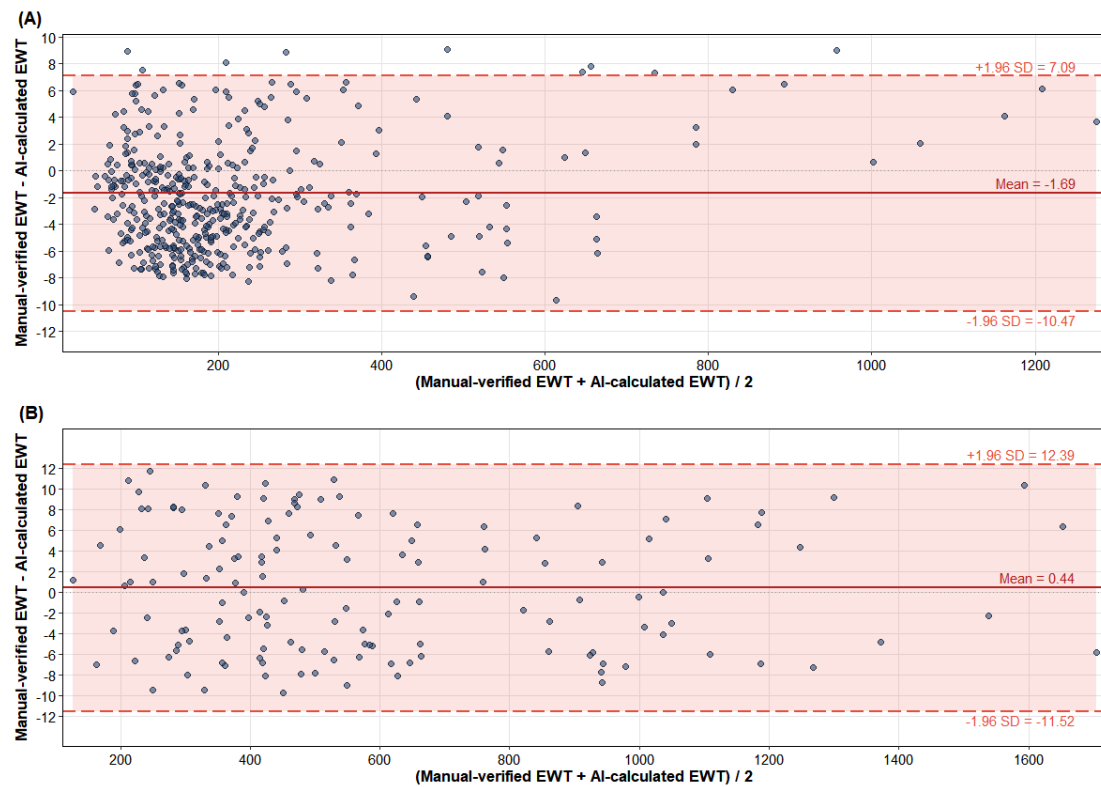
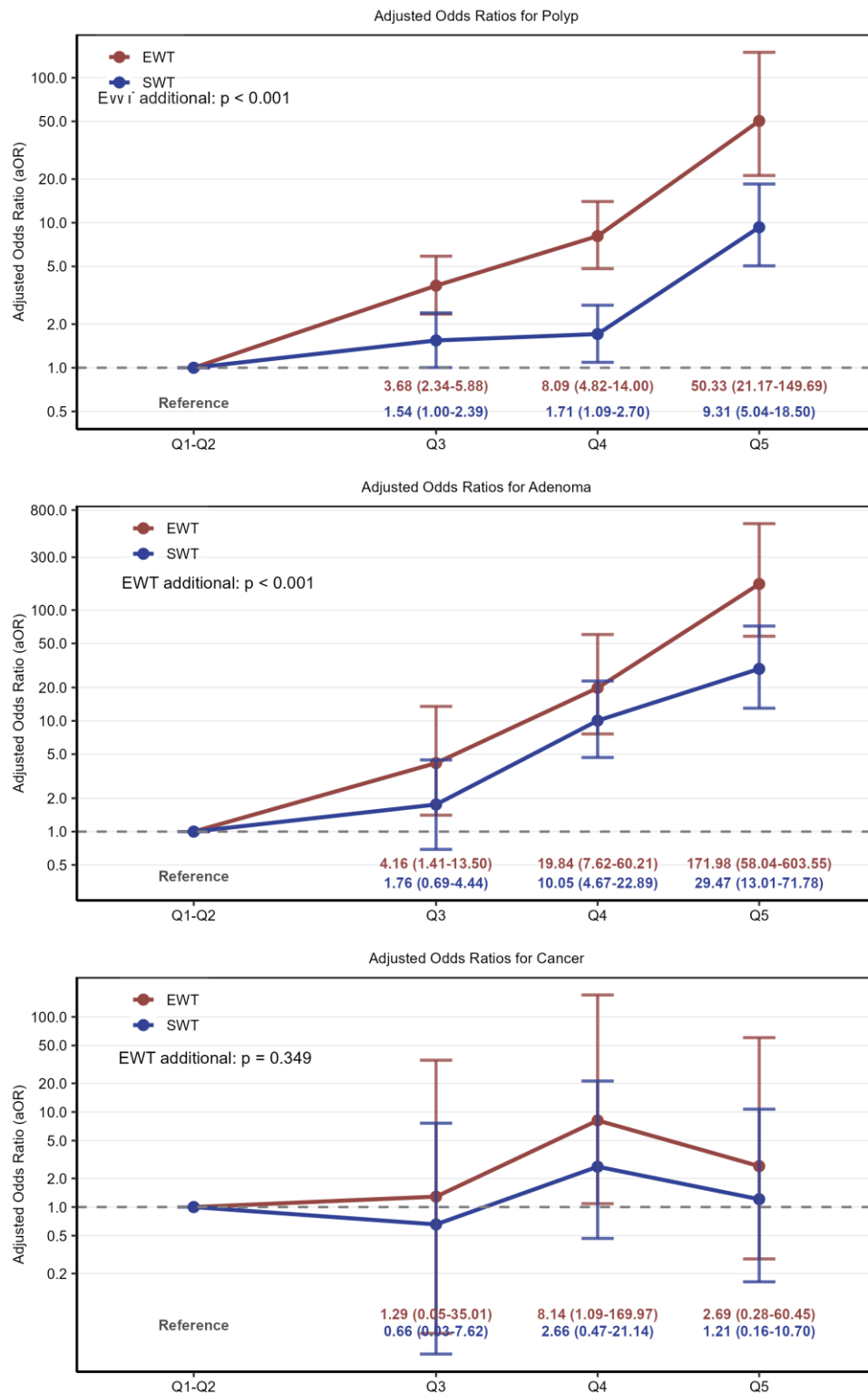




Supplementary Figure 1 Bland-Altman analysis comparing the agreement between artificial intelligence-calculated effective withdrawal time and the manually verified effective withdrawal time. A: The Diagnostic colonoscopy; B: The Therapeutic colonoscopy.



Supplementary Figure 2 Sensitivity analysis after exclusion of extreme effective withdrawal time values. Adjusted odds ratios for polyp detection (top), adenoma detection (middle), and colorectal cancer detection (bottom) according to quintiles of

effective withdrawal time (in red) and standard withdrawal time (in blue), after excluding the upper 3% of effective withdrawal time values ($n = 31$). EWT: Effective withdrawal time; SWT: Standard withdrawal time; aOR: Adjusted odds ratio.

Supplementary Table 1 Agreement Between artificial intelligence-calculated and manual-verified Effective Withdrawal Time Metrics

Item	Manual- verified EWT	AI- calculated EWT	<i>P</i> value	Mean difference (95% CIs)	<i>P</i> _{lower} <i>P</i> _{upper} and
Therapeutic ($n = 143$)					
EWT	481.0 (356.0, 759.0)	478.0 (356.0, 764.0)	0.357	-0.4 (-1.4, 0.6)	< 0.001 and < 0.001
Polyp observation	62.4 (37.5, 109.0)	61.8 (33.8, 112.0)	0.576	0.4 (-1.3, 2.0)	< 0.001 and < 0.001
Therapeutic procedure	137 (63.3, 267.0)	136.0 (62.8, 273.0)	0.949	0.3 (-0.6, 1.2)	< 0.001 and < 0.001
Obscured phase	88.0 (15.5, 165.0)	84.6 (15.2, 166.0)	0.525	-0.2 (-1.0, 0.6)	< 0.001 and < 0.001
Diagnostic ($n = 451$)					
EWT	172.0 (128.0, 242.0)	170.0 (124.0, 239.0)	< 0.001	1.7 (-1.3, 2.1)	< 0.001 and < 0.001
Polyp observation	2.9 (0, 9.55)	5.9 (2.4, 13.0)	< 0.001	-1.9 (-2.3, -1.5)	< 0.001 and < 0.001
Therapeutic procedure	0.0 (0.0, 0.0)	0.6 (0.2, 1.6)	< 0.001	-0.5 (-0.6, -0.4)	< 0.001 and < 0.001
Obscured phase	71.6 (40.0, 105.0)	70.4 (40.0, 106.0)	< 0.001	0.7 (0.4, 0.9)	< 0.001 and < 0.001

Data are presented as median (interquartile range) for continuous variables. *P* represents the statistical significance of the difference between groups, calculated using the Wilcoxon

signed-rank test. Mean differences and 95% CIs were estimated using the paired *t*-distribution. P_{lower} and P_{upper} represent the p-values derived from the Two One-Sided Tests procedure to evaluate equivalence. The equivalence margin was set at ± 5 seconds. Statistical equivalence is established when both P_{lower} and P_{upper} are significant (< 0.05). AI: Artificial intelligence; EWT: Effective withdrawal time; Obscured phase, time of dim or ambiguous frames.

Supplementary Table 2 Sensitivity analysis of adjusted odds ratios after exclusion of the upper 3% of effective withdrawal time values

Quintile	EWT aOR (95%CI)	SWT aOR (95%CI)
Polyp detection rate		
Q1-Q2	Reference	Reference
Q3	3.68 (2.34-5.88)	1.54 (1.00-2.39)
Q4	8.09 (4.82-14.00)	1.71 (1.09-2.70)
Q5	50.33 (21.17-149.69)	9.31 (5.04-18.50)
Adenoma detection rate		
Q1-Q2	Reference	Reference
Q3	4.16 (1.41-13.50)	1.76 (0.69-4.44)
Q4	19.84 (7.62-60.21)	10.05 (4.67-28.99)
Q5	171.98 (58.04-603.55)	29.47 (13.01-71.78)
Colorectal cancer detection		
Q1-Q2	Reference	Reference
Q3	1.29 (0.05-35.01)	0.66 (0.03-7.62)
Q4	8.14 (1.09-169.97)	2.66 (0.47-21.14)
Q5	2.69 (0.28-60.45)	1.21 (0.16-10.70)

EWT: Effective withdrawal time; SWT: Standard withdrawal time; aOR: Adjusted odds ratio.