# Water Exchange Colonoscopy Decreases The Right Colon Serrated Polyp Miss Rate: A Prospective Multicenter Tandem Study

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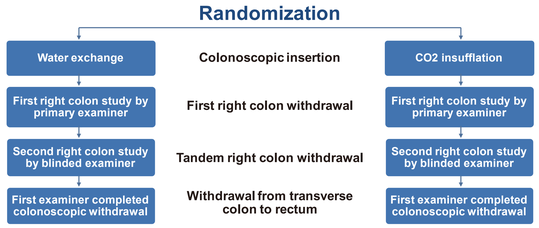
## Background

- Randomized controlled trial (RCT) showed screening colonoscopy reduces the colorectal cancer (CRC) incidence and death.
- Non-RCTs showed the protection is less for proximal/right colon.
- 85% of interval cancers are due to missed lesions; the right colon is an independent risk factor for interval cancers.
- Both adenomas and serrated polyps (SP) are precursors of CRC.
- Water exchange (WE) improves right colon cleanliness and segmental adenoma detection rate (ADR), SP detection rate (SPDR).

## Hypothesis and Methods

- **Hypothesis:** WE decrease right colon adenoma miss rate (AMR) and serrated polyp miss rate (SPMR) compared to CO2 method.
- **Aims:** Comparing right colon AMR and SPMR using WE vs. CO2.
- **Design:** A parallel RCT performed at 3 Taiwan sites.
- **Eligibility:** 45-75 y/o undergoing screening or surveillance colonoscopy.
- **Exclusion:** as study flowchart.

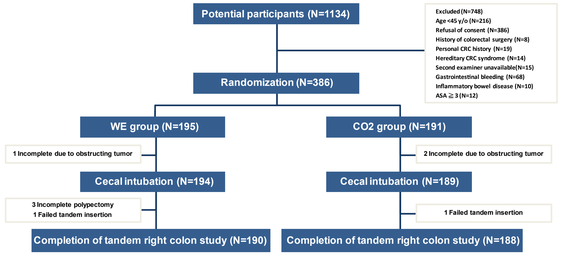
## Randomization and Intervention




## Outcomes

- **Primary outcome:**
  - Combined right colon AMR and SPMR
- **Secondary outcomes:**
  - Separate right colon AMR and SPMR
  - ADR, adenoma per colonoscopy (APC), SPDR
  - SP included sessile serrated lesion (SSL), traditional serrated adenoma (TSA), hyperplastic polyp

## Study Flowchart



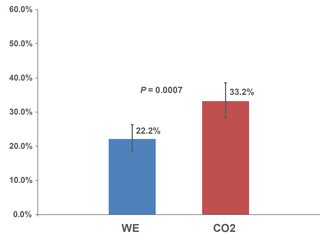

## Results: Demographics

| | WE (N=195) | CO2 (N=191) | P value |
|---|---|---|---|
| Male, n (%) | 91 (47) | 99 (52) | 0.360 |
| Age, mean (SD), years | 58.8 (7.9) | 58.9 (8.7) | 0.940 |
| Indications of colonoscopy | | | 0.600 |
| Screening, n (%) | 66 (34) | 69 (36) | |
| Surveillance, n (%) | 99 (51) | 98 (51) | |
| Positive FIT, n (%) | 30 (15) | 24 (13) | |

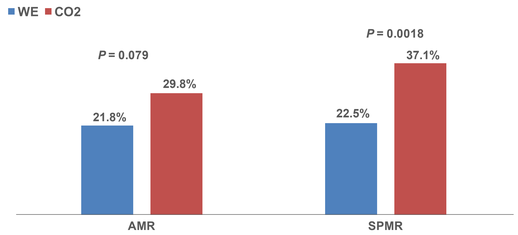
## Colonoscopy Procedure Data

| Variables presented as mean (SD) | WE (N=195) | CO2 (N=191) | *P* value |
|---|---|---|---|
| Withdrawal inspection time, min | 15.0 (6.7) | 15.5 (7.0) | 0.461 |
| First right - colon inspection time, min | 5.7 (3.3) | 6.4 (4.5) | 0.500 |
| Tandem right - colon inspection time, min | 4.7 (2.8) | 5.0 (3.2) | 0.298 |
| Total BBPS score | 8.0 (1.1) | 7.5 (1.1) | <0.0001 |
| Right colon BBPS score | 2.6 (0.5) | 2.3 (0.5) | <0.0001 |
| Correct guess of insertion method by blinded endoscopist, n (%) | 124 (64) | 103 (55) | 0.0757 |

**Primary Outcome:** Right colon AMR + SPMR




## Separate Right Colon AMR and SPMR




## Risk Factors for Miss of Right Colon Serrated Polyp

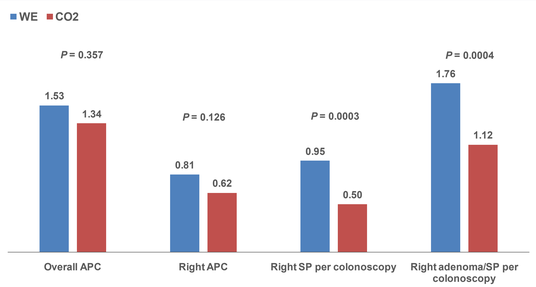
| | OR (95% CI) | *P* value |
|---|---|---|
| WE group vs. CO2 group | 1.03 (0.57-1.85) | 0.925 |
| Age (for a 5-year increase) | 1.07 (0.91-1.26) | 0.389 |
| Female vs. male | 1.03 (0.58-1.82) | 0.921 |
| Body mass index (for a 1-kg/m² increase) | 1.00 (0.93-1.08) | 0.981 |
| Active smoker | 1.22 (0.57-2.60) | 0.614 |
| Colonoscopy indication (screening vs. others) | 0.88 (0.37-2.07) | 0.768 |
| Endoscopist | 1.00 (0.98-1.02) | 0.938 |
| Right colon Boston Bowel Preparation Scale score (for a 1-point increment) | **0.55 (0.32-0.94)** | **0.027** |
| Right colon withdrawal inspection time in index exam (for a 1-min increment) | 1.01 (0.98-1.03) | 0.589 |
| ≥2 SPs vs. ≤1 SP in right colon during index exam | **3.47 (1.89-6.38)** | **<0.0001** |
| Guess of insertion method by blinded endoscopist (current vs. incorrect) | 0.83 (0.48-1.44) | 0.516 |

## Detection Rates by Primary Endoscopists

| Detection rates | WE (N=195) | CO2 (N=191) | *P* value |
|---|---|---|---|
| Overall ADR, n (%) | 106 (54.4) | 106 (55.5) | 0.822 |
| Combined ADR adding tandem results, n (%) | 115 (59.0) | 119 (62.3) | 0.503 |
| Right ADR, n (%) | 77 (39.5) | 72 (37.7) | 0.718 |
| Right SPDR, n (%) | 86 (44.1) | 66 (34.6) | 0.055 |
| Proximal SPDR, n (%) | 103 (52.8) | 84 (44.0) | 0.082 |
| *Clinically significant SPDR, n (%) | 25 (12.8) | 19 (9.9) | 0.375 |

*Clinically significant SP included SSL, TSA, HP ≥10 mm anywhere in the colon, and HP 6-9 mm in the proximal colon. Proximal colon was defined as colon segment proximal to the descending colon

## Per-Lesion Detection Data




## Discussion

- Correct guess rate of <67% confirmed adequate blinding of tandem endoscopist.
- The right colon inspection times were similar, confirming equivalent withdrawal technique.
- Compared to CO2, WE significantly decreased the right colon SPMR.
- Variability in proximal SPDR was similar between WE and CO2-insufflated colonoscopy.

## Conclusions

- THE SIGNIFICANT **REDUCTION OF SERRATED POLYP MISS RATE IN THE RIGHT COLON** ADD NOTEWORTHY ATTRIBUTES TO **WATER EXCHANGE** COLONOSCOPY.
- FURTURE STUDIES SHOULD ADDRESS THE HYPOTHESIS THAT A SIGNIFICANT REDUCTION IN THE RIGHT COLON SERRATED POLYP MISS RATE BY WATER EXCHANGE **PREVENTS POSTCOLONOSCOPY INTERVAL CANCERS.**