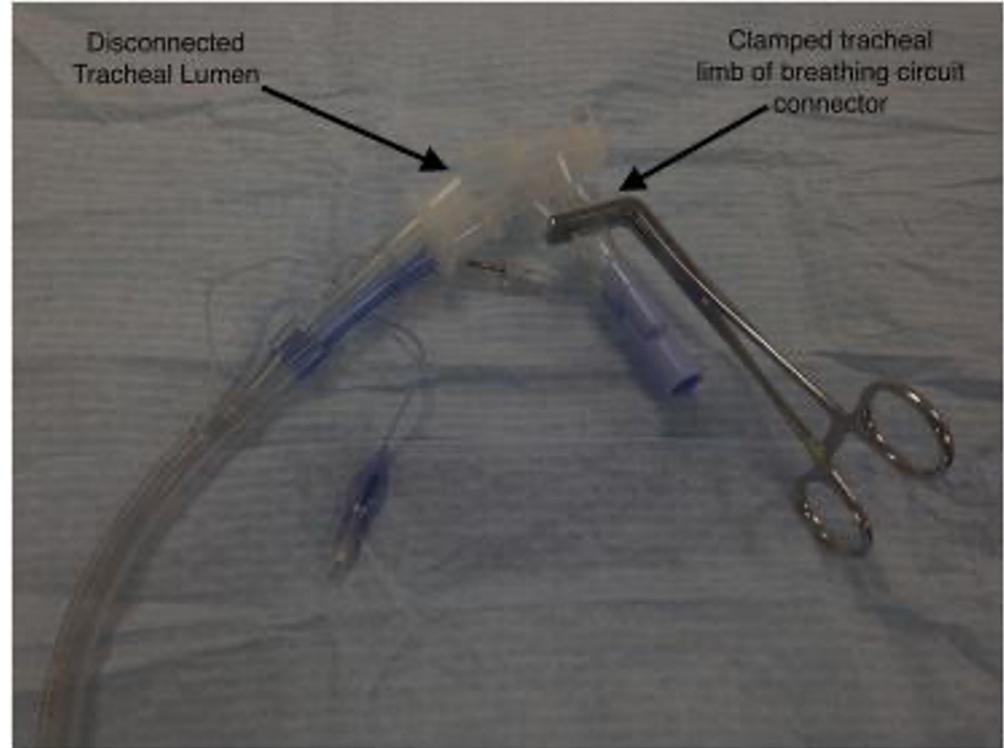
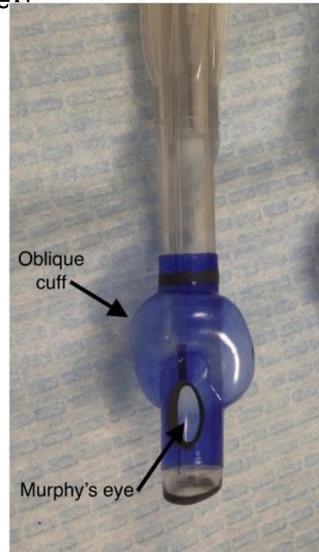


# Ein – Lungen – Ventilation



- DLT

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# Ein – Lungen – Ventilation



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- [https://www.bjaed.org/article/S2058-5349\(17\)30204-4/fulltext](https://www.bjaed.org/article/S2058-5349(17)30204-4/fulltext)

Erwachsenengröße: 35, 37, 39 und 41

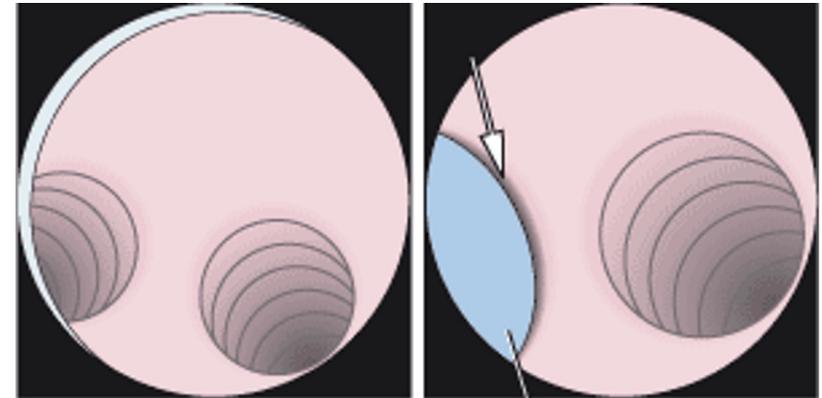
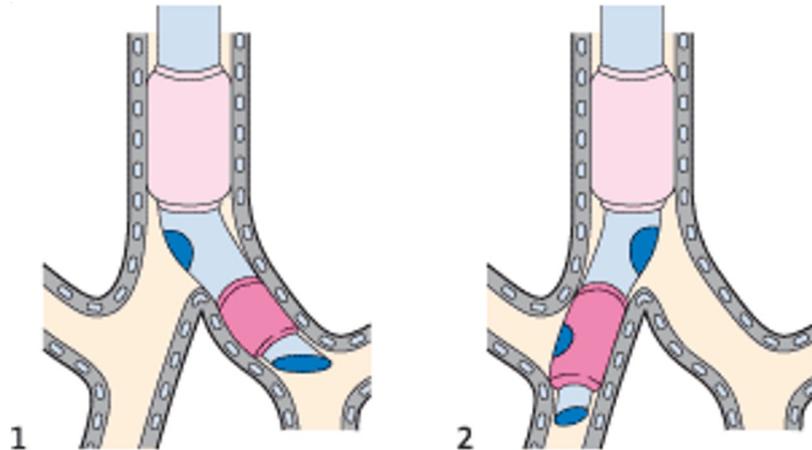
Kindergrößen: 26 und 28

# Ein – Lungen – Ventilation



- DLT

- <https://www.psychyrembel.de/Doppellumentubus/K065S>



bronchialer Cuff

# Ein – Lungen – Ventilation



- DLT



# Ein – Lungen – Ventilation



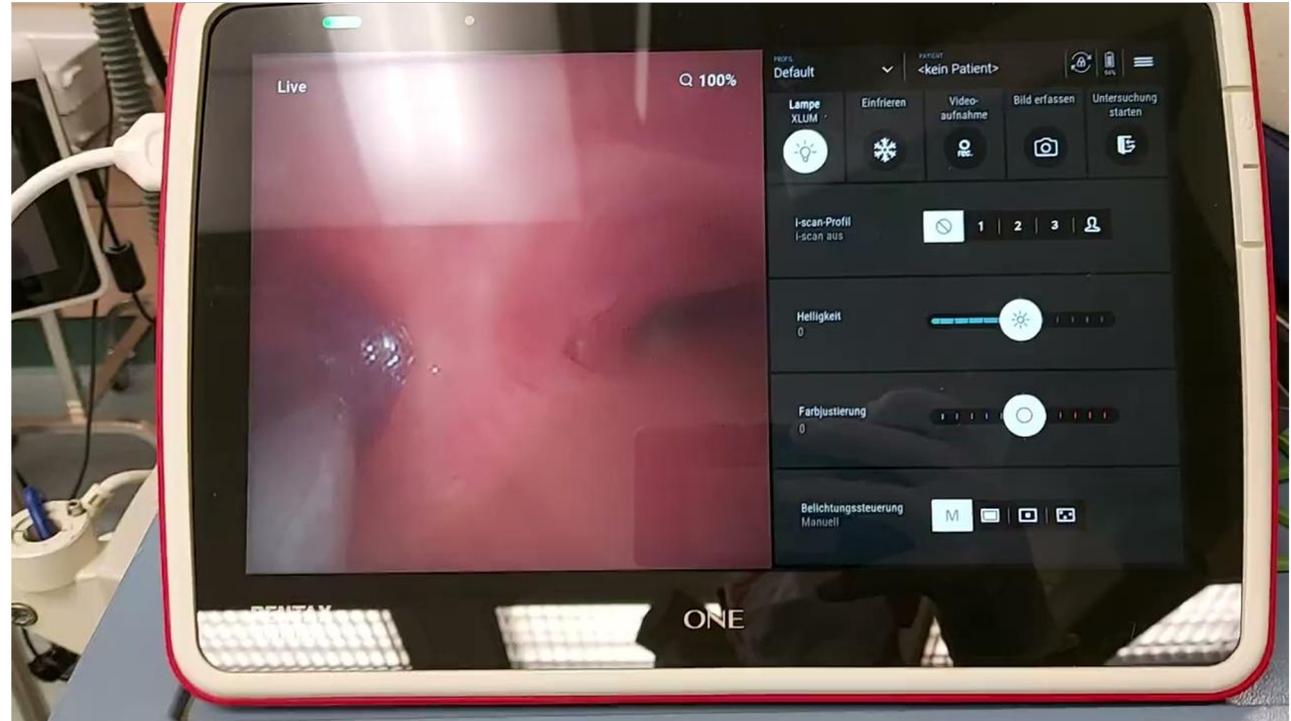
- DLT



# Ein – Lungen – Ventilation



- DLT
- Lage-Kontrolle mit dem Bronchoskop



# Ein – Lungen – Ventilation



- DLT – Ambu Vivasight



# Ein – Lungen – Ventilation



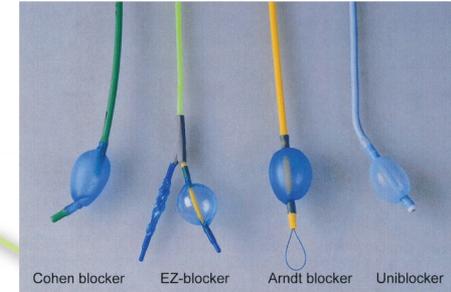
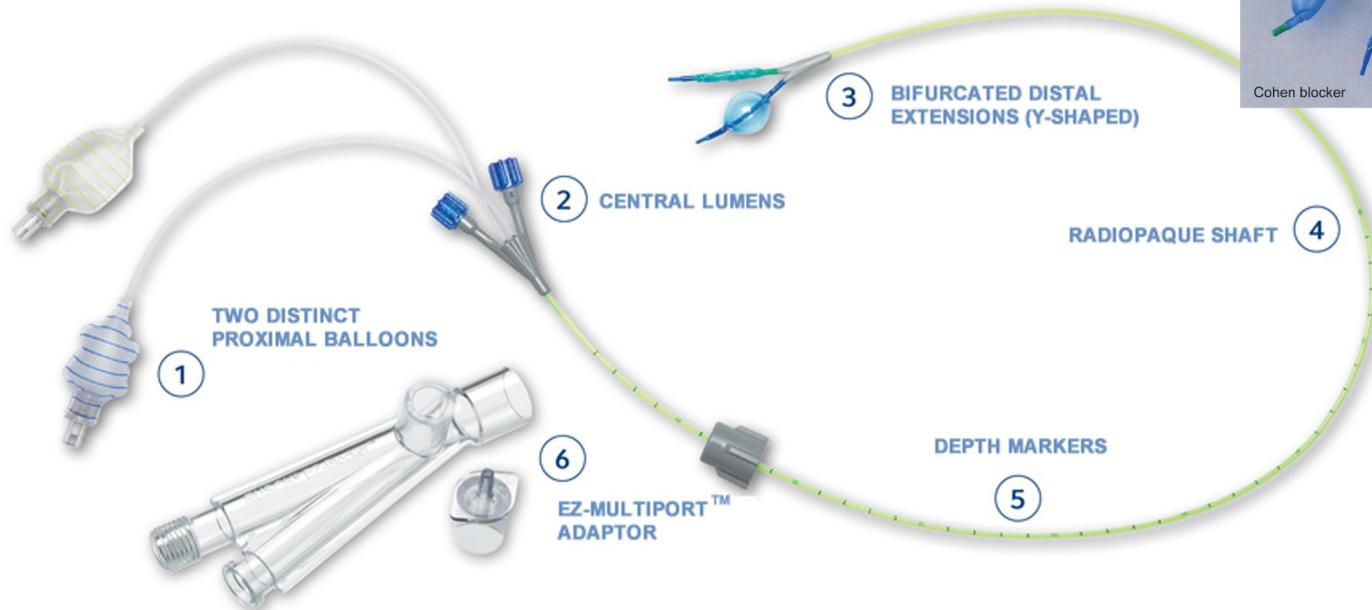
- DLT – wenn es doch nicht geht ...



# Ein – Lungen – Ventilation



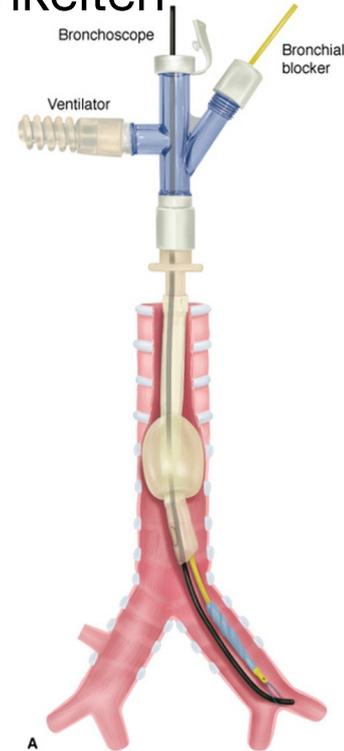
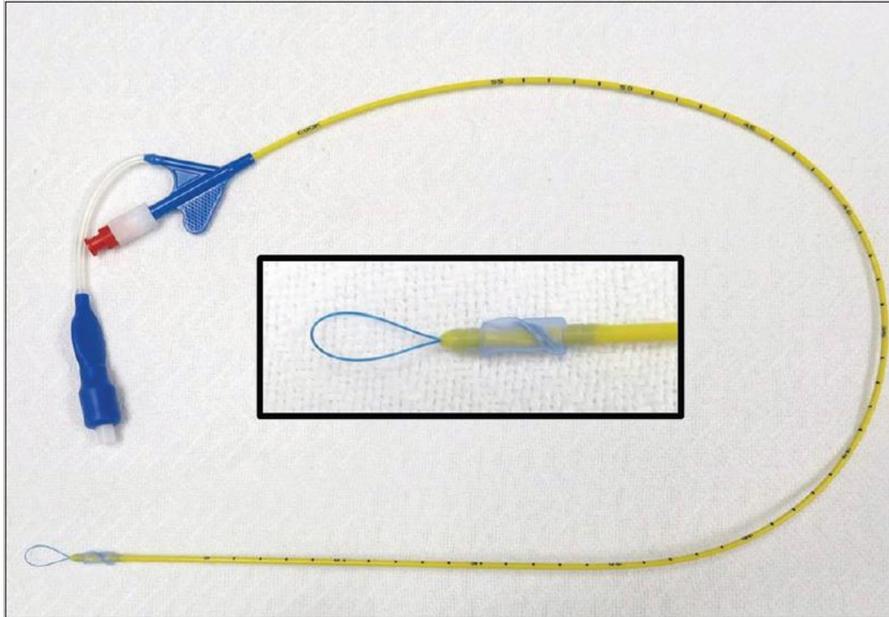
- Weitere Einlungenventilationsmöglichkeiten
- Bronchusblocker



# Ein – Lungen – Ventilation



- Weitere Einlungenventilationsmöglichkeiten
- Bronchusblocker

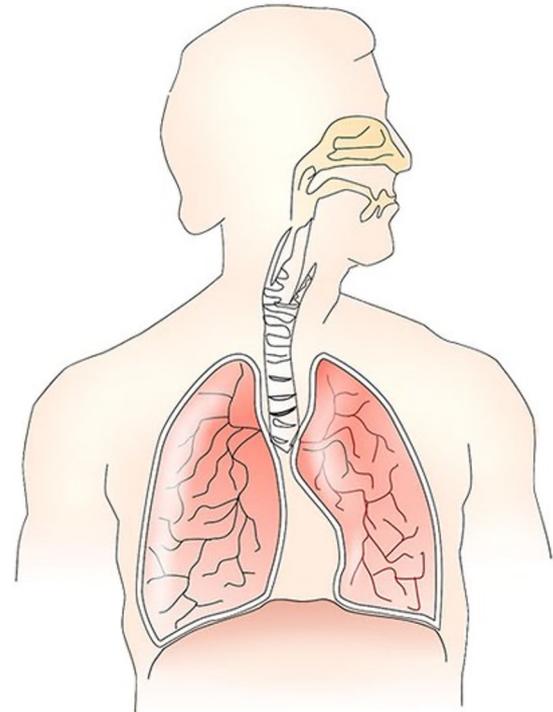


Coaxial Placement of Arndt Endo-Bronchial Blocker

# Ein – Lungen – Ventilation



- Klemmenresektion
- Lobektomie (OL, ML, UL, Lingula)
- Extraanatomische Segmentresektion
- Pneumonektomie
- Carinaresektion
- Sleevelobektomie



# Ein – Lungen – Ventilation



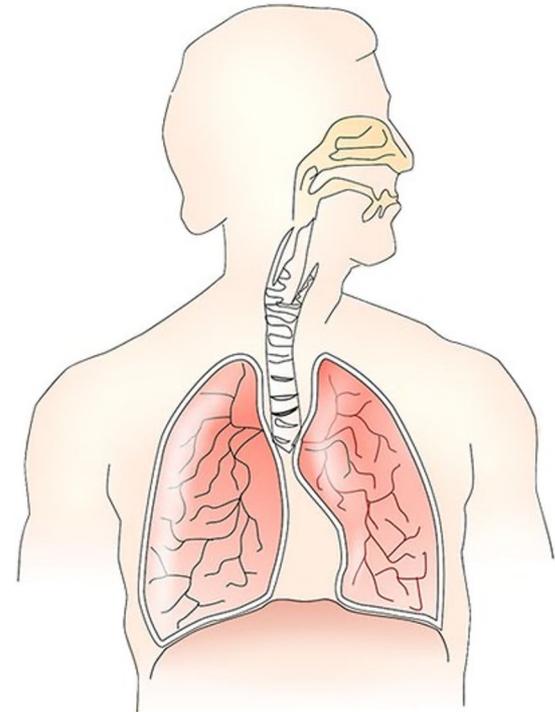
Review > [Thorac Surg Clin.](#) 2020 Feb;30(1):1-13. doi: 10.1016/j.thorsurg.2019.09.001.

## Technical Issues and Patient Safety in Nonintubated Thoracic Anesthesia

Gabor Kiss <sup>1</sup>

Affiliations + expand

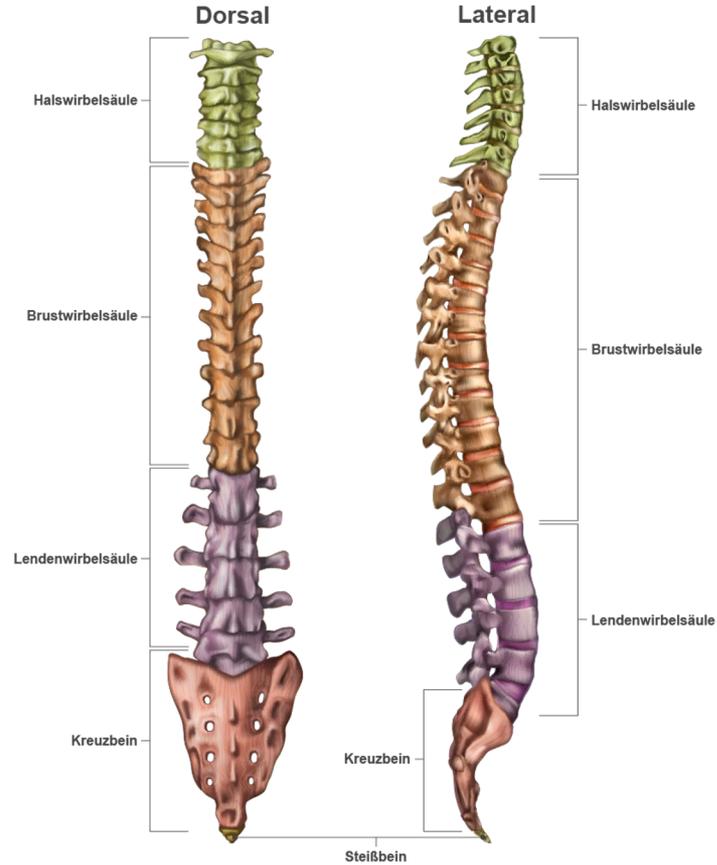
PMID: 31761277 DOI: [10.1016/j.thorsurg.2019.09.001](#)



# thorakaler Epiduralkatheter



# thorakaler Epiduralkatheter



# Minimalinvasiver Zugang zum Thorax



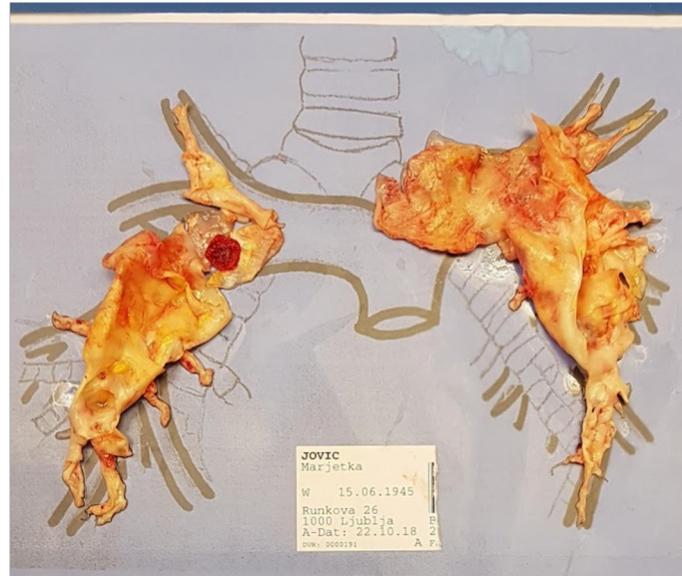
Beispiel: DaVinci für Thymektomien

# CTEPH



Diagnose: Chronische thromboembolische pulmonale Hypertension

Therapie: Pulmonale Thrombendarterektomie



# CTEPH



Diagnose: Chronische thromboembolische pulmonale Hypertension

Therapie: Pulmonale Thrombendarterektomie

Standardtubus

Zentrale Zugänge

HLM

Tiefe Hypothermie mit KL Stillstand

# CTEPH



# Lungentransplantation



## Lung transplantation is ...

Performed since November 9th 1989 at the University of Vienna (34 years)

Performed currently > 100 tx/year (total > 2000 patients)

# Trachealresektion



# Trachealresektion



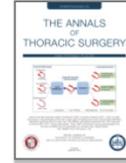
# Trachealresektion



The Annals of Thoracic Surgery

Volume 110, Issue 1, July 2020, Pages 251-257

ELSEVIER



Original article

General thoracic

## Laryngeal Mask as the Primary Airway Device During Laryngotracheal Surgery: Data From 108 Patients

Thomas Schweiger MD, PhD <sup>a, \*</sup>, Isaac de Faria Soares Rodrigues MD <sup>a, b, \*</sup>, Imme Roesner MD <sup>c</sup>, Berit Schneider-Stickler MD <sup>c</sup>, Matthias Evermann <sup>a</sup>, Doris-Maria Denk-Linnert MD <sup>c</sup>, Helmut Hager MD <sup>d</sup>, Walter Klepetko MD <sup>a, ♀</sup>

\* ✉, Konrad Hoetzenecker MD, PhD <sup>a, \*</sup>



# interventionelle Pulmologie



- Sedierung und Allgemeinnarkosen
- problematisches Setting während Pandemie
- mögliche Komplikationen: Pneu, Blutung, Hypoxie, Hypoventilation, Laryngo- und Bronchospasmus
- transkutanes CO2 nützliches Tool
- LMA oder Tubus - EBUS (endobronchichaler U/S)
- ambulant