ISRCTN38815804 https://doi.org/10.1186/ISRCTN38815804

Keyhole versus open colorectal surgery in the emergency setting

Submission date
10/01/2022

Recruitment status
No longer recruiting

Registration date
09/02/2022

Overall study status
Completed

Last Edited
07/08/2024

Condition category
Surgery

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Emergency general surgery is one of the most common reasons for admission to hospital. A wide range of problems can lead to emergency admission, and diseases that affect the large bowel (e. g. diverticular disease and cancer) make up a third of diseases that present as an emergency. There are two different types of operation that can be used in surgery: keyhole surgery, which involves several small cuts to allow surgical instruments to access the inside of the body, and open surgery, where a bigger cut is made. Currently, keyhole surgery is used in planned (elective) surgery involving the large bowel, but in the emergency setting surgeons choose open surgery more often. Surgeons think that using keyhole surgery in the emergency setting may result in shorter recovery time, reduced pain and shorter length of hospital stay compared with open surgery, but it is not certain if this is definitely the case as the current evidence is not strong enough to draw any firm conclusions. This study will help determine the effectiveness and cost-effectiveness of keyhole surgery in the emergency setting.

Who can participate?
Patients aged 18 years and over requiring emergency surgery on the large bowel

What does the study involve?
Participants are randomly allocated to be treated with open surgery or keyhole surgery. Participants will be followed up for 12 months after their operation. The researchers will also collect information about why patients choose to take part in the study or not and ask recruiting staff about the trial and recruitment processes. They will also investigate whether using routine health data could be a reliable way of collecting surgical clinical trial data in future.

What are the possible benefits and risks of participating?
Laparoscopic surgery in the emergency setting could lead to reduced pain, shorter recovery time and reduced hospital stays, therefore these are the potential benefits to participants in the laparoscopic group. It is hoped that this study will provide evidence to assist surgeons on the best approach for treating other patients with similar conditions in the future. There are also additional benefits to participants, including close and regular follow-up monitoring and rigorous assessment of outcomes.
All participants will need resectional bowel surgery and currently both types of surgery offered

in the study are used in NHS routine practice, so the risks of taking part in the study should not be any different from the risks of being treated outside of the study. If patients choose to take part in the study, they will be asked to give up some of their time to complete questionnaires and attend hospital appointments at certain times, but where possible these will be timed to coincide with normal clinical care.

Where is the study run from?
University of Leeds (UK)

When is the study starting and how long is it expected to run for?
October 2018 to June 2025

Who is funding the study?
National Institute for Health Research (NIHR) (UK)

Who is the main contact?
Dr Rachel Kelly
ctru-laces@leeds.ac.uk

Contact information

Type(s)
Scientific

Contact name
Miss Rachel Kelly

ORCID ID
https://orcid.org/0000-0002-2912-2859

Contact details
Senior Trial Coordinator
Clinical Trials Research Unit
University of Leeds
Leeds
United Kingdom
LS2 9JT
+44 (0)113 3436912
ctru-laces@leeds.ac.uk

Type(s)
Principal investigator

Contact name
Miss Deena Harji

Contact details
Clinical Trials Research Unit
University of Leeds
Leeds
United Kingdom

LS2 9JT
-
D.Harji@leeds.ac.uk

Additional identifiers

Integrated Research Application System (IRAS)
291081

Central Portfolio Management System (CPMS)
50862

Study information

Scientific Title
A multicentre, randomised controlled trial of Laparoscopic versus Open Colorectal Surgery in the Acute Setting (LaCeS2)

Acronym
LaCeS2

Study objectives
LaCeS2 will test the hypothesis that laparoscopic surgery is better than the standard care of open surgery within adult patients undergoing emergency colorectal surgery, in terms of post-operative clinical and cost-effectiveness.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 22/12/2021, North West – Preston Research Ethics Committee (Barlow House, 3rd Floor, 4 Minshull Street, Manchester, M1 3DZ, UK; +44 (0)2071048016; preston.rec@hra.nhs.uk), ref: 21/NW/0303

Primary study design
Interventional

Study design
Randomized; Interventional; Design type: Treatment, Surgery

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Laparoscopic versus open colorectal surgery

Interventions
LaCeS2 is a phase III, multicentre, randomised controlled superiority trial investigating the effectiveness and cost-effectiveness of keyhole (laparoscopic) colorectal emergency surgery compared to open surgery, and follows on from the LaCeS Feasibility Trial. An internal pilot

phase will assess the feasibility of recruitment and an integrated qualitative sub-study will assess broader site implementation of procedures, better understand equipoise and identify any further barriers to recruitment.

Both surgical approaches (open vs laparoscopic) are used in standard practice within the NHS, however, in emergency colorectal operations surgeons tend to opt for open surgery over laparoscopic surgery due to the lack of evidence for laparoscopic colorectal surgery in the emergency setting. Laparoscopic surgery is used for the management of acute appendicitis and gallbladder pathology in emergency general surgery which results in shorter recovery times, reduced pain and shorter length of hospital stay. It can be hypothesised that employing a laparoscopic approach to the emergency colorectal setting could see similar benefits.

Participant identification and consent (main trial)
Patients will be identified within the acute general surgical framework at the participating centres. Participating centres will be NHS hospitals with dedicated emergency surgery services with appropriate provisions for emergency laparoscopic surgery and have dedicated elective laparoscopic colorectal surgery services. Participants presenting with colorectal pathology requiring resectional surgery, as confirmed following a CT or MRI scan and/or endoscopy, will be approached for possible recruitment by an appropriate member of the research team. Suitability for inclusion will be assessed as per the eligibility criteria and patients will be provided with a verbal explanation of the study along with a written explanation, in the form of the approved Participant Information Sheet (PIS), by an appropriate member of the healthcare team for the patient to consider and there will be an opportunity to ask questions. The PIS will contain detailed information on the rationale, design and personal implications of the study. Patients will be given as long as they need within the time available prior to surgery (ideally this will be at least 2 hours) to discuss the trial with family, friends and healthcare professionals and consider participation. The right of the patient to refuse consent without giving a reason will be respected. Assenting patients will then be invited to provide written informed consent for their participation in the trial and formally assessed for eligibility. Informed consent may only be obtained by the Principal Investigator (PI) or an appropriate, delegated, healthcare professional. The healthcare professional must have knowledge of the trial interventions and have received training in the principles of Good Clinical Practice and the Declaration of Helsinki 1996. The healthcare professional must be fully trained in the trial according to the ethically approved protocol and be authorised and approved by the PI to take informed consent as documented in the trial Authorised Personnel Log (APL). Formal sign-off of eligibility will be carried out by the PI or another investigator to whom the PI has delegated this responsibility on the APL.

Randomisation
Participants will be randomised on a 1:1 basis to receive either laparoscopic or open surgery.

Pre-operative investigations
Preoperative investigations and treatment will be as per institutional protocol and must include radiological imaging i.e. CT or MRI scan and/or endoscopy. Details of pre-operative investigations and other baseline data required for trial purposes, such as demographics and any relevant medical history, will be collected prior to surgery on the baseline case report form.

Surgery
Participants will either receive laparoscopic surgery or open surgery depending on their randomised allocation. Laparoscopic surgery involves the use of multiple small incisions to enable the introduction of instruments to be able to undertake the operation. Open surgery is

carried out through a large midline incision. The specifics of each operation will be at the discretion of the operating surgeon. Both surgical procedures will be performed during an inpatient stay.

Post-operative care
Post-operative care will be as per local standard practice but participants must be reviewed for trial purposes at 6 weeks, 90 days and at 6 and 12 months post-surgery. The 6-week and 90-day post-operative follow-up assessments should be completed in clinic in line with routine clinical care, wherever possible, but participants will not need to attend a clinic visit for trial purposes at the later follow-up time points - these follow-up details will instead be obtained by the local site research team from the participants' medical notes.

Participant questionnaires
Participants will complete a number of questionnaires designed to capture health-related quality of life and the costs involved with each treatment. Participants will be asked to complete these questionnaires at baseline, 30 days, 90 days and 6, 9 and 12 months after their surgery. Each questionnaire pack will consist of three validated questionnaires and a Health and Social Care Resource Use questionnaire, and will take approximately 30 minutes to complete. The baseline questionnaires will be administered to the participant by the local research team while the participant is in hospital. Participants will complete the baseline questionnaires in paper format and these should be completed after informed consent but prior to randomisation, or at least before the participant is informed of their randomisation result. Participants will complete the follow-up questionnaires at home and will have the option to complete these either on paper or online. The follow-up questionnaires will be administered directly to participants by the LaCeS2 CTRU trial team by post, text or email (depending on the participant's QoL-completion preferences). If participants choose to complete their follow-up questionnaires in paper format via post, a freepost envelope will be provided so that they can return their completed questionnaire pack to the CTRU.

An integrated qualitative sub-study involving interviews with patients and recruiting site staff will run during the internal pilot phase to understand the LaCeS2 trial from the perspective of patients and recruiters and adapt recruitment processes to improve recruitment. These findings will be used to develop a bespoke training package for recruitment staff. All sites taking part in LaCeS2 will take part in this sub-study. During the internal pilot phase, all patients who were approached for LaCeS2 and either consented or declined to take part in the trial will be invited to take part in a qualitative interview to gather their views on the main trial recruitment processes and intervention, and for decliners, the researchers will also seek to understand their reasons for declining trial participation. A purposive sample of patients approached for the trial (10-12 decliners and up to 30 consenters) and a random sample of 20-25 staff involved in recruiting to the LaCeS2 trial from a range of centres will be recruited to the sub-study.

Study within a Trial (SWAT) - integration of routine data
A SWAT has been incorporated into the trial design to assess the feasibility, quality and accuracy of collecting trial-related data from routine health data from the National Emergency Laparotomy Audit (NELA). Case report forms (CRFs) are currently considered the gold standard for collecting trial-specific data and the LaCeS Feasibility Trial reported a data compliance rate of over 95% for the operative CRF. The aim of the SWAT is to externally validate the use of NELA as a potential data collection platform for surgical trials in future by comparing its data ascertainment and accuracy with the standard trial CRFs for all LaCeS2 participants. Details of this data linkage is covered in the patient information sheet and informed consent form for the main trial.

SWAT - Optimising Recruitment Strategies in the Emergency Setting
A separate SWAT will run during the internal pilot phase to try to identify the most effective method(s) of recruitment. Recruitment strategies may include videos, patient stories & clinician-led recruitment, with sites receiving one or more of these interventions. The impact of these strategies will be analysed quantitatively by evaluating recruitment rates and qualitatively assessing their implementation and acceptability through in-depth interviews with patients and healthcare professionals (see qualitative sub-study section above). Prior to use, the recruitment materials required for this SWAT will be submitted for ethical approval as an amendment. The findings of this study will feed into the development of an evolving site training package, which will be used to provide additional recruitment support to sites on an ongoing basis throughout the trial.

Timetable for research
There will be a 36-month recruitment period and all participants will be followed up until 12 months post-operation. The end of trial is defined as the last participant's last data item. The qualitative sub-study will run during the internal pilot phase which will take place during the first year of open recruitment. There will be 3 months at the end of follow-up for analysis and write-up.

There are no planned formal interim analyses for this trial, however, trial progress and safety will be monitored by the Data Monitoring and Ethics Committee and the Trial Steering Committee on an ongoing basis throughout the trial. The oversight committees will each meet at least annually.

Intervention Type
Procedure/Surgery

Primary outcome(s)
The incidence of 30-day postoperative complications, defined as the number of patients with a complication (of any grade) occurring within 30 days of surgery as a proportion of all randomised patients

Key secondary outcome(s)
1. Quality of life measured using the Gastrointestinal Quality of Life Index (GIQLI) and the 12-Item Short Form Survey (SF-12®) at 30 days, 90 days, 6, 9 and 12 months post-operation
2. Severity of 30-day postoperative complications measured using the Clavien-Dindo Classification and the Comprehensive Complication Index (CCI) at 30 days post-operation
3. Incidence of 90-day postoperative complications and incidence of surgery-specific complications over 12 months post-operation, measured at 90 days, 6 and 12 months post-operation. The incidence of 90-day complications is defined as the number of patients with a complication occurring within 90 days post-operatively as a proportion of all randomised patients. The incidence of surgery-specific complications is calculated as the number of patients experiencing a surgery-specific complication within 6 and 12 months as a proportion of all randomised patients.
4. Incidence of intra-operative complications and incidence of conversions from laparoscopic to open surgery measured at operation. The incidence of intra-operative complications is defined as the number of patients with intra-operative complications recorded as a proportion of all randomised patients. The incidence of conversions from laparoscopic to open surgery is calculated as the number of patients experiencing a conversion as a proportion of all patients allocated to receive laparoscopic surgery. An intra-operative conversion from laparoscopic to open surgery is defined as the use of a midline laparotomy wound for any part of the colorectal

dissection during the procedure.
5. 30-day postoperative mortality, re-operations and readmissions measured at 30 days post-operation:
5.1. 30-day postoperative mortality: mortality rates are defined as the number of patients that have been recorded as dead within the 30 days following surgery as a proportion of all randomised patients
5.2. 30-day postoperative re-operations: the incidence of re-operations is defined as the number of patients that have recorded an additional abdominal surgical procedure within the 30 days following surgery as a proportion of all randomised patients
5.3. 30-day postoperative readmissions: the incidence of 30-day post-operative readmissions is defined as the number of patients that have recorded readmission to hospital following initial discharge within the 30 days following surgery as a proportion of all randomised patients
6. Time to restoration of gastrointestinal function, calculated as the time, in days, from surgery to dietary intake and bowel function resumed
7. Length of hospital stay, calculated as the time, in days, from surgery to patient declared medically fit for discharge
8. Cost-effectiveness measured using the EQ-5D-5L and health resource utilisation at 30 days, 90 days, 6, 9 and 12 months post-operation
9. Qualitative study – an understanding of the recruitment barriers from the perspective of patients to inform staff/recruiter training and an understanding of the trial from the perspective of staff/recruiters at sites, measured via qualitative interviews with patients and recruiting site staff during the internal pilot phase of the main trial

Completion date
30/06/2025

Eligibility

Key inclusion criteria
1. Aged ≥18 years
2. Diagnosis of acute colorectal pathology requiring resectional surgery (for example; acute diverticular disease, inflammatory bowel disease, large bowel obstruction and colonic perforation) confirmed radiologically and/or endoscopically. A colorectal resection will be defined as surgery from the caecum to the anus
3. Urgency of operation defined as per National Confidential Enquiry into Patient Outcome and Death (NCEPOD) guidelines as urgent: intervention for acute onset or clinical deterioration of potentially life-threatening conditions, for those conditions that may threaten the survival of limb or organ, for fixation of many fractures and for relief of pain or other distressing symptoms. Normally within hours of the decision to operate, subdivided into NELA categories of 2a (approx. 2-6 hours) or 2b (approx. 6-18 hours).
4. Suitable for laparoscopic and open surgery
5. Informed written consent obtained
6. Able and willing to comply with the terms of the protocol including quality of life questionnaires

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
1. Acute non-colorectal pathology (for example; adhesional small bowel obstruction, appendicitis, peptic ulcer disease)
2. Hand-assisted laparoscopic surgery using a hand port
3. Laparoscopy and peritoneal lavage alone for colorectal pathology
4. Insertion of an endoscopic stent followed by laparoscopic resection for obstructing colorectal pathology
5. Patients undergoing emergency surgery for complications of elective colorectal operations
6. Pregnancy
7. Pre-existing cognitive impairment affecting the patient’s capacity to consent

Date of first enrolment
13/06/2022

Date of final enrolment
20/06/2024

Locations

Countries of recruitment
United Kingdom

England

Wales

Study participating centre
St. James's University Hospital
Beckett Street
Leeds
United Kingdom
LS9 7TF

Study participating centre
Bradford Royal Infirmary
Duckworth Lane

Bradford
United Kingdom
BD9 6RJ

Study participating centre
Northumbria Specialist Emergency Care Hospital
Northumbria Way
Cramlington
United Kingdom
NE23 6NZ

Study participating centre
James Paget University Hospital
Lowestoft Road
Gorleston
Great Yarmouth
United Kingdom
NR31 6LA

Study participating centre
Royal Albert Edward Infirmary
Wigan Lane
Wigan
United Kingdom
WN1 2NN

Study participating centre
Manchester Royal Infirmary
Cobbett House
Oxford Road
Manchester
United Kingdom
M13 9WL

Study participating centre
Wythenshawe Hospital
Southmoor Road
Wythenshawe
Manchester
United Kingdom
M23 9LT

Study participating centre
Arrowe Park Hospital
Arrowe Park Road
Wirral
United Kingdom
CH49 5PE

Study participating centre
Morriston Hospital
Heol Maes Eglwys
Cwmrhydyceirw
Swansea
United Kingdom
SA6 6NL

Study participating centre
Sunderland Royal Hospital
Kayll Road
Sunderland
United Kingdom
SR4 7TP

Study participating centre
York District Hospital
Wigginton Road
York
United Kingdom
YO31 8HE

Study participating centre
Doncaster Royal Infirmary
Armthorpe Road
Doncaster
United Kingdom
DN2 5LT

Study participating centre

Scarborough Hospital
Woodlands Drive
Scarborough
United Kingdom
YO12 6QL

Study participating centre
University Hospital of North Tees
Hardwick Road
Stockton-on-tees
United Kingdom
TS19 8PE

Study participating centre
Countess of Chester Hospital
Countess of Chester Health Park
Liverpool Road
Chester
United Kingdom
CH2 1UL

Study participating centre
Nottingham University Hospitals NHS Trust - Queen's Medical Centre Campus
Nottingham University Hospital
Derby Road
Nottingham
United Kingdom
NG7 2UH

Study participating centre
Northwick Park Hospital
Watford Road
Harrow
United Kingdom
HA1 3UJ

Study participating centre
Darlington Memorial Hospital
Hollyhurst Road

Darlington
United Kingdom
DL3 6HX

Study participating centre
Glan Clwd Hospital
Ysbyty Glan Clwydd
Bodelwyddan
Rhyl
United Kingdom
LL18 5UJ

Study participating centre
Wrexham Maelor Hospital
Croesnewydd Road
Wrexham Technology Park
Wrexham
United Kingdom
LL13 7TD

Study participating centre
Western General Hospital
Crewe Road South
Edinburgh
Lothian
United Kingdom
EH4 2XU

Study participating centre
The Grange University Hospital
Caerleon Road
Cwmbran
United Kingdom
NP44 8YN

Sponsor information

Organisation
University of Leeds

ROR
https://ror.org/024mrxd33

Funder(s)

Funder type
Government

Funder Name
NIHR Evaluation, Trials and Studies Co-ordinating Centre (NETSCC); Grant Codes: NIHR128815

Results and Publications

Individual participant data (IPD) sharing plan
The data-sharing plans for the current study are unknown and will be made available at a later date

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			26/07/2023	No	No