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= Abstract =

### Factors Affecting Insertion Time during Colonoscopy

Young Jun Cho, M.D., Won Ho Kim, M.D., Hyo Min Yoo, M.D.  
Cheol Kim, M.D., Seung Keun Lee, M.D., Young Myung Moon, M.D.  
Jin Kyung Kang, M.D. and In Suh Park, M.D.

Department of Internal Medicine, Yonsei University College of Medicine, Seoul, Korea

**Background/Aims:** The goal of this study was to examine whether certain variables are associated with insertion time during colonoscopy. **Methods:** A total of 703 consecutive subjects underwent colonoscopy by a single endoscopist from April of 1998 to August of 1998. The insertion time during colonoscopy was checked and the factors that may affect insertion time were analyzed. **Results:** The indications for colonoscopy were bowel habit change (34.8%), the diagnosis of and follow up for colonic neoplastic disease (31.6%), abdominal pain (22.8%), thin stool caliber (19.2%), hematochezia (16.1%), routine examination (10.7%), inflammatory bowel disease (9.4%), tenesmus (8.8%) and a family history of colonic disease (3.1%). Of 703 subjects, complete colonoscopy was possible in 678 (96.4%). Reasons for incomplete insertion included inadequate bowel cleaning (n=11), pain (n=6), a history of operations (n=3), and others (n=5). Therefore, the adjusted completion rate was 97.9% (678/692). The mean insertion time in complete colonoscopy was  $7.07 \pm 4.26$  min (range; 2-35 min). Multivariable analysis revealed that inadequacy of bowel preparation was significantly associated with prolonged (> 10 min) insertion time (p=0.005), whereas the history of colorectal resection was inversely associated with prolonged insertion time (p=0.010). **Conclusions:** Among the factors affecting insertion time during colonoscopy, cleanness of the bowels is the only correctable factor. (Korean J Gastrointest Endosc 19: 567-573, 1999)

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**Key Words:** Colonoscopy, Insertion time, Bowel cleaning

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: , 134 , : 120-752,  
Tel: 02-361-5410, Fax: 02-393-6884

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가 , 가 1998 4 8

1,000

가

가 , Waye Bashkoff) 1,351 911 911

(completion rate) 95.5% 171 37 703

. 703

360 , 343

52 ( ; 15 80 )

73 (10.4%),

가 2) 38 (5.4%) ,

가 106 (15.1%)

가 209 (29.7%), 246 (35.0%),

**Table 1.** Characteristics of Patients

Discrete and continuous characteristics		n (%)
Age (years, Mean ± SD)		51.8 ± 13.1
Male/Female		360/343
Body weight	< 90% of IBW	83 (13.5)
	90-120% of IBW	437 (70.9)
	> 120% of IBW	96 (15.6)
Education level	college	209 (29.7)
	high school graduate	246 (35.0)
	< high school	224 (31.9)
Operation history	abdominal surgery	73 (10.4)
	hysterectomy	38 (5.4)
	colorectal resection	106 (15.1)
Cleanness	good	139 (19.8)
	fair	436 (62.0)
	poor	105 (14.9)

IBW, ideal body weight

224 (31.9%) , 139 가 . , (19.8%), 436 (62.0%), 105 (14.9%) “ ”, (Table 1).

## 2)

Colonlyte<sup>®</sup> “ ” (polyethylene-glycol-solution, ) 4 “ ” 가 , Demerol<sup>®</sup> 25 mg “ ” 가 , “ ” (loop) “ ” .

## 3)

가 (ileocecal valve) SPSS (appendix orifice) , 10

, , , , , , , , p 0.05 가

가

## 1)

, , 3 가 244

**Table 2.** Site Reached in Incomplete Examination and Reasons for Non-completion of Colonoscopy

Site reached	n	%	Reasons for non-completion			
			Inadequate preparation	Pain	Operation history	Others
Ascending colon	3	0.4	3	0	0	0
Hepatic flexure	6	0.9	1	2	2	1
Transverse colon	3	0.4	1	1	0	1
Splenic flexure	2	0.3	1	0	0	1
Descending colon	2	0.3	1	1	0	0
Sigmoid colon	9	1.3	4	2	1	2
Rectum	0	0	0	0	0	0
Total	25	3.6	11	6	3	5

**Table 3.** Factors Affecting Prolonged Colonoscopic Insertion Time\*

Variables	OR	(95% CI)	p value
Bowel cleanness (fair and poor vs. good)	2.95	(1.37 6.36)	0.005
Colorectal operation history (none vs. yes)	3.51	(1.34 9.17)	0.010
Age (> 60 yrs vs. 60 yrs)	1.64	(0.96 2.79)	0.068
Body weight (> 120% vs. 120 of IBW)	1.65	(0.91 3.01)	0.097
Constipation	1.64	(0.85 3.15)	0.135
Higher education ( college vs. high school)	1.40	(0.83 2.36)	0.196
Abdominal pain	1.18	(0.68 2.03)	0.539
Female	1.14	(0.67 1.92)	0.614
Hysterectomy	1.02	(0.38 2.78)	0.953
Abdominal surgery	1.01	(0.46 2.24)	0.965

OR, odds ratio; CI, confidence interval; IBW, ideal body weight; \*, insertion time longer than 10 min.

(34.8%), 222 가 (p=0.001),  
 (31.6%), 160 (22.8%), 가 135 가  
 (19.2%), 113 (16.1%), 75 (p=0.005)  
 (10.7%), 66 (9.4%), (> 10 ) 가 ,  
 62 (8.8%), 가 22 (3.1%) ,  
 . 가  
 2) (p=0.006) , , , ,  
 ,  
 703 .  
 678 (96.4%) ,  
 7.07 ± 4.26 2  
 35 . ,  
 25 (3.6%) (p=0.005)  
 11 (1.6%), 6 (0.9%), (Table 3).  
 3 (0.4%), 5 (0.7%)  
 (Table 2).  
 S 9 ,  
 가 2 , 3 , 가 6 1994 Chu-  
 3 . rch2)가 crude  
 3) completion rate  
 adjusted completion rate  
 10 .  
 , 10 crude

completion rate 57 99%

82.5% , adjusted completion rate 74 98%  
84% .

57)

Waye Bash-  
koff1) 1,351  
95.5% , Chu-  
rch2) 2,907

가  
(true pelvis) 가  
.78) ,

crude completion rate 93.6%, adjusted com-  
pletion rate 98.8% .

가 259)

가 가 (loop)

Fleischer 3)

가

,  
,

가 .10

가

가 14

96.4%

60

60

37

60

가

가 crude completion  
rate 91.6% adjusted completion rate 97.9%  
. 25

가 .

11 ,

6

3

S

9

가

Church2)

(92.4% vs. 94.8%)

가

(< 20 , 85.7%)

(> 80 , 88.9%)

(92.8% vs. 98.3%)

(98.4%

(> 10 ) 가

vs. 95.8%)

가

가

redundant

.4)

				678 (96.4%)
				7.07 ± 4.26
				25 (3.6%)
				11 (1.6%), 6
				(0.9%), 3 (0.4%), 5 (0.7%)
				3)
가	가	가		(p=0.001),
가	가	가		(p=0.006),
				(p=0.005)
				가
				II)가
				(p=0.005)
				(p=0.01)
				가
				가 가
				가
				가

cisapride 가

.12-14)

1998 4 8

703

1)

244 (34.8%), 222  
 (31.6%), 160 (22.8%), 가 135  
 (19.2%), 113 (16.1%), 75 (10.7%),  
 66 (9.4%),  
 62 (8.8%), 가 22 (3.1%)  
 2)

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