

Does Colonoscopy with Water Exchange Decrease Right Colon Polyp Miss Rates?



Joseph C. Anderson, MD, FACG

VA Medical Center, White River Junction, VT; Geisel School of Medicine at Dartmouth, Hanover, NH; University of Connecticut School of Medicine, Farmington, CT

Dr Joseph Anderson
Co-Editor-in-Chief

This summary reviews Cheng, C-L, Tang J-H, Hsieh Y-H, et al. Comparing Right-Sided Colon Adenoma and Serrated Polyp Miss Rates With Water Exchange and CO₂ Insufflation: A Randomized Controlled Trial. *Am J Gastroenterol*. 2024; doi: 10.14309/ajg.00000000000003168.

Correspondence to Joseph C. Anderson, MD, FACG, Co-Editor-in-Chief. Email: EBGI@gi.org

Keywords: water exchange, colonoscopy, serrated polyp, miss rate

COLON

STRUCTURED ABSTRACT

Question: Can colonoscopy performed with water exchange reduce the right-sided colon adenoma miss rate (rAMR) and serrated polyp (SP) miss rate (rSPMR) compared with standard colonoscopy?

Design: A randomized controlled trial.

Setting: Three hospitals in Taiwan between November 2019 and December 2022.

Patients: The authors included consecutive patients who were 45–75-years-old and scheduled for a colonoscopy for screening, surveillance, or positive fecal immunochemical test results. They excluded patients who had hereditary colorectal cancer (CRC) syndromes, a personal history of CRC or inflammatory bowel disease, previous colonic resection, known obstructive lesion of the

colon, gastrointestinal bleeding, an American Society of Anesthesiology classification 3 or higher, or if they refused to provide informed consent.

Exposure: Overall, 386 patients were randomly assigned to insertion with either WE or CO₂ insufflation.

Outcomes: The primary outcome was the combined rAMR and rSPMR as determined by a second endoscopist examining the proximal colon after reintubation of this segment.

Data Analysis: The investigators used an intention-to-treat analysis to assess the primary outcome. The Student *t* test for continuous variables and proportion tests for discrete variables were used to assess differences in demographic and clinical characteristics. Multivariate logistic regression analyses were used to determine independent predictors of rSPMR.

Funding: None.

Results: The authors observed that the use of WE significantly decreased the combined rAMR and rSPMR (22.2% vs 32.2%, $P < 0.001$) and rSPMR alone (22.5% vs 37.1%, $P = 0.002$) compared with CO₂ insufflation, but not rAMR (21.8% vs 29.8%, $P = 0.079$). The detection of SP per colonoscopy (SP per colonoscopy) in the right-sided colon was also increased when using WE (0.95 6 1.56 vs 0.50 6 0.79, $P < 0.001$). After adjusting for important covariates, the authors observed that 2 or more right-sided SPs were an independent predictor of rSPMR (odds ratio, 3.47; 95% confidence interval, 1.89–6.38), along with a higher right-sided colon Boston Bowel Preparation Scale score (odds ratio, 0.55; 95% confidence interval, 0.32–0.94).

COMMENTARY

Why Is This Important?

The introduction of the water jet has enabled endoscopists to employ water-assisted colonoscopy. This technique can be performed with water immersion, in which water is infused and aspirated on withdrawal, or WE, in which the water is aspirated on insertion. Does

water help polyp detection? Our randomized controlled trial of total underwater colonoscopy demonstrated that visualizing the mucosa underwater does not increase polyp detection.¹ However, it is unclear if WE can help increase polyp detection. Although WE may aid in detection of polyps, this technique is

associated with longer procedure times due to longer insertion times. Therefore, data examining its use for detection are essential for practicing endoscopists. The current study provides important information by examining the impact of WE on right-sided polyp detection. This is an important outcome since post-colonoscopy CRCs are often in the proximal colon.

Key Study Findings

This study is a well-designed trial with careful attention to maintaining equal inspection times for both arms.

The main finding is the decrease in miss rate for serrated polyps, which may be important precursor lesions. Other significant findings include the decreased need for abdominal pressure or change in patient position in order to achieve cecal intubation.

The latter is quite important for patients having deep sedation with propofol. Therefore, these data support the use of water during the insertion phase to aid with cecal intubation.

Caution

The main finding here is the decreased miss rate for small serrated polyps. While some of these proximal SPs may be sessile serrated polyps, which can develop dysplasia and thus progress to malignancy,² many are likely to be benign hyperplastic polyps which have no clinical significance. In addition, many of the water studies are performed by experts who are very comfortable with

this technique. The data suggest that WE can help to improve bowel preparation scores as it did in this study. After logistic regression, a higher bowel preparation score was a predictor for reduced proximal SP miss rates. Higher quality of bowel preparation after washing could explain the increased detection of polyps.

My Practice

I use copious water during colonoscopy, mostly as WE.^{3, 4} For colons that are redundant, I may use water immersion. Filling the sigmoid colon with water helps to weigh it down and straighten the colon. Water also helps the endoscopist to visualize the mucosa by pushing it away from the scope without overly distending the colon, as would happen with air or CO₂. Thus, one can complete the colon with less scope inserted and, therefore, less looping. I also use water to get through tight sigmoid colons. This helps to prevent barotrauma which can still occur even with CO₂.⁵ When examining the mucosa on withdrawal, I also use the water jet to spray the mucosal surfaces because I feel that it helps to identify subtle abnormalities, which can often be SPs. One recommendation is to use body temperature water to prevent the development of intraluminal white mucous in the rectosigmoid colon.⁷

For Future Research

A major issue that needs to be addressed is the utility of WE for endoscopists in practice since many of the

studies have been conducted by a small group of investigators. How WE compares to other techniques and imaging technology is also important, largely because of the extra time needed for WE.

Conflict of Interest

The author has no reported conflicts of interest.

REFERENCES

1. Anderson JC, Kahi CJ, Sullivan A, et al. Comparing adenoma and polyp miss rates for total underwater colonoscopy versus standard CO(2): a randomized controlled trial using a tandem colonoscopy approach. *Gastrointest Endosc*. 2019;89:591-598.
2. Anderson JC, Lisovsky M, Greene MA, et al. Factors associated with classification of hyperplastic polyps as sessile serrated adenomas/polyps on morphologic review. *J Clin Gastroenterol*. 2018;52:524-529.
3. Anderson JC. Water-aided colonoscopy. *Gastrointest Endosc Clin N Am*. 2015;25:211-26.
4. Anderson JC. Use of total underwater colonoscopy to navigate endoscopic challenges. *Clin Gastroenterol Hepatol*. 2020;18:1427-1430.
5. Anderson JC, Rex DK. Performing high-quality, safe, cost-effective, and efficient basic colonoscopy in 2023: Advice from two experts. *Am J Gastroenterol*. 2023;118:1779-1786.
6. El Rahyel A, McWhinney CD, Parsa N, et al. Room temperature water infusion during colonoscopy insertion induces rectosigmoid colon mucus production. *Endoscopy* 2020;52:1118-1121.