

Can old dogs learn new tricks?

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Water-related colonoscopy techniques have been around for decades, and many endoscopists are familiar with the use of water to some extent, if only for cleansing purposes. The more recent and refined method of water exchange,¹ as opposed to water immersion, has not yet been widely adopted. Several trials have demonstrated the advantages with water methods for colonoscopy including reduced pain during the procedure, and reduced need for sedation. Interestingly, more pronounced pain attenuation and increment in adenoma detection rate seems to be serendipitous effects of the water exchange compared to water immersion.^{2,3} Given these apparent advantages, two questions arise: Does the water exchange method deserve a larger body of followers, and if so, how can the technique be taught efficiently?

The recent awareness that colonoscopy has fallen short of preventing right sided colon cancer has triggered off a massive focus on the quality of colonoscopy for colorectal cancer screening. In May 2012, two major conventions on both sides of the Atlantic addressed this issue in-depth: Several state-of-the-art lectures and numerous abstracts were presented at Digestive Disease Week in San Diego, CA, and a two-day symposium devoted specifically to quality in colonoscopy was hosted by The European Society for Gastrointestinal Endoscopy (ESGE) in collaboration with the European Society for Digestive Oncology (ESDO) in Berlin, Germany.

Two of the most discussed issues at these conventions were the adenoma detection rate (ADR) and the detection of the relatively new entity of sessile serrated polyps/adenomas. Preventing interval cancer (defined as cancer diagnosed after a screening colonoscopy, and before a new colonoscopy is due according to screening or surveillance guidelines) remains the most important aim of screening colo-

noscopy. Although ADR is a surrogate marker, the recommended threshold of individual ADR of at least 20% has been confirmed to be valid in the prevention of interval cancer.⁴ New insight is continuously provided on how we can improve ADR, including new endoscopy equipment, imaging techniques, and the use of mucosal dye. All these improvements may be of importance, but their precise contribution to improve screening outcomes in the long run is uncertain.

An arguably more important issue, albeit less discussed, is the low adherence rate with screening colonoscopy in many countries. It is intuitive to assume that the reputation of colonoscopy as a burdensome, unpleasant or even painful procedure prevents screening participation. The use of sedation and analgesia may improve tolerance of the procedure, but may also increase the overall burden for patients and the risk of complications. An easy, inexpensive method both improving ADR and reducing the burden of colonoscopy is therefore most enticing. Conceivably, water exchange colonoscopy represents such a method.

Years of training are required to establish competence in colonoscopy and to fulfill performance standards recommended in screening guidelines. In order to improve performance, one must know the current performance level and recognize the benefit of improvement. Cecal intubation rate (CIR) and ADR are fairly easy monitored outcome measures, and serve as incentives for training to reach the recommended standards. To monitor patient burden is a more challenging task, but it is nevertheless an important component of overall performance.

Sedation and analgesia are commonly used to reduce anxiety and discomfort, but colonoscopy with no or minimal sedation is certainly feasible and may decrease the overall burden for many patients. As the water exchange method is not just an adjunctive means to reach

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Abbreviations: ESGE, European Society for Gastrointestinal Endoscopy; ESDO, European Society for Digestive Oncology; ADR, adenoma detection rate

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the cecum, but rather an alternative technique altogether, acquisition of a complete new set of skills is required for endoscopists experienced with the standard air or carbon dioxide insufflation techniques. Endoscopists with performance meeting or exceeding the recommended CIR and ADR thresholds may not find it worthwhile spending valuable time learning a new method. However, conversion to gas insufflation is always possible if difficulties are encountered while trying to reach the cecum, implying that training can be incorporated in the everyday practice of any colonoscopist. An individual learning curve has been published suggesting that cecal intubation rate and time to reach the cecum can approach baseline after no more than 100 cases.⁵

In our opinion, patients should have the option to make informed choices to undergo sedated or unsedated procedures based on evidence, and it is the endoscopists' responsibility to recognize their own limitations. Trials with water exchange colonoscopy in the setting of minimal and no sedation have provided us with knowledge, allowing patients to make informed choices. Nevertheless it is still an open question how the nuances of this new method can best be transferred to yield the desired performance improvements.

In this issue of the journal, the proponents of water exchange colonoscopy,

Professor Felix Leung and colleagues, report results from coached training sessions with 19 experienced colonoscopists in the USA and abroad.⁶ 77 patients were examined with water exchange during the sessions with an overall intention-to-treat cecal intubation rate of 88%, and 14 of 19 endoscopists achieved 100% intention-to-treat cecal intubation. These are uncontrolled observational data, but the report from Leung and colleagues indicate that the water exchange technique can be learnt fairly easy with supervision from a proficient colleague. Although the same skills can be acquired by self-learning, supervised training is undoubtedly an effective way to weed out beginner's errors at an early stage, and may optimize learning curves.

It has been known for some years that carbon dioxide insufflation has significant advantages over air insufflation in several endoscopic procedures. Although no training is needed to incorporate the use of carbon dioxide, adaptation of this theoretical knowledge into everyday clinical practice is very slow. The need for investing in new equipment and continuous replacement of gas tanks may partly explain this reluctance. Water exchange colonoscopy, on the other hand, takes some time to master, but can be adapted with minimal or no financial investment. Ongoing trials will provide deeper insight

into the possible quality enhancing effects of water exchange colonoscopy. In the meantime, the current knowledge and accessibility should be sufficient to interest any endoscopist seeking to improve their performance.

Conflicts of interest

None.

References

1. Leung FW, Leung JW, Mann SK, Friedland S, Ramirez FC. The water method significantly enhances patient-centered outcomes in sedated and unsedated colonoscopy. *Endoscopy* 2011; 43:816-21.
2. Leung F, Harker J, Leung J, Siao-Salera R, Mann S, Ramirez F, et al. Removal of infused water predominantly during insertion (water exchange) is consistently associated with a greater reduction of pain score-review of randomized controlled trials (RCTs) of water method colonoscopy. *J Interv Gastroenterol* 2011; 1:114-20.
3. Leung F, Harker J, Leung J, Siao-Salera R, Mann S, Ramirez F, et al. Removal of infused water predominantly during insertion (water exchange) is consistently associated with an increase in adenoma detection rate-review of data in randomized controlled trials (RCTs) of water-related methods. *J Interv Gastroenterol* 2011; 1:121-6.
4. Kaminski MF, Regula J, Kraszewska E, Polkowski M, Wojciechowska U, Didkowska J, et al. Quality indicators for colonoscopy and the risk of interval cancer. *N Engl J Med* 2010; 362:1795-803.
5. Ramirez FC, Leung FW. The water method for aiding colonoscopy insertion: the learning curve of an experienced colonoscopist. *J Interv Gastroenterol* 2011; 1:97-101.
6. Leung F. The water exchange method for colonoscopy-effect of coaching. *Journal of Interventional Gastroenterology* 2012.