Assisted Abdominal Compression in Colonoscopy: A Post-Print Study

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Abstract

Objective To investigate the safety and efficacy of assisted abdominal compression during colonoscopy. Methods Fifty patients undergoing colonoscopy in the Endoscopy Center of our hospital were enrolled and randomly divided into the manual position-change without compression group (Group R, n=25) and the abdominal compression assistance group (Group D, n=25). During the examination procedure, the frequency of abdominal discomfort episodes and colonoscopy duration were recorded for both groups. The effectiveness of abdominal compression was compared between the two groups. Results During the examination procedure, there was a statistically significant difference in the frequency of abdominal discomfort episodes between the manual position-change without compression group (Group R) and the abdominal compression assistance group (Group D) ($P<0.05$). There was also a statistically significant difference in colonoscopy duration ($P<0.05$). Conclusion The technique of applying abdominal compression assistance demonstrates certain efficacy in further reducing patient discomfort during colonoscopy and the workload of operators in clinical practice.

Full Text

Research on the Role of Assisted Abdominal Compression in Colonoscopy

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Abstract

Objective: To investigate the safety and efficacy of assisted abdominal compression during colonoscopy.
Methods: Patients undergoing colonoscopy at our hospital' s endoscopy center were randomly divided into two groups: a personnel-assisted turning without compression group (Group R) and an assisted abdominal compression group (Group D). During the examination procedure, the number of abdominal discomfort episodes and colonoscopy completion time were recorded for both groups. The effectiveness of abdominal compression was compared between the groups.
Results: There were statistically significant differences between Group R (assisted turning without compression) and Group D (assisted abdominal compression) in the number of abdominal discomfort episodes during examination (P<) and in colonoscopy time (P<).
Conclusion: The application of assisted abdominal compression technique effectively reduces patient discomfort during colonoscopy and decreases operator workload, demonstrating clinical value.

Keywords: Colonoscopy; Assisted abdominal compression

Introduction

With changing dietary habits and structures, the incidence of intestinal diseases continues to rise, making colonoscopy a common method for diagnosis and treatment. However, the procedure presents particular challenges in obese patients, especially those with central obesity, as colonoscopy duration is longer and the procedure more difficult compared to normal-weight patients. During examination, assistants must often guide patients to change positions, wasting time and human resources.

After the colonoscope enters the deep colon, loop formation can cause paradoxical movement where pushing the endoscope causes it to retract instead, or create strong dilation of the intestinal wall, leading to severe abdominal pain and even perforation. Excessive bowel curvature forming acute angles makes it difficult to locate the intestinal lumen direction by adjusting the colonoscope knobs. Common sites for loop formation include the sigmoid colon and the transverse colon 下垂处 [transverse colon ptosis area], while acute angulation commonly occurs at the rectosigmoid junction, splenic flexure, and hepatic flexure. The purpose of assisted compression is to eliminate sharp colonic bends and reduce colonoscope loops, making the scope shorter and straighter for smooth advancement to the cecum. This is particularly crucial for painless colonoscopy patients who cannot perceive pain, increasing risks of serious complications such as perforation and bleeding. When encountering difficult intubation, external assisted abdominal compression and position changes become essential to facilitate advancement and reduce adverse events.

Based on clinical observations, we developed standardized assisted abdominal compression techniques for difficult colonoscopy cases.

1. Materials and Methods

1.1 Study Design and Participants From [date range not specified], 50 patients undergoing colonoscopy at our hospital's endoscopy center who were anticipated to have difficult intubation based on their clinical profiles were randomly divided into two groups: 25 cases in the personnel-assisted turning without compression group (Group R) and 25 cases in the assisted abdominal compression group (Group D). General patient data are shown in . There were no statistically significant differences between groups in gender, age, height, weight, or disease course ($P>0.05$).

All patients underwent routine bowel preparation before colonoscopy. The procedure was performed under standard colonoscopy protocol with anesthesiologist monitoring blood pressure, oxygen saturation, heart rate, respiration, and electrocardiogram throughout the examination.

1.2 Intervention Protocol The assisted abdominal compression technique was applied during colonoscopy for difficult cases. Patients initially assumed left lateral decubitus position; when encountering difficulty, they could be changed to supine or right lateral decubitus position. The compression technique involved: (A) lifting the left lower abdomen upward toward the spine when passing the rectosigmoid junction; (B) pushing from below the umbilicus when the descending colon entered the transverse colon and when the transverse colon entered the ascending colon. Manual compression blocks intestinal curvature, transforming acute angles into obtuse angles and facilitating smooth insertion. This approach allows endoscopists to complete the procedure efficiently without requiring patients to repeatedly change positions.

1.3 Outcome Measures For each patient, we recorded: (1) time from anal insertion to cecal intubation (insertion time); (2) post-procedure abdominal pain and discomfort assessed using a Visual Analogue Scale (VAS) after patients regained consciousness; (3) blood pressure and heart rate fluctuations during assisted compression.

1.4 Statistical Analysis Data were analyzed using SPSS statistical software. Measurement data were expressed as mean $\pm$ standard deviation ($\pm$s) and compared between groups using independent t-tests. Count data were compared using ^{2} tests. $P<0.05$ was considered statistically significant.

2. Results

Comparison of abdominal wall pain and discomfort indices between the two groups showed statistically significant differences ($P<0.05$). Colonoscope inser-

tion time also differed significantly between groups (P<0.05), with Group R showing markedly longer times than Group D .

Table 1 General characteristics of both groups (n=25, ±s)
Age (years) | Height (cm) | Weight (kg)

Table 2 Comparison of abdominal wall pain and discomfort indices between groups (n=25, ±s)
Insertion time (minutes) | Abdominal wall pain (VAS score) | Abdominal discomfort (VAS score) | Blood pressure fluctuation after assistance (mmHg) | Heart rate fluctuation after assistance (beats/min)
Note: Comparison between Group D and Group R, P<0.05

3. Discussion

This study demonstrates that assisted abdominal compression technique reduces abdominal wall pain and significantly decreases colonoscopy operation time compared to patient turning methods.

3.1 Key Principles of Abdominal Compression Successful implementation requires: (1) thorough knowledge of colonic anatomy and three-dimensional spatial orientation; (2) familiarity with anatomical landmarks to determine the endoscope tip location based on insertion depth and visualized bowel morphology; (3) maintaining the colonoscope in a state with only one bend while keeping the shaft straight—this represents the ideal insertion state; (4) nurses must carefully observe the endoscopic screen during compression to confirm smooth advancement while simultaneously inquiring about patient comfort, strictly avoiding blind compression.

3.2 Comparison with Position Change Method Abdominal compression offers several advantages over position changes: (1) it allows continuous operation without interrupting the procedure; (2) compression can be adjusted in real-time as the colonoscope advances; (3) position changes require procedure interruption and often multiple adjustments, increasing insertion time significantly; (4) position changes alter the colonoscope' s location in the bowel, requiring repositioning and increasing procedure time. Postoperative adhesions can also impede colonoscope advancement, where position changes prove ineffective and abdominal compression becomes necessary.

3.3 Post-Procedure Care Patients should be informed that mild abdominal distension and pain may occur post-procedure due to insufflation, typically self-resolving. Residual gas should be aspirated during scope withdrawal. Patients may eat once abdominal symptoms resolve. Those undergoing painless colonoscopy must be accompanied by family when leaving and should not cycle, drive, or engage in high-altitude or precision work on the day of procedure. Patients who underwent biopsy should avoid strenuous activity for three days.

4. Conclusion

Assisted abdominal compression during colonoscopy effectively reduces patient discomfort and facilitates successful completion of the examination in shorter time. This technique should be performed according to the endoscopist's requirements regarding compression site, force, and direction, representing a valuable skill for endoscopy nurses.

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Note: Figure translations are in progress. See original paper for figures.