Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

Effect of deep breathing exercises on oxygenation of patients undergoing major abdominal surgery

Protocol summary

Summary

Pulmonary complications are common after abdominal surgery. Upper abdominal surgery alters postoperative pulmonary function, as observed by impairment of lung volumes such as total lung capacity, vital capacity and tidal volume. It also reduces the efficiency of efforts to cough for as long as one week. There are also falls in oxygen arterial pressure and oxygen hemoglobin saturation. The aim of the present study is to evaluate the effectiveness of deep breathing exercises (DBE) on oxygenation after major abdominal surgery. In a prospective, randomized trial, patients performing deep-breathing exercises (n = 20) will be compared to a control group (n = 20) who perform no deep breathing exercises postoperatively. Patient management is similar in the groups in terms of assessment, positioning, and mobility. Pulse oximetry, respiratory rate (RR), heart rate (HR), and mean arterial pressure (MAP) will be recorded. A visual pain scale will be applied before and after DBE.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT201011012560N5**
Registration date: **2010-12-02, 1389/09/11**
Registration timing: **registered_while_recruiting**

Last update:
Update count: **0**

Registration date

2010-12-02, 1389/09/11

Registrant information

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Recruitment status

Recruitment complete

Funding source

Vice Chancellor for Research of Qom University of Medical Sciences

Expected recruitment start date

2010-11-22, 1389/09/01

Expected recruitment end date

2011-02-20, 1389/12/01

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Effect of deep breathing exercises on oxygenation of patients undergoing major abdominal surgery

Public title

Effect of deep breathing exercises on oxygenation of patients undergoing major abdominal surgery

Purpose

Supportive

Inclusion/Exclusion criteria

Inclusion criteria: 1) Patients who undergoing elective major abdominal surgery. 2) Having complete alert and ability of patient to performing deep-breathing exercises. 3) Having no history of surgery. 4) Patients undergoing general anesthesia. 5) Not to use pulmonary drugs. Exclusive criteria: 1) Patients with active pulmonary pathology (COPD and Asthma), CHF, CRF and unstable

cardiovascular condition. 2) active pulmonary and cardiac pathology (eg, ARDS and unstable angina). 3) Patients with an indication for liver transplantation, or who presented aneurysm of any arterial segment. 4) Patients with active bleeding after surgery and who needed to operating room or who transferred to intensive care unit. 5) Patients with pulmonary aspiration and temperature over 38° c.

Age
No age limit
Gender
Both

Phase
N/A
Groups that have been masked
No information
Sample size
Target sample size: **40**
Randomization (investigator's opinion)
Randomized
Randomization description
Blinding (investigator's opinion)
Not blinded
Blinding description
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Qom University of Medical Sciences and Health Services
Street address
Saheli st.
City
Qom
Postal code
Approval date
2010-10-21, 1389/07/29
Ethics committee reference number
12050/34/ت

Health conditions studied

1

Description of health condition studied
Acute pulmonary insufficiency following obdoman surgery
ICD-10 code
J95.2
ICD-10 code description
Acute pulmonary insufficiency following nonthoracic surgery

Primary outcomes

1

Description
SpO2
Timepoint
before surgery and before and immediately after deep breathing exercise
Method of measurement
Pulse oximetry

2

Description
Heart rate
Timepoint
Before surgery and before and immediately after deep breathing exercise
Method of measurement
monitoring equipment

3

Description
respiratory rate
Timepoint
Before surgery and before and immediately after deep breathing exercise
Method of measurement
monitoring equipment

4

Description
mean arterial pressure
Timepoint
Before surgery and before and immediately after deep breathing exercise
Method of measurement
monitoring equipment

5

Description
Pain
Timepoint
Before deep breathing exercise
Method of measurement
visual pain scale

Secondary outcomes

empty

Intervention groups

1

Description
Experimental group: The patients in the experimental group will be informed and practiced the breathing technique preoperatively. Deep breathing exercise (DBE) will be initiated approximately 2 hours after surgery when patients awake (in daytime). While resting in a semi-recumbent position, the patients will be instructed to inhale as slowly and deeply as possible, hold their breath for 3 seconds, and then exhale in a relaxed manner while coughing during it. With the help of a researcher nurse using proprioceptive input, the patients will be encouraged to make each subsequent breath deeper than the previous breath for 10 breaths. After 10 breaths, the patients will perform incentive spirometry by latex glove for 2 minute. These periods will be followed by a rest period (ie, normal breathing), and the cycle will be repeated four times per hour for 2 consecutive hours.

Category
Other

2

Description
Control group: Patients in the control group receive routine care by the nurses. They don't receive any deep breathing exercise (DBE).

Category
Other

Recruitment centers

1

Recruitment center

Name of recruitment center
Shahid- Beheshti hospital

Full name of responsible person

Street address

City
Qom

Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Qom University of Medical Sciences and Health Services

Full name of responsible person
Ali Salimi

Street address
Saheli st.

City
Qom

Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?
Yes

Title of funding source
Qom University of Medical Sciences and Health Services

Proportion provided by this source
100

Public or private sector
empty

Domestic or foreign origin
empty

Category of foreign source of funding
empty

Country of origin

Type of organization providing the funding
empty

Person responsible for general inquiries

Contact

Name of organization / entity
Qom University of Medical Sciences and Health Services

Full name of responsible person
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Position
MSc in Community Health Nursing

Other areas of specialty/work

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Person responsible for updating data

Contact

Sharing plan

Deidentified Individual Participant Data Set (IPD)
empty
Study Protocol
empty
Statistical Analysis Plan
empty
Informed Consent Form
empty
Clinical Study Report
empty
Analytic Code
empty
Data Dictionary
empty