# Clinical trial results:
# Optimizing surgical conditions during laparoscopic umbilical, incisional –and linea alba herniotomy with deep neuromuscular blockade (The hernia study)

## Summary

| | |
|---|---|
| EudraCT number | 2014-002802-19 |
| Trial protocol | DK |
| Global end of trial date | 25 February 2017 |

**Results information**

| | |
|---|---|
| Result version number | v1 (current) |
| This version publication date | 21 July 2022 |
| First version publication date | 21 July 2022 |

## Trial information

**Trial identification**

| | |
|---|---|
| Sponsor protocol code | NMBDKHernia2014 |

**Additional study identifiers**

| | |
|---|---|
| ISRCTN number | - |
| ClinicalTrials.gov id (NCT number) | NCT02247466 |
| WHO universal trial number (UTN) | - |

Notes:

**Sponsors**

| | |
|---|---|
| Sponsor organisation name | Herlev Hospital |
| Sponsor organisation address | Herlev Ringvej, Herlev, Denmark, |
| Public contact | Mona Ring Gätke, Department of Anaesthesiology, mona.gatke@regionh.dk |
| Scientific contact | Mona Ring Gätke, Department of Anaesthesiology, mona.gatke@regionh.dk |

Notes:

**Paediatric regulatory details**

| | |
|---|---|
| Is trial part of an agreed paediatric investigation plan (PIP) | No |
| Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial? | No |
| Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial? | No |

Notes:

## Results analysis stage

| | |
|---|---|
| Analysis stage | Final |
| Date of interim/final analysis | 28 February 2017 |
| Is this the analysis of the primary completion data? | Yes |
| Primary completion date | 01 February 2017 |
| Global end of trial reached? | Yes |
| Global end of trial date | 25 February 2017 |
| Was the trial ended prematurely? | No |

Notes:

## General information about the trial

Main objective of the trial:

Primary outcome:
Improvement of surgical workspace (rated on a 5-point scale) estimated as the difference between the workspace during deep NMB and the workspace without NMB. Ratings are performed in the same patient during stable pneumoperitoneum at 12 mmHg.

Protection of trial subjects:

Postoperative pain treatment comprised paracetamol, NSAID and morphine according to local guidelines.

Background therapy: -

Evidence for comparator: -

| | |
|---|---|
| Actual start date of recruitment | 01 May 2015 |
| Long term follow-up planned | No |
| Independent data monitoring committee (IDMC) involvement? | Yes |

Notes:

## Population of trial subjects

### Subjects enrolled per country

| | |
|---|---|
| Country: Number of subjects enrolled | Denmark: 34 |
| Worldwide total number of subjects | 34 |
| EEA total number of subjects | 34 |

Notes:

### Subjects enrolled per age group

| | |
|---|---|
| In utero | 0 |
| Preterm newborn - gestational age < 37 wk | 0 |
| Newborns (0-27 days) | 0 |
| Infants and toddlers (28 days-23 months) | 0 |
| Children (2-11 years) | 0 |
| Adolescents (12-17 years) | 0 |
| Adults (18-64 years) | 34 |
| From 65 to 84 years | 0 |
| 85 years and over | 0 |

## Subject disposition

### Recruitment

Recruitment details:

Patients were enrolled by an investigator before surgery. Eligible patients were more than 18 years of age scheduled for elective laparoscopic ventral hernia repair.

### Pre-assignment

Screening details:

exclusion criteria
were known allergy to sugammadex, mivacurium or rocuronium, severe renal disease,
neuromuscular disease, lactating or pregnant women

### Period 1

| | |
|---|---|
| Period 1 title | overall trial (overall period) |
| Is this the baseline period? | Yes |
| Allocation method | Randomised - controlled |
| Blinding used | Double blind |
| Roles blinded | Subject, Investigator |

Blinding implementation details:

The patient’s hand, the nerve stimulator and computer were concealed from the surgeon and the surgical staff.
An investigator prepared the intervention medicine in coded syringes before surgery so that the surgical team was blind to the medication. During surgery, the unblinded investigator was responsible for NMB monitoring and administration of the study drugs.

### Arms

| | |
|---|---|
| Are arms mutually exclusive? | Yes |
| **Arm title** | Saline Rocuronium |

Arm description:

In group A, patients received a bolus of 3ml of saline and 3 min later the surgeon evaluated the surgical view using a five-point subjective rating scale,16 ranging from 5 (optimal) to 1 (worst), refer to Table 1. Next, a bolus of rocuronium 0.6 mgkg1 was administered, and 3 min later when TOF¼0 was reached, the PTC was measured, and the surgeon re-evaluated the surgical view.

| | |
|---|---|
| Arm type | Active comparator |
| Investigational medicinal product name | rocuronium |
| Investigational medicinal product code | 25246 |
| Other name | |
| Pharmaceutical forms | Injection |
| Routes of administration | Intravenous use |

Dosage and administration details:

rocuronium 0.6 mg/kg intravenous

| | |
|---|---|
| **Arm title** | rocuronium sugammadex |

Arm description:

In Group B, a bolus of rocuronium 0.6mg/kg was administered and 3 min later when TOF 0 was reached, the PTC was measured and the surgeon evaluated the surgical view using the five-point rating scale. Sugammadex was then administered, 4 to 16mg/kg according to depth of NMB, and 3 min later, the surgeon re-evaluated the surgical view throughout the surgery until last suture

boluses of saline (placebo) were administered. During suturing of the hernial defect, surgical conditions were assessed using the five-point rating scale.
At the end of surgery, NMB was reversed in all patients

| | |
|---|---|
| Arm type | Experimental |
| Investigational medicinal product name | sugammadex |
| Investigational medicinal product code | |
| Other name | |
| Pharmaceutical forms | Injection |
| Routes of administration | Intravenous use |

Dosage and administration details:

A bolus of rocuronium 0.6mg/kg was administered and 3 min later when TOF 0 was reached, the PTC was measured and the surgeon evaluated the surgical view using the five-point rating scale. Sugammadex was then administered, 4 to 16 mg/kg.

| **Number of subjects in period 1** | Saline Rocuronium | rocuronium sugammadex |
|---|---|---|
| Started | 19 | 15 |
| Completed | 19 | 15 |

## Baseline characteristics

| Reporting groups | |
|---|---|
| Reporting group title | Saline Rocuronium |
| Reporting group description: | |
| In group A, patients received a bolus of 3ml of saline and 3 min later the surgeon evaluated the surgical view using a five-point subjective rating scale,16 ranging from 5 (optimal) to 1 (worst), refer to Table 1. Next, a bolus of rocuronium 0.6 mgkg1 was administered, and 3 min later when TOF¼0 was reached, the PTC was measured, and the surgeon re-evaluated the surgical view. | |
| Reporting group title | rocuronium sugammadex |
| Reporting group description: | |
| In Group B, a bolus of rocuronium 0.6mg/kg was administered and 3 min later when TOF 0 was reached, the PTC was measured and the surgeon evaluated the surgical view using the five-point rating scale. Sugammadex was then administered, 4 to 16mg/kg according to depth of NMB, and 3 min later, the surgeon re-evaluated the surgical view throughout the surgery until last suture boluses of saline (placebo) were administered. During suturing of the hernial defect, surgical conditions were assessed using the five-point rating scale.<br>At the end of surgery, NMB was reversed in all patients | |

| Reporting group values | Saline Rocuronium | rocuronium sugammadex | Total |
|---|---|---|---|
| Number of subjects | 19 | 15 | 34 |
| Age categorical<br>Units: Subjects | | | |
| In utero | 0 | 0 | 0 |
| Preterm newborn infants (gestational age < 37 wks) | 0 | 0 | 0 |
| Newborns (0-27 days) | 0 | 0 | 0 |
| Infants and toddlers (28 days-23 months) | 0 | 0 | 0 |
| Children (2-11 years) | 0 | 0 | 0 |
| Adolescents (12-17 years) | 0 | 0 | 0 |
| Adults (18-64 years) | 19 | 15 | 34 |
| From 65-84 years | 0 | 0 | 0 |
| 85 years and over | 0 | 0 | 0 |
| Age continuous<br>Units: years | | | |
| arithmetic mean | 57 | 55 | |
| standard deviation | ± 17 | ± 15 | - |
| Gender categorical<br>Units: Subjects | | | |
| Female | 4 | 5 | 9 |
| Male | 15 | 10 | 25 |

## End points

### End points reporting groups

| Reporting group title | Saline Rocuronium |
|---|---|

Reporting group description:

In group A, patients received a bolus of 3ml of saline and 3 min later the surgeon evaluated the surgical view using a five-point subjective rating scale,16 ranging from 5 (optimal) to 1 (worst), refer to Table 1. Next, a bolus of rocuronium 0.6 mgkg1 was administered, and 3 min later when TOF¼0 was reached, the PTC was measured, and the surgeon re-evaluated the surgical view.

| Reporting group title | rocuronium sugammadex |
|---|---|

Reporting group description:

In Group B, a bolus of rocuronium 0.6mg/kg was administered and 3 min later when TOF 0 was reached, the PTC was measured and the surgeon evaluated the surgical view using the five-point rating scale. Sugammadex was then administered, 4 to 16mg/kg according to depth of NMB, and 3 min later, the surgeon re-evaluated the surgical view throughout the surgery until last suture boluses of saline (placebo) were administered. During suturing of the hernial defect, surgical conditions were assessed using the five-point rating scale.
At the end of surgery, NMB was reversed in all patients

### Primary: difference in the surgical view

| End point title | difference in the surgical view[1] |
|---|---|

End point description:

| End point type | Primary |
|---|---|

End point timeframe:

Immediately

Notes:

[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: This was analyzed as a paired design

| End point values | Saline Rocuronium | rocuronium sugammadex | | |
|---|---|---|---|---|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 19 | 15 | | |
| Units: score | | | | |
| arithmetic mean (full range (min-max)) | 0.21 (0 to 2) | -0.06 (-2 to 2) | | |

### Statistical analyses

No statistical analyses for this end point

### Secondary: suturing hernia

| End point title | suturing hernia |
|---|---|

| | |
|---|---|
| End point description:<br>subjective assessment of suturing the defect using a five point rating scale. 0 worst, 5 optimal. | |
| End point type | Secondary |
| End point timeframe:<br>during suture of the defect | |

| **End point values** | Saline Rocuronium | rocuronium sugammadex | | |
|---|---|---|---|---|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 19 | 15 | | |
| Units: score | | | | |
| arithmetic mean (standard deviation) | 4.8 (± 0.4) | 4.0 (± 1.4) | | |

**Statistical analyses**

| **Statistical analysis title** | suture hernia defect |
|---|---|
| Comparison groups | Saline Rocuronium v rocuronium sugammadex |
| Number of subjects included in analysis | 34 |
| Analysis specification | Pre-specified |
| Analysis type | superiority |
| P-value | < 0.05 |
| Method | Wilcoxon (Mann-Whitney) |

**Secondary: duration of hernia suturing**

| | |
|---|---|
| End point title | duration of hernia suturing |
| End point description: | |
| End point type | Secondary |
| End point timeframe:<br>during suturing of hernia | |

| **End point values** | Saline Rocuronium | rocuronium sugammadex | | |
|---|---|---|---|---|
| Subject group type | Reporting group | Reporting group | | |
| Number of subjects analysed | 19 | 15 | | |
| Units: minutes | | | | |
| arithmetic mean (standard deviation) | 10 (± 9) | 9 (± 7) | | |

**Statistical analyses**

| **Statistical analysis title** | suture hernia defect |
|---|---|
| Comparison groups | rocuronium sugammadex v Saline Rocuronium |
| Number of subjects included in analysis | 34 |
| Analysis specification | Pre-specified |
| Analysis type | superiority |
| P-value | < 0.05 |
| Method | Wilcoxon (Mann-Whitney) |

## Adverse events

### Adverse events information[1]

Timeframe for reporting adverse events:

Adverse events were reported according to agreement with the Danish Medicines Agency and monitored by the Good Clinical Research Practice Unit at Copenhagen University Hospitals

| | |
|---|---|
| Assessment type | Systematic |

### Dictionary used

| | |
|---|---|
| Dictionary name | MedDRA |
| Dictionary version | 10 |

Frequency threshold for reporting non-serious adverse events: 0 %

Notes:

[1] - There are no non-serious adverse events recorded for these results. It is expected that there will be at least one non-serious adverse event reported.
Justification: Adverse events were monitored according to agreement with the Danish Medicines Agency and monitored by the GCP unit at Copenhagen University Hospital

## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

None reported

### Online references

http://www.ncbi.nlm.nih.gov/pubmed/29878947