A randomized controlled trial assessing the effect of prescribed patient position changes during colonoscope withdrawal on adenoma detection CME

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Background: High-quality colonoscope withdrawal technique is associated with a higher adenoma detection rate. Position change is routinely used in barium enema and CT colonography to facilitate adequate distension of the colon and promote movement of fluid from the segment of the colon being assessed.

Objective: To determine whether prescribed position changes during colonoscope withdrawal affect the adenoma detection rate compared with the usual care per endoscopist.

Design: Prospective, randomized, controlled trial.

Setting: Tertiary-care, university-affiliated hospital.

Patients: Patients referred for outpatient colonoscopy between July 2011 and July 2012 were evaluated for eligibility. Inclusion criteria were outpatient status and age $\geq$40 years. Exclusion criteria were (1) complete colonoscopy within 1 year before the procedure, (2) inability to provide informed consent, (3) incomplete colonoscopy to the cecum, (4) previous bowel resection, (5) inflammatory bowel disease, (6) colonic polyposis syndrome, (7) inadequate bowel preparation, and (8) musculoskeletal disorder or other mobility issues limiting effective patient position changes during colonoscopy.

Interventions: Prescribed position changes during colonoscope withdrawal.

Main Outcome Measurements: Polyp detection rate (PDR) and adenoma detection rate (ADR).

Results: A total of 776 patients were enrolled, with 388 in the dynamic group. There was no difference in PDR (odds ratio [OR] 0.99; $P = .93$) or ADR (OR 1.17; $P = .28$). Colonoscope withdrawal time was longer in the dynamic group (median time 466.5 vs 422.5 seconds; $P < .0001$).

Limitations: Single-center study. Indication for procedure not controlled. Lack of standardized bowel preparation and blinding.

Conclusion: Prescribed position changes during colonoscope withdrawal do not affect polyp/adenoma detection compared with the usual practice when the baseline ADR is above the recommended standard. (Clinical trial registration number: NCT01395173.) (Gastrointest Endosc 2014;80:277-83.)

Abbreviations: ADR, adenoma detection rate; PDR, polyp detection rate.

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Colonoscopy is commonly performed for colorectal cancer screening, with the objective of identifying and excising colon adenomas, the precursor to most colorectal cancers. Published data have revealed that adenoma detection rates vary among endoscopists and that low adenoma detection rates are associated with higher rates of interval colorectal cancers.[1]

A high-quality colonoscope withdrawal technique including slow withdrawal, careful examination of flexures and the proximal side of folds, suctioning and cleaning out all residual fluid and debris, re-examining colon segments and retroflexed views, and adequate distention is associated with higher adenoma detection rates.[2-4]

Position change during colonoscope withdrawal was originally based on the experience of radiologists with barium enema and more recently, CT colonography, who used position change to facilitate adequate distension of the colon and promote movement of fluid from the segment of the colon being assessed.[5-7] The use of position changes during colonoscope withdrawal is discussed in standard endoscopy texts, particularly the use of the right oblique or right lateral position at the splenic flexure, but, anecdotally, is relatively rare in routine clinical practice.[8-9] Reasons for not performing position change may include time constraints, difficulty moving heavily sedated patients, a lack of awareness regarding its potential advantages, and a lack of evidence for its benefit. Recent data in 2 studies have shown an advantage to changing patient position multiple times to maximize distention in the colon segment being evaluated.[10-11] In both crossover studies, the patients were randomized to colonoscope withdrawal in the left lateral position only, left lateral decubitus (ascending colon and hepatic flexure), supine (transverse colon), and right lateral decubitus position (splenic flexure and descending colon) in sequence. Each segment was examined in tandem fashion in different positions. The authors found that the latter withdrawal technique discovered significantly more adenomas.

Our objective was to validate these results in a North American population randomized to prescribed position changes during colonoscope withdrawal or usual care per endoscopist.

Take-home Message

- Prescribed dynamic position changes during colonoscope withdrawal do not affect adenoma detection when the adenoma detection rate is above the recommended standard, but this technique is associated with longer withdrawal time.

METHODS

Study design, patient population, and randomization

This was a prospective, randomized, controlled trial. Outpatients referred to the St. Paul's Hospital (Vancouver, Canada) gastroenterologists between July 2011 and July 2012 were evaluated for study eligibility. Inclusion criteria were outpatient status and age $\geq$40 years. Exclusion criteria were (1) complete colonoscopy within 1 year before the procedure, (2) inability to provide informed consent, (3) incomplete colonoscopy to the cecum, (4) previous bowel resection, (5) inflammatory bowel disease, (6) colonic polyposis syndrome, (7) inadequate bowel preparation, and (8) musculoskeletal disorder or other mobility issues limiting effective patient position changes during colonoscopy.

Randomization occurred at the time of colonoscopy in the endoscopy clinic before colonoscope withdrawal. The randomization list for patient position assignment was created by using a random number generator in a 1-to-1 ratio. The randomization process was administered by the research assistant after the patients were enrolled. The patients and the gastroenterologists performing the procedure could not be blinded to the patient assignment. Patients were randomized to either colonoscope withdrawal as per endoscopist's usual care (control), which may involve position changes as deemed necessary by the gastroenterologist, or "dynamic" prescribed position changes: ascending colon/hepatic flexure examined in left lateral decubitus position, transverse colon in supine position, and splenic flexure/descending colon/sigmoid colon/rectum in right lateral decubitus position. Physicians were permitted to deviate from prescribed position changes in the dynamic group as per protocol if deemed medically necessary.

Patients gave written informed consent for the procedure and the study. The study was approved by University of British Columbia Providence Health Care Research Ethics Board and was registered at ClinicalTrials.gov (Identifier, NCT01395173).

Procedure

Colonoscopies were performed by 9 experienced Canadian certified endoscopists at a single, university-affiliated, tertiary-care center by using Olympus 180 Series HD colonoscopes (Olympus Optical Co, Ltd, Tokyo, Japan). Conscious sedation with midazolam and/or fentanyl was offered to patients as standard of care, unless declined. Antispasmotic agents were not used, and room air was used for insufflation as per standard of care at this center. Completeness of the procedures was supported by intubation of the terminal ileum or by documenting the usual landmarks of the cecum including ileocecal valve and appendiceal orifice.

Data collection

Baseline data was collected prospectively from the patient and medical records, including age, sex, endoscopist,

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