

# Enhanced Recovery after Lung Surgery in 1 minute<sup>1</sup>

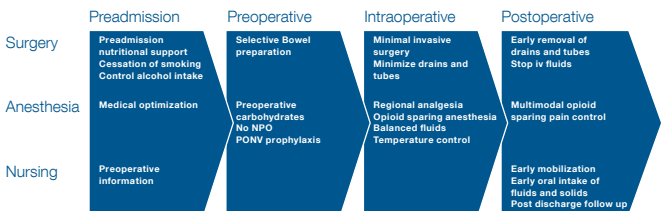


Enhanced Recovery After Surgery (ERAS) is a paradigm shift in perioperative care, resulting in substantial improvements in clinical outcomes and cost savings.

## Goals of enhanced recovery programmes

- ✓ **MINIMIZE RECOVERY TIME**
- ✓ **REDUCE COMPLICATIONS**
- ✓ **REDUCE LENGTH OF STAY**

Recommendations were developed for a total of 45 enhanced recovery items covering topics in the entire patient journey from referral to discharge:



<sup>1</sup> Batchelor TJP et al, Guidelines for enhanced recovery after lung surgery: Recommendations of the Enhanced Recovery After Surgery (ERAS) Society and the European Society of Thoracic Surgeons (ESTS). Eur J Cardiothorac Surg 2018; doi:10.1093/ejcts/ezy301.

# Evidence-based improvements

**Individual care elements** may not necessarily have significant benefits when studied in isolation, but **their combination** with other elements of the pathway is thought to have a synergistic effect.



## Recommendations of ERAS & ESTS

### Preadmission

- Information, education and counselling
- Perioperative nutrition
- Smoking cessation, alcohol dependency management
- Anaemia management
- Pulmonary rehab. and prehab.

### Preoperative

- Preoperative fasting and carbohydrate treatment
- Pre-anaesthetic medication

### Perioperative

- VTE prophylaxis
- Antibiotic prophylaxis and skin prep.
- Temperature control
- Anaesthetic protocol
- Fluid management
- AF prevention
- MIS

### Postoperative

- **Chest drain management**
- Urinary drainage
- Early mobilization and adjuncts to physiotherapy



## Management of chest tubes remains a critical aspect

in the postoperative course of patients following lung resection, influencing the recovery phase and hospital stay.



***“A detailed analysis identified the duration of chest drain as the single most important determinant of length of stay”*** Eric Lim

# 4 Recommendations of ERAS & ESTS

The question of whether external suction or its absence has a beneficial effect on clinical outcomes has been the subject of several systematic reviews and clinical guidelines.

However, **regulated suction** [as provided by digital devices] reduced the duration of chest tube duration by 1.1 days and the length of hospital stay by 1 day after lobectomy.

## 1 The routine application of external [wall<sup>2</sup>] suction should be avoided

The **amount of pleural fluid output** observed daily influences the timing of chest tube removal. Studies on more aggressive chest drain removal strategies within fast track programmes have been shown to be safe.



## 2 Chest tubes can be removed safely even if the daily serous effusion is of high volume (up to 450 ml/24 h).

<sup>2</sup> The references cited by the ERAS Guidelines refer to publications showing the disadvantages of using external fixed suction as provided by wall suction.

Chest tubes are painful and inhibit respiratory function. Traditionally, thoracic surgeons have used 2 chest tubes to drain the pleural space after lobectomy.

The **use of a single chest tube** is associated with **less pain** and **reduced chest tube duration** without increasing the risk of recurrent effusion.

**3** A single tube should be used instead of 2 after a routine anatomical lung resection.



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## DIGITAL DRAINAGE

Digital drainage systems have **several advantages** over a traditional water seal.

They are light, compact and have a built-in suction pump, so do not need to be attached to wall suction, should suction be required, favouring **early patient mobilization**.

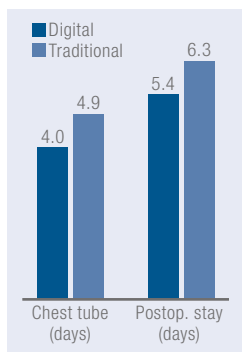


## Digital drainage systems **reduce variability in decision-making** and should be used



The ability to store information and display trends in air leak over time allows **more informed decision-making** about chest tube removal and **reduces inter-observer and clinical practice variability.**

Both chest tube duration and length of hospital stay were found to be shorter [with digital drainage] after lung resection<sup>3</sup>



Higher levels of **patient satisfaction** [with digital drainage] paralleled the objective clinical benefits

*“We found that patients managed with the electronic device had a more positive perception of the chest drainage system, in particular related to its comfort, portability, and convenience for personnel and patients compared with those managed with the traditional device.”<sup>4</sup>*

3 Brunelli A, Salati M, Refai M, Di Nunzio L, Xiume F, Sabbatini A. Evaluation of a new chest tube removal protocol using digital air leak monitoring after lobectomy: a prospective randomised trial. *Eur J Cardiothorac Surg* 2010;37:56–60

4 Pompili C, Detterbeck F, Papagiannopoulos K, Sihoe A, Vachlas K, Maxfield MW et al. Multicenter international randomized comparison of objective and subjective outcomes between electronic and traditional chest drainage systems. *Ann Thorac Surg* 2014;98:490–6; discussion 496.

# Improving outcomes and streamlining care – clinically proven

ORIGINAL

## The use of Thopaz<sup>+</sup> improves patient outcomes...

- Reduced chest tube duration
- Shorter hospital stays
- Reduction in hospital costs



## ...and streamlines the delivery of care

- Improved inter-observer agreement due to precise air leak monitoring
- Simplified ward rounds
- Standardized hospital practices/protocols
- Better discharge planning

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