Paravertebral catheter versus Epidural analgesia in Minimally Invasive Esophageal Resection: a randomized controlled multicenter trial (PEPMEN trial)

Published: 20-11-2019
Last updated: 30-01-2025

To compare paravertebral catheter versus epidural analgesia regarding the quality of recovery in patients undergoing minimally invasive esophagectomy.

Ethical review	Approved WMO
Status	Completed
Health condition type	Malignant and unspecified neoplasms gastrointestinal NEC
Study type	Interventional

Summary

ID

NL-OMON54619

Source
ToetsingOnline

Brief title
PEPMEN trial

Condition

- Malignant and unspecified neoplasms gastrointestinal NEC
- Gastrointestinal neoplasms malignant and unspecified
- Gastrointestinal therapeutic procedures

Synonym
esophageal cancer

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Utrecht
Source(s) of monetary or material Support: Toegekende subsidie ZonMw Doelmatigheid 2020 (dossiernummer 852002004)

Intervention

Keyword: analgesia, enhanced recovery, esophageal cancer, surgery

Outcome measures

Primary outcome

The primary outcome measure is the quality of recovery on postoperative day 3,

measured by the *Quality of Recovery - 40 (QoR-40)* questionnaire.

Secondary outcome

Secondary outcome measures include the need for escape pain medication,

additional opioid consumption, technical complications, length of intensive

care and hospital stay, postoperative complications, quality of life at 3 and

6 months after surgery, pain at 6 months after surgery, and cost-effectiveness.

Study description

Background summary

Esophageal cancer is currently the 9th most common cancer worldwide and is increasingly diagnosed in the Western world, mainly due to the growing incidence of adenocarcinoma. Curative treatment for esophageal cancer, which involves neoadjuvant therapy followed by esophagectomy, is possible for patients with locally resectable disease without distant metastases. Esophagectomy is usually performed by a two-stage transthoracic procedure, which involves an abdominal and a thoracic surgical phase. Open transthoracic surgery is associated with substantial short-term postoperative thoracic pain, which can contribute to (pulmonary) complications and delayed recovery. Thoracic epidural analgesia is the current gold standard for pain control, as it was shown to be superior to systemic opioids in terms of pain control and pulmonary complications after open esophagectomy. However, over the last

decades, minimally invasive esophagectomy is increasingly adopted and is associated with less postoperative pain when compared to open surgery. Furthermore, enhanced recovery protocols have been introduced and aim at fast mobilization and recovery after minimally invasive esophagectomy, which may be hampered by technical failure of analgesia or by hypotensive events due to the bilateral sympathetic nerve block that is inherent to epidural analgesia. In this context, a re-evaluation of the current gold standard for pain management after minimally invasive esophagectomy is warranted.

In a Cochrane review that included a variety of thoracotomy procedures, it was concluded that paravertebral analgesia provides comparable pain relief while inducing less postoperative hypotension, urinary retention, and nausea when compared to epidural analgesia. A systematic review of patients that underwent esophagectomy indeed reported comparable pain control and less hypotensive events in retrospective case series that compared paravertebral versus epidural analgesia, however, the authors highlighted the lack of high-quality prospective studies and the need to perform such research. In another more recent retrospective cohort study, paravertebral analgesia was compared to epidural analgesia in patients undergoing open esophagectomy. That study showed a 29% reduction in the need for inotropic medication and a 40% shorter mean length of postoperative admission to the ICU after implementing paravertebral analgesia. Although these findings are promising, all studies were retrospective in nature and included patients who underwent esophagectomy by an open approach, which implies that substantial bias may be present and that the results may not be applicable to patients undergoing minimally invasive esophagectomy. Therefore, a randomized controlled trial is required to gain insight in the efficacy and costs aspects of paravertebral analgesia in relation to epidural analgesia in patients undergoing minimally invasive esophagectomy.

Study objective

To compare paravertebral catheter versus epidural analgesia regarding the quality of recovery in patients undergoing minimally invasive esophagectomy.

Study design

Multicenter, randomized, controlled prospective trial.

Intervention

Paravertebral catheter analgesia in patients who undergo minimally invasive esophagectomy.

Study burden and risks

In contrast to an epidural catheter (control study arm), a paravertebral catheter (intervention study arm) is placed during the surgical procedure while the patient is under general anesthesia. This means that the catheterization of patients in the interventional study arm is certainly not more stressful for patients. The only potential additional risk of paravertebral catheterization includes accidental puncturing of the parietal pleura during catheter placement, which can happen during paravertebral catherization under ultrasound guidance and sometimes leads to a small pneumothorax (~0.5%). However, in the current study, paravertebral catheterization is achieved under thoracoscopic vision. Therefore, this complication has not occurred with the surgical teams who place the paravertebral catheter under thoracoscopic vision. Hence, the study procedure is not considered to carry any additional risks when compared to the standard treatment (epidural analgesia).

The burden of participation for patients is low, as patients will only be asked to complete additional questionnaires during their postoperative hospitalization, namely on postoperative days 1-3. The questonnaires involve the 'Quality of Recovery 40 (QoR-40)' and International Pain Outcomes (IPO)' lists, as specified in the study protocol under the section 'Secondary study parameters/endoints'. The additional quality of life questionnaires, which are described in the study protocol, are already completed by all patients undergoing esophagectomy in the context of the *Prospective Observational Cohort study of Oesophageal-gastric cancer Patients (POCOP, www.pocop.nl)' study. The EORTC C30 and OG-25 questinnaires that are completed for POCOP before surgery, at 3 months after surgery, and at 6 months after surgery will also be used for this study.

Contacts

Public
Universitair Medisch Centrum Utrecht

Heidelberglaan 100
Utrecht 3584 CX
NL
Scientific
Universitair Medisch Centrum Utrecht

Heidelberglaan 100
Utrecht 3584 CX
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

The study population consists of patients who are scheduled to undergo elective minimally invasive esophagectomy with two-field lymphadenectomy, gastric conduit reconstruction, and intrathoracic anastomosis (i.e. Ivor Lewis procedure).

Exclusion criteria

- ASA >III / severe comorbidity
- Coagulation disorders that prohibit epidural analgesia according to the Nederlandse Vereniging voor Anesthesiologie (NVA) guideline *Neuraxisblokkade en antistolling*
- Other contraindications for epidural analgesia
- Allergy to local anesthetics
- Ongoing opioid use (i.e. any opioid) prior to esophagectomy (i.e. >3 months calculated until the day of esophagectomy)
- Renal failure, i.e. eGFR < 50
- Unable to complete questionnaires in Dutch
- Cervical lymph node dissection (i.e. 3-field lymphadenectomy)
- Pregnancy

Study design

Design

Study phase:	4
Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Completed
Start date (anticipated):	21-01-2020
Enrollment:	192
Type:	Actual

Ethics review

Approved WMO Date:	20-11-2019
Application type:	First submission
Review commission:	METC NedMec
Approved WMO Date:	05-02-2020
Application type:	Amendment
Review commission:	METC NedMec
Approved WMO Date:	10-08-2020
Application type:	Amendment
Review commission:	METC NedMec
Approved WMO Date:	21-12-2021
Application type:	Amendment
Review commission:	METC NedMec
Approved WMO	

Date:	05-07-2023
Application type:	Amendment
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL68486.041.19

Study results

Date completed:	21-03-2024
Results posted:	17-12-2024
Actual enrolment:	199

First publication
01-01-1900