

Usefulness of Manometry in Anorectal Diseases

Chang Nam Kim, M.D.¹, Sang Kyu Park, R.N., Sook Young Kim, R.N.
Chang Sik Yu, M.D. and Jin Cheon Kim, M.D.

Department of Surgery, University of Ulsan College of Medicine and
Asan Medical Center; ¹Eulji University School of Medicine, Daejeon, Korea

Purpose: Anorectal manometry is an objective means of assessing the anorectal function through the anorectal sphincter muscles. The purpose of this study was to assess the usefulness of anorectal manometry. **Methods:** Manometric findings of 1145 patients with anorectal diseases were analyzed. **Results:** In hemorrhoids, the maximum resting pressure (MRP) was significantly decreased postoperatively ($P < 0.05$), and the maximum squeezing pressure (MSP) was decreased postoperatively. The MRP was increased in hemorrhoids, internal sphincter hypertonia, and chronic anal fissure (CAF). The MRP and MSP were significantly decreased in CAF, anal fistula, and anal stricture postoperatively ($P < 0.05$). In anal fistula, the high pressure zone length and sphincter length were significantly decreased postoperatively ($P < 0.05$), and the vector symmetric index was decreased to 0.79 postoperatively. Fourteen of the 57 patients with fecal incontinence did not show rectoanal inhibitory reflex (RAIR). In 22 of the 25 patients were clinically suspected of congenital megacolon (CMC), unnecessary surgery was avoided with RAIR. Twelve of the 15 patients with CMC, who had undergone surgery, showed the RAIR. In patients treated by total proctocolectomy (TPC) with ileal pouch-anal anastomosis (IPAA) for ulcerative colitis (UC) and familial adenomatous polyposis (FAP), the MRP and MSP were decreased postoperatively, and the sensation of fullness (SOF) was significantly decreased postoperatively ($P < 0.05$). In patients with rectal cancer treated by low anterior resection, the MRP, MSP, SOF, and compliance were significantly decreased until 12 months postoperatively ($P < 0.05$). **Conclusions:** Manometry appears to be an important tool to evaluate anorectal function that enables adequate surgery or treatment for the most of anorectal diseases. Furthermore, it is a valuable tool in assessing functional recovery after surgeries associated with a sphincter injury. (JKSCP 2000;16:376-382)

Key Words: Anus, Rectum, Disease, Manometry, , , ,

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(: 301-726)
(Tel: 042-259-1294/1298, Fax: 042-259-1162)
(E-mail: kimcn@emc.eulji.ac.kr)

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1996 3 1997 8

1145

631 (55%), 514 (45%),
43 (7.82%)

manometry (MMS-200, Narco Bio-Systems, Austin, Texas, U.S.A.)

(transducer)

가

가 가 (Fig. 1).

6

2

Bisacodyl (Dulcolax®, Boehringer Ingelheim Korea Limited, Seoul, Korea) 2 30

가

8-channel

(5.5 mm 150 cm)

10 cm

1 mm/sec

3

1
(maximum resting pressure, MRP),
(maximum squeezing pressure, MSP), (high pressure zone, HPZ), (vector symmetric index) . latex
(5.5 mm
150 cm) 8
channel(8 channel)

가

(sensation of balloon)

(sensation of fullness)

(balloon pressure)

(rectal pressure)

(rectoanal

inhibitory reflex, RAIR)

10 cc 가

20%

, 가

(compliance)

6 7 Bisacodyl 1
, 6 7 kg 1 cc

. 5 6

kg 50 mg Chloral hydrate (Pocral®, Hanlim, Seoul, Korea)

가

latex

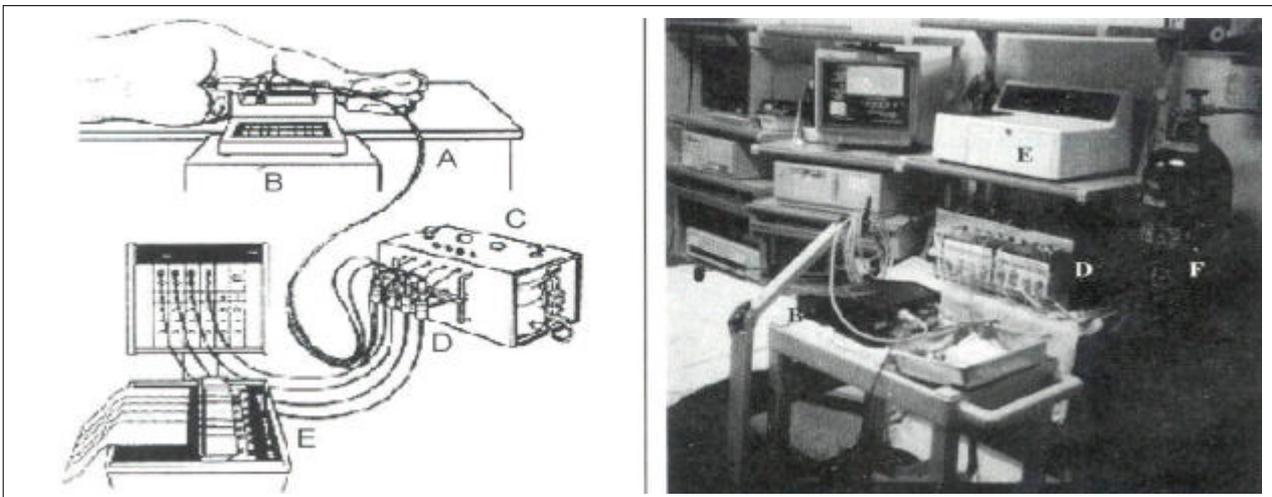


Fig. 1. Anorectal manometry apparatus. A = catheter; B = withdrawal motor; C = perfusion apparatus; D = transducer; E = recorder; F = nitrogen tank.

Table 1. Manometric results of various diseases

	Maximum resting pressure (mmHg)		Maximum squeezing pressure (mmHg)		Period after surgery (months)
	Preoperative	Postoperative	Preoperative	Postoperative	
Hemorrhoids	98 ± 36 (n=4 10)	69 ± 24 (n=18)*	178 ± 38 (n=4 10)	168 ± 38 (n=18)	2.7 ± 1.6
ISH	101 ± 28 (n=97)	78 ± 13 (n=5)	182 ± 35 (n=97)	173 ± 42 (n=5)	1.3 ± 0.2
CAF	95 ± 28 (n=96)	66 ± 23 (n=26)*	176 ± 38 (n=96)	141 ± 46 (n=26)*	1.7 ± 0.2
FIA	89 ± 33 (n=16)	29 ± 19 (n=5)*	157 ± 5 1 (n=16)	87 ± 45 (n=5)*	53.2 ± 43.7
Anal stricture	81 ± 35 (n=16)	45 ± 28 (n=6)*	166 ± 58 (n=16)	110 ± 23 (n=6)*	1.7 ± 0.5
Rectocele	62 ± 27 (n=19)	50 ± 24 (n=6)	12 1 ± 42 (n=19)	105 ± 37 (n=6)	2.8 ± 1.6
Rectal prolapse	4 1 ± 24 (n=10)	46 ± 19 (n=6)	125 ± 53 (n=10)	12 1 ± 43 (n=6)	3.0 ± 1.9
IPAA (UC +FAP)	88 ± 5 1 (n=5)	62 ± 30 (n=12)	162 ± 69 (n=5)	138 ± 5 1 (n=12)	6.3 ± 3.1

*P < 0.05 between pre- and post-operative values.

ISH = internal sphincter hypertonia; CAF = chronic anal fissure; FIA = fistula in ano; IPAA = ileal pouch anal anastomosis; UC = ulcerative colitis; FAP = familial adenomatous polyposis.

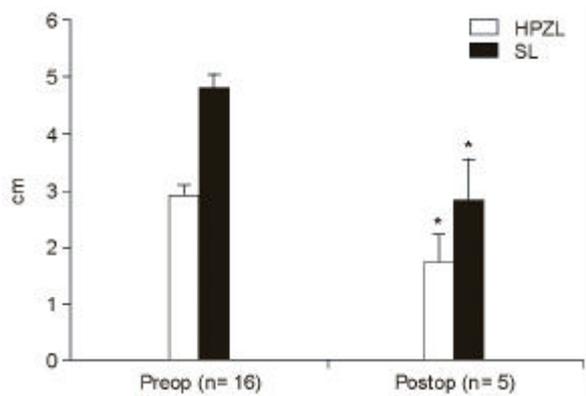


Fig. 2. Pre- and post-operative HPZL and SL of patients with fistula in ano. There are significant differences between pre- and post-operative respective factors. HPZL = high pressure zone length; SL = sphincter length; Preop = preoperative; Postop = postoperative; n = number of patients. *, P < 0.05 compared with preoperative respective values.

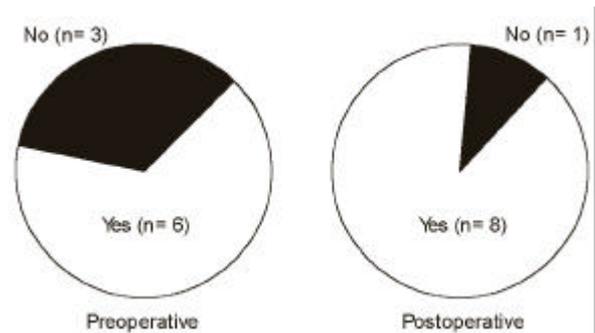


Fig. 3. The pre- and post-operative rectoanal inhibitory reflex (RAIR) of same patients group with fecal incontinence. Three patients of preoperative period and one patient of postoperative period did not showed the RAIR.

unpaired t-test
P < 0.05

(P < 0.05),

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(Table 1).

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(P < 0.05).

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(Fig. 2),

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0.90

0.79

(, 5)

(

, 47)

101 ± 42 mmHg(31

), 75 ± 28 mmHg(34)

14 ± 9

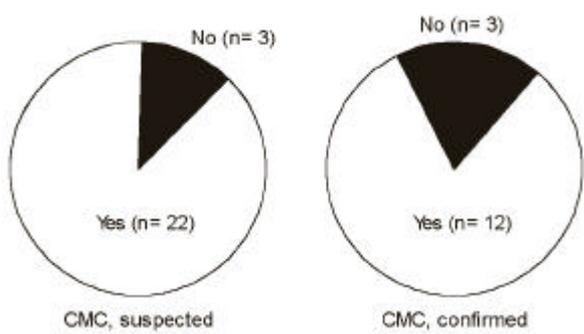


Fig. 4. The RAIR in patients with suspected congenital megacolon (CMC) and confirmed CMC. Left picture: Unnecessary surgery was avoided in 22 patients with RAIR. Right picture: After surgery, 12 patients showed the RAIR.

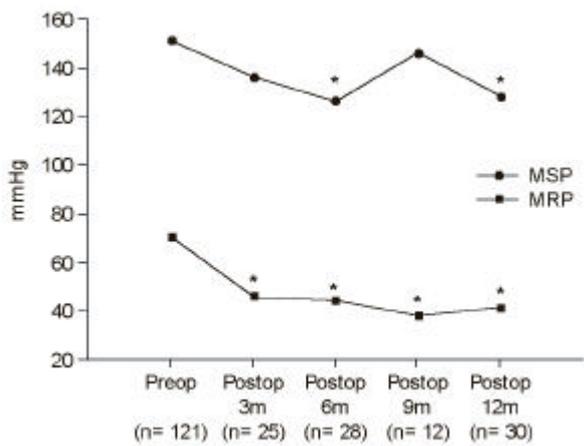


Fig. 5. Manometric findings of patients with rectal cancer had undergone low anterior resection. MRP = maximum resting pressure; MSP = maximum squeezing pressure; m = months. *, P < 0.05 compared with preoperative value.

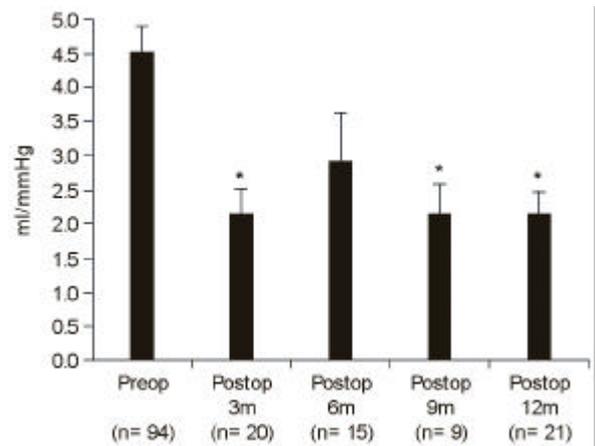


Fig. 6. Compliance of patients with rectal cancer had undergone low anterior resection. *, P < 0.05 compared with preoperative value.

15 , 12 가
(Fig. 4). , -
156 ± 32 ml, 2 12 ± 133 ml 102 ± 35 ml, 99
± 47 ml (P < 0.05).
75 , 가 17
, 가
12 , 가
(P < 0.05)(Fig. 5, 6).

ml(13), 12 ± 6 ml(33) . 57
14 가
, 12 3 가
9
6 , 3 가
8 , 1 (Fig. 3),
33 ± 27 mmHg 38 ± 18
mmHg, 56 ± 35 mmHg
71 ± 33 mmHg 가 .
22 가 25

가
가 .
40 70 mmHg
가 !
1 2 cm 가
.
55 60%,⁵ 25 30%,⁶
15%⁷
2
3 ^{1,4} 1 ^{1,8}

(zero baseline)

(ultra-short form)

(straining)

18

3.0 cm

2.5 3.5 cm, 2.0

(sampling reflex)

가

가

가

9,10

20

(visco-elasticity)

11

2 6 ml/mmHg

21

1.0

, 0.0

가 14

12,13

가

가

9

3

1

14

가
가

가

soiling

22

15,16

23

가

가

24

25

가

26

가

가

가

17

Marlex mesh (C.R. Bard, Inc., Billerica, MA, U.S.A.) 가

가 ,
 27,28
 가
 가
 14%,²⁹ 66%,³⁰ 91%³¹
 80%
 가
 가
 32
 가 ,^{3,33}
 19,34
 가
 19,35
 12
 가
 3
 12
 36
 가
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