Normal withdrawal time correlates with polyp detection rate and adenoma detection rate: A quantitative observational study from a metropolitan Australian hospital

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Introduction

Colonoscopy is the gold standard bowel cancer screening test but it has reduced effectiveness for lowering colorectal cancer (CRC) rates due to the reported 20% missed detection rate for adenomas in a meta-analysis of tandem colonoscopy studies. The true missed detection rate for significant lesions is likely to be higher as these findings came from an era where the sessile serrated adenoma had not yet gained international consensus as a possible precancerous lesion.

In our retrospective observational study featuring 10 colonoscopists and 3,169 colonoscopies, we measured the correlation between normal withdrawal time (NWT) and adenoma detection rate (ADR), between NWT and polyp detection rate (PDR), and between NWT and sessile serrated adenoma detection rate (SSADR) to assess the validity of the NWT as a determining factor of colonoscopy performance. We additionally measured the correlation between ADR, PDR and SSADR to assess the validity of the SSADR as a colonoscopy performance measure.

Methods

We excluded patients with age <50 years, CRC history, inflammatory bowel disease history, poor or fair bowel preparation, and excluded colonoscopists who performed <50 procedures or had <6 months data. NWT was calculated from colonoscopies where no polyps were detected, and where no procedures were performed such as polypectomy, mucosal biopsy, haemorrhoid banding or thermal therapy. Linear regressions were used to calculate the strength of association between variables.

Results

The 10 colonoscopists had mean NWTs ranging from 5.8 to 9.6 minutes, ADR from 24.1 to 65.7%, and PDR from 31.3 to 77.9% (Table 1). Mean NWT correlated strongly with both ADR and PDR (r=0.64 and r=0.72, respectively; p<0.05; Table 2). The correlation between NWT and SSADR did not reach statistical significance. The optimal NWT was between 9 to 10 minutes which was associated with the highest ADR and PDR in our group. SSADR correlated very strongly with both ADR and PDR with r values of 0.91 and 0.86, respectively.

Table 1. Mean normal withdrawal time vs adenoma detection rate, sessile serrated adenoma detection rate and polyp detection rate

Mean colonoscopist normal withdrawal time, minutes	Adenoma detection rate, %	Sessile serrated adenoma detection rate, %	Polyp detection rate, %
5.8	24.1	4.8	31.3
7.1	61.6	12.8	74.7
7.7	34.9	4.4	48.7
7.7	60.6	16.8	73.0
8.0	59.7	14.4	73.5
8.1	48.5	11.3	65.5
8.2	57.6	13.9	76.8
9.1	63.2	11.8	77.9
9.5	50.6	11.2	73.0
9.6	65.7	15.2	75.5

Table 2. Correlation between normal withdrawal time and detection rates

	r value	p value
Mean normal withdrawal time vs adenoma detection rate	0.64	0.0458
Mean normal withdrawal time vs sessile serrated adenoma detection rate	0.49	0.1529
Mean normal withdrawal time vs polyp detection rate	0.72	0.0179

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Conclusions

Our results reaffirm findings from previous studies, strengthening the likelihood that longer NWT is an independent factor that lead to improved adenoma detection, hence lowering future colorectal cancer rates. This one key performance indicator may allow more focused education and retraining to facilitate excellence in colonoscopy quality standards. ∎

Conflicts of interest

None declared.