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Do robotic and conventional surgery need different training?

Submission date
25/09/2025

Recruitment status
No longer recruiting

Registration date
26/09/2025

Overall study status
Completed

Last Edited
29/09/2026

Condition category
Surgery

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol
Background and study aims
The rise in robotic surgical procedures underscores the need for effective training in minimally invasive surgery, particularly the interactions between robotic and conventional techniques. The aim of the study was to examine whether conventional and robotic laparoscopy require different neuropsychological skills and to evaluate the role of individual experience and expertise.

Who can participate?
Residents and experts from general surgery, urology and gynecology took part in the study as well as fifth-year medical students

What does the study involve?
Participants underwent neuropsychological testing, followed by surgical training in both conventional and robot-assisted laparoscopy, performing identical tasks six times in a random order.

What are the possible benefits and risks of participating?
The participants benefit from the structured training programme as well als the information they gather about themselves from the extensive testing. Since the study is an observational educational study on simulator basis, there were no risks for the participants.

Where is the study run from?
University Medical Center Schleswig-Holstein (Germany)

When is the study starting and how long is it expected to run for?
January 2021 to June 2022

Who is funding the study?
The study is funded by the Clinic for Gynaecology and Obstetrics, University Medical Center Schleswig-Holstein, Kiel, Germany. The provision of training tools and staff was supported by the faculty through an innovative teaching fund.

Who is the main contact?
Prof. Ibrahim Alkatout, Ibrahim.Alkatout@uksh.de

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number
CANTAB 02

Study information

Scientific Title
The need for adaptive laparoscopic training, depending on conventional and robotic procedures. Evidence from an experimental study.

Study objectives
The aim of the study was to examine whether conventional and robotic laparoscopy require different neuropsychological skills and to evaluate the role of individual experience and expertise.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 15/03/2021, Ethics committee of the University Clinic of Kiel (Arnold-Heller-Str. 3, Haus U 27, Kiel, 24105, Germany; +49 (0)43150014191; ethikkomm@email.uni-kiel.de), ref: D448 /21

Primary study design
Interventional

Study design
Single-center randomized cross over training trial

Study type(s)
Other

Health condition(s) or problem(s) studied
Personality traits, neuropsychological features and surgical skills of surgeons

Interventions
At baseline, participants underwent neuropsychological testing, personality assessment and motivation testing. After the baseline measures, all participants underwent surgical training in both conventional and robot-assisted laparoscopy, performing identical tasks six times in a randomized cross over setting. Randomisation was achieved by a randomisation table.

Intervention Type
Other

Primary outcome(s)
1. Neuropsychological skills measured by Cambridge Neuropsychological Test Automated Battery at baseline
2. Personality traits measured by NEO Five Factor Inventory at baseline
3. Motivation measured by Questionnaire on Current Motivation at baseline

Key secondary outcome(s)
Surgical training outcomes in simulated tasks, measured analogous during each task (time, mistakes) during conventional laparoscopy and digitally during robotic training

Completion date
01/06/2022

Eligibility

Key inclusion criteria
1. Postgraduates (residents and experts) from general surgery, urology and gynecology
2. Fifth-year medical students

Participant type(s)
Health professional, Learner/student

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit

18 Years

Upper age limit
99 Years

Sex
All

Total final enrolment
323

Key exclusion criteria
No consent

Date of first enrolment
15/03/2021

Date of final enrolment
30/12/2021

Locations

Countries of recruitment
Germany

Study participating centre
Univeristy Hospital Schleswig-Holstein
Clinic for Gynaecology and Obstetrics
Arnold-Heller-Str. 3
Kiel
Germany
24105

Sponsor information

Organisation
University Hospital Schleswig-Holstein

ROR
https://ror.org/01tvm6f46

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
University Medical Center Schleswig-Holstein

Results and Publications

Individual participant data (IPD) sharing plan
The anonymized data are available on request per mail to the corresponding author Prof. Ibrahim Alkatout (Ibrahim.Alkatout@uksh.de).

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		28/09/2026	29/09/2026	Yes	No