MeDe study protocol: a randomized controlled trial comparing **Me**dian nerve **De**compression at the carpal tunnel alone versus **Me**dian nerve **De**compression at both the carpal tunnel and Lacertus fibrosis in adults with carpal tunnel syndrome.

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Abstract

Background:

Carpal tunnel release is the most commonly performed surgical procedure in patients diagnosed with carpal tunnel syndrome (CTS). Nevertheless, up to 43% of patients experience residual symptoms, necessitating secondary surgical interventions in approximately one out of eight carpal tunnel releases. These residual symptoms may be attributable to proximal median nerve compression (PMNC), which can potentially be alleviated by performing a Lacertus release. However, diagnosing PMNC poses a challenge, as standard diagnostic tools like physical examination, electromyography (EMG) and ultrasound lack the specificity to distinguish between CTS and PMNC. Consequently, PMNC often goes undetected and untreated during initial evaluations. This randomised trial compares patient-reported outcomes following median nerve decompression at the carpal tunnel alone versus median nerve decompression at both the carpal tunnel and the Lacertus fibrosus in individuals with CTS.

Methods: This multicenter superiority trial compares patient-reported outcomes following median nerve decompression at the carpal tunnel alone versus median nerve decompression at both the carpal tunnel and Lacertus fibrosus in adults with CTS. The inclusion criteria are adult patients (≥ 18 years) with CTS, as confirmed by electromyography or ultrasound. The primary outcome is the Boston Carpal Tunnel Questionnaire Symptom Severity Scale (BCTQ SSS) score at twelve months follow-up. Secondary outcomes are the total BCTQ score, BCTQ Functional Status Scale (FSS), residual and persistent symptoms, recurrence, pillar pain, sensibility, tip-pinch strength, Return to work, Quality of life assessed with the EQ-5D-5L questionnaire, cost-effectiveness and cost-utility, additional surgical interventions, and complications. Sample size calculation showed that 110 patients must be randomised. The estimated time for inclusion will be 12 months.

Discussion: The MeDe study will provide evidence of whether **Me**dian nerve **De**compression at the carpal tunnel combined with **Me**dian nerve **De**compression at the Lacertus fibrosis results in better patient-related outcomes and quality of life compared to **Me**dian nerve **De**compression at the carpal tunnel alone in adult patients with Carpal Tunnel Syndrome.

Trial registration: registered in the CCMO Registry on ToetsingOnline.nl on 24-09-2024 with registration number NL87289.100.24 and OMON number NL005175

Keywords (3-10): carpal tunnel syndrome, proximal median nerve compression, Lacertus syndrome, double crush, nerve decompression, carpal tunnel release, Lacertus release.

MeDe study: a randomized controlled trial comparing Median nerve Decompression at the carpal tunnel alone versus Median nerve Decompression at both the carpal tunnel and Lacertus fibrosis in adults with carpal tunnel syndrome.

Short Title	**MeDe** study
Trial registration	Registered in CCMO Registry on ToetsingOnline.nl on 24-09-2024 with registration number NL87289.100.24 and OMON number NL005175
Protocol version	Version 3.3, May 27th 2026.
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Funding	None
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Name and contact information for the trial sponsor	Board of directors - Maasstad Hospital, Rotterdam, the Netherlands. Maasstadweg 21, 3079 DZ Rotterdam Phone number: +31 (0)10 291 3042 E-mail: SecretariaatRvB@maasstadziekenhuis.nl
Role of sponsor	The study sponsor is enabling the study. The lead investigator is NS and is mainly involved in the study design, writing the report, deciding to submit the report for publication and delegating activities. The coordinating investigator is ID and is involved in data collection, management, analysis, interpretation of data and writing of the report. JJ, SP, GN, HC and NS are involved in data collection and writing of the report and MK is involved in data analysis and interpretation.

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60 **PROTOCOL SIGNATURE SHEET**

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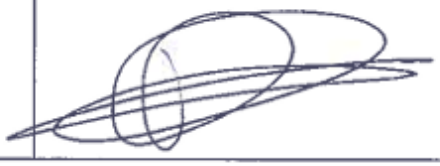
Name	Signature	Date
Sponsor or legal representative: ***<please include name and function>*** ***<For non-commercial research >*** **Head of Department:** ***NWL Schep, trauma surgeon***		26-5-2026
[Coordinating Investigator/Project leader/Principal Investigator]: ***I Domela Nieuwenhuis, Coordinating investigator***		27-5-2026

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LIST OF ABBREVIATIONS AND RELEVANT DEFINITIONS

AE	Adverse Event
BCTQ	Boston Carpal Tunnel Questionnaire
CCMO	Central Committee on Research Involving Human Subjects; in Dutch: Centrale Commissie Mensgebonden Onderzoek
CEA	Cost-effectiveness analysis
CRPS	Chronic regional pain syndrome
CTS	Carpal tunnel syndrome
CTR	Carpal tunnel release
CUA	Cost-utility analysis;
EMG	Electromyography
FSS	Functional status scale
FU	Follow up
GCP	Good Clinical Practice
iMCQ	Medical consumption questionnaire
iPCQ	Production consumption questionnaire
MCID	Minimal clinically important difference
PMNC	Proximal median nerve compression
PROM	Patient-reported outcome measurement
QALY	Quality adjusted life year
(S)AE	(Serious) Adverse Event
SSS	Symptom severity scale
Sponsor	The sponsor is the party that commissions the organisation or performance of the research, for example a pharmaceutical company, academic hospital, scientific organisation or investigator. A party that provides funding for a study but does not commission it is not regarded as the sponsor, but referred to as a subsidising party.
UAVG	Dutch Act on Implementation of the General Data Protection Regulation; in Dutch: Uitvoeringswet AVG
WMO	Medical Research Involving Human Subjects Act; in Dutch: Wet Medisch-wetenschappelijk Onderzoek met Mensen

1. Introduction and rationale

In the Netherlands, 22500 carpal tunnel releases are performed yearly.[1] Success rates range between 75-90%, however, up to 43% of patients have residual symptoms following carpal tunnel release.[2-4] Requiring secondary surgical interventions in approximately one out of eight CTR cases [5]

Recent studies show that residual symptoms following carpal tunnel release may be caused by a proximal median nerve compression, isolated or combined with compression at the carpal tunnel.[6,7] A proximal median nerve compression may be treated effectively with a Lacertus release.[7] Lacertus release is performed under regional or local anaesthetics in the outpatient clinic, similar to a carpal tunnel release. However, diagnosing a PMNC can be challenging since physical examination, electromyography (EMG) and nerve ultrasound lack the specificity to distinguish between CTS and PMNC.[8]

There is no consensus on the optimal treatment for residual symptoms following carpal tunnel release. Theoretically, residual symptoms may be minimised by combining median nerve decompression at the carpal tunnel with proximal median nerve decompression through a Lacertus release.

This randomised trial compares patient-reported outcomes following median nerve decompression at the carpal tunnel alone versus median nerve decompression at both the carpal tunnel and the Lacertus fibrosus in individuals with CTS.

Design

This manuscript is written according to the Consolidated Standard for Reporting Trials (CONSORT statement) and Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT guidelines).[9,10]

2. Objectives

The primary objective is to determine which treatment is superior: carpal tunnel release alone or carpal tunnel release combined with Lacertus release in adult patients.

3. Study design

This multicenter randomised clinical superiority trial compares carpal tunnel release with carpal tunnel release combined with Lacertus release in adults with CTS confirmed by EMG or ultrasound. All participating hospitals are located in the Netherlands, one non-academic teaching hospital (Maasstad Ziekenhuis) and one non-teaching hospital (Spijkenisse Medisch Centrum).

4. Study population

All adult patients (≥18 years) at the outpatient clinic with CTS confirmed by EMG or/and nerve ultrasound who choose surgical treatment are eligible for inclusion.

CTS diagnosis will be confirmed by electromyography (EMG) or nerve ultrasound conducted by a clinical neurophysiologist or neurologist. EMG measures the sensory latency difference in the fourth finger by comparing the median and ulnar nerve conduction velocities. A sensory latency difference smaller than 0.6 milliseconds is considered negative for CTS. Nerve conduction may be immeasurable in cases of severe compression neuropathy or due to subsequent nerve damage. In cases of diagnostic uncertainty, nerve ultrasound will be utilised. Nerve ultrasound measures the cross-sectional area of the nerve in the wrist at the height of the carpal tunnel and in the forearm at the height of the distal 1/3. An area larger than 11 square millimetres at the carpal tunnel and 9 square millimetres or smaller at the forearm is considered positive for CTS.

The exclusion criteria are:

- Previous surgical decompression of the median nerve at the ipsilateral wrist or forearm
- Severe thenar atrophy: Examination of the thenar is based on clinical observation. The presence of thenar muscle atrophy is scored as none, mild, or severe.
- Simultaneous nerve decompression in the ipsilateral arm (e.g. cubital tunnel, Guyon and radial nerve release.

- Neurological disorders affecting peripheral nerves (e.g. spinal cord compression or injury, muscular dystrophy, dystonia, ALS)
- Malunion of the distal radius
- Impaired hand function
- Pregnancy
- Inability to complete study forms due to insufficient comprehension of the Dutch language

Sample size

Sample size calculation is based on our primary endpoint, the change in BCTQ SSS score at twelve months. The score for an individual without any CTS symptoms is 1.0. The higher the score, the worse the symptoms. We hypothesised a superior (lower) BCTQ SSS score in the intervention group and used the results from two published studies for our sample size calculation. We assume that a difference of at least 0.5 scores is clinically important. This minimal clinically important difference (MCID) for the BCTQ SSS is based on the pooled MCID threshold of 1.0 and the reported MCID range between 0.88 and 1.55 for the BCTQ SSS.[11]

With a two-sided significance level of 0.05 and a standard deviation of 0.7, a two-group Student's T-test has 90% power to detect a difference of 0.5 between scores in the control and intervention groups, based on an MCID of 1.0 in the control group, if at least 50 patients per group or 100 patients in total are included.[12] Accounting for approximately 7.5% drop-out due to lost-to-follow-up and assuming that, eventually, the Mann -Whitney U test as the non-parametric counterpart of the T-test with a relative efficiency of 0.955 has to be applied for distributional reasons, 110 patients will initially be included. A power of 90% seems advisable to generate convincing evidence to change clinical practice amongst surgeons who might have a preferential attitude to the treatment choice.

5. Treatment of research participants

The intervention group will receive a carpal tunnel release supplemented with a Lacertus release. This combination of carpal tunnel and Lacertus release is the standard treatment for median nerve double crush syndrome. The control group receives the standard treatment consisting of a carpal tunnel release.

Lacertus Release Surgical Procedure

Local or regional anaesthesia is administered. The patient is positioned supine with the arm extended on an arm board. The surgical site is sterilised, and a tourniquet is applied to the upper arm to control bleeding.

A transverse incision is made on the forearm's volar (anterior) aspect, approximately 3cm distal of the elbow crease. This incision is placed over the palpable brachioradialis and biceps tendon.

The subcutaneous tissue is dissected to expose the fascia overlying the flexor pronator muscles. The brachial fascia is identified and incised to reveal the underlying Lacertus fibrosus (also known as the bicipital aponeurosis). The Lacertus fibrosus is a tendinous band extending from the biceps tendon medially across the forearm. Care is taken to avoid injury to the underlying structures, particularly the median nerve, which lies deep and slightly medial to the Lacertus fibrosus. The Lacertus fibrosus is incised transversely. The surgeon ensures that the median nerve is fully decompressed and that there are no remaining constrictive bands.

Hemostasis is achieved using electrocautery as needed. The incision is closed in layers: the subcutaneous tissue is approximated with absorbable sutures, and the skin is closed with non-absorbable or absorbable sutures.

A sterile dressing is applied for 3-5 days. The patient is instructed to use the arm normally and to monitor for signs of complications.

Retrospective analysis of carpal tunnel release combined with Lacertus release

We conducted a retrospective analysis of 50 patients who underwent a carpal tunnel release combined with Lacertus release in our outpatient clinic since January 1, 2023. All patients had a minimum follow-up period of three months, and no complications, such as bleeding, infection, seroma or nerve damage, were observed or reported. Two patients experienced minor bruising around the Lacertus release incision, and three reported a temporary bruised sensation in their arms. These minor issues were resolved without additional treatment within two to three weeks.

6. INVESTIGATIONAL PRODUCT

Not applicable

7. NON-INVESTIGATIONAL PRODUCT

Not applicable

8. Methods

8.1 Outcomes

The primary outcome is the Boston Carpal Tunnel Questionnaire Symptom Severity Scale (BCTQ SSS) at twelve months follow-up. The BCTQ is a carpal tunnel syndrome-specific, patient-reported outcomes instrument that comprises two subscales: the Symptom Severity Scale (SSS), which includes eleven questions about CTS symptoms, and the Functional Status Scale (FSS), which includes eight questions about overall functional status, each scored from 1 to 5. The sum of the scores for each subscale is divided by the number of questions in that subscale. The maximum score is 5.0, indicating the worst possible condition. The lowest score is 1.0, with no CTS symptoms.[13] The BCTQ SSS and FSS will be collected at baseline, six weeks, three months, six and 12 months. See Table 1 and Figure 1 for an overview of the measurements and timeline.

Secondary outcomes:

- BCTQ FSS
- BCTQ Total score: a weighted mean of the BCTQ SSS and FSS score.
- Anchor questions regarding patient satisfaction to analyse MCID will be assessed at 12 months.
- Residual symptoms: the presence of preoperative symptoms after carpal tunnel release (yes/no) will be assessed at six weeks, three, six and 12 months.
- Persistent CTS: preoperative symptoms have never completely disappeared after carpal tunnel release (yes/no), will be assessed at six weeks, three, six and 12 months.[14]
- Recurrence: recurrence of median nerve compression symptoms (including CTS) is defined as an asymptomatic period after carpal tunnel release of three months minimum, followed by a recurrence of preoperative symptoms.[15] Recurrence will be assessed at six and 12 months.
- Pillar pain: the presence of tenderness or pain in the thenar or hypothenar area around the hook of the hamate and the unciform process of the trapezium.[14] Pillar pain will be assessed at six weeks, three, six and 12 months.
- Secondary surgery: This includes, but is not limited to, nerve decompression, internal or external neurolysis, and flap reconstruction in the ipsilateral arm. It will be assessed at six weeks, three, six and 12 months.
- Complications/adverse events, such as infection, seroma, and tendon and neurovascular damage, will be monitored and registered at all time points: six weeks, three, six and 12 months.
- (Return to) work: will be assessed using the QuickDASH work module and an additional question to investigate the time it takes to Return to Work. It will be assessed at baseline, six weeks, three and six months.

- Sensibility: monofilament test on the tuft of the 3rd digit and the proximal thenar. The tuft of the 5th digit and the distal thenar will be measured and used as a reference. Sensibility will be tested at baseline, three and 12 months.
- Tip-pinch strength: tip-to-tip pinch strength of the first and second digit will be measured with a Baseline Pinch Gauge. The mean of three measurements will be taken at baseline, three and 12 months.
- Cost-effectiveness of intervention: measured with health care resource utilisation and costs (iMCQ, iPCQ); at six weeks, three months, six and 12 months. Cost-effectiveness will be measured as costs per unit change in the BCTQ.[16]
- Quality of life: will be assessed using the 5-level EuroQol (EQ-5D-5L) questionnaire at baseline and 12 months.[17]
- Cost-utility analysis will be described as cost per quality adjusted life years (QALYs). QALYs will be measured by the EQ-5D-5L; at baseline and 12 months.
- Patient Demographics: age, sex, labour (blue versus white collar), hand dominance and medical history regarding comorbidities and hand-specific conditions will be assessed at baseline.
- Physical examination may include but is not limited to, sensibility of the thenar, proximal thenar, hypothenar, tuft of digits 3 and 5, tip-pinch strength measured by the ok sign and the FLP and FDP2 separately, scratch collapse test over the carpal tunnel and Lacertus fibrosis, and Phalen and Tinel test. Physical examination will be assessed at baseline, three and 12 months.
- Exploratory ultrasound: changes in median nerve cross-sectional diameter, measured by nerve ultrasound, will be assessed to evaluate postoperative changes in nerve size over time; at baseline and 3 months.

Data collection

Measurements and data collection will take place at five time points as shown in Table 1. The time points are at baseline (T0), six weeks (T1), three months (T2), six months (T3) and 12 months (T4) after surgery. At T0, informed consent will be obtained, baseline characteristics and physical examination tests will be gathered, sensibility and tip-pinch strength will be measured, and patients will need to complete questionnaires. T2 is a standard outpatient visit, where the monofilament and tip-pinch strength will be measured. A nerve ultrasound will be performed on T2. T4 is an extra visit where the researcher measures sensibility and tip-pinch strength. At T1, T2, T3 and T4, the patient will be asked to complete questionnaires by email, and reminders will be sent automatically. When a patient does not respond, we will contact the patient by telephone or obtain a paper questionnaire through a home visit or telephone interview.

8.2 Randomisation

After signing informed consent, patients will be randomly assigned to the intervention or control group. To ensure allocation concealment, randomisation will be automated (using Castor software) and password-protected.[18] This is an open-label trial since both treatments are visually different for the treating physician and the patient. Therefore, randomisation will not be blinded.

8.3 Study procedures

The intervention group will receive a carpal tunnel release supplemented with a Lacertus release. This combination of carpal tunnel and Lacertus release is the standard treatment for median nerve double crush syndrome. The control group receives the standard treatment consisting of a carpal tunnel release. See '5. Treatment of research participants' for the surgical technique**.**

8.4 Withdrawal of individual research participants

Participants can leave the study at any time for any reason without any consequences if they wish to do so. The investigator can decide to withdraw a participant from the study for urgent medical reasons.

8.4.1 Specific criteria for withdrawal: not applicable

8.5 Replacement of individual research participants after withdrawal

All patients who withdraw after informed consent has been given, but before the surgical procedure, will be replaced. Their data will be analysed according to the intention-to-treat principle, allowing us to obtain a comprehensive database of consecutive patients and avoid attrition bias. An end-of-study form will be completed, and the drop-out reason will be recorded.

9. SAFETY REPORTING

9.1 Temporary halt for reasons of research participant safety

In accordance to section 10, subsection 4, of the WMO, the sponsor will suspend the study if there is sufficient ground that continuation of the study will jeopardise participant health or safety. The sponsor will notify the review committee without undue delay of a temporary halt including the reason for such an action. The study will be suspended pending a further positive decision by the review committee. The investigator will take care that all participants are kept informed.

9.2 (Serious) adverse events

All adverse events reported by the patient or observed by the treating physician or researcher will be recorded. Serious adverse events (SAEs) will be reported through the web portal 'het Onderzoeksportaal' of the Central Committee on Research Involving Human Research (Dutch

CCMO) and to the Medical Research Ethics Committee of our institution (MEC-U), which approved the protocol. SAE reporting will take place within 7 days after the sponsor has first knowledge of an SAE resulting in death or is life-threatening. All other SAEs will be reported within 15 days.

Adverse events (AEs) are defined as:

- Wound infection treated with I&D or antibiotics
- Postoperative bleeding
- Tendon damage
- Neurovascular damage
- Seroma
- CRPS defined conform by the Budapest criteria
- Secondary surgery

9.3 Follow-up of adverse events

All AEs will be followed until they have abated, or until a stable situation has been reached. Depending on the event, follow up may require additional tests or medical procedures as indicated, and/or referral to the general physician or a medical specialist.

SAEs need to be reported till end of study within the Netherlands, as defined in the protocol.

10. Statistical analysis

Baseline patient characteristics and physical examination tests will be described using descriptive statistics. Outcome measures will be analysed per protocol and according to the intention-to-treat principle.

The primary outcome, the difference in BCTQ SSS score between both groups at twelve months, according to the intention-to-treat principle, will be analysed using the unpaired t-test or Mann-Whitney U test, depending on the data distribution. For secondary outcomes, Trends in BCTQ SSS and FSS scores along the different FU moments will be assessed using a generalised linear mixed model for repeated measurements, calculating the marginal mean differences. Furthermore, the number of complications, re-interventions and cross-overs will be determined using a Fisher Exact or a Chi-square test. A non-responder analysis will be performed with baseline data and complications when available. A two-sided p-value < 0.05 will be considered statistically significant.

Both cost-effectiveness (CEA) and cost-utility analysis (CUA) will be performed from a social and healthcare perspective. For the calculation of medical costs, we will use charges published in Dutch guidelines as a proxy for actual costs. Intramural costs (i.e. additional diagnostics, number of

hospital visits, in case of hospital admission, the length of stay, etc.) are collected from the electronic health record. Productivity costs will be registered in detail by the iPCQ. The iMCQ and the iPCQ are validated by the Institute of Medical Technology Assessment (Erasmus University, Rotterdam, The Netherlands). The primary economic outcome for the CEA is the cost-per-unit change in CTS symptoms, which closely relates to the clinical outcome measure (BCTQ SSS). The primary economic outcome for the CUA is the cost per QALY. QALYs will be measured based on the Dutch tariff for the EQ-5D-5L. Differences between groups will be assessed after correction for bias and using accelerated non-parametric bootstrapping to account for sampling variability, generating 5,000 replications. Results will be presented graphically using cost-effectiveness plans.[19,20] The time horizon will be one year.

11. Ethical considerations

11.1 Regulation statement

This study will be conducted according to the principles of the Declaration of Helsinki (2024) and in accordance with the Medical Research Involving Human Subjects Act (WMO) and other guidelines, regulations and Acts like the General Data Protection Regulation (in Dutch: Uitvoeringswet Algemene Verordening Gegevensbescherming). This study is approved by the Medical Research Ethics Committees United (MEC-U) with reference number: NL87289.100.24. Written informed consent is obtained from all participants before randomisation takes place.

11.2 Recruitment and consent

Patients are informed about the study by the treating physician after the decision has been made to proceed with surgical treatment for carpal tunnel syndrome. The study and the informed consent process are discussed face-to-face by the investigator, after the patient showed interest in the study and agreed to be informed. The patient is provided with the Patient Information Folder (PIF) and the consent form, along with a return envelope. Should the patient have any questions regarding the study, they are encouraged to contact the investigator (by telephone). If, after the consideration period, the patient has no further questions, decides to participate and returns the signed consent form, randomisation will take place. Preoperative measurements will be conducted on the day of the surgical procedure.

There is a minimum interval of one week between the initial provision of study information and the signing of the informed consent form. Deviations from this interval are permitted if preferred by the participant.

11.3 Objection by minors or incapacitated research participants

Not applicable

11.4 Benefits and risks assessment, group relatedness

Participants in the intervention group will receive the standard treatment for carpal tunnel syndrome, supplemented with a lacertus release. This combined procedure is already routinely performed in clinical practice when a double crush syndrome of the median nerve is suspected. As described in the "Retrospective analysis of carpal tunnel release combined with Lacertus release" (see page 8 of the study protocol), outcomes from 50 patients treated in our clinic support the safety and feasibility of this approach. Both the carpal tunnel release and lacertus release will be performed sequentially under local anesthesia, with a modest increase in operative time of approximately 5–10 minutes.

There are negligible additional risks for participants, as both procedures are considered standard surgical treatments. Our clinical experience also indicates that patients do not perceive the combined procedure as more burdensome. Postoperative complaints are typically focused on the wrist incision, with minimal discomfort reported from the forearm site. In clinical practice, some patients require a second surgical procedure for lacertus release after an initial carpal tunnel release, resulting in two separate recovery periods. By combining the two procedures, we aim to reduce the overall recovery time and shorten the duration of symptoms, potentially benefiting participants and being more cost-effective due to fewer patients requiring second surgical treatments.

Therefore, the burden of participation is considered low, and the potential for direct benefit justifies the conduct of this study.

11.5 Compensation for injury

The sponsor/investigator has liability insurance in accordance with article 7 of the WMO.

The sponsor (also) has insurance, which is in accordance with the legal requirements in the Netherlands (Article 7 WMO). This insurance provides cover for damage to research participants through injury or death caused by the study. The insurance applies to the damage that becomes apparent during the study or within 4 years after the end of the study.

12. ADMINISTRATIVE ASPECTS, MONITORING AND PUBLICATION

12.1 Handling and storage of data and documents

Patient data is handled confidentially and is accessible only by members of the research team. After randomisation, patients receive a study identification number (pseudonymised). A subject

identification list will only be accessible to the principal investigator, study coordinator, and monitor. All data will be collected by one of the investigators and kept in an online, password-protected database (Castor EDC) with an audit trail. All source data will be stored by the project leader for 15 years after the publication of the results of this trial.

12.2 Monitoring and Quality Assurance

This study is labelled a low-risk study, see attachment "Risico classificatie investigator initiated onderzoek", therefore a data safety monitoring board is not required. The study will be monitored at least once by an independent monitor in compliance with Good Clinical Practice (GCP). A written report from the monitor will be discussed with all participating members of the study's project group.

12.3 Amendments

Amendments are changes made to the research after a favourable opinion by the review committee has been given. All amendments will be notified to the review committee that gave a favourable opinion.

Non-substantial amendments will not be notified to the review committee, but will be recorded and filed by the sponsor.

12.4 Annual progress report

The sponsor/investigator will submit a summary of the progress of the trial to the review committee once a year. Information will be provided on the date of inclusion of the first participant, numbers of participants included and numbers of participants that have completed the trial, serious adverse events, other problems, and amendments.

12.5 Temporary halt and (prematurely) end of study report

The investigator/sponsor will notify the review committee of the end of the study within a period of 8 weeks. The end of the study is defined as the last patient's last visit.

The sponsor will notify the review committee immediately of a temporary halt of the study, including the reason of such an action.

In case the study is ended prematurely, the sponsor will notify the review committee within 15 days, including the reasons for the premature termination.
Within one year after the end of the study, the investigator/sponsor will submit a final study report with the results of the study, including any publications/abstracts of the study, to the review committee.

12.6 Public disclosure and publication policy

This study does not involve the publication of individual participant data; therefore, consent for publication is not applicable. All datasets generated or analysed during the study are available from the corresponding author upon reasonable request, in accordance with data sharing principles. The authors declare that they have no competing interests that could have influenced the outcomes of this research. Additionally, this study was conducted without any external funding or financial support.

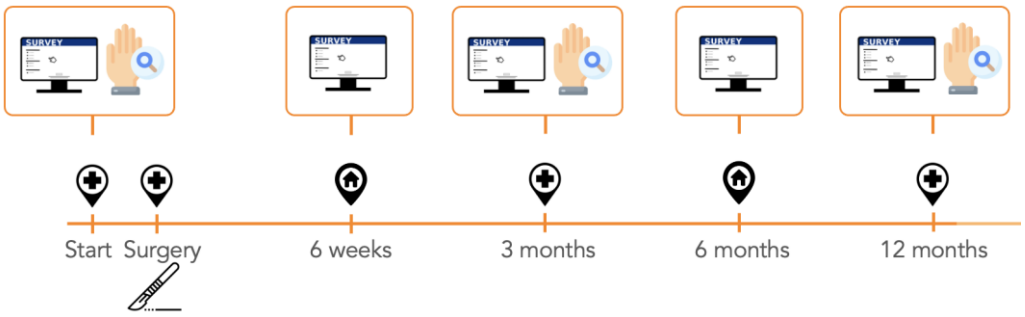

Figure 1. Timeline of measurements

Table 1. Overview of measurement

	T0 Baseline	T1 6 weeks	T2 3 months	T3 6 months	T4 12 months
Symptoms (BCTQ) + recurrence	x	x	x	x	x
(Return to) work	x	x	x	x	
Quality of life	x				x
Cost Utility	x	x	x	x	x
Sensibility	x		x		x
Motor Strength	x		x		x
(S)AE		x	x	x	x

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