A phase IV, blinded, randomized controlled trial to compare the effectiveness of low pressure pneumoperitoneum during laparoscopic donor nephrectomy to optimize the quality-of-recovery during the early post-operative phase

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To investigate whether the use of low pressure pneumoperitoneum during laparoscopic donor nephrectomy improves the quality-of-recovery during the early post-operative phase as compared to the use of standard pressure pneumoperitoneum.

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Renal disorders (excl nephropathies)
Study type	Interventional

Summary

ID

NL-OMON40838

Source
ToetsingOnline

Brief title
LEOPARD-2 study

Condition

- Renal disorders (excl nephropathies)
- Renal and urinary tract therapeutic procedures

Synonym

donor nephrectomy, kidney donation

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Sint Radboud
Source(s) of monetary or material Support: MSD;Haarlem

Intervention

Keyword: Laparoscopic donornephrectomy, Low pressure pneumoperitoneum, Sugammadex

Outcome measures

Primary outcome

Quality of recovery-40 score on day 1 (overall score)

Secondary outcome

Questionnaires

• Quality of recovery-40 questionnaire

• Return to Work questionnaire

Medication use

• Cumulative morphine use

• Cumulative use of other analgetics

• Cumulative use of anti-emetics

Clinical parameters

• Components of pain assessment

• Evaluation of post-operative complications, graded according to Clavien Dindo

• Post-operative incidence of nausea and/or vomiting

• Time until reaching discharge criteria*

• Serum creatinine

• Incidence of chronic pain

Intra-operative parameters

• Operation time (min), length of pneuoperitoneum (min), first warm ischemia time (sec)

• Estimated blood loss (ml)

• Conversion to open donor nephrectomy (incidence)

• Conversion to hand-assisted donor nephrectomy (incidence)

• Intra-operative complications (e.g. bleeding, injury to spleen or liver)

• Urine output during pneumoperitoneum phase

• Cumulative use of rocuronium (mg)

• Cumulative use of sugammadex (mg)

• Surgical rating score

* Discharge criteria are: adequate paincontrole with oral analgetics, absence of nausea/vomiting, passage of flatus or defecation, intake of solid food, patient is mobilized and independent and patient accepts discharge. Discharge criteria will be evaluated daily. If the donor for social reasons wants to stay longer (e.g. long distance and partner or child is still hospitalized) than the *virtual* discharge date is listed. A physician who is independent (ward

physician) is responsible for the actual discharge date.

Study description

Background summary

As both patients with end-stage kidney disease and society benefit tremendously from live kidney donation, the safety and well-being of kidney donors are highly important objectives in live kidney donation. Laparoscopic donor nephrectomy has several advantages over open donor nephrectomy, such as less post-operative pain, better quality of life and shorter hospital stay1. Therefore, laparoscopic donor nephrectomy is nowadays the treatment of choice. So far, modifications of the technique of laparoscopic donor nephrectomy, i.e. hand-assisted and/or retroperitoneoscopic approaches, did not show a significant benefit with regard to safety as reflected by the conversion to open and postoperative complication rate2-4. We therefore believe that further research should focus on the optimization of early postoperative recovery. Postoperative recovery is largely determined by the consequences of postoperative pain and its concomitant use of opioids. Since non-steroidal anti-inflammatory drugs are contra-indicated during and after nephrectomy, the management of postoperative pain largely depends on the administration of opioids. Measures to reduce postoperative pain would also reduce the occurrence of postoperative drowsiness, nausea and vomitus, and postoperative bowel dysfunction.
Pain after laparoscopic surgery can be divided into three components: a) superficial wound pain, b) deep intra-abdominal pain and c) referred shoulder pain5. A recent pilot study performed by our group showed that the use of low pressure pneumoperitoneum (7 mmHg) was feasible and significantly reduced deep intra-abdominal and referred pain scores during the first 72 hours after surgery6. Previous studies by others show that low pressure pneumoperitoneum during laparoscopic Nissen fundoplication and laparoscopic cholecystectomy is associated with a reduction of the systemic inflammatory response, less adverse impact on the peritoneal environment, post-operative pain and analgesic consumption7-10.

To facilitate the use of low pressure pneumoperitoneum and to optimize the quality of the surgical conditions (which in theory increases safety of the low pressure pneumoperitoneum), muscle relaxation will be standardized throughout the procedure. In our current practice higher doses of rocuronium are used for laparoscopic donor nephrectomy as compared to standard laparoscopic procedures (e.g. laparoscopic cholecystectomy). To facilitate recovery, suggamadex is used on a regular basis to antagonize the effects of muscle relaxation. Currently, a non-invasive device, the acceleromyograph at the wrist (TOF-watch-SX, MSD), is used to monitor the depth of muscle relaxation aiming at a train-of-four (TOF)

below 2. In our study we use the same device to measure the post tetanic count (PTC), aiming at a count of 1 or 2 which is defined as *deep* muscle relaxation. Instead of additional boluses of rocuronium, a continuous infusion with rocuronium will be used to guarantee a steady PTC of 1 or 2 during the whole procedure. After surgery all patients will receive suggamadex to rapidly antagonize the effects of muscle relaxation. This guarantees that the participants are not exposed to any additional burden related to the use of *deep* muscle relaxation.

Referenties

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Study objective

To investigate whether the use of low pressure pneumoperitoneum during laparoscopic donor nephrectomy improves the quality-of-recovery during the early post-operative phase as compared to the use of standard pressure pneumoperitoneum.

Study design

Single-center, single-blind, randomized, controlled clinical trial

Intervention

The patient will be randomized in one the following study groups:
• Standard pressure pneumoperitoneum (12 mmHg)
• Low pressure pneumoperitoneum (6 mmHg)

Study burden and risks

The patient will be asked to fill in some questionnaires:
• Quality of recovery-40: 5x 5 minutes = 25 minutes
• Return to work: 3x 5 minutes = 15 minutes
• Components of pain assessment: 7x 2 minutes = 14 minutes
• Nausea score = 5x 1 minute = 5 minutes

Total estimated 59 minutes

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

Obtained informed consent
Age over 18 years

Exclusion criteria

• insufficient control of the Dutch language to read the patient information and to fill out the questionnaires

• chronic use of analgetics or psychotropic drugs
• use of NSAIDs shorter than 5 days before surgery
• known of suspect allergy to rocuronium or sugammadex
• significant liver* or renal** dysfunction
• neuromuscular disease
• pregnant of breastfeeding;*Liver dysfunction is defined as alanine aminotransferase (ALAT) and/or aspartate aminotransferase (ASAT) > twice the upper limit (extremely rare in live kidney donors)
** renal dysfunction is defined as serum creatinine twice the normal level and/or glomerular filtration rate < 60 ml/min (extremely rare in live kidney donors)

Study design

Design

Study phase:	4
Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)

Primary purpose: Treatment

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	26-08-2014
Enrollment:	64
Type:	Actual

Ethics review

Approved WMO Date:	10-07-2014
Application type:	First submission
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)
Approved WMO Date:	03-09-2014

Application type:	Amendment
Review commission:	CMO regio Arnhem-Nijmegen (Nijmegen)

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	NL48056.091.14