

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



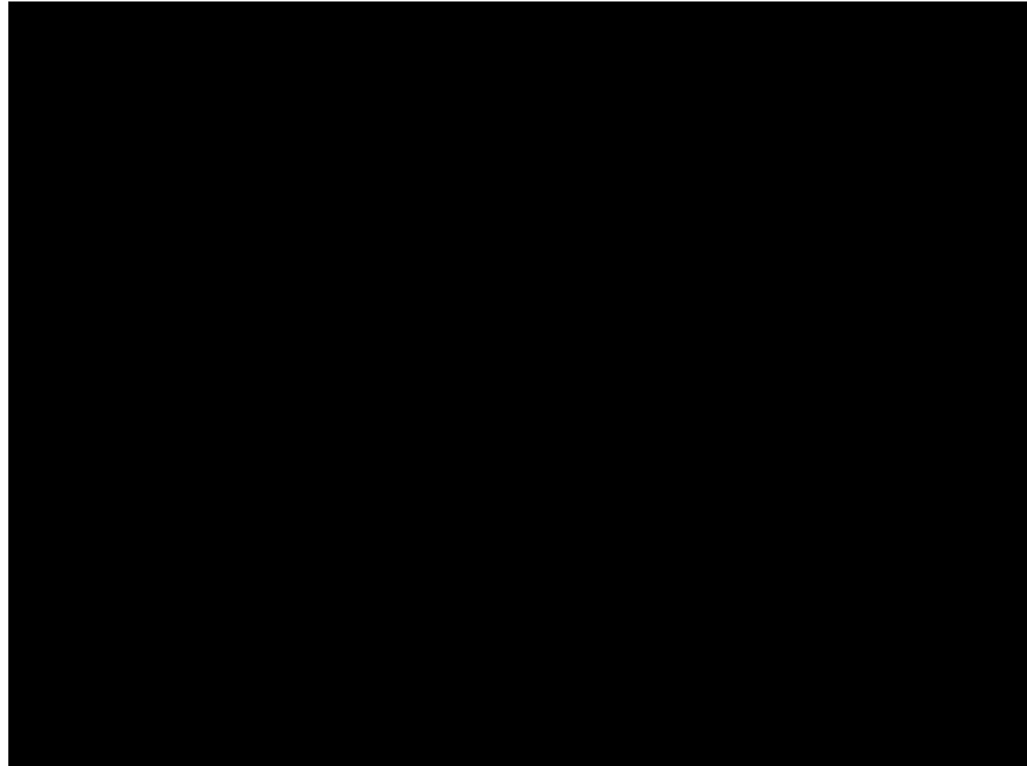
**Table 1.** Respiratory risk stratification (related to planned lung resection)

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>**

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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



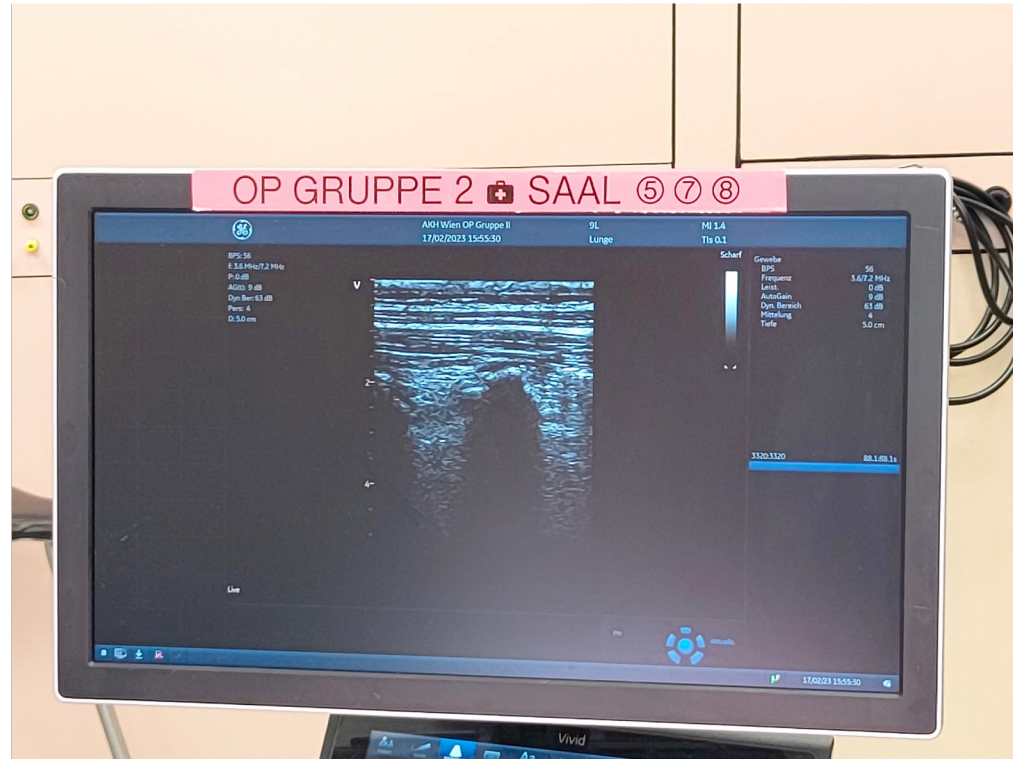
- Erector Spinae Block (ESB)



# 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

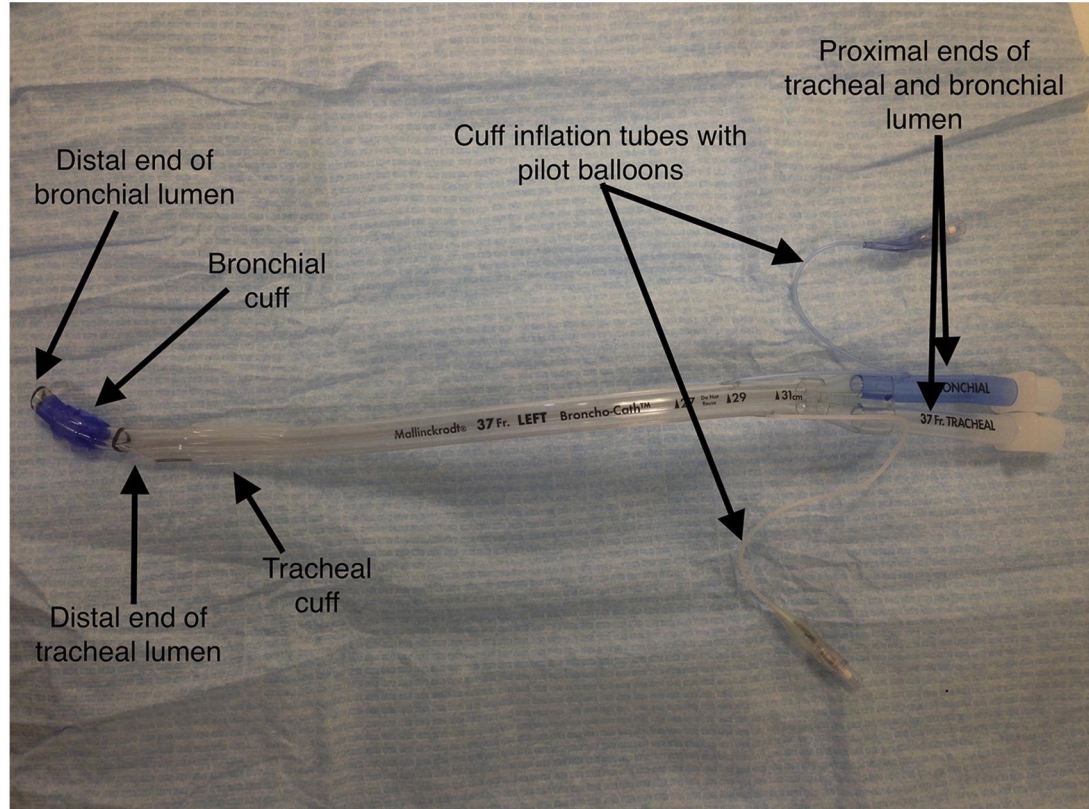


# Ein – Lungen – Ventilation



- DLT

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

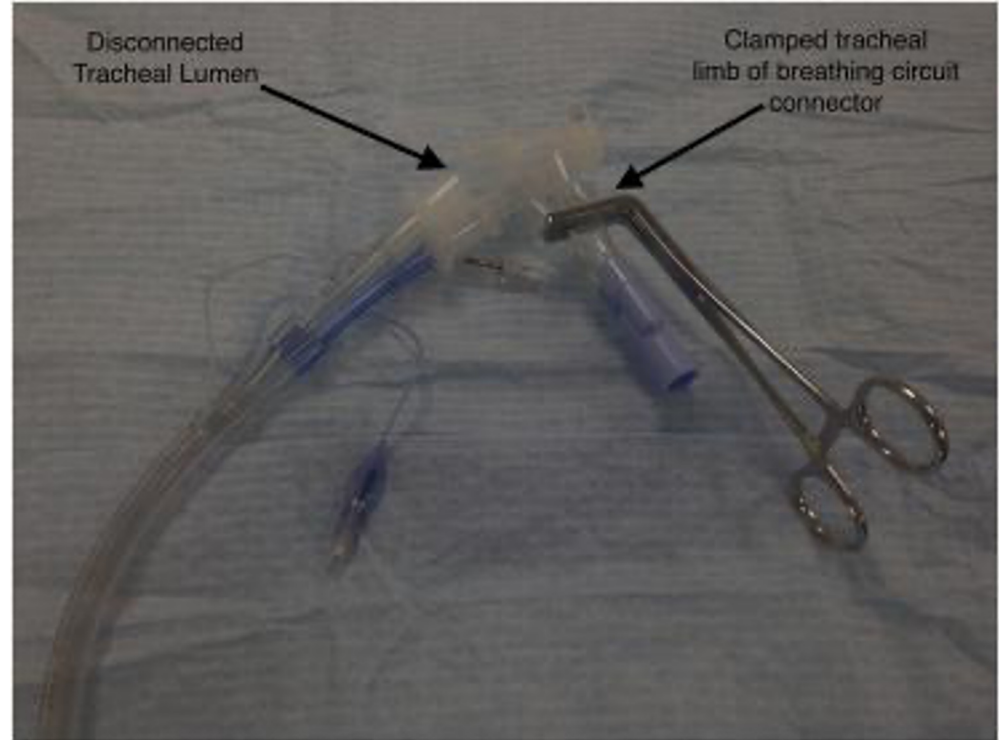
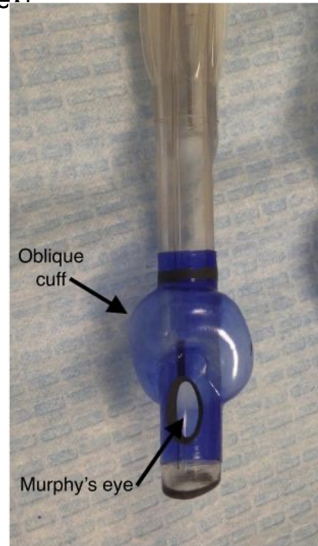


# Ein – Lungen – Ventilation



- DLT

- [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

- [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

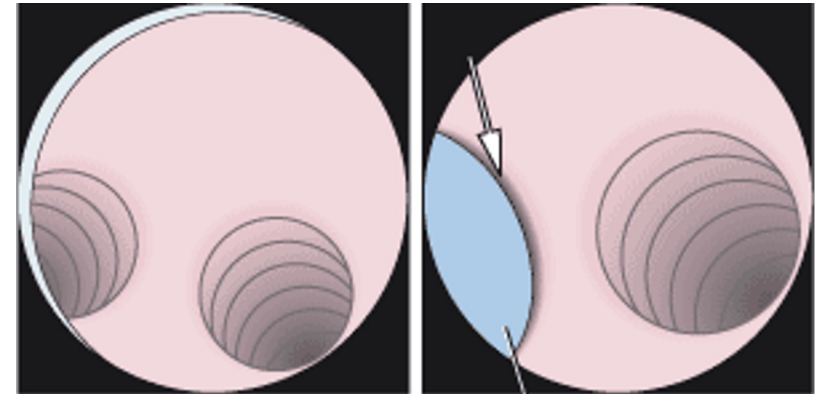
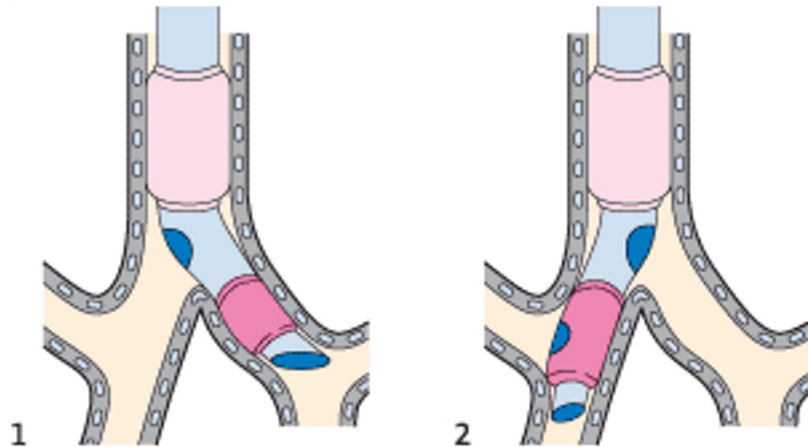
Kindergrößen: 26 und 28

# Ein – Lungen – Ventilation



- DLT

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



bronchialer Cuff



# Ein – Lungen – Ventilation



- DLT



# Ein – Lungen – Ventilation



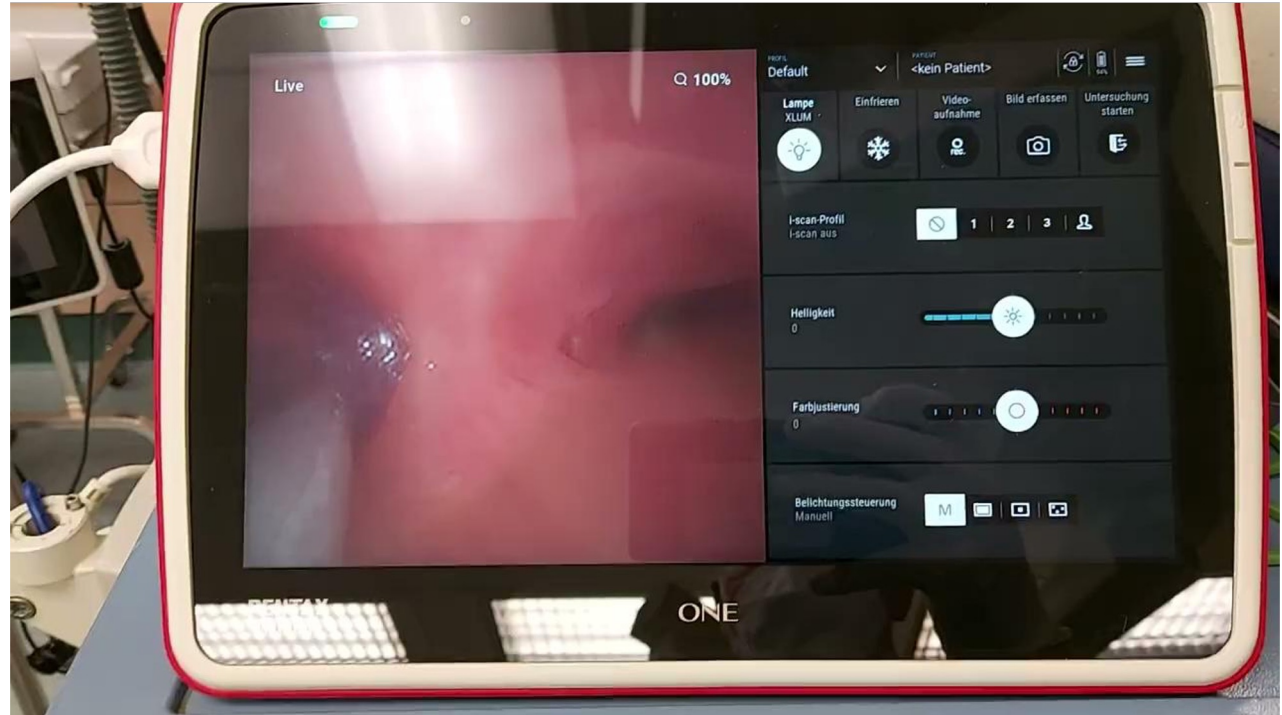
- DLT



# Ein – Lungen – Ventilation



- DLT
- Lage-Kontrolle mit dem Bronchoskop





# Ein – Lungen – Ventilation



- DLT – Ambu Vivasight



# Ein – Lungen – Ventilation



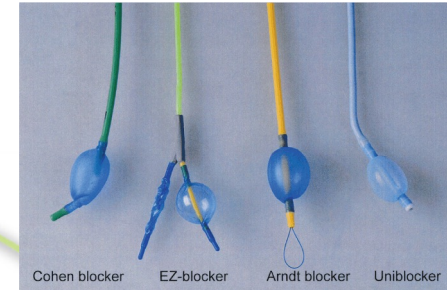
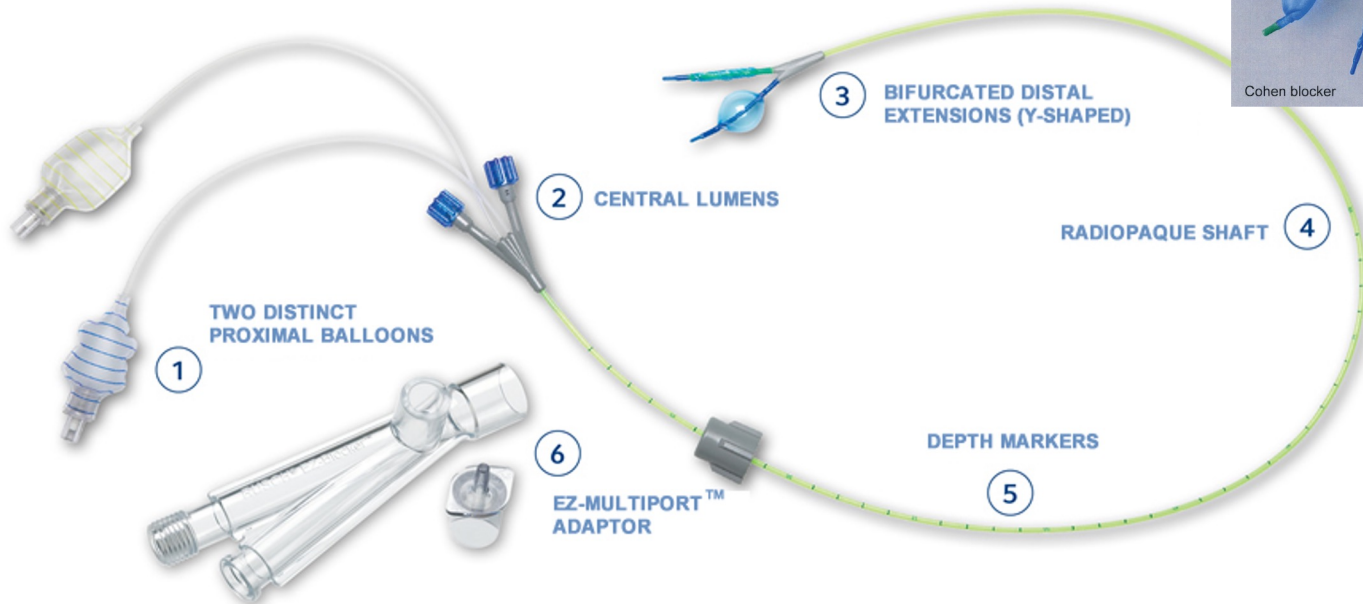
- DLT – wenn es doch nicht geht ...



# Ein – Lungen – Ventilation



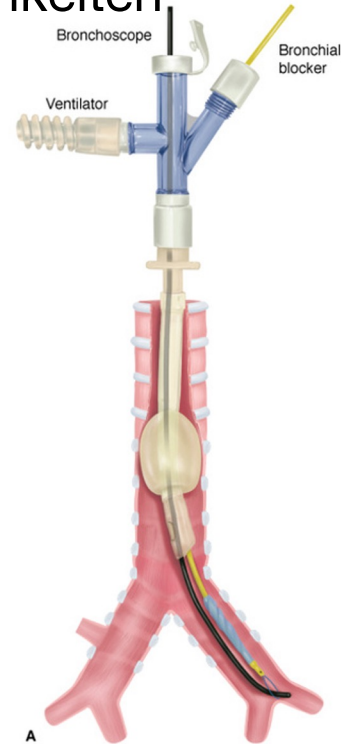
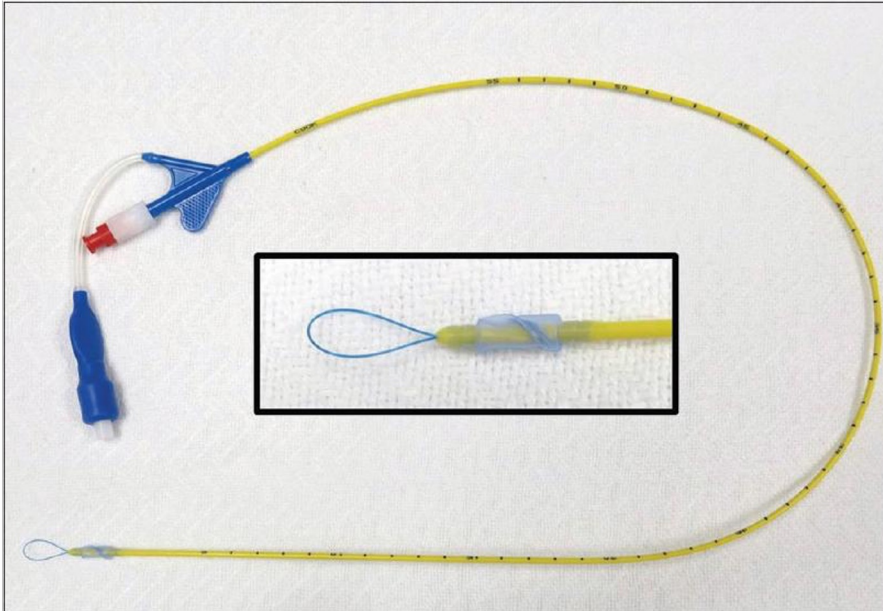
- Weitere Einlungenventilationsmöglichkeiten
- Bronchusblocker



# Ein – Lungen – Ventilation



- Weitere Einlungenventilationsmöglichkeiten
- Bronchusblocker



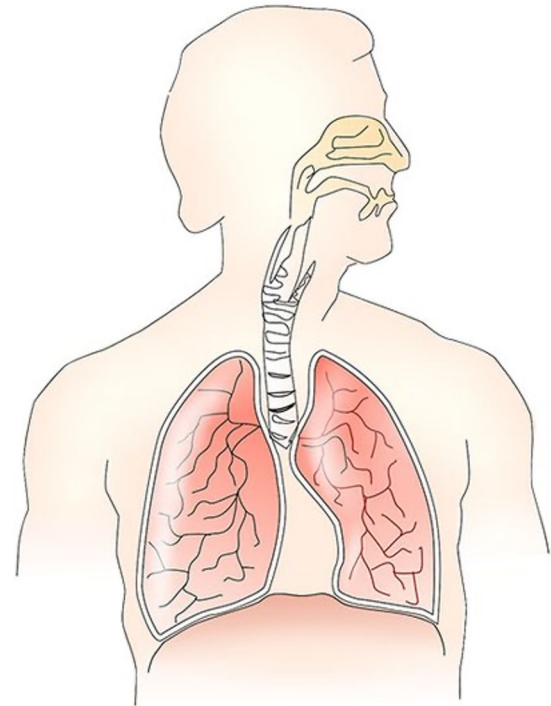
Coaxial Placement of Arndt Endo-Bronchial Blocker



# Ein – Lungen – Ventilation



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





# Ein – Lungen – Ventilation



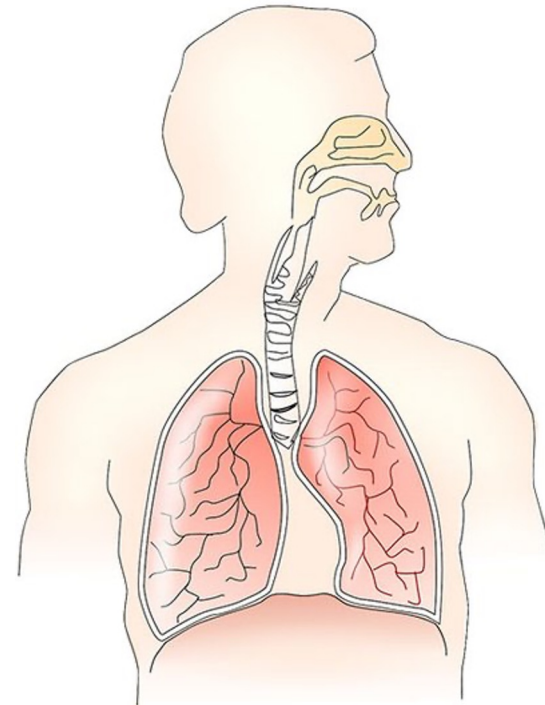
Review > [Thorac Surg Clin.](#) 2020 Feb;30(1):1-13. doi: 10.1016/j.thorsurg.2019.09.001.

## Technical Issues and Patient Safety in Nonintubated Thoracic Anesthesia

Gabor Kiss <sup>1</sup>

Affiliations + expand

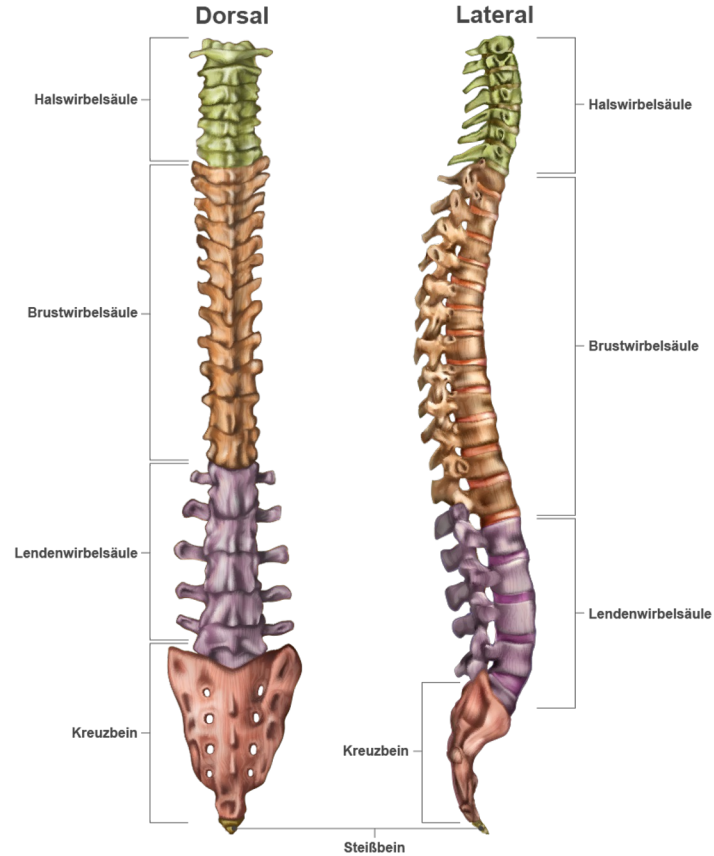
PMID: 31761277 DOI: [10.1016/j.thorsurg.2019.09.001](#)



# thorakaler Epiduralkatheter



# thorakaler Epiduralkatheter



# Minimalinvasiver Zugang zum Thorax



Beispiel: DaVinci für Thymektomien

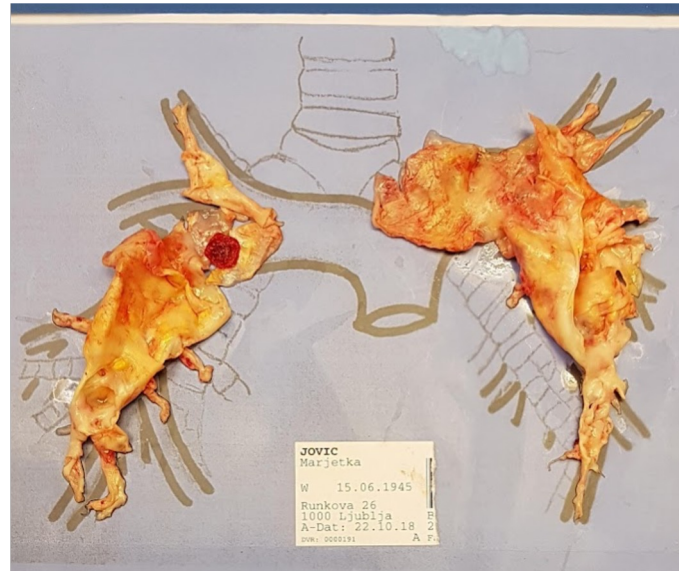


# CTEPH



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



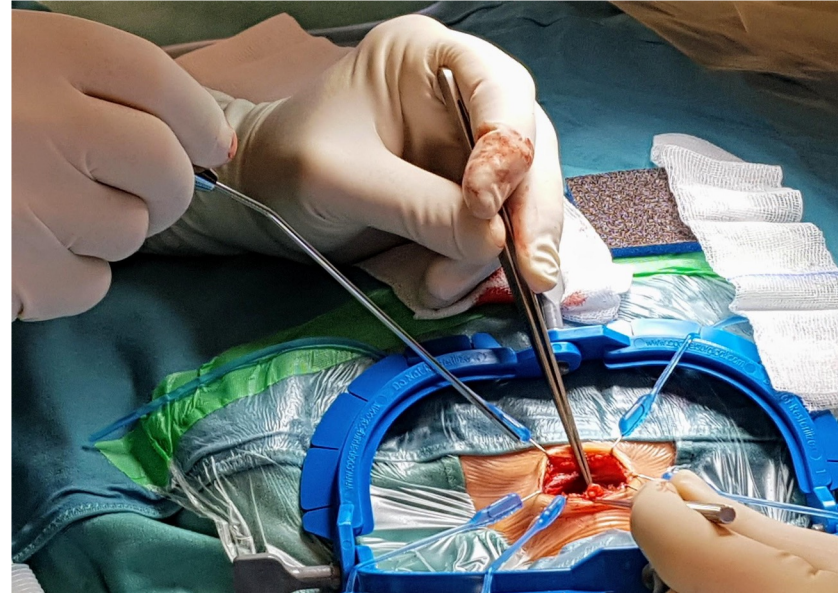
## Lung transplantation is ...

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