INPLASY PROTOCOL

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Corresponding author:
Lingyun Zhang

micky1972@126.com

Author Affiliation:
The Affiliated Hospital of Qingdao University, Shandong Province, China

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None.

How to control pain of the conscious elective colonoscopy with new techniques: a meta-analysis comparing water-assisted and carbon dioxide insufflation methods for colonoscopy

Liang, T[1]; Jing, X[2]; Sun, X[3]; Liu, Y[4]; Dou, X[5]; Zhang, L[6].

Review question / Objective: **P: conscious colonoscopy patients; I: Water-assisted colonoscopy; C: carbon dioxide insufflation colonoscopy; O: pain score, cecal intubation time, body position change, abdominal compression; S: RCTs.**
Condition being studied: **Cadoni et al had highlighted the longer time of overall procedrual time and higher adenoma/polyps detection rate. Aziz, Xiufang Xu et al. meta-analysis had come a conclusion that water-assisted technique colonoscopy can increase the diagnostic accuracy.**
Information sources: **Electronic databases incude PubMed, Embase, the Cochrane Library, Web of Science and similar articles or references**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 January 2021 and was last updated on 16 January 2021 (registration number INPLASY202110057).

INTRODUCTION

Review question / Objective: **P: conscious colonoscopy patients; I: Water-assisted colonoscopy; C: carbon dioxide insufflation colonoscopy; O: pain score, cecal intubation time, body position change, abdominal compression; S: RCTs.**

Rationale: **Colonoscopy is the golden standard method for colonic screening, surveillance and diagnostics due to its**

flawless imaging capability. Intolerable pain has becoming an obstacle for colonoscopy. The new method of Carbon dioxide insufflation in colonoscopy can significantly decrease distention but not the pain. Sedation or anaelthesia can make patients painless, but cause many side-effects such as high expenditure, escorting and no driving and so on. Cadoni et al had highlighted the longer time of overall procedual time and higher adenoma/polyps detection rate. Which method can increase efficiency, patient comfort and further cater to patients' demands. The aim of this meta-analysis is to compare carbon dioxide insufflation with water-assisted method in colonoscopy and summarize the advantages of water-assisted technique in pain-controlling of colonoscopy.

Condition being studied: Cadoni et al had highlighted the longer time of overall procedrual time and higher adenoma/polyps detection rate. Aziz, Xiufang Xu et al. meta-analysis had come a conclusion that water-assisted technique colonoscopy can increase the diagnostic accuracy.

METHODS

Search strategy: (((((((colonoscopy[MeSH Terms])) AND (water)) OR (water exchange)) OR (water immersion)) AND (carbon dioxide)) OR (CO2)) AND (2011[Date - Publication]:2021[Date - Publication]).

Participant or population: conscious colonoscopy patients.

Intervention: Water-assisted technique in colonoscopy.

Comparator: Carbon dioxide insufflation in colonoscopy.

Study designs to be included: Random controlled clinical trials.

Eligibility criteria: 1) referred specifically to water-assisted colonoscopy ; 2) RCTs; 3) there was a control arm of carbon dioxide insufflation; 4) adult participants; 5)excluding reviews, letters without original data, editorials.

Information sources: Electronic databases include PubMed, Embase, the Cochrane Library, Web of Science and similar articles or references

Main outcome(s): Pain score, cecal intubation time, Fentanyl dose, Midazolam dose, abdominal compression.

Additional outcome(s): Analgesia demand, willingness to repeat the procesure , cecal intubaion rate, the difference of pain score and cecal incubation time among the sub group analysis

Data management: The studies were screened by two reviewers independently according to the steps for preliminary screening and full-text screening, the disagreements were solving by discussion or consultation with a third reviewer. We are going to use Review Manager 5.1.4 to analyze the data.

Quality assessment / Risk of bias analysis: Random sequence generation(selection bias), allocation concealment(selection bias),blinding of participants and personnel(performance bias) blinding method, incomplete outcome, blinding of outcome assessment(detection bias), incomplete outcome data(attrition bias), selective reporting(reporting bias) and other bias. we are going to use Review Manager 5.1.4 software to appraise the studies.

Strategy of data synthesis: We are going to use Review Manager 5.1.4 software to analyze and synthesize the data. Our study is primarily to compare the pain core of the 2 techniques of colonoscopy. It includes the following aspects(pain score, cecal intubation time, body position change, abdominal compression and so on).

Subgroup analysis: We divide the water exchange group into WE-CO2 and WE-Air and analyze the pain score and cecal intubation time between the 2 subgroups.

Sensibility analysis: We are going to use the Review Manager 5.1.4 to analyze the

sensibility. Exclusion is used to decide the sensibility of the included studies.

Language: English.

Country(ies) involved: No other countries involved. This systematic review is going to be carried out in the Affiliated Hospital of Qingdao University in China.

Keywords: water, carbon dioxide, CO2, colonoscopy, meta-analysis.

Dissemination plans: We hope to dissemination the outcome to endoscopists all over the world to decrease the pain of colonoscopy patients.

Contributions of each author:

Author 1 - Tao Liang - drafted the manuscript.
Email: lt19722000@126.com
Author 2 - Xue Jing - provided statistical expertise and registration.
Email: jx7067@sina.com
Author 3 - Xueguo Sun - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.
Email: sunxueguo@126.com
Author 4 - Ying Liu - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.
Email: 14717@163.com
Author 5 - Xianli Dou - The author contributed to the development of the selection criteria, and the risk of bias assessment strategy.
Email: 844773466@qq.com
Author 6 - Lingyun Zhang - The author read, provided feedback, approved the final manuscript and submitted the manuscript.
Email: micky1972@126.com