Clinical trial results:
Selective ultrasound-guided nerve block of the medial femoral cutaneous nerve in healthy volunteers

Summary

EudraCT number	2020-004942-12
Trial protocol	DK
Global end of trial date	13 December 2020

Results information

Result version number	v1 (current)
This version publication date	20 February 2022
First version publication date	20 February 2022

Trial information

Trial identification

Sponsor protocol code	Protokol_MFCN_10102020

Additional study identifiers

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

Notes:

Sponsors

Sponsor organisation name	Aarhus University Hospital
Sponsor organisation address	Palle-Juul Jensens Boulevard 165, Aarhus, Denmark,
Public contact	Siska Bjørn, Aarhus University, +45 60651087, siskabjoern@clin.au.dk
Scientific contact	Thomas Fichtner Bendtsen, Aarhus University, tfb@dadlnet.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	13 December 2021
Is this the analysis of the primary completion data?	Yes
Primary completion date	12 December 2020
Global end of trial reached?	Yes
Global end of trial date	13 December 2020
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

The primary objective is to investigate the success rate of anesthesia of the "gap" (non-anesthetized area) on the surgical incision used for total knee arthroplasty (TKA) after nerve block of the anterior branch from the medial femoral cutaneous nerve (MFCN) compared to the posterior branch of the MFCN.

Protection of trial subjects:

This volunteer trial was conducted in accordance with the Declaration of Helsinki and approved by the Danish Medicines Agency, The Central Denmark Region Committees on Health Research Ethics and the Danish Data Protection Agency. The trial was prospectively registered in the EudraCT database and was monitored by the Good Clinical Practice Unit at Aalborg and Aarhus University Hospitals. Prior to inclusion, written informed consent was obtained from all subjects after a thorough oral and written participant information had been given.
All nerve blocks in the trial were superficial cutaneous nerve blocks with very little discomfort for the volunteer.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	08 November 2020
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Denmark: 20
Worldwide total number of subjects	20
EEA total number of subjects	20

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)	20
From 65 to 84 years	0
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

Healthy volunteers of 18 years or older were recruited through a Danish website dedicated to recruit volunteers for research (www.forsøgsperson.dk). All volunteers received payment for their participation.

Pre-assignment

Screening details:

Inclusion criteria: Age≥18, ASA I-II, informed consent.
Exclusion criteria: Unable to cooperate, unable to speak or understand Danish, known neuropathy in the extremities, infection in the areas around the injection sites, BMI >28 kg/m2, pregnancy, allergy towards any. medical product in the trial, daily use of medicine except oral contraceptives

Period 1

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

Arms

Are arms mutually exclusive?	Yes
Arm title	Randomization group 1

Arm description:

All volunteers received bilateral active intermediate femoral cutaneous nerve blocks (IFCNB, block round 1) and active bilateral distal femoral triangle blocks (distal FTB, block round 2).
Block round 3: active block of the medial femoral cutaneous nerve (MFCN) combined with placebo block of the anterior branch on of the MFCN on the right side and vice versa on the left side.
Block round 4: placebo block of the medial femoral cutaneous nerve (MFCN) combined with active block of the anterior branch of the MFCN on the right side and vice versa on the left side.

Arm type	Experimental
Investigational medicinal product name	Marcaine adrenaline
Investigational medicinal product code	
Other name	Bupivacaine with adrenaline
Pharmaceutical forms	Solution for injection
Routes of administration	Perineural use

Dosage and administration details:

Marcaine adrenaline 2.5 mg/ml + 5 microgram/ml
Cumulated dose: 160 mg

Investigational medicinal product name	Sodium chloride
Investigational medicinal product code	
Other name	Normal saline
Pharmaceutical forms	Solution for injection
Routes of administration	Perineural use

Dosage and administration details:

Sodium chloride 9mg/ml used for the placebo nerve blocks.

Arm title	Randomization group 2

Arm description:

All volunteers received bilateral active intermediate femoral cutaneous nerve blocks (IFCNB, block round 1) and active bilateral distal femoral triangle blocks (distal FTB, block round 2).
Block round 3: placebo block of the medial femoral cutaneous nerve (MFCN) combined with active block of the anterior branch on of the MFCN on the right side and vice versa on the left side.
Block round 4:active block of the medial femoral cutaneous nerve (MFCN) combined with placebo block of the anterior branch of the MFCN on the right side and vice versa on the left side.

Arm type	Experimental
Investigational medicinal product name	Marcaine adrenaline
Investigational medicinal product code	
Other name	Bupivacaine with adrenaline
Pharmaceutical forms	Solution for injection
Routes of administration	Perineural use

Dosage and administration details:

Marcaine adrenaline 2.5 mg/ml + 5 microgram/ml
Cumulated dose: 160 mg

Investigational medicinal product name	Sodium chloride
Investigational medicinal product code	
Other name	Normal saline
Pharmaceutical forms	Solution for injection
Routes of administration	Perineural use

Dosage and administration details:

Sodium chloride 9mg/ml used for the placebo nerve blocks.

Number of subjects in period 1[1]	Randomization group 1	Randomization group 2
Started	9	10
Completed	9	10

Notes:

[1] - The number of subjects reported to be in the baseline period are not the same as the worldwide number enrolled in the trial. It is expected that these numbers will be the same.
Justification: 20 volunteers were enrolled in the trial. One volunteer withdrew consent during block round 1 (before randomization). The withdrawal was due to personal reasons and not any adverse events. Therefore only 9 volunteers were randomized to group 1.

Baseline characteristics

Reporting groups

Reporting group title	Overall period

Reporting group description: -

Reporting group values	Overall period	Total	
Number of subjects	19	19	
Age categorical Units: Subjects			
In utero		0	
Preterm newborn infants (gestational age < 37 wks)		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)		0	
From 65-84 years		0	
85 years and over		0	
Age continuous Units: years			
arithmetic mean	23.6		
standard deviation	± 2.8	-	
Gender categorical Units: Subjects			
Female	6	6	
Male	13	13	
ASA group			
The ASA Physical Status Classification			
Units: Subjects			
ASA I	19	19	
ASA II	0	0	
Body mass index (BMI) Units: kg/m^2			
arithmetic mean	23.2		
standard deviation	± 1.9	-	

End points

End points reporting groups

Reporting group title	Randomization group 1

Reporting group description:

All volunteers received bilateral active intermediate femoral cutaneous nerve blocks (IFCNB, block round 1) and active bilateral distal femoral triangle blocks (distal FTB, block round 2).
Block round 3: active block of the medial femoral cutaneous nerve (MFCN) combined with placebo block of the anterior branch on of the MFCN on the right side and vice versa on the left side.
Block round 4: placebo block of the medial femoral cutaneous nerve (MFCN) combined with active block of the anterior branch of the MFCN on the right side and vice versa on the left side.

Reporting group title	Randomization group 2

Reporting group description:

All volunteers received bilateral active intermediate femoral cutaneous nerve blocks (IFCNB, block round 1) and active bilateral distal femoral triangle blocks (distal FTB, block round 2).
Block round 3: placebo block of the medial femoral cutaneous nerve (MFCN) combined with active block of the anterior branch on of the MFCN on the right side and vice versa on the left side.
Block round 4:active block of the medial femoral cutaneous nerve (MFCN) combined with placebo block of the anterior branch of the MFCN on the right side and vice versa on the left side.

Subject analysis set title	Anterior branch of MFCN
Subject analysis set type	Per protocol

Subject analysis set description:

Volunteers with a gap after IFCNB and distal FTB (block round 1 + 2). Block of the anterior branch of the MFCN in block round 3.

Subject analysis set title	Posterior branch of the MFCN
Subject analysis set type	Per protocol

Subject analysis set description:

Volunteers with a gap on the incision line after IFCNB and distal FTB (block round 1 + 2). Addition of MFCN block in block round 4 (posterior branch of the MFCN)

Primary: Success rate of anesthesia of the non-anesthetized gap on the midline incision after addition of selective MFCN-A versus addition of the MFCN-P to the combined IFCN block and distal FTB

End point title	Success rate of anesthesia of the non-anesthetized gap on the midline incision after addition of selective MFCN-A versus addition of the MFCN-P to the combined IFCN block and distal FTB

End point description:

Pinprick was performed using a sterile neurological examination pin (Neuropen, Owen Mumford, UK).

End point type	Primary

End point timeframe:

Standard midline incision for TKA drawn with UV pen at baseline. Pinprick testing performed 30 min after each round of nerve blocks.

End point values	Anterior branch of MFCN	Posterior branch of the MFCN		
Subject group type	Subject analysis set	Subject analysis set		
Number of subjects analysed	10	10		
Units: No unit				
Complete anesthesia of the incision line	9	0		
Incomplete anesthesia of the incision line	1	10		

Statistical analyses

Statistical analysis title	McNemar’s test
Comparison groups	Anterior branch of MFCN v Posterior branch of the MFCN
Number of subjects included in analysis	20
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.004
Method	Mcnemar

Adverse events

Adverse events information

Timeframe for reporting adverse events:

From time of inclusion and up until 24 hours after inclusion

Assessment type	Non-systematic

Dictionary used

Dictionary name	MedDRA
Dictionary version	10.0

Reporting groups

Reporting group title	Randomization group 1

Reporting group description:

All volunteers received bilateral active intermediate femoral cutaneous nerve blocks (IFCNB, block round 1) and active bilateral distal femora triangle blocks (distal FTB, block round 2).
Block round 3: active block of the medial femoral cutaneous nerve (MFCN) combined with placebo block of the anterior branch on of the MFCN on the right side and vice versa on the left side.
Block round 4: placebo block of the medial femoral cutaneous nerve (MFCN) combined with active block of the anterior branch on of the MFCN on the right side and vice versa on the left side.

Reporting group title	Randomization group 2

Reporting group description:

All volunteers received bilateral active intermediate femoral cutaneous nerve blocks (IFCNB, block round 1) and active bilateral distal femora triangle blocks (distal FTB, block round 2).
Block round 3: placebo block of the medial femoral cutaneous nerve (MFCN) combined with active block of the anterior branch on of the MFCN on the right side and vice versa on the left side.
Block round 4:active block of the medial femoral cutaneous nerve (MFCN) combined with placebo block of the anterior branch on of the MFCN on the right side and vice versa on the left side.

Serious adverse events	Randomization group 1	Randomization group 2	
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 10 (0.00%)	0 / 10 (0.00%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	

Frequency threshold for reporting non-serious adverse events: 0.05 %

Non-serious adverse events	Randomization group 1	Randomization group 2	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	3 / 10 (30.00%)	1 / 10 (10.00%)	
Nervous system disorders			
Dizziness	Additional description: Very brief vasovagal episode during block round 1 (before randomized study drug was given). The dizziness resolved after a few minutes with no interventions.		
subjects affected / exposed	3 / 10 (30.00%)	1 / 10 (10.00%)	
occurrences (all)	0	0	

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

Limitations of the trial such as small numbers of subjects analysed or technical problems leading to unreliable data.

No significant limitations to report

Notes: