Adenoma Detection During Both The Insertion and Withdrawal Versus Only Withdrawal of Colonoscopy: A Prospective Randomized Controlled Trial

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Conflicts of Interest: None

Background

- Polyps seen and not removed during colonoscopic insertion are sometimes unable to be found during withdrawal.
- Additional inspection and polypectomy for polyps ≤ 10 mm during insertion reduced polyp miss rate.[1]
- Two RCTs reported that insertion polypectomy offered no additional benefit on adenoma detection.[2,3]

[1]Wildi SM, et al. Endoscopy 2012; [2]Hewett DG, et al. Gastrointest Endosc 2012;
[3]Sanaka MR, et al. Surg Endosc 2015.

Aims of Study

- **Primary aim:**
  To evaluate whether additional inspection and polypectomy during insertion increased adenoma detection rate (ADR).

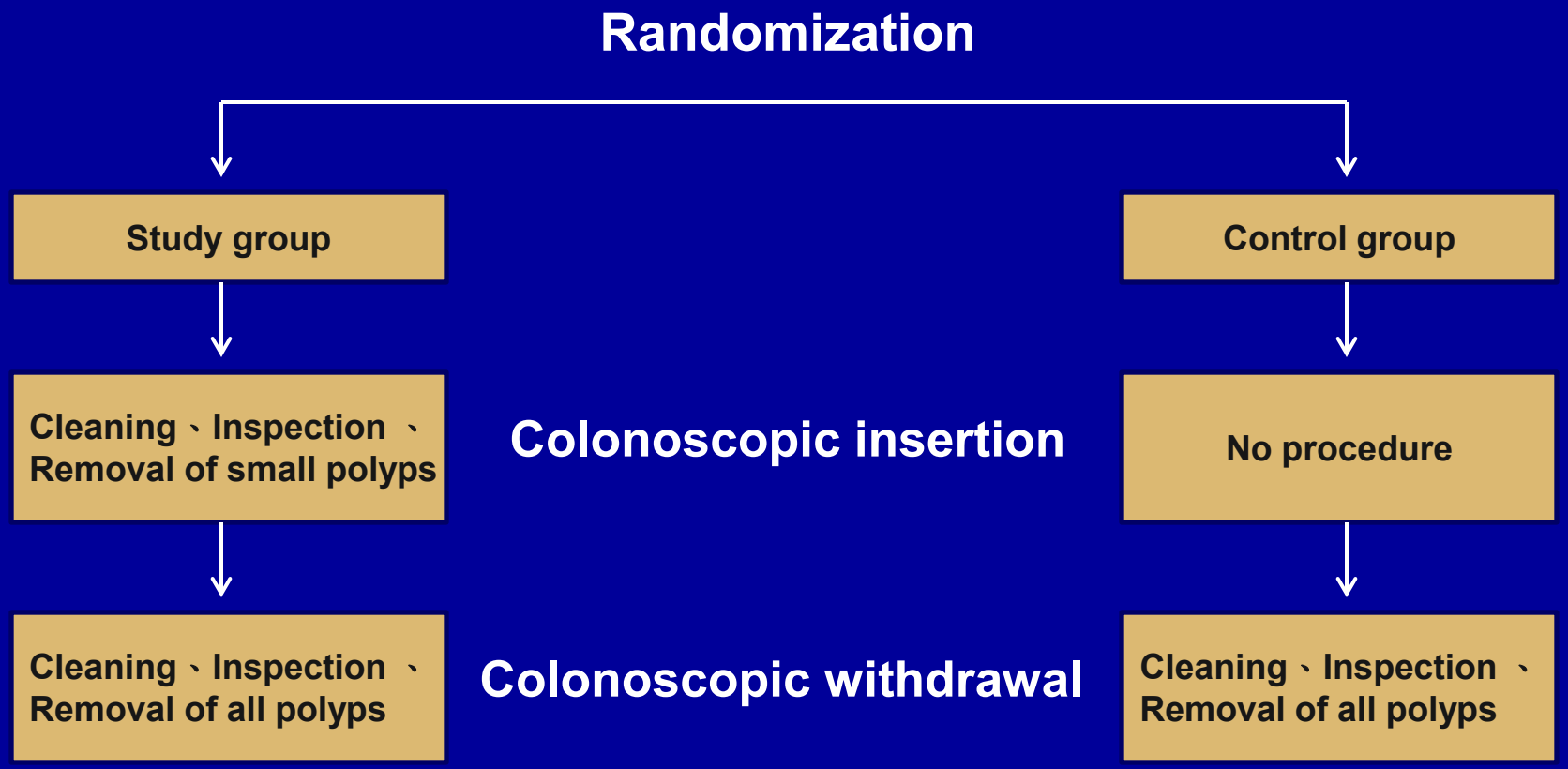
- **Secondary aims:**
  To compare the proximal colon ADR and hyperplastic polyp detection rate (HPDR), adenoma per colonoscopy (APC), adenoma per positive colonoscopy (APPC), and other pertinent procedure-related measures.

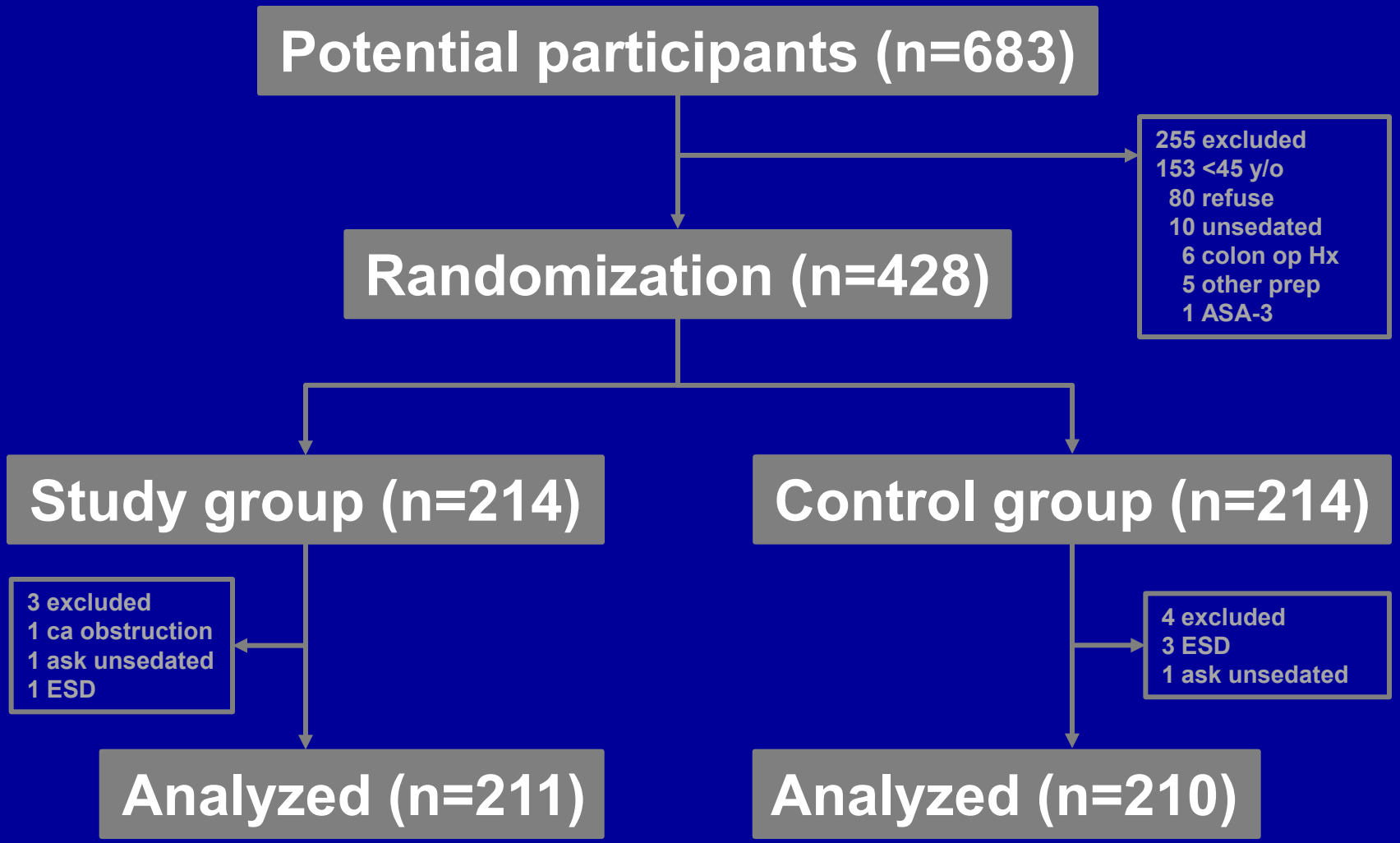
Inclusion and Exclusion Criteria

- **Inclusion criteria:**
  Patients aged ≥ 45 years who were able to give informed consent were eligible for enrollment.

- **Exclusion criteria:**
  - Previous surgical resection of the colon
  - Inflammatory bowel disease
  - Polyposis syndrome
  - Gastrointestinal bleeding
  - ASA classification of physical status ≥ 3
  - Refusal to provide written informed consent
  - Obstructive lesions of the colon
  - Inadequate preparation (BBPS score of 0 or 1 in any segment)
  - Inability to completely remove a polyp

Randomization and Intervention




Potential participants (n=683)
255 excluded
153 <45 y/o
80 refuse
10 unsedated
6 colon op Hx
5 other prep
1 ASA-3
Randomization (n=428)
Study group (n=214)
Control group (n=214)
3 excluded
1 ca obstruction
1 ask unsedated
1 ESD
4 excluded
3 ESD
1 ask unsedated
Analyzed (n=211)
Analyzed (n=210)

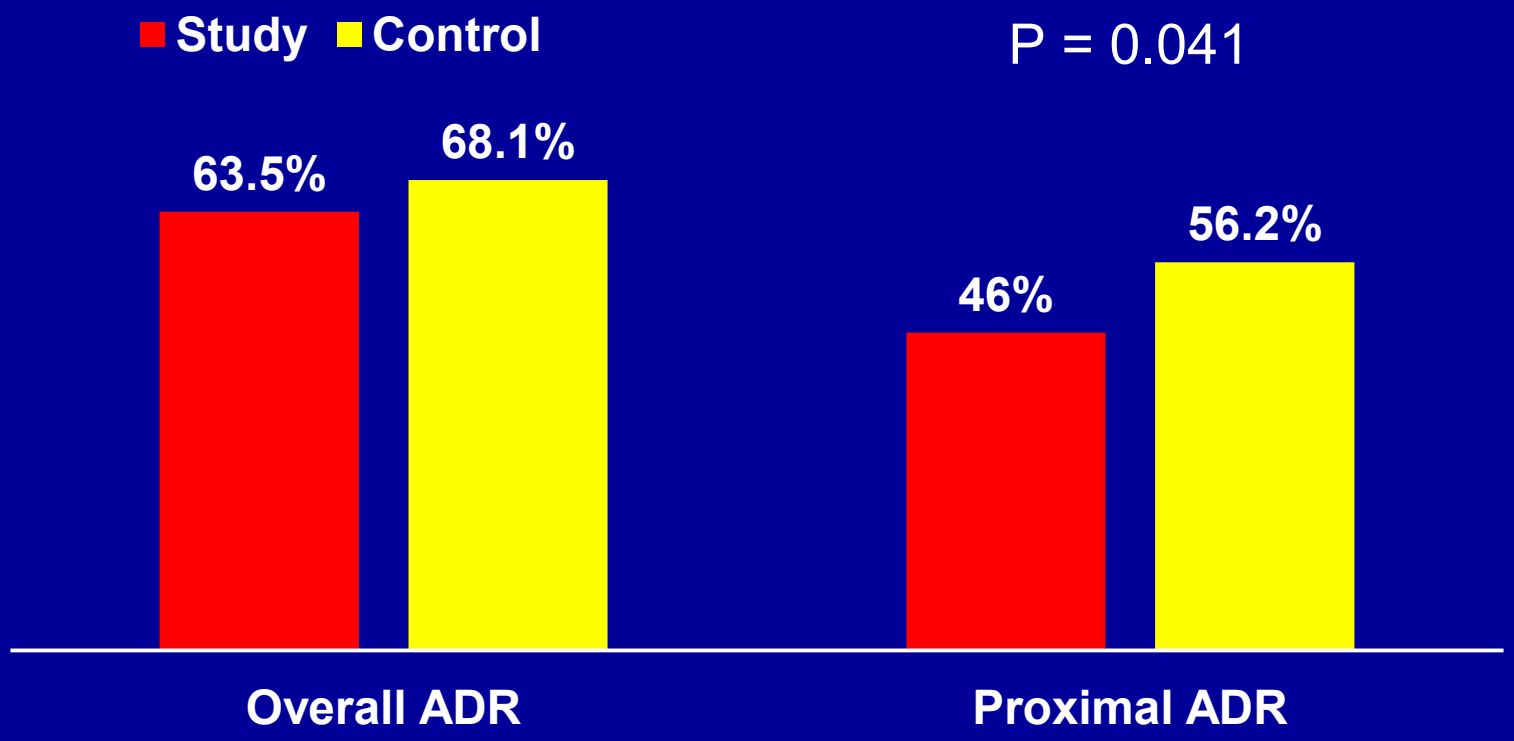
Results: Demographics and Indications

	Study group (N=211)	Control group (N=210)	P value
Male, n (%)	99 (46.9)	99 (47.1)	1.000
Age, mean (SD), years	57.7 (8.5)	58.2 (8.5)	0.465
Body mass index (BMI), mean (SD), kg/m^2	25.2 (4.2)	25.3 (3.7)	0.707
Family history of CRC, n (%)	34 (16.1)	27 (12.9)	0.406
Active Smoker, n (%)	36 (17.0)	24 (11.4)	0.531
Screening indication, n (%)	75 (35.5)	84 (40.0)	0.367
Surveillance indication n, (%)	136 (64.5)	126 (60.0)	

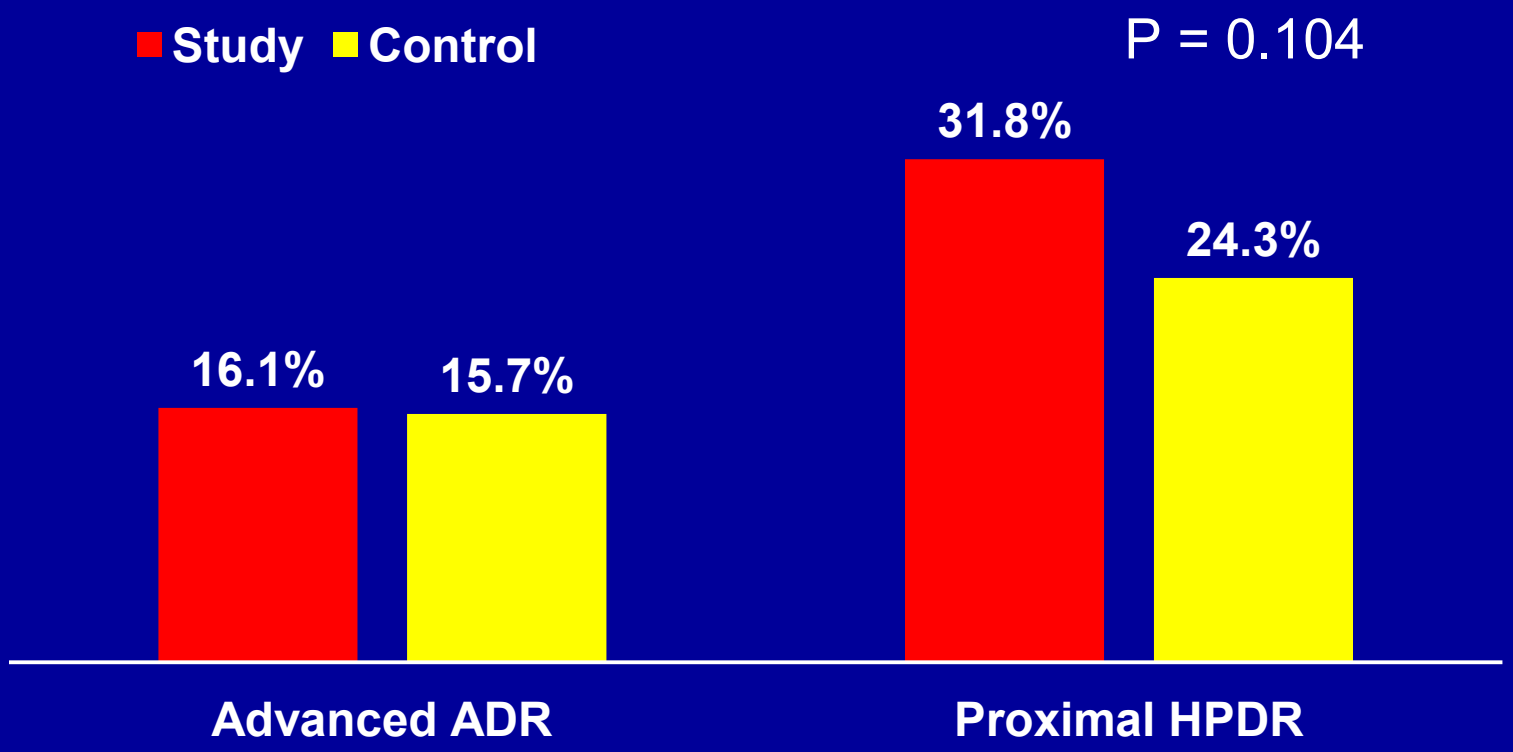
Colonoscopy Procedures

	Study group	Control group	P value
Cecal intubation time, mean (SD), min	11.1 (4.8)	6.2 (4.7)	<0.0001
Withdrawal time, mean (SD), min	23.1 (7.9)	29.2 (9.8)	<0.0001
Total procedure time, mean (SD), min	34.2 (10.3)	35.3 (11.4)	0.283
BBPS score, mean (SD)	7.0 (0.5)	7.0 (0.5)	0.999
Patient discomfort during procedure (score 0-10), mean (SD)	0.3 (0.9)	0.4 (1.0)	0.525
Colonoscopy technical difficulty (score 0-10), mean (SD)	2.7 (1.3)	2.6 (1.2)	0.227
Fentanyl dose, mean (SD), ug/kg	1.16 (0.34)	1.15 (0.38)	0.736
Midazolam dose, mean (SD), mg/kg	0.07 (0.04)	0.07 (0.05)	0.987

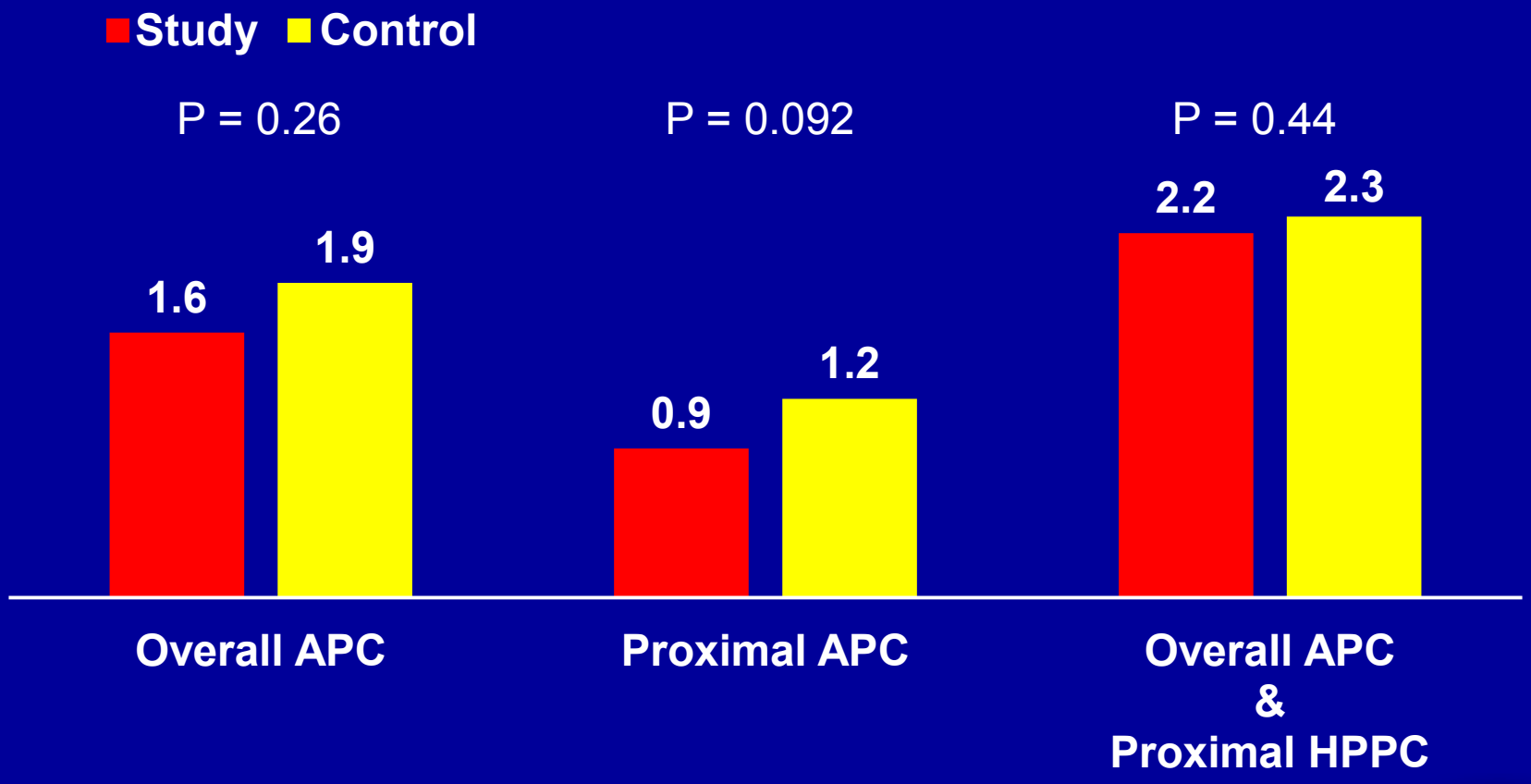
Adenoma Detection Rate (ADR)



Detection of Advanced Adenoma and Proximal Hyperplastic Polyp



Adenoma and Hyperplastic Polyp Per Colonoscopy (APC/HPPC)



Adenoma Per Positive Colonoscopy (APPC) & Adenoma detected after the first adenoma (ADR-Plus)

	Study group	Control group	P value
Overall APPC, mean (SD)	2.5 (2.0)	2.7 (2.5)	0.484
Proximal APPC, mean (SD)	2.0 (1.4)	2.1 (1.9)	0.659
Overall ADR-Plus, mean (SD)	1.5 (2.0)	1.7 (2.5)	0.484
Proximal ADR-Plus, mean (SD)	1.0 (1.4)	1.1 (1.9)	0.659
Patients classified as high-risk group, n (%) [95% CI]	61 (28.9) [22.9-35.5]	62 (29.5) [23.5-36.2]	0.915

*High-risk group was defined as patients with presence of ≥3 adenomas of any size, any adenoma ≥1 cm in size, or adenoma with villous component, or high-grade dysplasia.

Risk Factors for Colon Adenomas

	Odds Ratio	95% CI	P Value
Study group vs. control group	1.23	0.71-2.13	0.469
Age (for a 5-year increase)	1.32	1.15-1.51	0.0001
Female vs. male	0.90	0.56-1.43	0.646
BMI (for a 1-kg/m^2 increase)	1.06	1.00-1.13	0.065
Active smoker	0.98	0.51-1.89	0.957
Family history of CRC	0.87	0.47-1.61	0.651
Screening vs. surveillance indication	1.44	0.92-2.26	0.115
Endoscopist	0.96	0.48-1.92	0.905
BBPS score (for a 1-point increase)	0.79	0.49-1.28	0.338
Colonoscopy withdrawal time (for a 1-min increase)	1.08	1.04-1.11	<0.0001

Conclusion

Additional **inspection** and **polypectomy** during colonoscopic **insertion** did **not improve ADR** and other secondary quality measures compared with traditional inspection and polypectomy performed entirely during withdrawal.