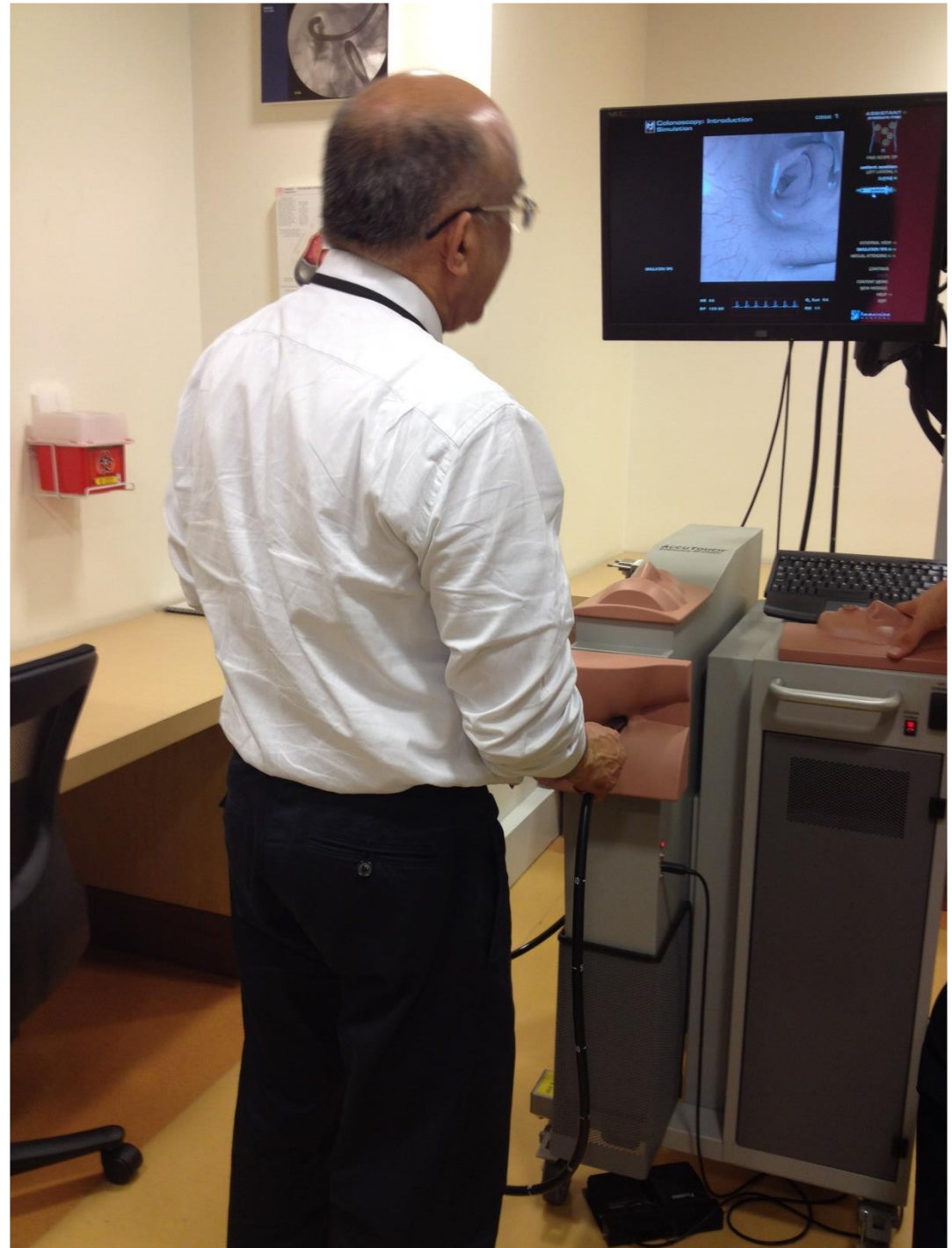
Colonoscopia Total
Técnica básica

Dr. William Otero Regino MD, FAGA, FACP
Profesor Titular de Medicina,
Universidad Nacional de Colombia
Hospital Universitario Nacional


Colonoscopy: Introduction
Simulation

Colonoscopia, compleja, hay pioneros

“La única cosa nueva en el mundo,
Es la historia no que tu no conoces”

Harry Truman

Colonoscopia

"Una de las experiencias más satisfactoria para un endoscopista es lograr una colonoscopia "bien hecha", llegando al ciego en menos de 5 min, visualizando la mayor superficie de mucosa colónica Durante la retirada, sin complicaciones ni molestias para el paciente, quien al final del examen se sentirá agradecido y dispuesto a repetirla si fuera necesario"

Alfredo Suárez MD, FASGE
Ex Director Posgrado Gastroenterología
Universidad Centro-Occidental "Lisandro Alvarado"
Barquisimeto Venezuela

Colonoscopia

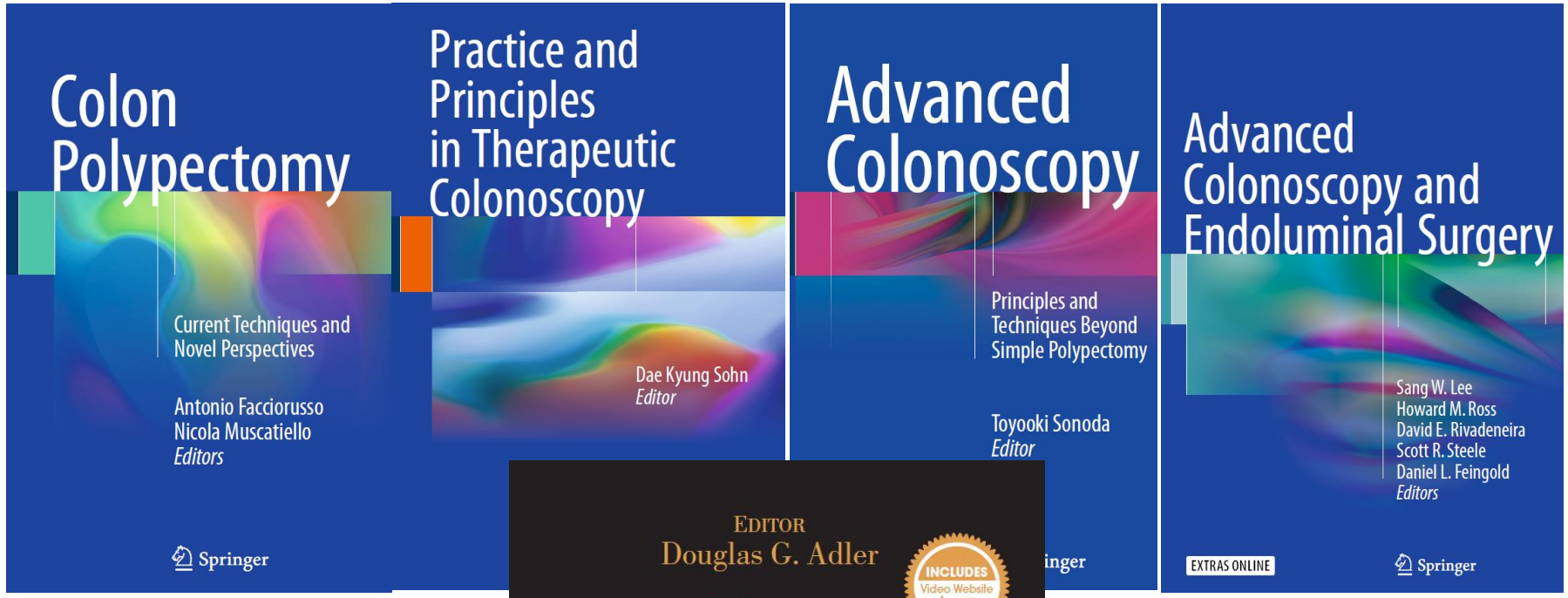
No es un examen de rutina
No es un trabajo
Es una pasión!

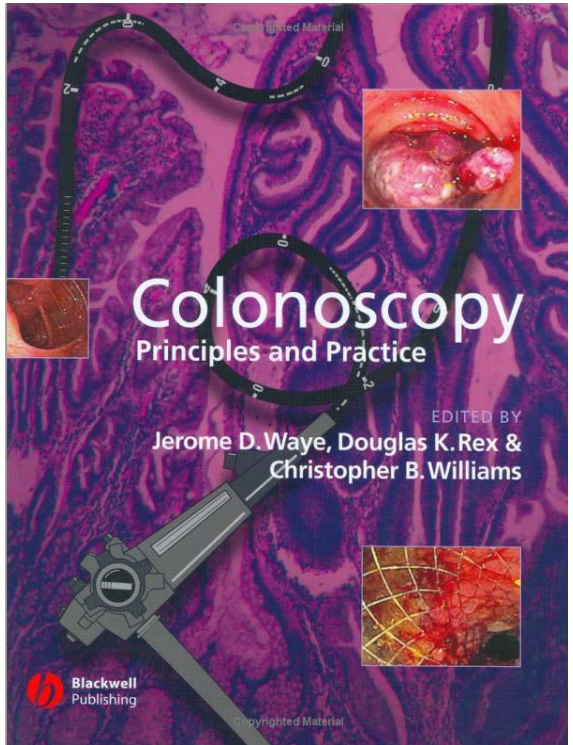
W. Otero

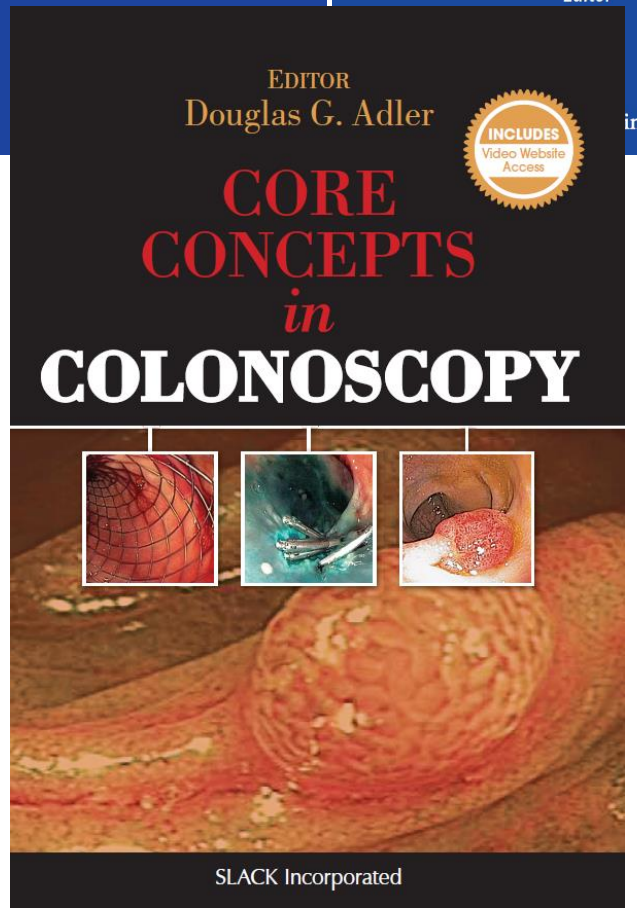
Atletas y expertos necesitan 10.000 horas de para alcanzar el más alto nivel

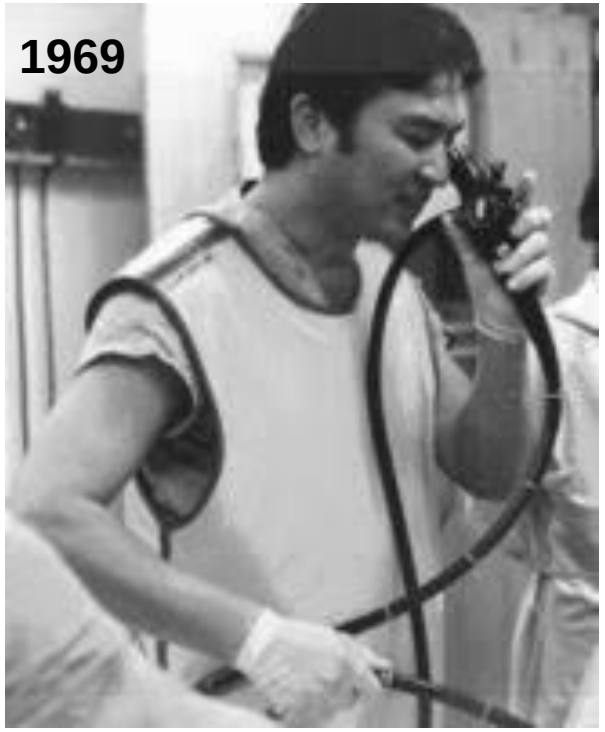
Beatles
Bill Gates

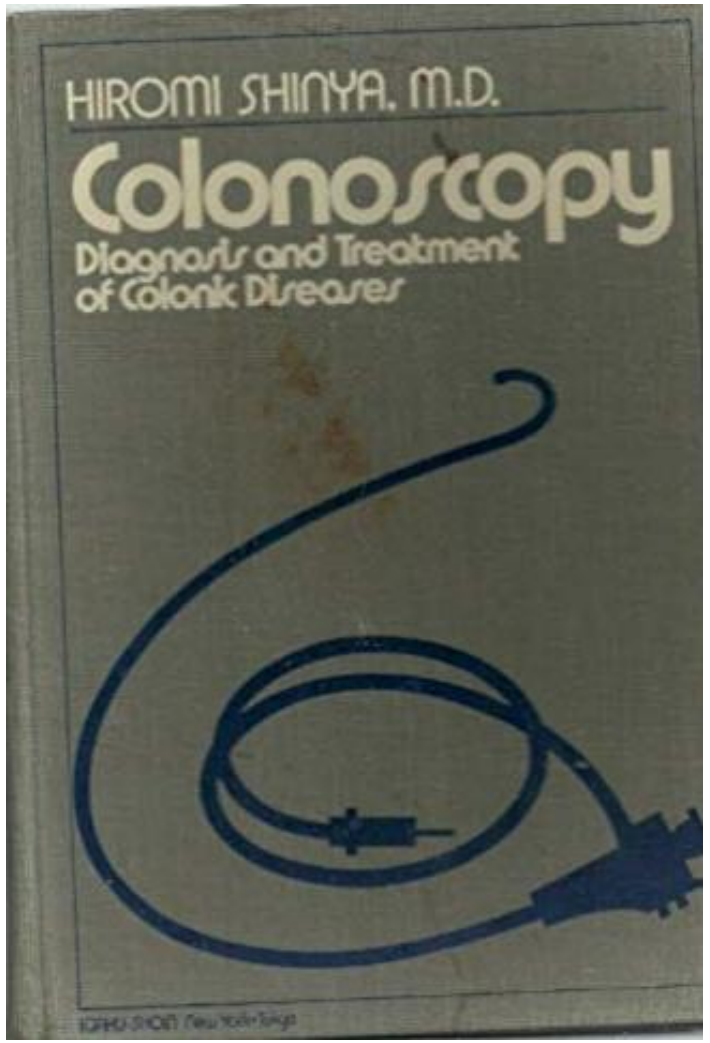
Bucobo JC, Gastrointst Endosc 2009;70:370-1


Colon Polypectomy
Current Techniques and Novel Perspectives
Antonio Facciorusso
Nicola Muscatiello
Editors
Springer
Practice and Principles in Therapeutic Colonoscopy
Dae Kyung Sohn
Editor
Advanced Colonoscopy
Principles and Techniques Beyond Simple Polypectomy
Toyooki Sonoda
Editor
Advanced Colonoscopy and Endoluminal Surgery
Sang W. Lee
Howard M. Ross
David E. Rivadeneira
Scott R. Steele
Daniel L. Feingold
Editors
EXTRAS ONLINE
Springer


Colonoscopy
Principles and Practice
EDITED BY
Jerome D. Waye, Douglas K. Rex &
Christopher B. Williams
Blackwell Publishing


EDITOR
Douglas G. Adler
INCLUDES Video Website Access
CORE CONCEPTS in COLONOSCOPY
SLACK Incorporated


1969



Inventor de la colonoscopia
1969. “Un solo operador”

Bourke M. Endoscopy Handbook. Gastroenterological Society of Australia, 2016

“Durante la inserciòn, los expertos en colonoscopia hacen muchas cosas Inconscientemente *pero no* pueden *explicarlas*”

Rex DK, Am J Gastroenterol 2012;107:1467-72

Competentes Inconscientes!

Conocer la Historia clínica

Conocer la indicación

Colonoscopia Exitosa

Familiarizado Colonoscopio

Adecuada Preparación

Familiarizado Con enfermeras

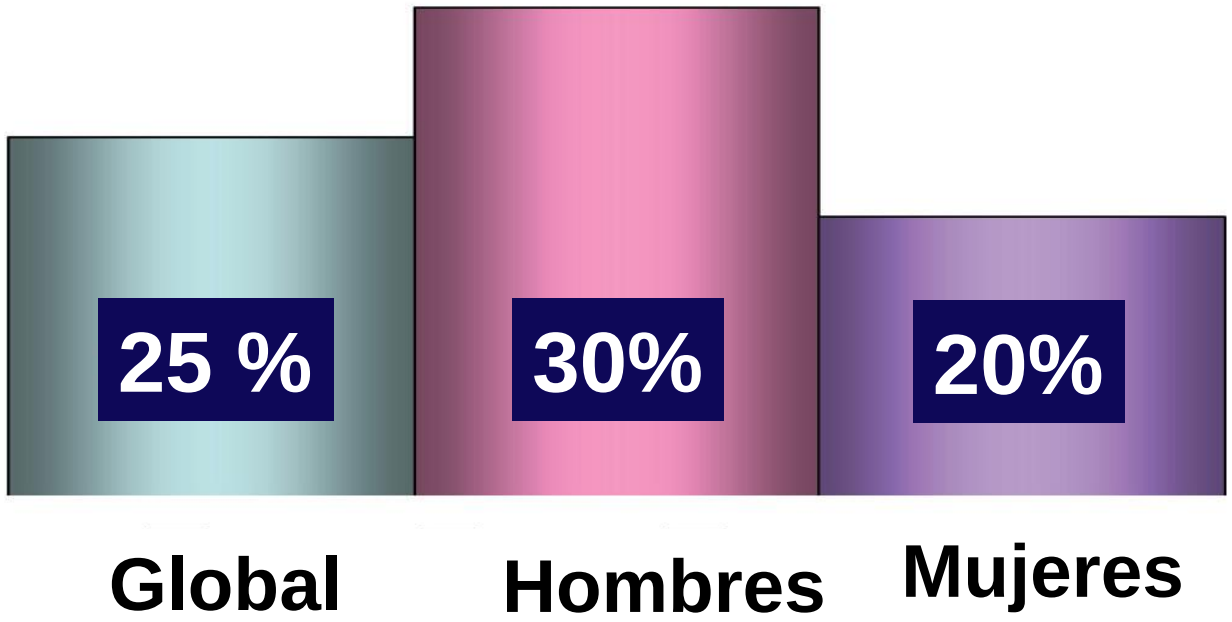
Familiarizado Anestesiólogo

Todo el personal mirando la pantalla

Bourke M. Endoscopy Handbook. Gastroenterological Society of Australia, 2016

Tasa de detección de adenomas

% pacientes > 50 años
Con adenomas identificados
Y documentados



ASGE 2015

Nurse Observation During Colonoscopy Increases Polyp Detectio[illegible]pective Study

Harry R. Aslanian, MD[1], Frederick K. Shiel[illegible]g Deng, MPH[2], Jason N. Rogart, MD[1], Priya A. Jamidar, MD[1] and Uzma D. Sidd[illegible]

OBJECTIVES: To determine whe[illegible] adenoma detection.

METHODS: Consecutive patie[illegible]ively randomized to routine colonoscopy or ph[illegible]

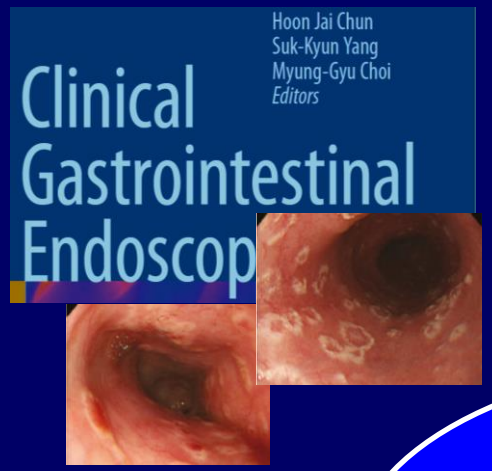
RESULTS: Of 502 patients, [illegible] observation during[illegible] nurse only. With n[illegible] vs. 1.03 polyps ar[illegible] fold increase in th[illegible] adenoma detectio[illegible] rate with nurse ob[illegible]

CONCLUSIONS: Nurse observation[illegible]umber of polyps and adenomas found per colonos[illegible]R and all-polyp detection rate.

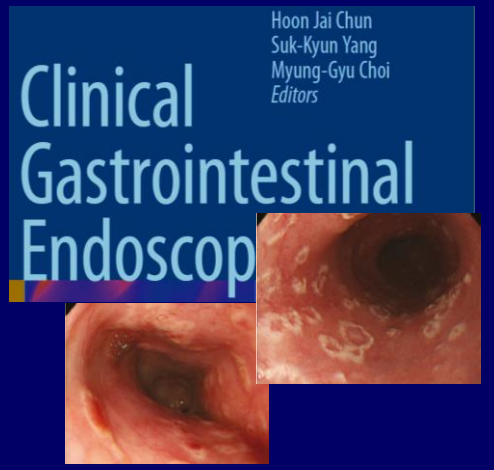
Con el ojo de la enfermera 20-30% más!!!

[illegible]nterol **2013;108:166–172;**

Endoscopia Digestiva Alta



Errores en la Caracterización
Reconocida Erróneamente Diagnosticada



No Detección

Errores en la Detección Lo ve, No reconoce

Errores en la Observación
Áreas ciegas Difíciles de ver

Tajiti H, Gastrointest Endosc 2019;89:1106-8

Experticia en colonoscopia

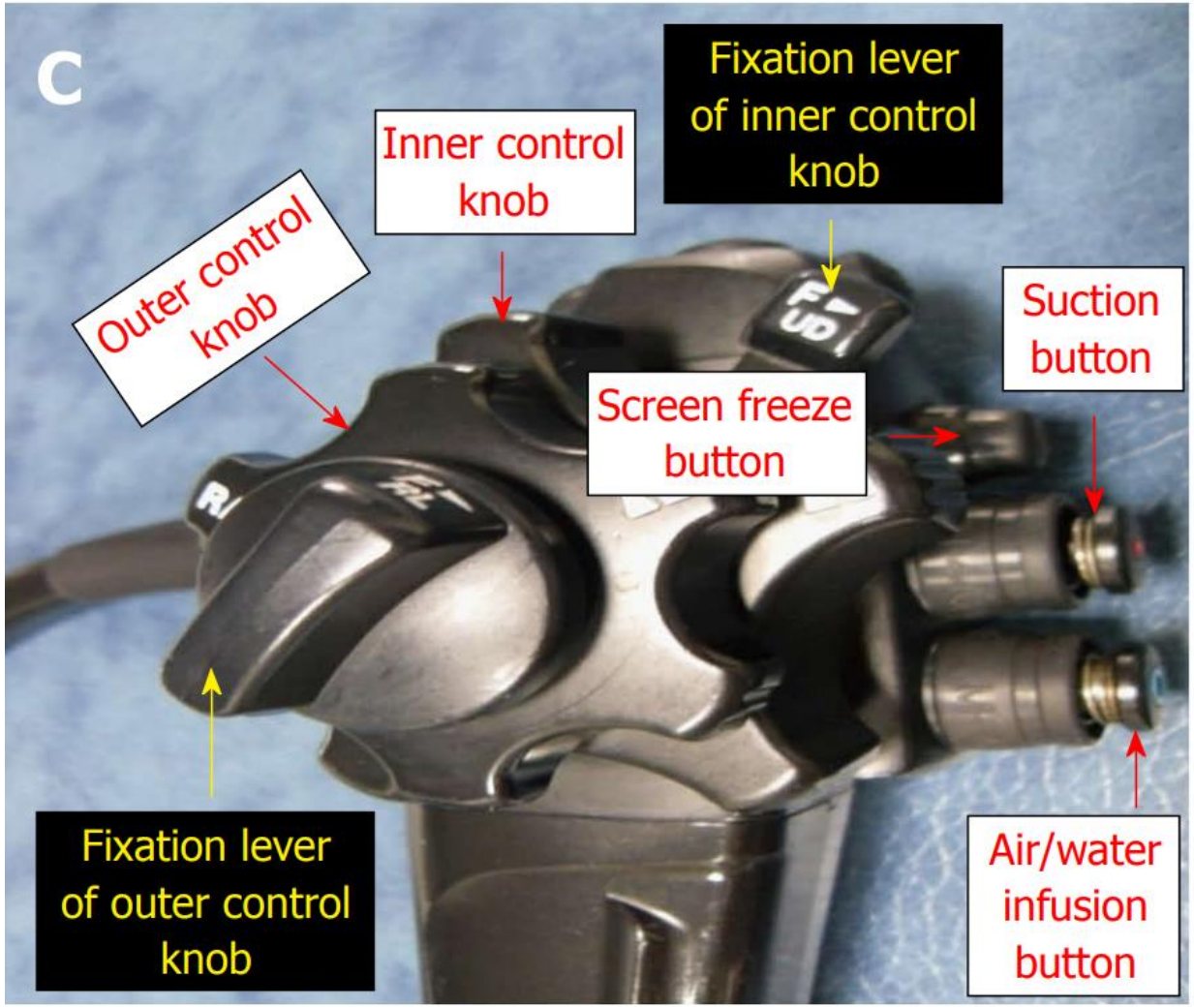
Requiere años de práctica
Es una experiencia muy personal
Son útiles los consejos de otros con más experiencia
Estudiar permanentemente para conocer “nuevos trucos”
Con cada colonoscopia siempre se aprende
Cada caso: oportunidad para mejorar la técnica
Siempre información nueva, un artículo insuficiente

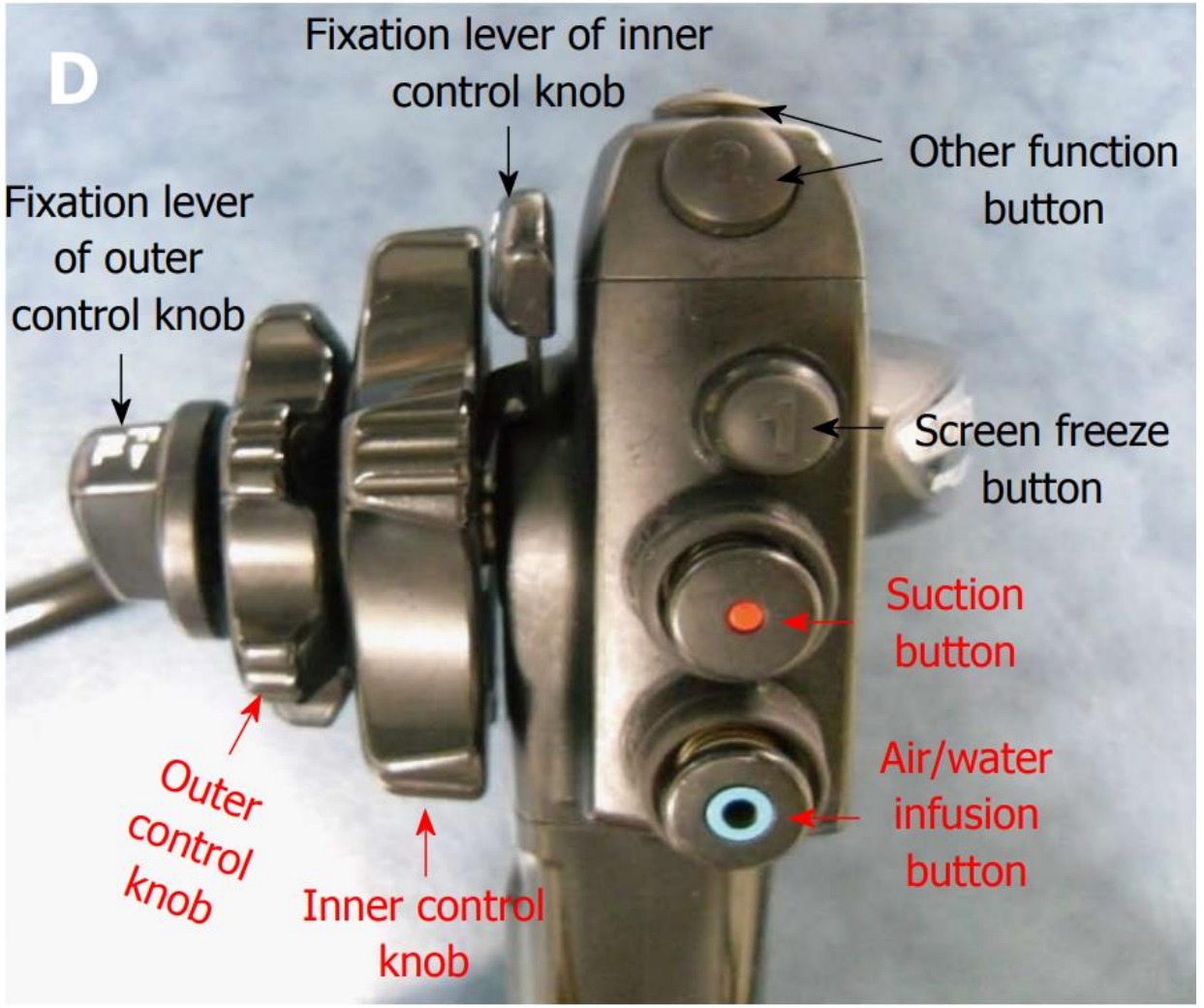
W. Otero

Colonoscopia: Ya Estoy listo !
El fin de semana me leí la técnica!


OLYMPUS


FUJIFIL

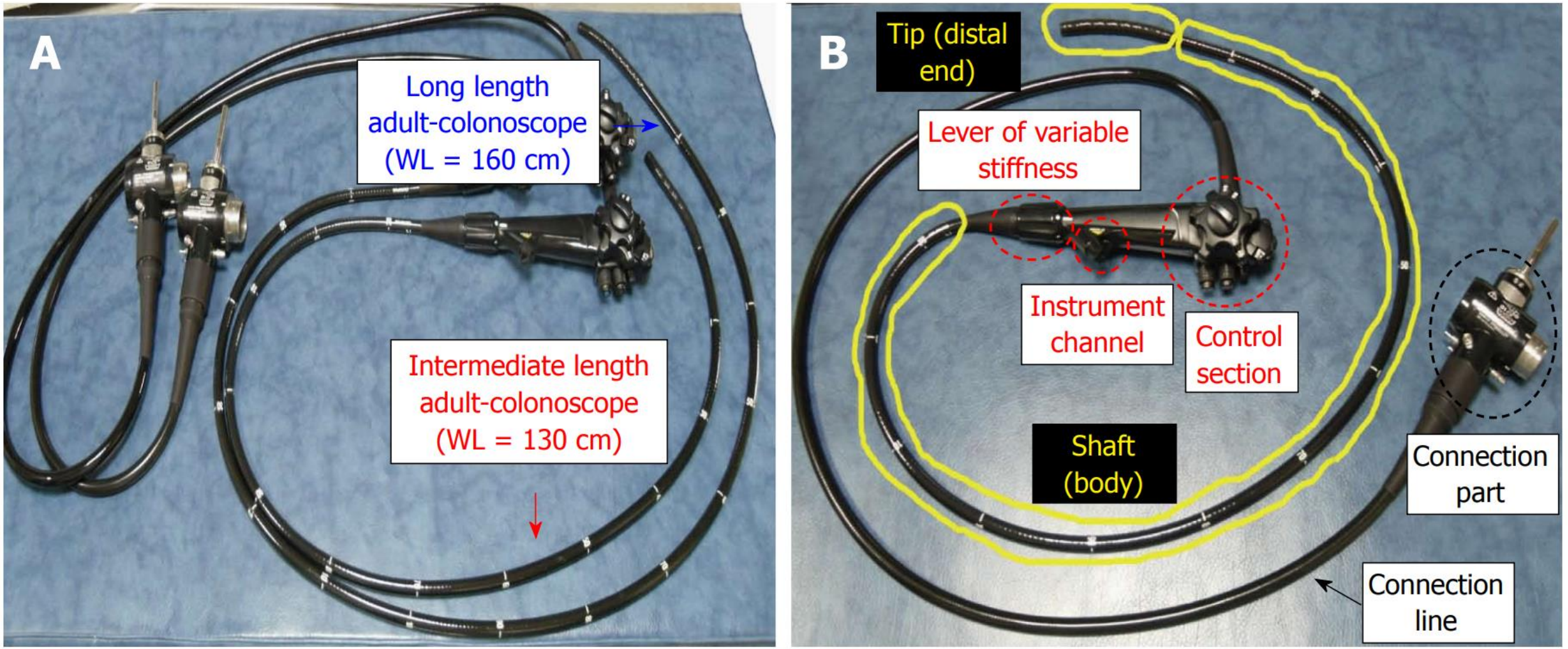




Lee SH, World J Gastroenterol 2014;20:16984-95

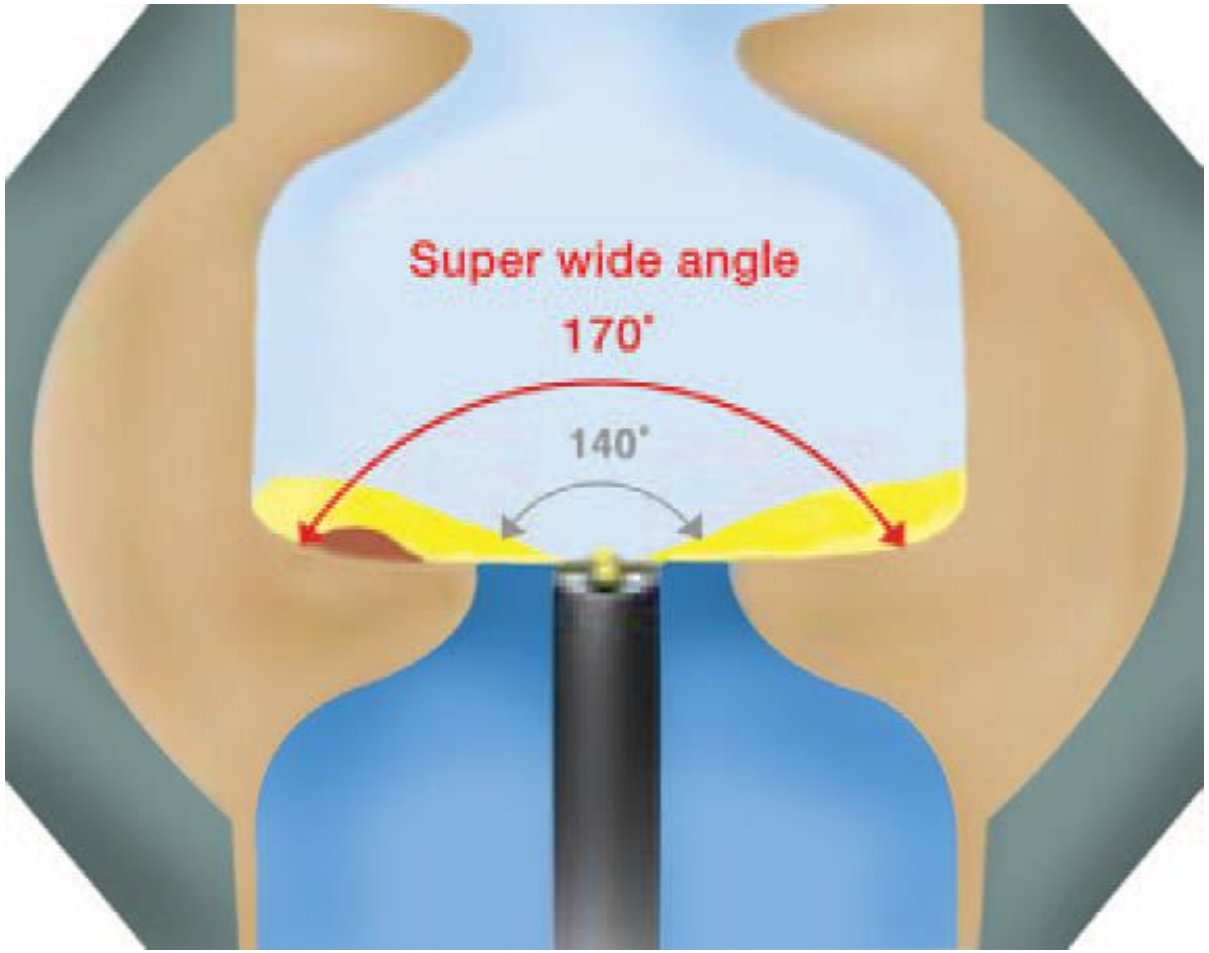
Table 1-1. Differences Between Commonly Used Models

COLONOSCOPE TYPE	FUJINON	PENTAX	OLYMPUS
Colonoscope working length, mm	1330 to 1690	1700	1680
Colonoscope width, mm	12.8	14.6	13.9
Field of view, degrees	140	140	170
Number of lights on tip	2	2	3
Working channel diameter, mm	3.8	3.7	3.8



Lee SH, World J Gastroenterol 2014;20:16984-95

Ángulo de visión



Colonoscopia

Posiciones

Lee SH, World J Gastroenterol 2014;20:16984-95

Lee SH, World J Gastroenterol 2014;20:16984-95

nature publishing group ORIGINAL CONTRIBUTIONS

Right Or Left in COLonoscopy (ROLCOL)? A Randomized Controlled Trial of Right- versus Left-Sided Starting Position in Colonoscopy

N. Vergis, BM BCh, MA[1], A.K. McGrath[1], C.H. Stoddart[1] and Jonathan M. Hoare, PhD[1]

Am J Gastroenterol 2015;110:1575-81

Gonzalez FM, Bueno N, Casillas GB et al. Comparison between conventional left lateral position and right lateral position as the starting position in colonoscopy. Gastrointest Endosc 2017; 85: AB179– AB180

Mocanu I, Laranjo A, Pires S et al. Colonoscopy on the left, right? U Eur Gastroenterol J 2017; 5: A461

Dig Dis Sci (2013) 58:782–787
DOI 10.1007/s10620-012-2468-x

ORIGINAL ARTICLE

Prone Positioning of Obese Patients for Colonoscopy Results in Shortened Cecal Intubation Times: A Randomized Trial

Fatema S. Uddin · Ramiz Iqbal · William V. Harford · Kerry B. Dunbar · Byron L. Cryer · Stuart J. Spechler · Linda A. Feagins

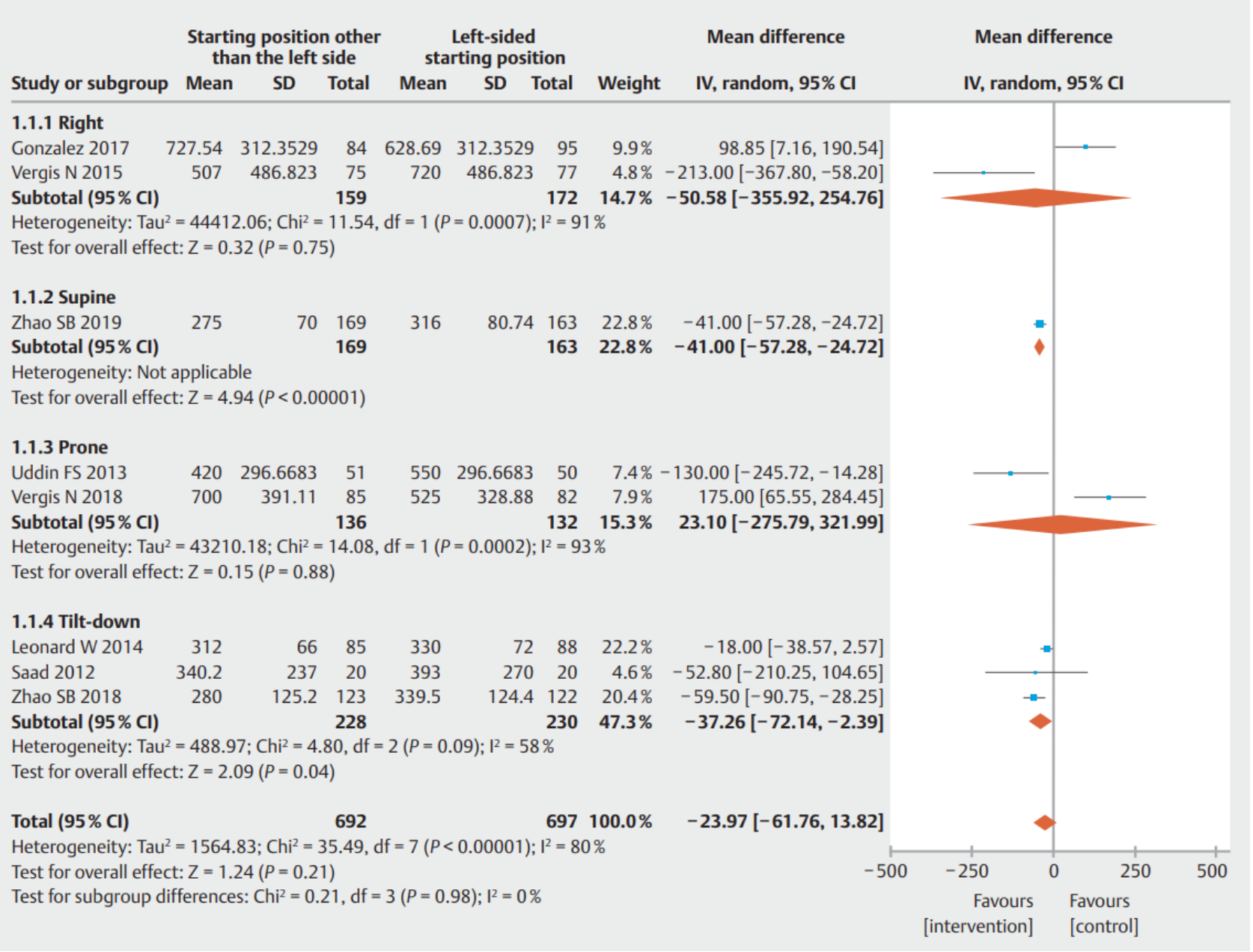
Efficacy and safety of the starting position during colonoscopy: a systematic review and meta-analysis

OPEN ACCESS

Authors
Jun Watanabe[1,2], Daeho Park[3,4], Eiichi Kakehi[5], Kazuoki Inoue[3], Shizukiyo Ishikawa[1], Yuki Kataoka[6]

Watanabe J, Endosc Int Open 2020; 08: E848-E60

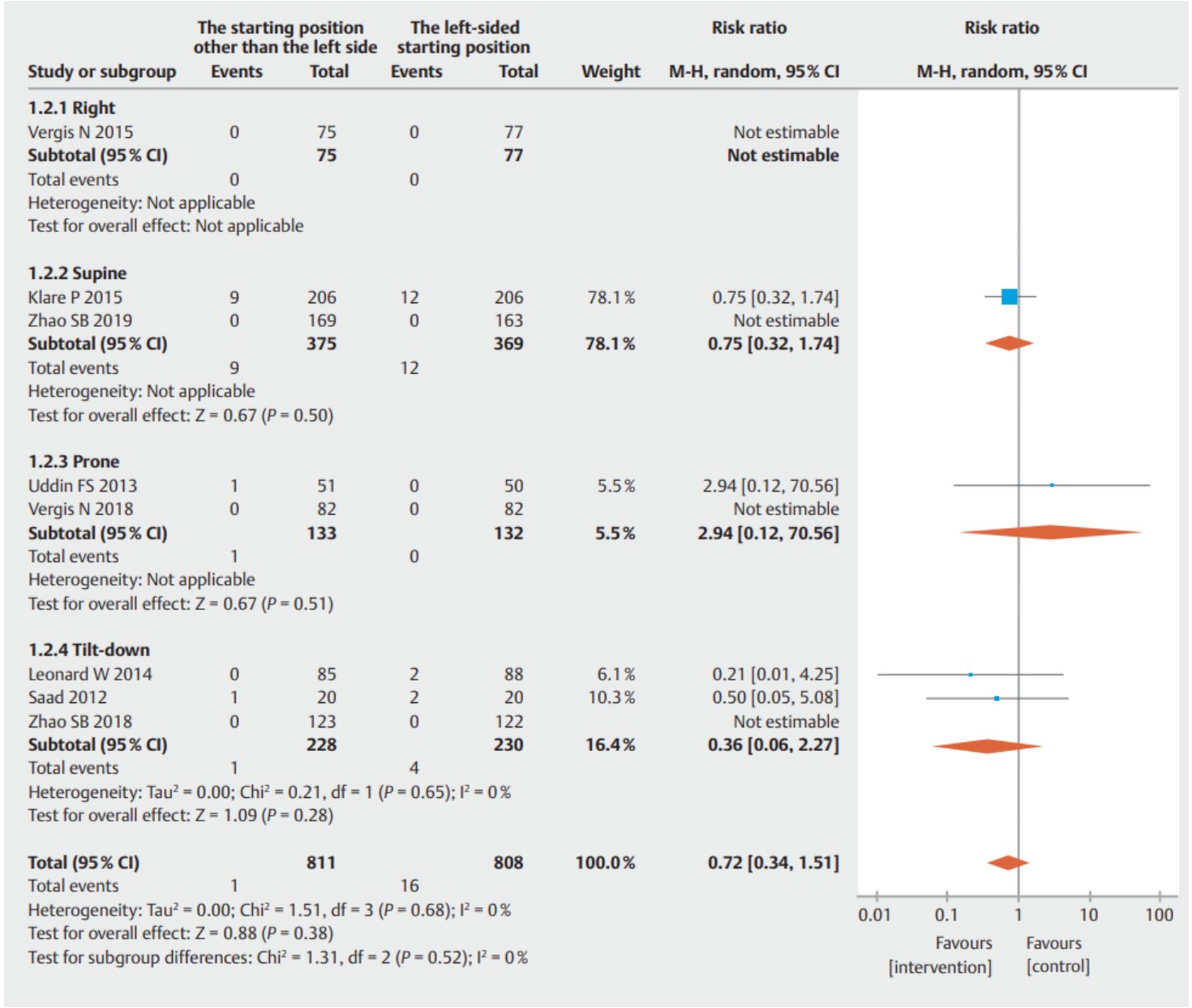
Tiempo de Intubación Cecal



Study or subgroup	Starting position other than the left side: Mean	SD	Total	Left-sided starting position: Mean	SD	Total	Weight	Mean difference: IV, random, 95% CI
1.1.1 Right								
Gonzalez 2017	727.54	312.3529	84	628.69	312.3529	95	9.9%	98.85 [7.16, 190.54]
Vergis N 2015	507	486.823	75	720	486.823	77	4.8%	−213.00 [−367.80, −58.20]
Subtotal (95% CI)			**159**			**172**	**14.7%**	**−50.58 [−355.92, 254.76]**
Heterogeneity: $Tau^2 = 44412.06$; $Chi^2 = 11.54$, df = 1 ($P = 0.0007$); $I^2 = 91\%$								
Test for overall effect: Z = 0.32 ($P = 0.75$)								
1.1.2 Supine								
Zhao SB 2019	275	70	169	316	80.74	163	22.8%	−41.00 [−57.28, −24.72]
Subtotal (95% CI)			**169**			**163**	**22.8%**	**−41.00 [−57.28, −24.72]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 4.94 ($P < 0.00001$)								
1.1.3 Prone								
Uddin FS 2013	420	296.6683	51	550	296.6683	50	7.4%	−130.00 [−245.72, −14.28]
Vergis N 2018	700	391.11	85	525	328.88	82	7.9%	175.00 [65.55, 284.45]
Subtotal (95% CI)			**136**			**132**	**15.3%**	**23.10 [−275.79, 321.99]**
Heterogeneity: $Tau^2 = 43210.18$; $Chi^2 = 14.08$, df = 1 ($P = 0.0002$); $I^2 = 93\%$								
Test for overall effect: Z = 0.15 ($P = 0.88$)								
1.1.4 Tilt-down								
Leonard W 2014	312	66	85	330	72	88	22.2%	−18.00 [−38.57, 2.57]
Saad 2012	340.2	237	20	393	270	20	4.6%	−52.80 [−210.25, 104.65]
Zhao SB 2018	280	125.2	123	339.5	124.4	122	20.4%	−59.50 [−90.75, −28.25]
Subtotal (95% CI)			**228**			**230**	**47.3%**	**−37.26 [−72.14, −2.39]**
Heterogeneity: $Tau^2 = 488.97$; $Chi^2 = 4.80$, df = 2 ($P = 0.09$); $I^2 = 58\%$								
Test for overall effect: Z = 2.09 ($P = 0.04$)								
Total (95% CI)			**692**			**697**	**100.0%**	**−23.97 [−61.76, 13.82]**
Heterogeneity: $Tau^2 = 1564.83$; $Chi^2 = 35.49$, df = 7 ($P < 0.00001$); $I^2 = 80\%$								
Test for overall effect: Z = 1.24 ($P = 0.21$)								
Test for subgroup differences: $Chi^2 = 0.21$, df = 3 ($P = 0.98$); $I^2 = 0\%$								

Watanabe J, Endosc Int Open 2020; 08: E848-E60

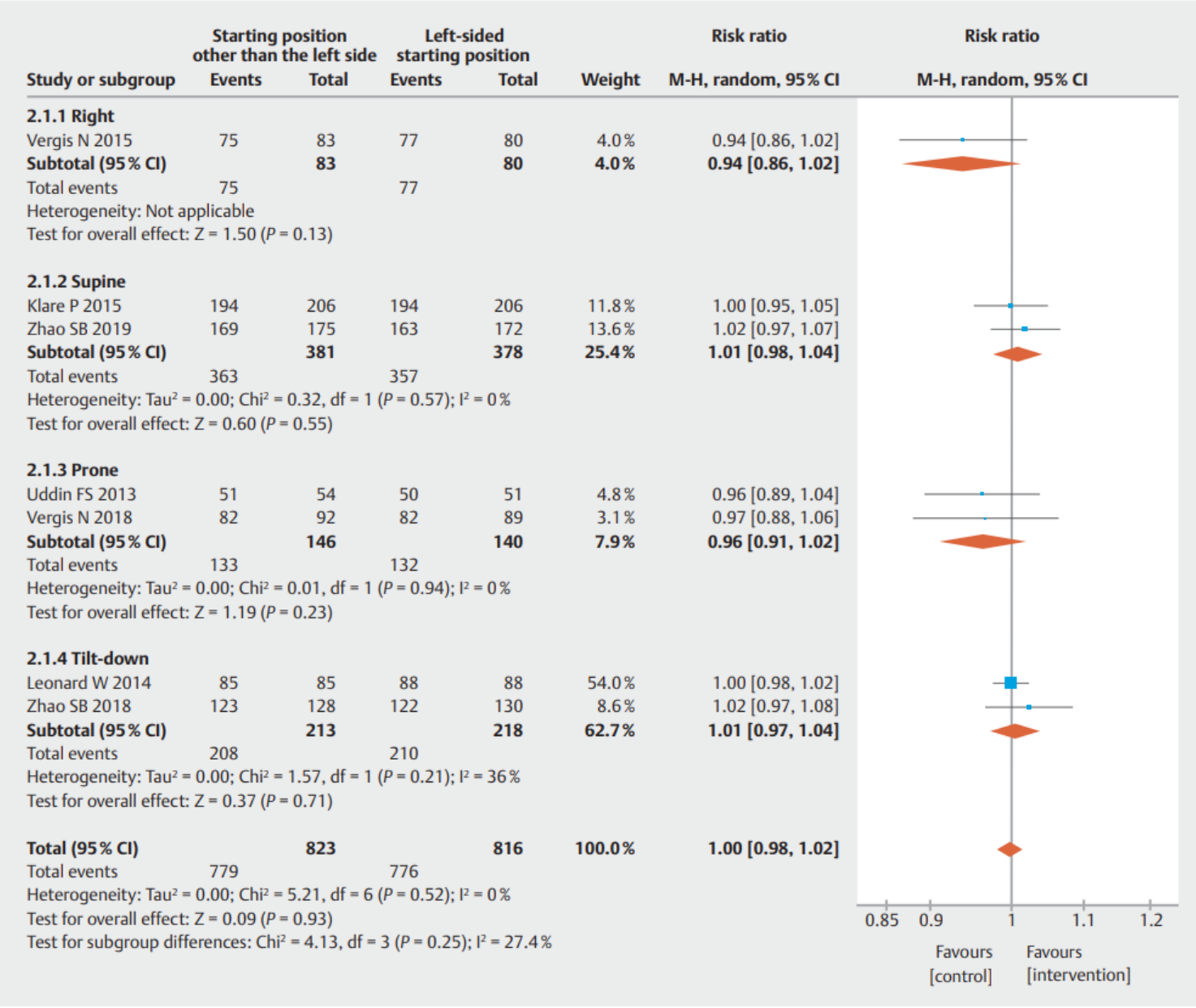
Efectos adversos
Que ameritan
Medicamentos
Por la posición



Study or subgroup	The starting position other than the left side Events	Total	The left-sided starting position Events	Total	Weight	Risk ratio M-H, random, 95% CI
1.2.1 Right						
Vergis N 2015	0	75	0	77		Not estimable
Subtotal (95% CI)		**75**		**77**		**Not estimable**
Total events	0		0			
Heterogeneity: Not applicable						
Test for overall effect: Not applicable						
1.2.2 Supine						
Klare P 2015	9	206	12	206	78.1%	0.75 [0.32, 1.74]
Zhao SB 2019	0	169	0	163		Not estimable
Subtotal (95% CI)		**375**		**369**	**78.1%**	**0.75 [0.32, 1.74]**
Total events	9		12			
Heterogeneity: Not applicable						
Test for overall effect: Z = 0.67 (*P* = 0.50)						
1.2.3 Prone						
Uddin FS 2013	1	51	0	50	5.5%	2.94 [0.12, 70.56]
Vergis N 2018	0	82	0	82		Not estimable
Subtotal (95% CI)		**133**		**132**	**5.5%**	**2.94 [0.12, 70.56]**
Total events	1		0			
Heterogeneity: Not applicable						
Test for overall effect: Z = 0.67 (*P* = 0.51)						
1.2.4 Tilt-down						
Leonard W 2014	0	85	2	88	6.1%	0.21 [0.01, 4.25]
Saad 2012	1	20	2	20	10.3%	0.50 [0.05, 5.08]
Zhao SB 2018	0	123	0	122		Not estimable
Subtotal (95% CI)		**228**		**230**	**16.4%**	**0.36 [0.06, 2.27]**
Total events	1		4			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.21$, df = 1 (*P* = 0.65); $I^2 = 0\%$						
Test for overall effect: Z = 1.09 (*P* = 0.28)						
Total (95% CI)		**811**		**808**	**100.0%**	**0.72 [0.34, 1.51]**
Total events	1		16			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.51$, df = 3 (*P* = 0.68); $I^2 = 0\%$						
Test for overall effect: Z = 0.88 (*P* = 0.38)						
Test for subgroup differences: $Chi^2 = 1.31$, df = 2 (*P* = 0.52); $I^2 = 0\%$						

Watanabe J, Endosc Int Open 2020; 08: E848-E60

Proporción Intubación Exitosa después de cada Posición de inicio



Study or subgroup	Starting position other than the left side Events	Total	Left-sided starting position Events	Total	Weight	Risk ratio M-H, random, 95% CI
2.1.1 Right						
Vergis N 2015	75	83	77	80	4.0%	0.94 [0.86, 1.02]
Subtotal (95% CI)		**83**		**80**	**4.0%**	**0.94 [0.86, 1.02]**
Total events	75		77			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.50 (*P* = 0.13)						
2.1.2 Supine						
Klare P 2015	194	206	194	206	11.8%	1.00 [0.95, 1.05]
Zhao SB 2019	169	175	163	172	13.6%	1.02 [0.97, 1.07]
Subtotal (95% CI)		**381**		**378**	**25.4%**	**1.01 [0.98, 1.04]**
Total events	363		357			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.32$, df = 1 (*P* = 0.57); $I^2 = 0\%$						
Test for overall effect: Z = 0.60 (*P* = 0.55)						
2.1.3 Prone						
Uddin FS 2013	51	54	50	51	4.8%	0.96 [0.89, 1.04]
Vergis N 2018	82	92	82	89	3.1%	0.97 [0.88, 1.06]
Subtotal (95% CI)		**146**		**140**	**7.9%**	**0.96 [0.91, 1.02]**
Total events	133		132			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.01$, df = 1 (*P* = 0.94); $I^2 = 0\%$						
Test for overall effect: Z = 1.19 (*P* = 0.23)						
2.1.4 Tilt-down						
Leonard W 2014	85	85	88	88	54.0%	1.00 [0.98, 1.02]
Zhao SB 2018	123	128	122	130	8.6%	1.02 [0.97, 1.08]
Subtotal (95% CI)		**213**		**218**	**62.7%**	**1.01 [0.97, 1.04]**
Total events	208		210			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.57$, df = 1 (*P* = 0.21); $I^2 = 36\%$						
Test for overall effect: Z = 0.37 (*P* = 0.71)						
Total (95% CI)		**823**		**816**	**100.0%**	**1.00 [0.98, 1.02]**
Total events	779		776			
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 5.21$, df = 6 (*P* = 0.52); $I^2 = 0\%$						
Test for overall effect: Z = 0.09 (*P* = 0.93)						
Test for subgroup differences: $Chi^2 = 4.13$, df = 3 (*P* = 0.25); $I^2 = 27.4\%$						

Watanabe J, Endosc Int Open 2020; 08: E848-E60

Conclusion

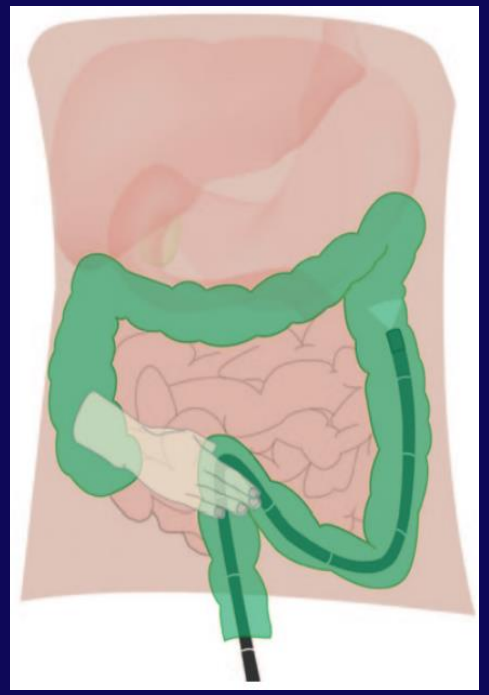
In conclusion, our systematic review demonstrated that no definitive conclusion was reached regarding the efficacy and safety of starting position during colonoscopy. The findings imply that the decision with regard to the participant's position should be made after evaluating the overall clinical scenario and colonoscopist and patient preference. Further investigations are needed to assess the efficacy and safety of the starting position, especially the supine and tilt-down starting positions without sedation.

Watanabe J, Endosc Int Open 2020; 08: E848-E60

2005

Decúbito supino: Ventajas

Amplía la angulación RS
Se logra mejor intubación del colon derecho
Se facilitan las maniobras de compresión
Facilita al anestesiòlogo solucionar complicaciones

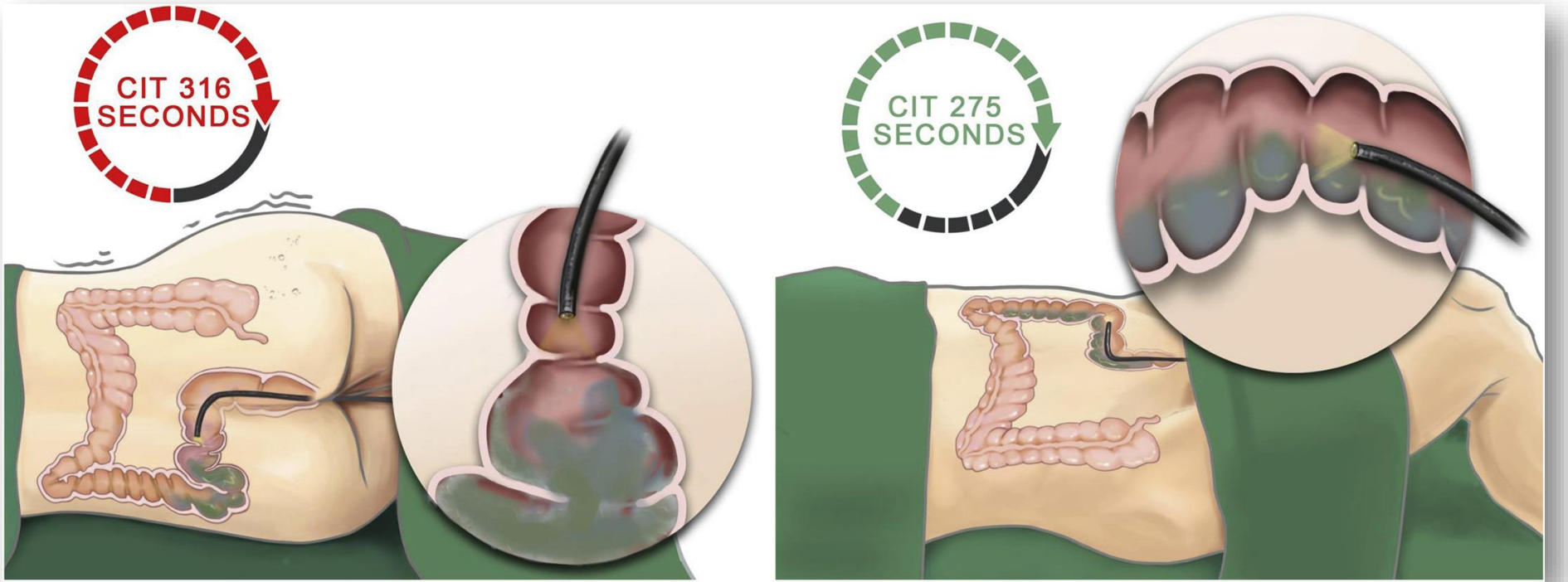


Compresión
Profiláctica

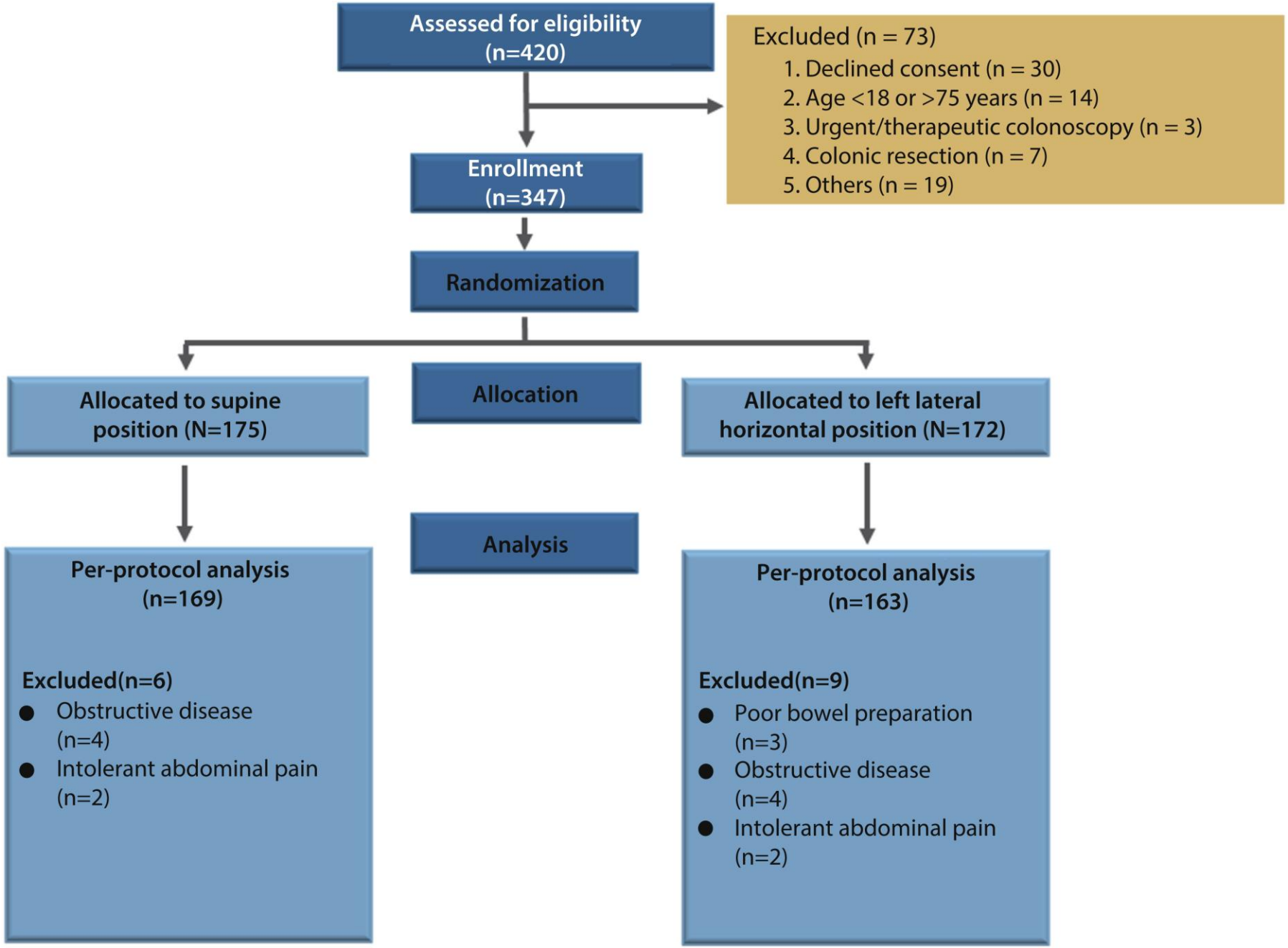
Impact of the supine position versus left horizontal position on colonoscopy insertion: a 2-center, randomized controlled trial CME

Shengbing Zhao, MD,[1,*] Xia Yang, MD,[1,2,*] Qianqian Meng, MD,[1,*] Shuling Wang, MD,[1,*] Jun Fang, MD,[3] Wei Qian, MD,[1] Tian Xia, MD,[1] Peng Pan, MD,[1] Zhijie Wang, MD,[1] Lun Gu, MD,[1] Xin Chang, MD,[1] Duowu Zou, MD, PhD,[1,4] Zhaoshen Li, MD, PhD,[1] Yu Bai, MD, PhD[1]

Shanghai; Wuhan, China



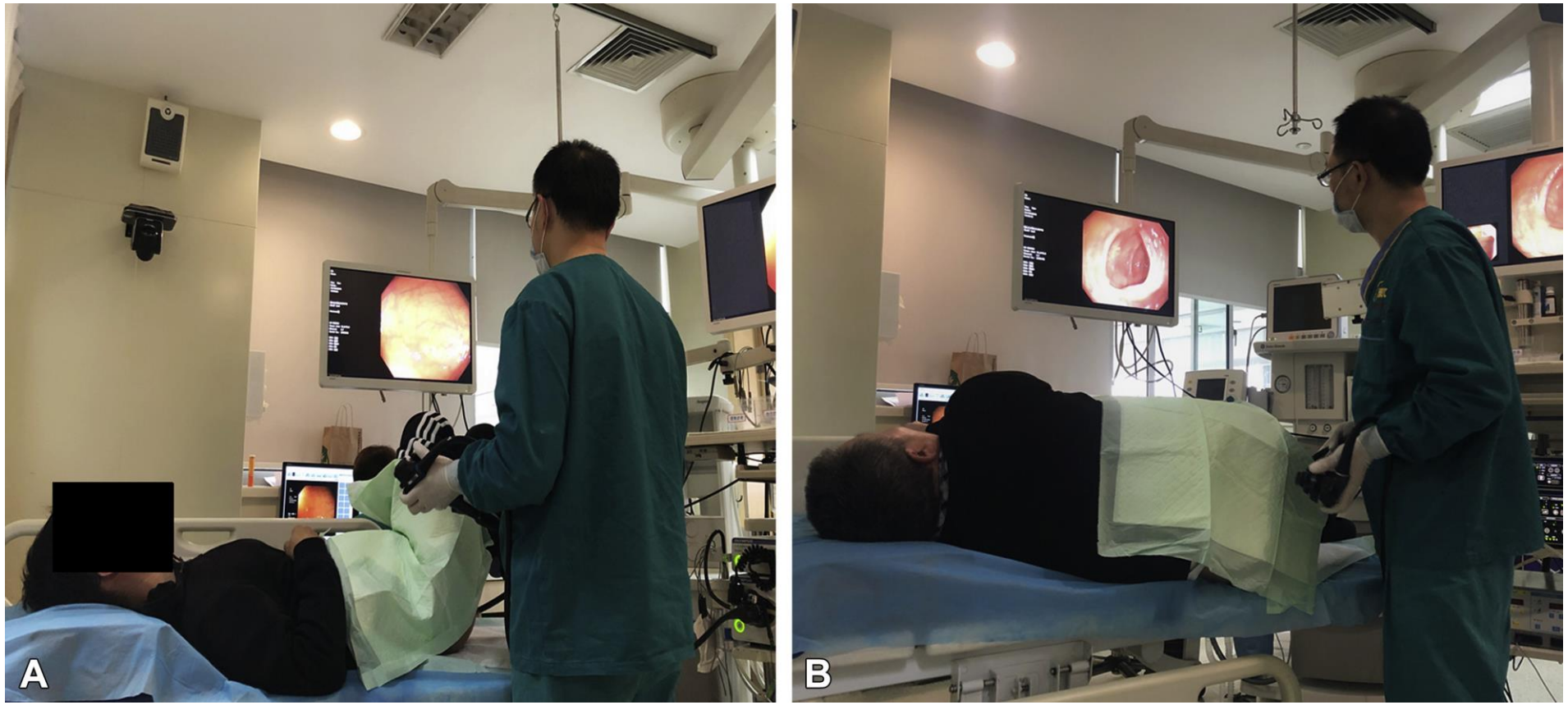
Gastrointest Endosc 2019;89:1193-201



Zhao S, et al Gastrointest Endosc 2019;89:1193-201

Supino

Decúbito lateral izquierdo



Zhao S, et al Gastrointest Endosc 2019;89:1193-201

Colonoscopia
Reglas básicas


Como un lápiz
Permite giro de
hasta 360 grados
Ayudante
Del Pulgar

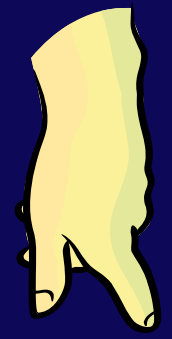
Movimiento finos delicados
Una llave
Destornillador pequeño

Agarre burdo con el puño
Movimientos bruscos
Gira <180

Colonoscopia bien hecha

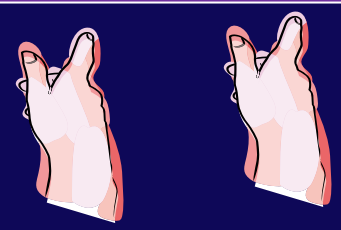
Antes de iniciar
Revisar: Colonoscopio
Procesador central,
Aire, agua: todo óptimas condiciones

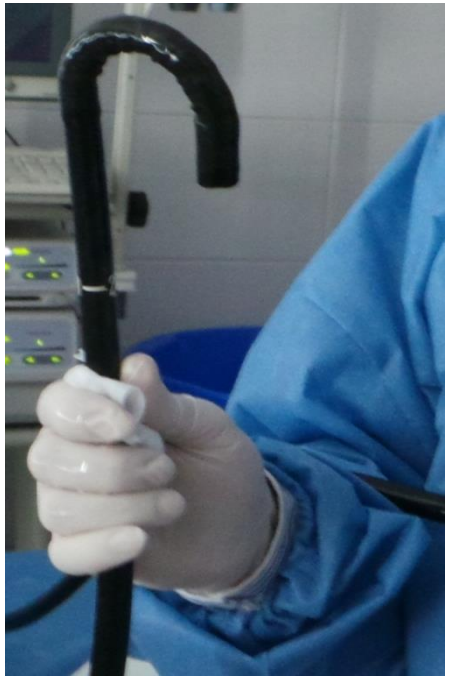
Colon Limpio Boston 9/9

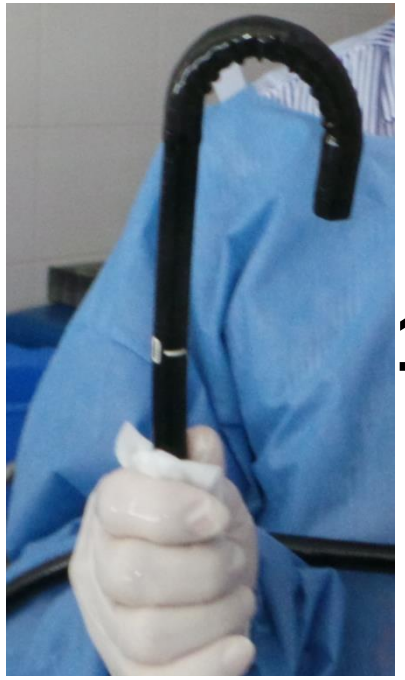


Sedación Adecuada?

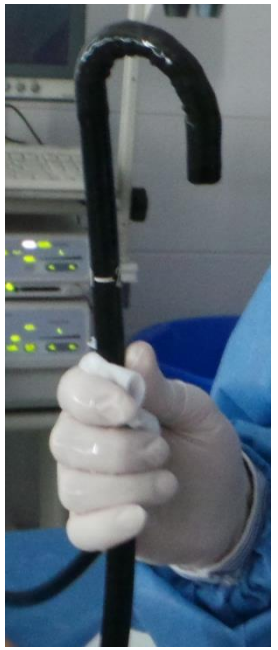
Técnica Correcta

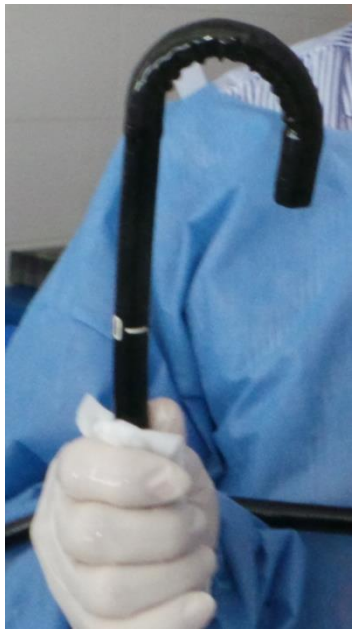






180°





160°

Table 1 Comparison of endoscopes: Adult-gastroscope *vs* intermediate length adult-colonoscope *vs* long length adult-colonoscope

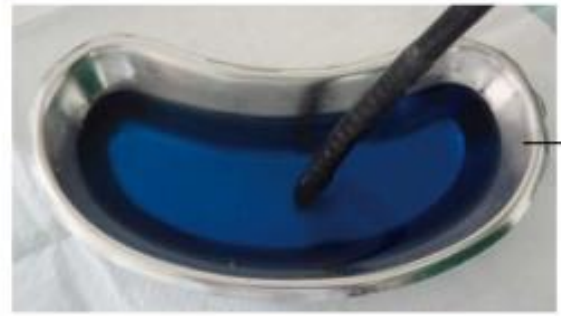
Characteristic	Adult-gastroscope	Adult-colonoscope	
		Intermediate length-type	Long length-type
Total length[1]	1350 mm (1.35 m)	1650 mm (1.65 m)	2000 mm (2 m)
Working length[2]	1030 mm (1.03 m)	1330 mm (1.33 m)	1680 mm (1.68 m)
Diameter	9.2 mm	12.9 mm	
Diameter of instrument channel	2.8 mm	3.7 mm	
Angulation range[3]	Up 210°, Down 90°, Right 100°, Left 100°	Up 180°, Down 180°, Right 160°, Left 160°	

Lee SH, World J Gastroenterol 2014;20:16984-95

F

G

Close the hole of the button, do not push the button!



Air bubbles

H

Push the suction button

I

Push the button above air/water infusion button

Siempre se aprende
Con cada colonoscopia

Cada caso es una oportunidad
Para evaluar su propia técnica
Cómo mejorarla
Cómo adaptarla a cada paciente

Colonoscopia

“Los malos hábitos que se [illegible]en
Al comenzar a aprender p[illegible]
Toda la vida”
Dificultan el aprendizaje

Yo

Estrategias mejorar la destreza

Demostrando que el problema existe
Enseñando técnicas adecuadas
Monitoreo constante
Auditoría

Cada mano cumples sus tareas


25-30 cm del ano

Mano del ano: 25-30 cm


GIFSec.com

Colonoscopia

Paradoja:
Entre más lento y más suave: más rápido
Movimientos precisos y controlados
Nunca movimientos repetitivos sin propósito

Bourke M

“Vísteme despacio que estoy de prisa"

Torque

Exige

1ero: Pulgar izquierdo sobre sobre la rueda grande control UP/Down

Mano derecha sobre el tubo de inserción

Con pulgar-índice
Se agarra como un lápiz

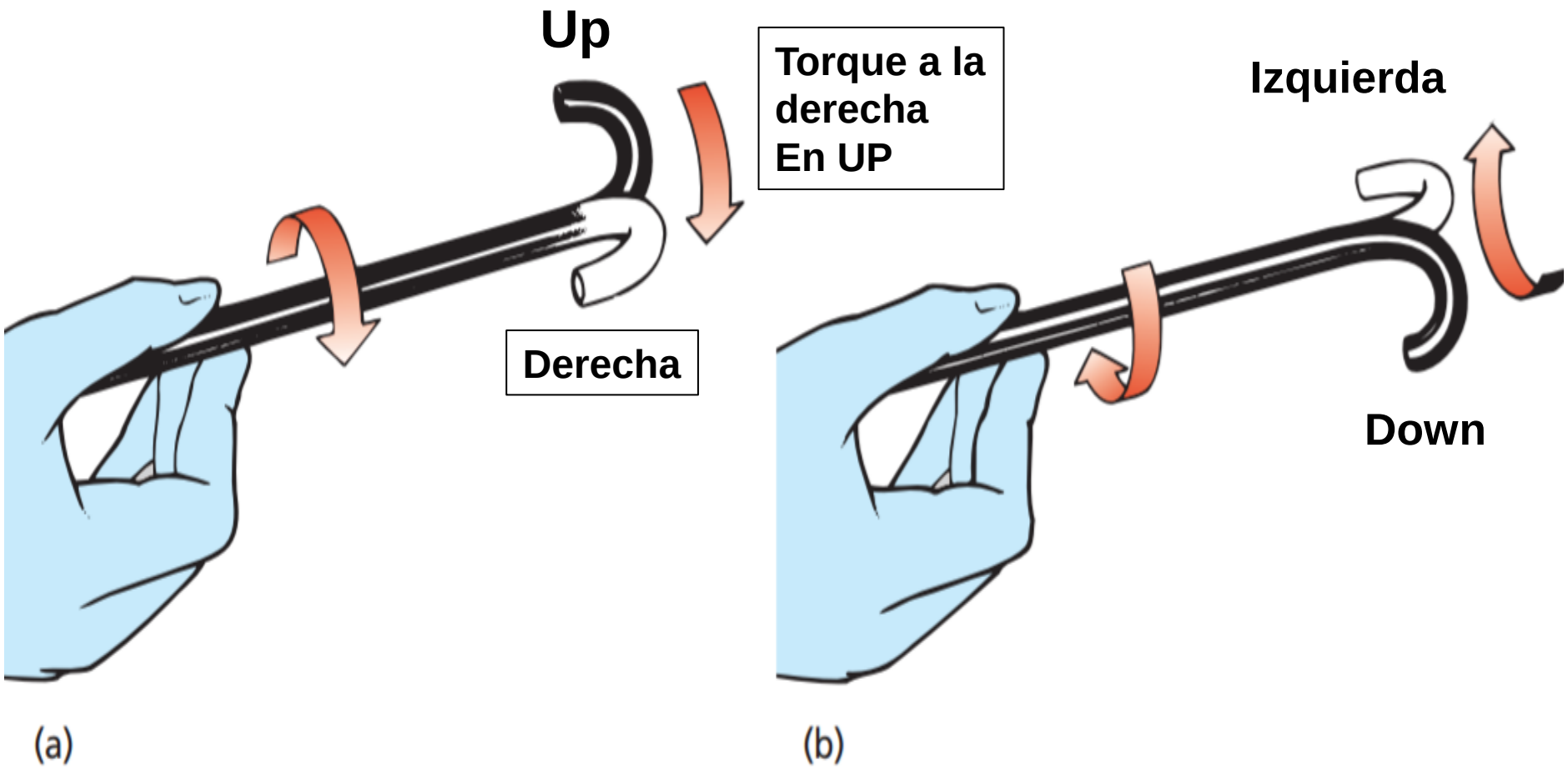
Coordinación

Maximiza la sensibilidad detecta la tensión del shaft

Se rota la mano a la derecha: si la punta está
en UP: se moverá a la derecha
en DOWN: se moverá a la izquierda

William CB, En Waye J, Rex DK, Colonoscopy Principles and Practice 2003:319-38

El torque reemplaza Movimientos de La rueda pequeña: Derecha e izquierda

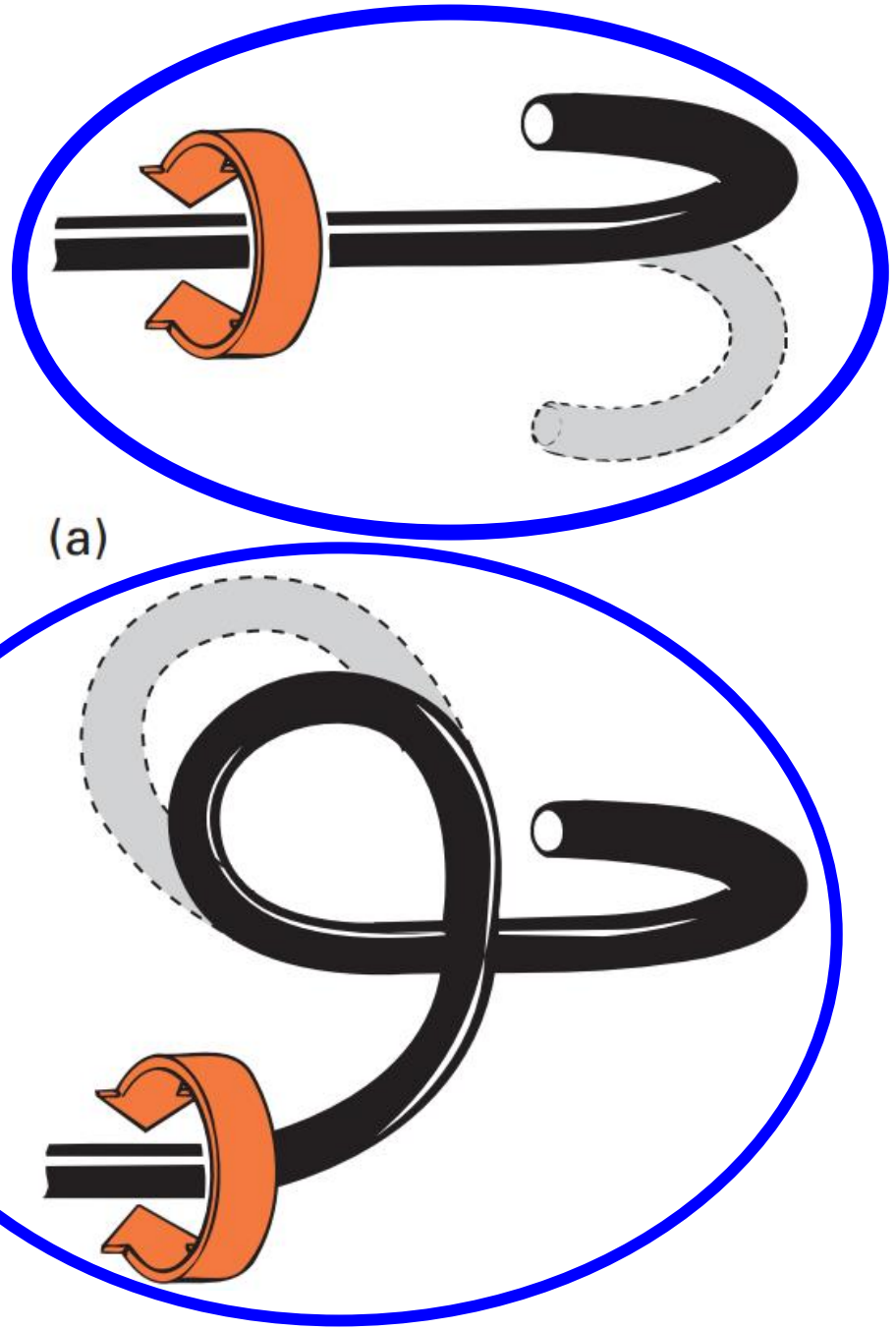


William CB, En Waye J, Rex DK (Edit). Colonoscopy Principles and Practice 2003:319-38

Torque funciona
Con equipo recto

Nunca

Cuando hay asas



OK

No !

Cotton PB, Williams C. Practical Gastrointestinal Endoscopy Wiley &Son 2014

Movimientos deben ser lentos y exactos

Nunca

Bruscos y erráticos

Permanentemente vigilar
Distensión del abdomen
Notar paciente “puja mucho”
Sentir tensión del Endoscopio

Evitar asas peligrosas
Mucho aire: alarga colon

Symposium on Surgical Endoscopy of the Gastrointestinal Tract

Colonoscopy: Technique and Training Methods

*Hiromi Shinya, M.D.,**
Mark Cwern, M.D.,†
and Robyn Karlstadt, M.D.‡

Surg Clin North Am 1982;5:869-76

Principios básicos que han resistido
Los avances tecnológicos

Mantener el colonoscopio recto
Torque a la derecha
Mínima insuflación de gas
No “empujar” si no se sabe dónde está la punta
Nunca quitar el pulgar izquierdo de UP/Down
Cambios de posición y presión abdominal

Waye JD, Gastrointest Endosc 2018;87:621-4.

Maniobra más importante

Capacidad para hacer el torque a la derecha

Waye JD, Gastrointest Endosc 2018;87:621-4.

“Enganchar la unión rectosigmoidea Y rotar a la derecha

Shinya H, Surg Clin North Am 1982;5:869-76,

Mantener tubo inserción: RECTO
Nunca empujar contra resistencia fija

En la colonoscopia
no se necesita fuerza

Dexterity and technical ability are two key ingredients for a succesful endoscopist. These traits are usually achieved by experience in performing endoscopy. Repetition is therefore quite important for refining the various techniques used during the performance of endoscopy. Since one may be limited in attaining this kind of repetitive experience in a clinical setting, we have designed latex colon models to aid in achieving this goal (Fig. 1).

The colon models serve as a teaching tool on which coordination of motion between the control knob and the body of the endoscope can be practiced under supervision in well-organized teaching seminars. The insertion, withdrawal, and torque motions may be demonstrated on the models by the instructor and reproduced by the student with several practice sessions. The models have been designed to aid in the instruction of colonic polypectomy as well. The colon models have been constructed to represent varying degrees of difficulty of insertion. Some of the techniques taught in the seminar include right turn shortening technique, the alpha maneuver, and insertion of the splinting device.

The main goal of the endoscopist is to reach the cecum with the shortest length of scope and without discomfort to the patient. This is accomplished by telescoping, shortening, and straightening the colon. One may advance the scope directly into the visualized lumen or, with experience, bring the

HAND GRIP OF THE ENDOSCOPE

For this section, one may wish to correlate the position of the endoscopist's hand with a colonoscope. Since most instruments have the same basic design, this description will be applicable to all. The control unit of the endoscope is held comfortably in the left hand with the fourth and fifth fingers firmly holding the base of the control unit. The left thumb is placed on the up-down control knob. The left forefinger is placed opposite the suction button superiorly and the air button inferiorly. Movement of these buttons is easily accomplished by the index finger. The body of the scope is always held with the right hand approximately 10 cm from the anus during the procedure. The body of the scope may be turned either clockwise (right) or counterclockwise (left) with the right hand in this position. The right-left dial on the control unit may be turned using only the left thumb. Thus, complete tip control is established by the endoscopist. The scope should be handled as though it were an extension of the endoscopist. Simultaneous motion of the left thumb (flexion/extension) and right hand (clockwise/counterclockwise) gives complete control of the scope.

Anus and Rectum

With the patient in the left lateral recumbent position the cheeks of both buttocks are spread, and close examination is carried out in the area of the anus and perineum. The endoscopist then checks for hemorrhoids, fistulas, or fissures, as well as any other surrounding skin abnormalities. A bimanual digital rectal examination is performed by the endoscopist prior to the procedure. The index finger of the right hand is placed on the lateral surface, at the tip of the scope, and the tip is inserted into the anus. The anal canal should be visualized during the insertion of the scope. As one inserts the tip, air is constantly insufflated, which aids in keeping the anal canal dilated and the lens of the instrument clear. As the scope is inserted into the rectum, the tip is flexed to form a 90 degree angle in order to see the rectal lumen. The tip is then directed in an upward position, toward the posterior wall of the rectum. As one looks through the endoscope, the triangular point on the view finder corresponds to the posterior wall of the rectum. Using this as a guide, it follows that the anterior wall would be downward (accomplished by extension of the left thumb on the up-down knob). The left lateral rectal wall is on the left, as seen through the eyepiece,

Sigmoid and Descending Colon

The scope is advanced by movement of the tip until the lumen or its location is ascertained. It is important to pull back the scope whenever

resistance is encountered. The neophyte endoscopist should not attempt to impose any maneuvers on the sigmoid such as an alpha maneuver but should follow the lumen. It is important to telescope and shorten the sigmoid during advancement of the scope. One may form multiple loops of sigmoid colon by stretching the sigmoid. When one reaches the junction of the sigmoid and descending colon, an "N" pattern may be formed. The endoscopist should then pull back the scope while rotating it clockwise and straighten the tip. Two types of loops may be encountered, namely, the

TECHNIQUES

Traversing the Sigmoid Colon

Direct Insertion. This technique is as described. One simply inserts the scope while visualizing the sigmoid lumen. If necessary, one may use to and fro motions, and the sigmoid lumen should be kept inflated for several centimeters ahead of the scope tip. The scope may be advanced as long as the lumen is visualized and no resistance is encountered.

Pull Back Rotation. This is used when the lumen is not visualized. At that time the endoscope should be withdrawn or rotated, or both, until the lumen again comes into view.

Slide by the Mucosa. This should be used only when an acute angulation is encountered in the sigmoid colon. The endoscopist must know the direction that the sigmoid lumen takes before attempting this maneuver.

The tip of the scope is partially in contact with the colonic mucosa as the scope is advanced. The mucosa will slide by rapidly over the tip for a short distance without resistance until the lumen again comes into view. Should the endoscope press directly into the colonic wall, blanching of the colonic mucosa will occur and the scope must be withdrawn. This technique is recommended only for short segments of the colon at an angle. If a patient has diverticulosis, inflammatory bowel disease, extrinsic fixation of the bowel, or adhesions, this technique should not be used. Also, it should not be continuously applied.

Abdominal Manipulations. To advance the endoscope through the mid portion of the redundant sigmoid colon and to concomitantly avoid stretching the bowel mesentery, gentle extra-abdominal pressure of an assistant's open hand over the left lower quadrant will enable the bowel to remain in a straightened position. If the colon is being stretched while the operator advances to the proximal sigmoid, the endoscope should be flexed and pulled back toward the operator. At the same time, an assistant's hand pressed down over the left lower quadrant or upper to middle abdomen will fix the sigmoid and prevent bowing of the loop. It is important to note

depending upon the movement of the scope. If no advancement is being made with the endoscope the abdominal manipulator changes the position of his or her hand to another portion of the abdomen. If the scope is successfully advancing with the hand in this position, it is maintained.

Right Turn Shortening Technique. This is a difficult technique to master and usually requires a great deal of expertise. It is generally used to traverse the moderately redundant sigmoid colon. Every sigmoid fold that comes into view is hooked and gently withdrawn while the scope is rotated clockwise. When the sigmoid–descending colon junction is reached, an angle slightly greater than 90 degrees should be formed between the tip of the scope and the body of the instrument. With the use of the left thumb control to visualize the lumen, the endoscope should be turned to the right as the descending colon is entered. At this point the sigmoid should be completely straightened. Constant clockwise rotation as well as the small withdrawal movements will form a loop in the colonoscope outside the patient. Once the scope is in the mid to proximal descending colon, the instrument may be rotated in a counterclockwise fashion, thus straightening the sigmoid as well as the outside loop of the scope.

To and Fro Motion

To and Fro Motion

As previously described, this technique will help to telescope the colon. It may be used throughout the colonoscopy in various areas. It is especially useful when the scope cannot be advanced or when resistance is encountered.

Splenic Flexure

When one has passed through the descending colon, the distance from the splenic flexure to the anal verge being 40 cm, the scope is completely straightened. The scope is then flexed approximately 90 degrees and pulled

Transverse Colon

In general, this is one of the easiest areas to traverse as long as the sigmoid is kept straight. It is easily identified by its triangular folds. An aortic pulsation may also be seen when the transverse colon is entered. There are several ways to get from the mid transverse colon to the right transverse colon, one being direct advancement. However, if the transverse colon seems to be redundant, one should flex the tip of the scope in an upward direction when one reaches the mid transverse colon. At this point one should withdraw and apply intermittent suction, which will telescope and shorten the colon and pull the hepatic flexure toward the scope. Gravity is also utilized by keeping the patient on the left side. However, this maneuver is not sufficient to traverse an extremely redundant transverse colon. Therefore, the endoscopist should advance the scope while causing a bowing of the transverse colon. On fluoroscopy this will appear to have a U shape. An assistant's hand placed over the left side of the abdomen may prevent pronounced bowing of the transverse colon. Once the instrument has reached the hepatic flexure, the scope is flexed toward the ascending colon. The scope should then be pulled back as "hooking" the hepatic flexure fold.

Hepatic Flexure, Ascending Colon, and Cecum

When the scope is entering into the ascending colon, abdominal manipulation can be utilized in order to prevent bowing of the transverse colon. Have the assistant place a hand on the left or right upper quadrant and gently push down. Before the scope is advanced to the cecum, the sigmoid and transverse colon should be straightened by repeated withdrawal and aspiration of air. A figure 7 shape of the scope is seen under fluoroscopy when it reaches the cecum. However, if the transverse colon forms a large U shape and the right colon forms a clockwise internal spiral, it may be difficult to change to the figure 7 configuration before reaching the cecum. The operator should be constantly withdrawing the scope and aspirating air to prevent formation of a loop of the transverse colon. In patients with redundant colons, the splinting device, keeping the sigmoid colon straight, abdominal manipulation, and minimizing the U loop of the transverse colon will be helpful. The endoscopist may form a gamma loop of the transverse colon. Although this may be advantageous to widen the angle of the hepatic

Ileocecal Junction and Entrance into the Terminal Ileum

The base of the cecum is generally identified by locating and identifying the three tinea of the colon. The appendiceal orifice is usually seen both medially and superiorly to this junction. The ileocecal valve is approximately 4 to 6 cm distal to the appendiceal orifice. The valve lips are transversely and medially located at the junction of the cecum and ascending colon and may not be readily identified in an "en face" view when looking directly toward the cecum. To enter the ileocecal valve one identifies the ileocecal junction and slightly flexes the tip of the scope and applies a slight counterclockwise rotation along the scope. This will lift the upper lip of the valve by the tip of the instrument and the terminal ileum is then visualized. This may be repeated several times until the terminal ileum is finally entered. Once it is entered the scope is straightened and one can advance. The ileocecal valve has been seen in three configurations. The type 1 valve is a thin mucosal slit. The type 2 has moderately thick mucosal lips, and the type 3 valve has an oval shape and is quite prominent. The type 1 valve is the most difficult to enter. Once one has advanced into the ileocecal valve, one can enter at least 25 cm into the terminal ileum.

Splinting Device (Sliding Tube)

The splinting device, also known as the external stiffening device or over-tube, is placed over the body of the colonoscope prior to the commencement of the procedure. It is 40 cm long and is a moderately rigid and tapered tube through which the colonoscope can be inserted. This device should never be inserted unless the sigmoid and descending colon have been straightened. It serves to prevent bowing of the sigmoid so that the scope may be advanced more easily to the transverse colon and cecum. This device should be used only under the fluoroscope and with the long endoscope. After the scope has reached the splenic flexure and the sigmoid colon is straightened, the tip of the splint is well lubricated and inserted into the rectum and advanced to the mid-descending colon, using either a back and forth motion or a screw-like motion, or both. The right hand fixes the colonoscope so that it does not move with the splint and the splint is placed into the colon under fluoroscopic control until it reaches the mid to proximal descending colon. The splint should not be advanced over the distal flexion joint of the instrument. One should be especially cautious in

patients with diverticular disease, inflammatory bowel disease, stricture of the colon, or postabdominal surgery status. An assistant may hold the splint in place while the colonoscope is advanced through the colon. If resistance is felt by the endoscopist while withdrawing the scope, the splint should also be withdrawn several centimeters.

The disadvantages of the splinting device are that (1) it requires fluoroscopy, (2) it cannot be used with narrowing or stricture of the rectum and sigmoid, (3) it cannot be used without straightening the sigmoid and descending colon, (4) it may cause bleeding or auto-polypectomy of sigmoid polyps, and (5) if not properly used, it may cause colonic perforation.

305 East 55 Street, Suite 102
New York, New York 10022

Ano-recto

Fotos:
canal anal

Despuès de pasar el canal anal
Distender e identificar el charco de agua
Aspirar el líquido solo en el recto
Aspirar sólo el aire, NO el líquido

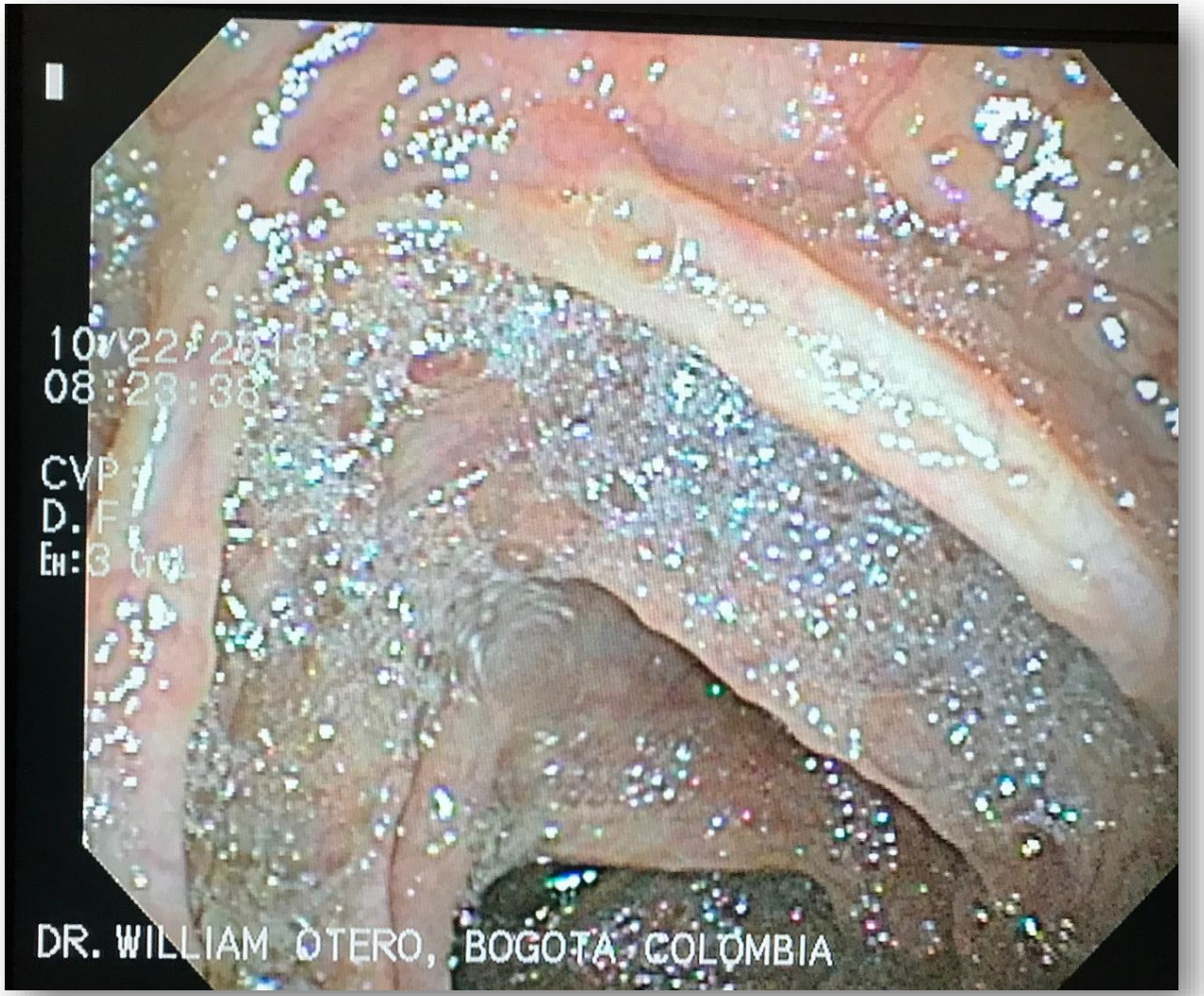
Rotar a la derecha y colocar el àngulo desde las 6 hasta las 12

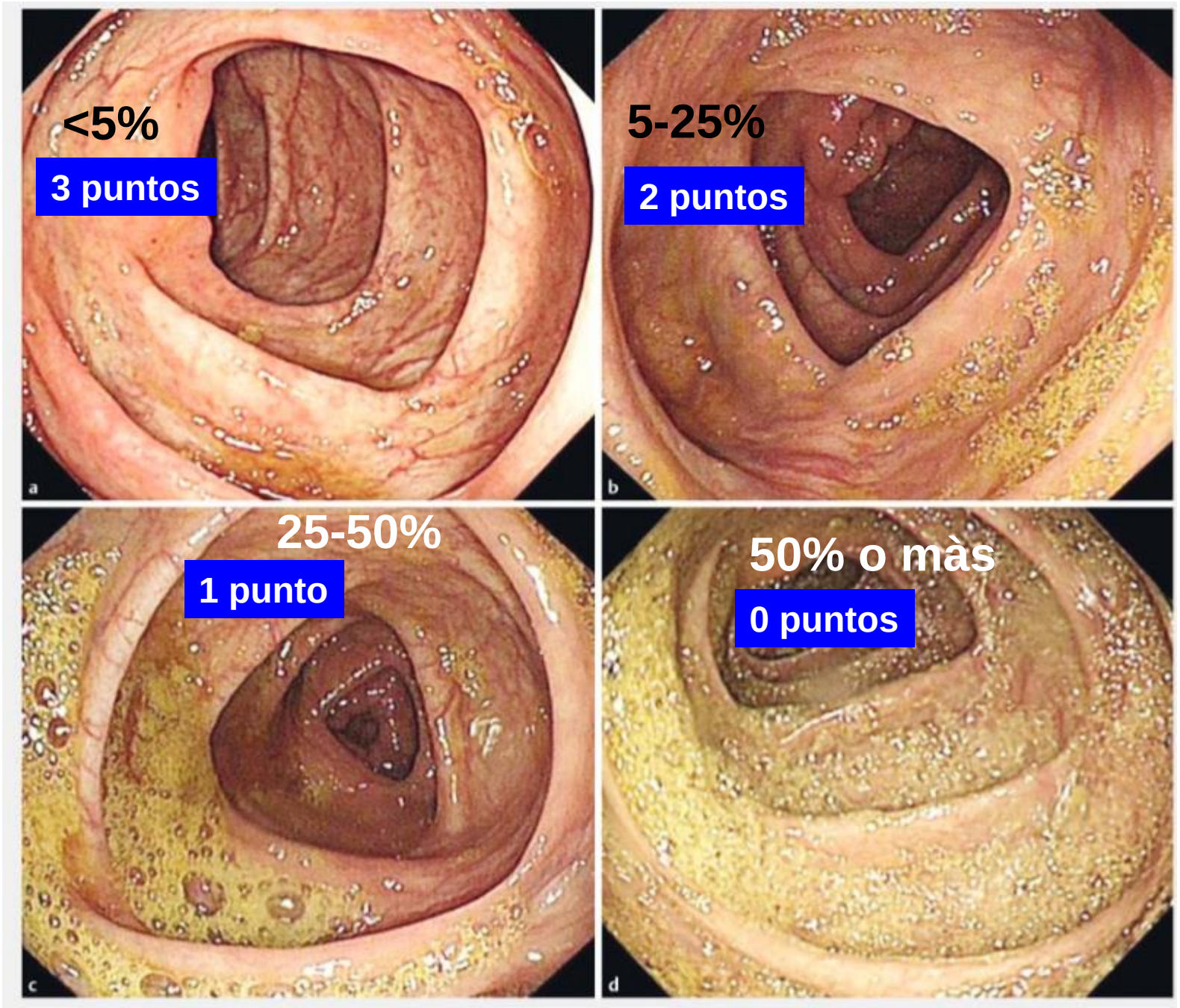
©

Maestro del colon izquierdo!!!

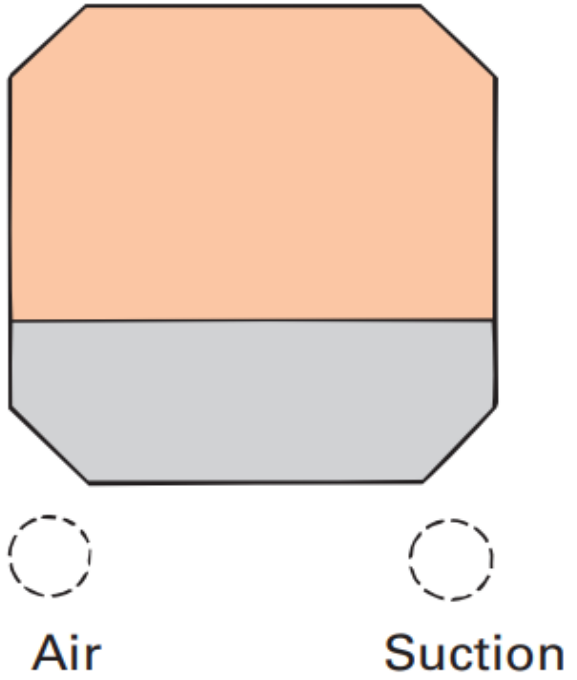
“If preparation and residual bile salts result in excessive bubbles, introducing antibubble silicone emulsion will remove them, as during gastroscopy”

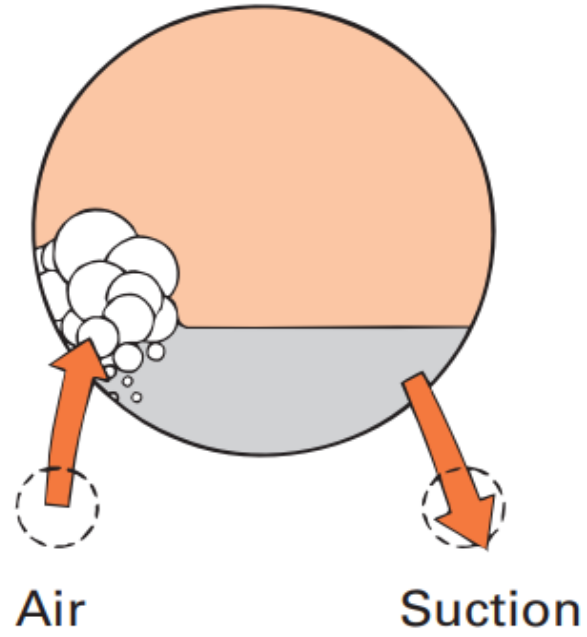
Billiams CB 2003





Zhang S, et al. Endoscopy 2018;50:412-422.

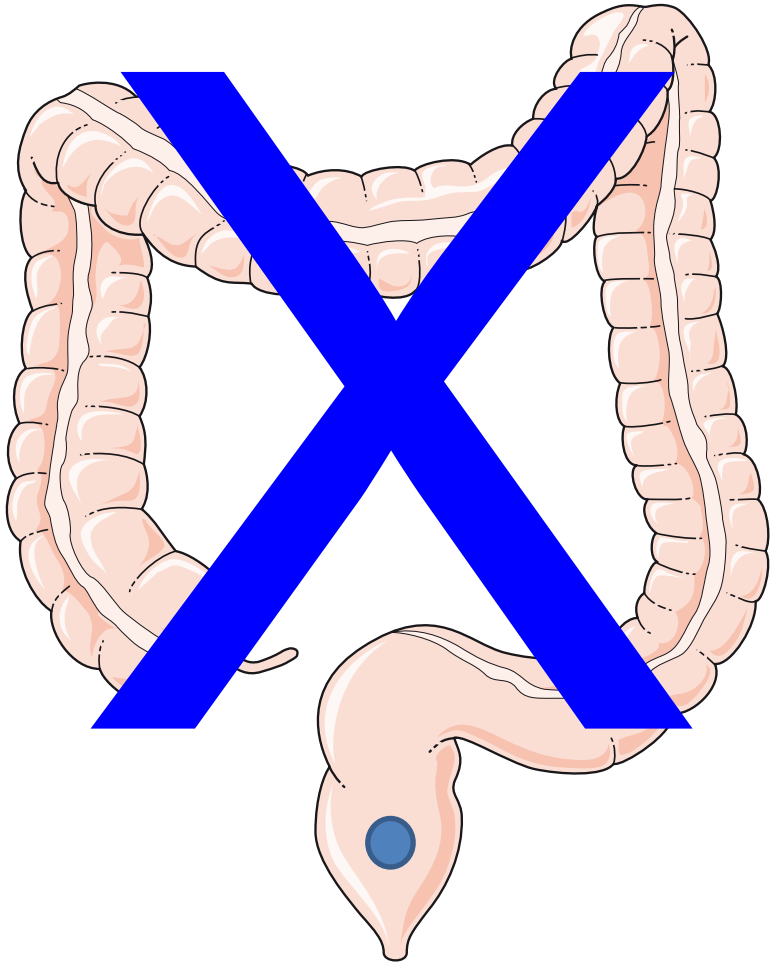




Cotton PB, Williams C. Practical Gastrointestinal Endoscopy Wiley &Son 2014


Simeticona?
OTERO, BOGOTA COLOMBIA

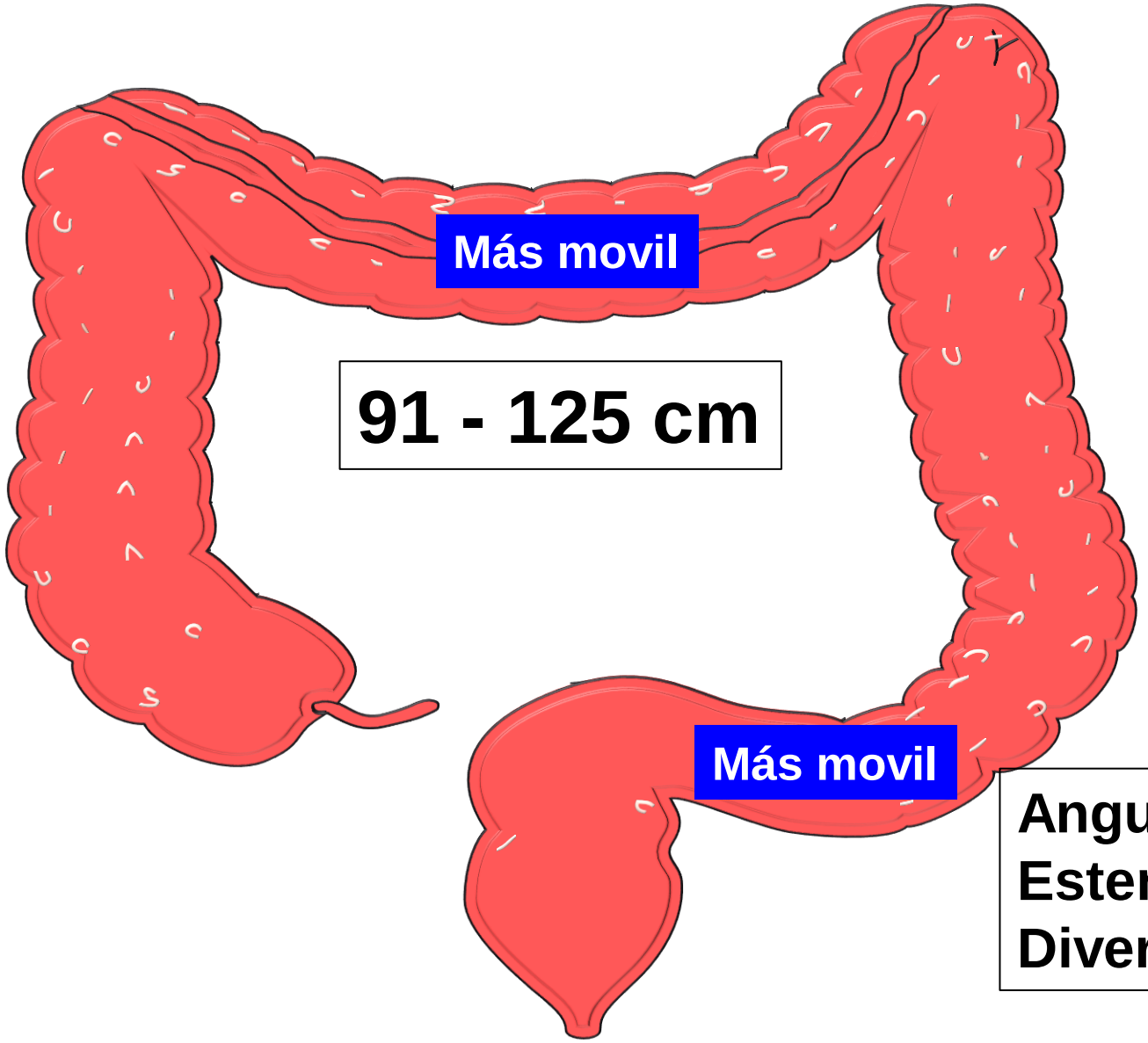
El factor más desafiante para llegar al ciego es la anatomía del colon



Waye J, Gastrointest Endosc 2018;87:621-4

No basta con mirar hacía adelante

Causas frecuentes de colonoscopia incompleta



Angulaciones
Estenosis
Diverticulosis

Roberts-Thomson IC, J Gastroenterol and Hepatol; 2009:180–184

Principal meta tècnica de la colonoscopia

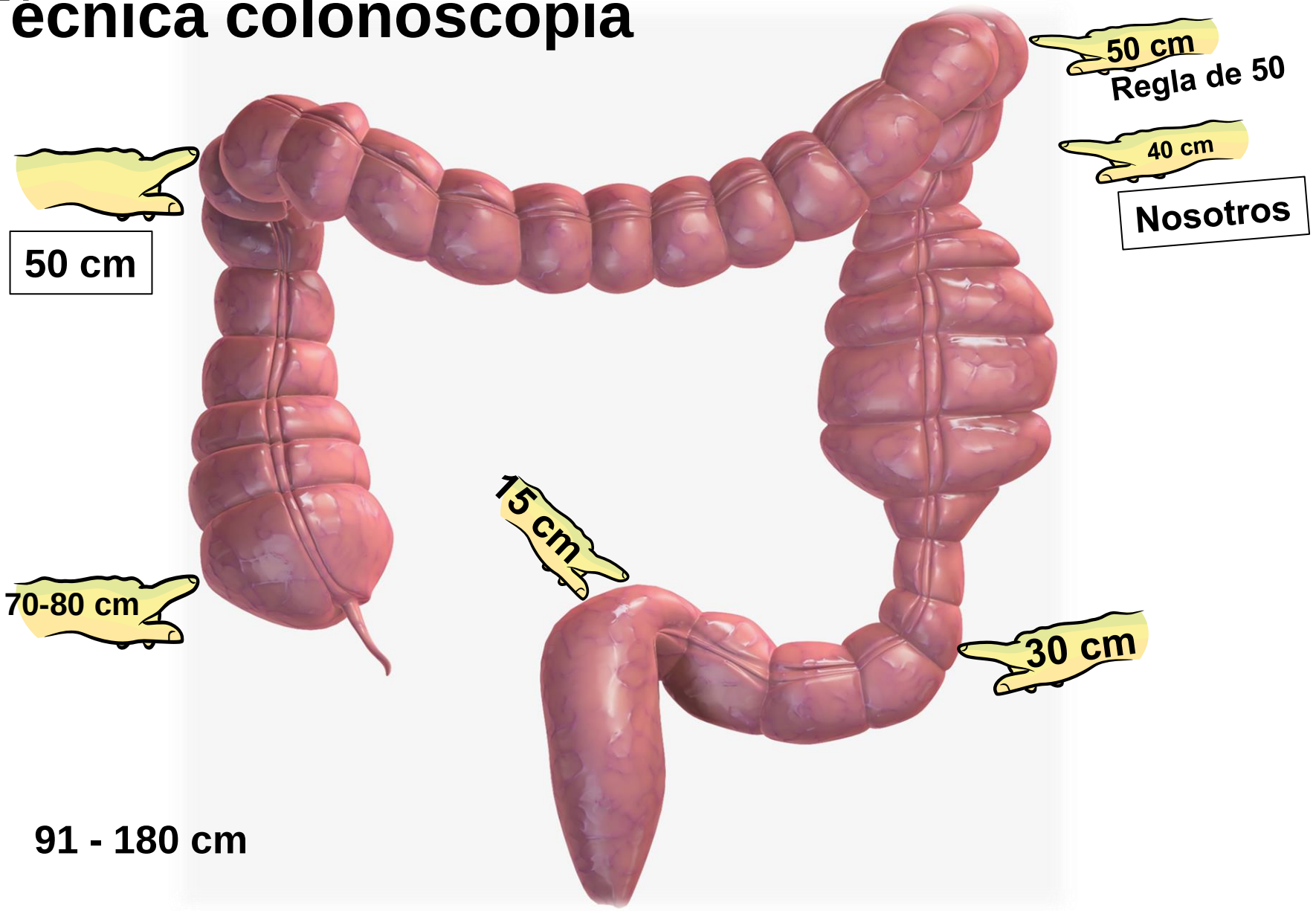
Sin moletias para El paciente

Palcanzar el ciego con mìnima cantidad de equipo

Rectificando (acortando)
Torque + retirada
“Trae” colon hacía colonoscopio
Telescopando

Shinya H, Surg Clin N Am 1982;62:869-76

Técnica colonoscopia



Roberts-Thompson IC, J Gastroenterol and Hepatol; 2009;24:180–4

Colonoscopia

Maniobra más importante

Rectificar unión recto-sigmoidea

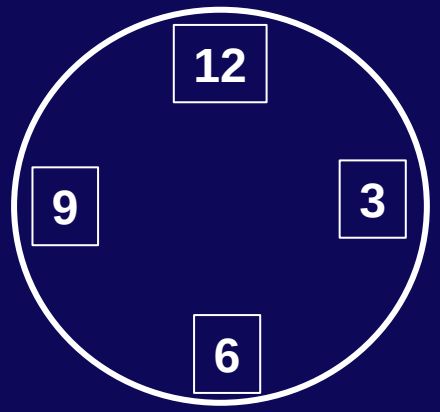
Shinya H, Surg Clin North Am 1982;5:869-76

Rectificación unión recto-sigmoidea

Torque a la derecha-rectificación

Decúbito Lateral Izquierdo

Posterior



Izquierda

Derecha

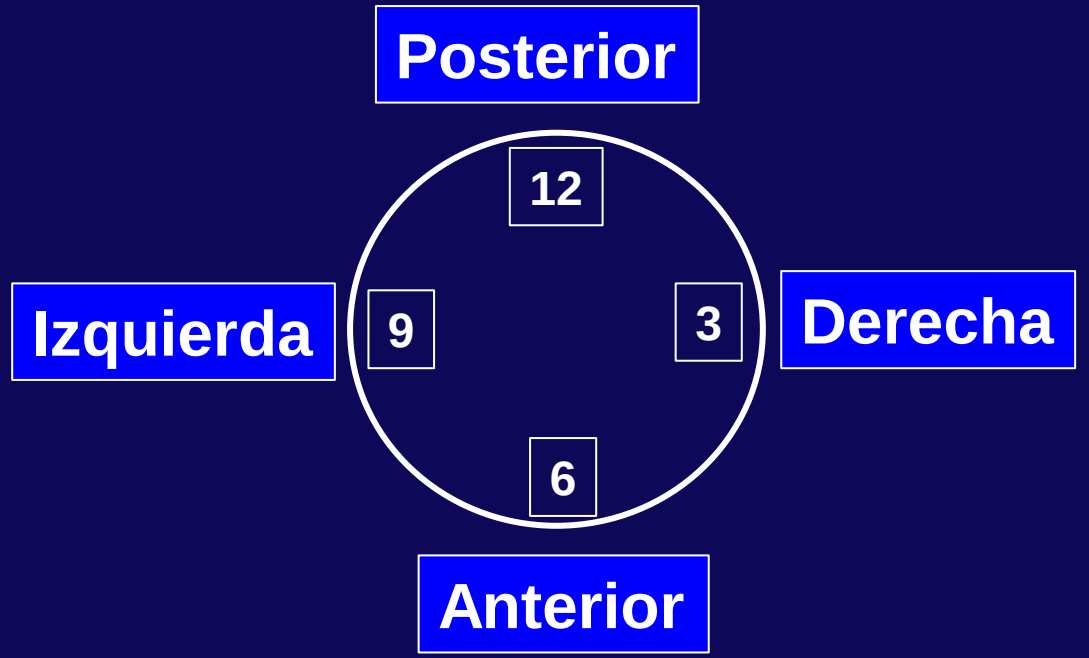
Anterior

Enganchar
Unión RS,
Rotar a la derecha
Retirar

Rectificación unión recto-sigmoidea

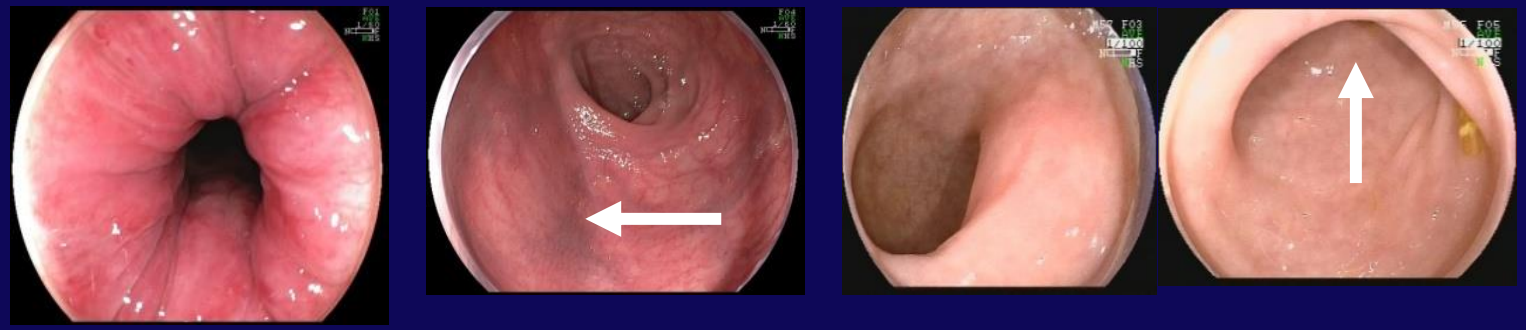
Torque a la derecha-rectificación

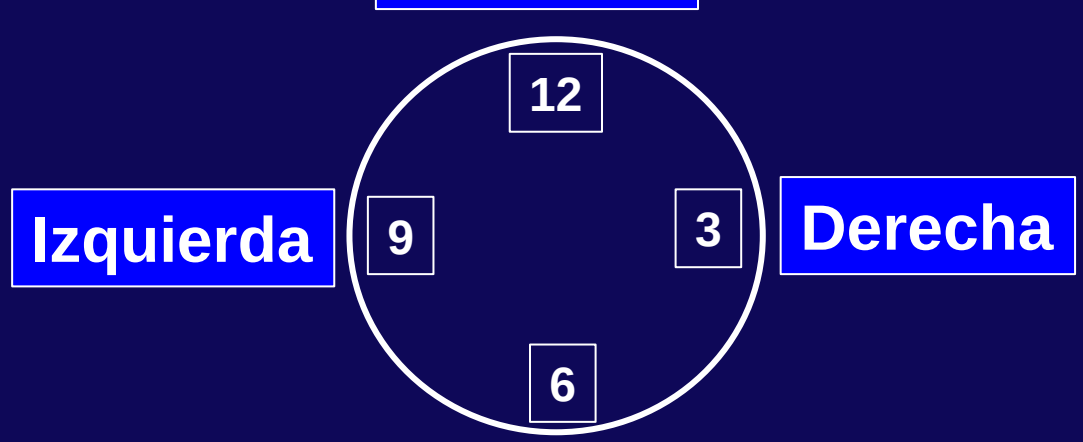
Decúbito Supino



Maniobra más importante: Rectificar unión recto-sigmoidea

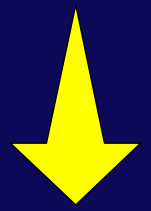
Decúbito Lateral Izquierdo





El sigmoides es el Segmento decisivo

**“Vísteme despacio
Que estoy de prisa”**

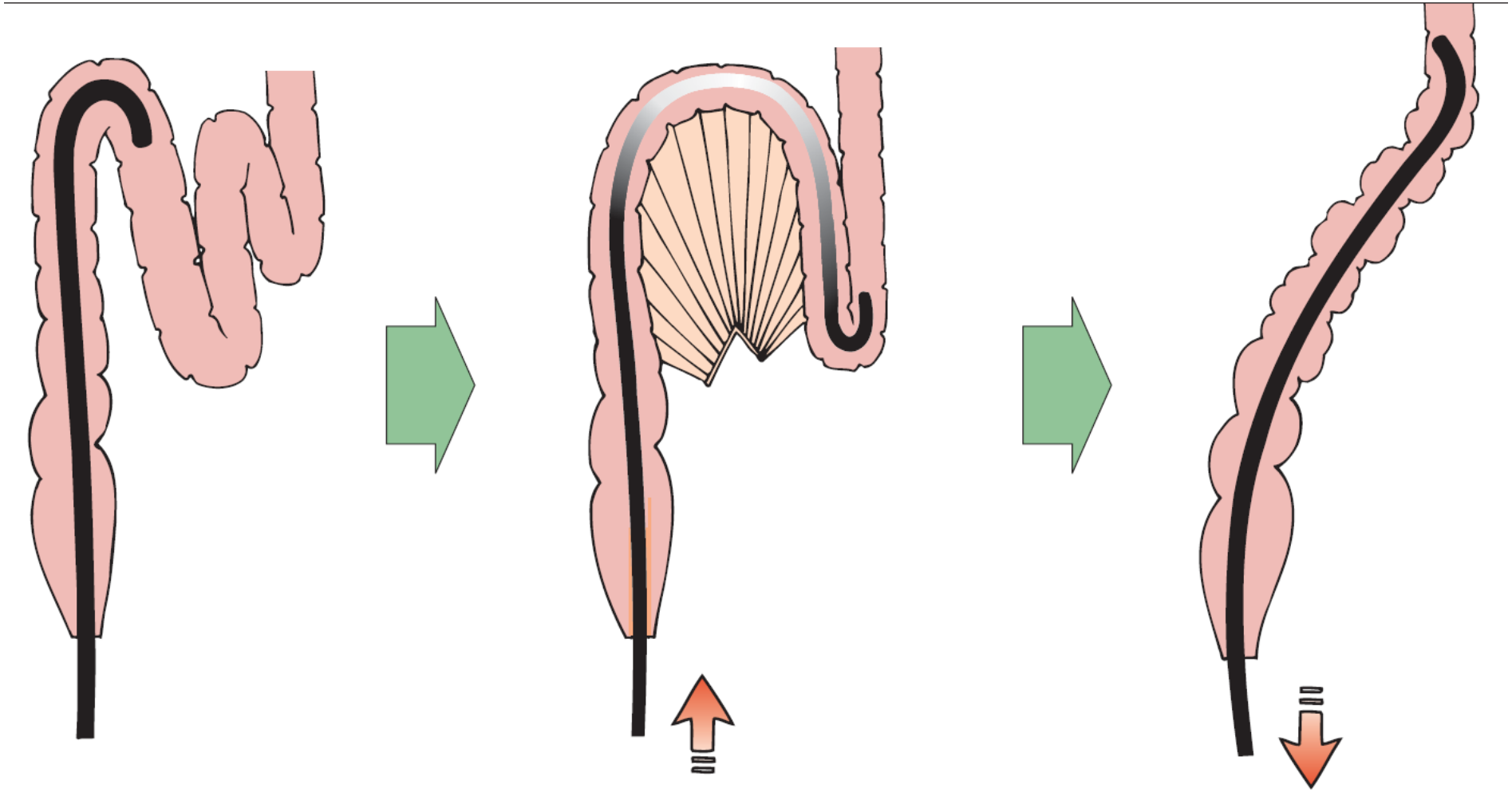


Entre más lento en Sigmoides Más Fácil y rápido se llega al ciego

La dificultad de la Colonoscopia está en el Sigmoides

Consume 2/3 del tiempo total
Segmento más difícil
Principal sitio de dolor
Todas asas deben reducirse
Acortamiento con rotación derecha y “Up”
El colonoscopio debe permanecer recto

Maestro del colon izquierdo!!!

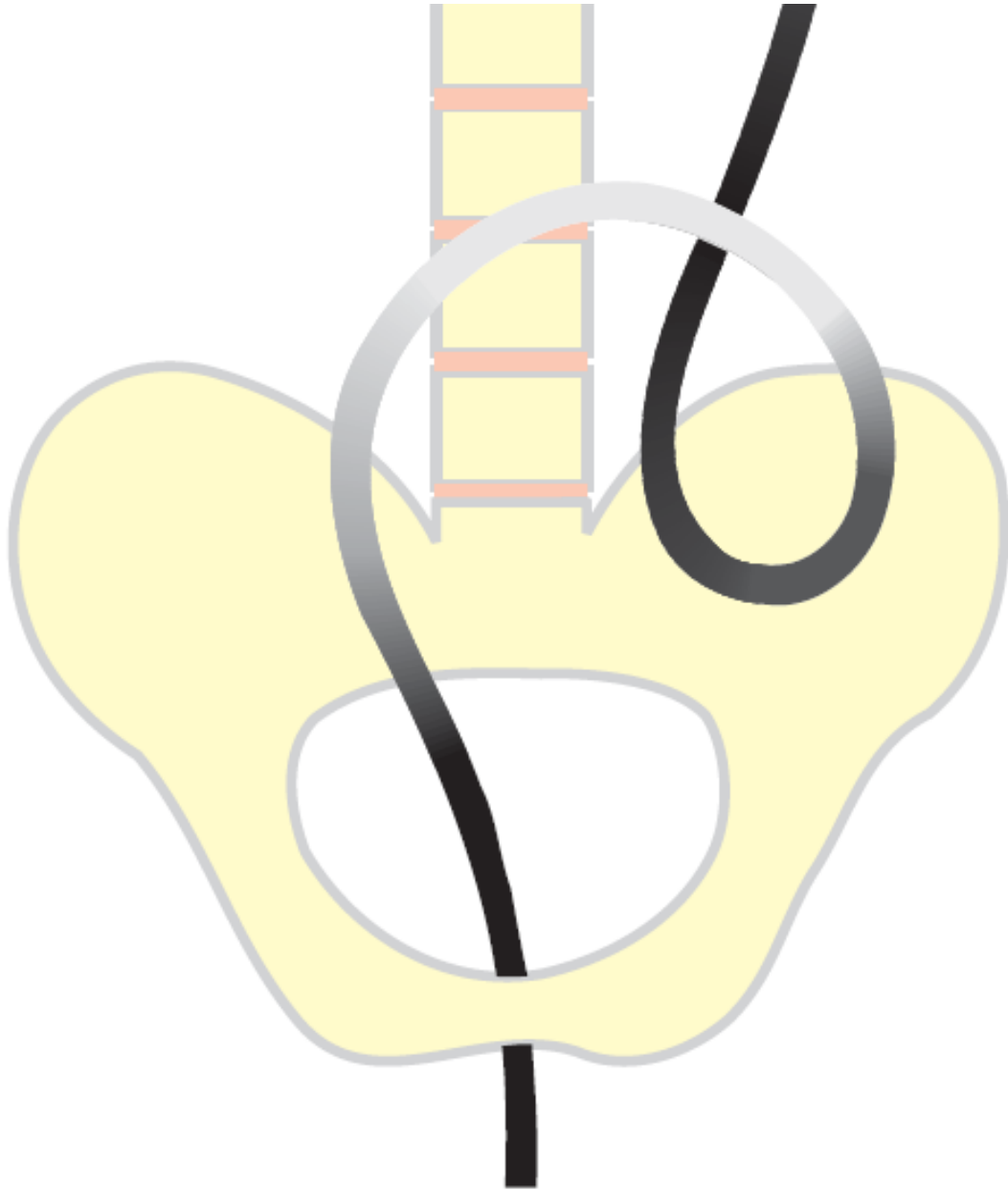


Cuando se avanza
Muy rápido

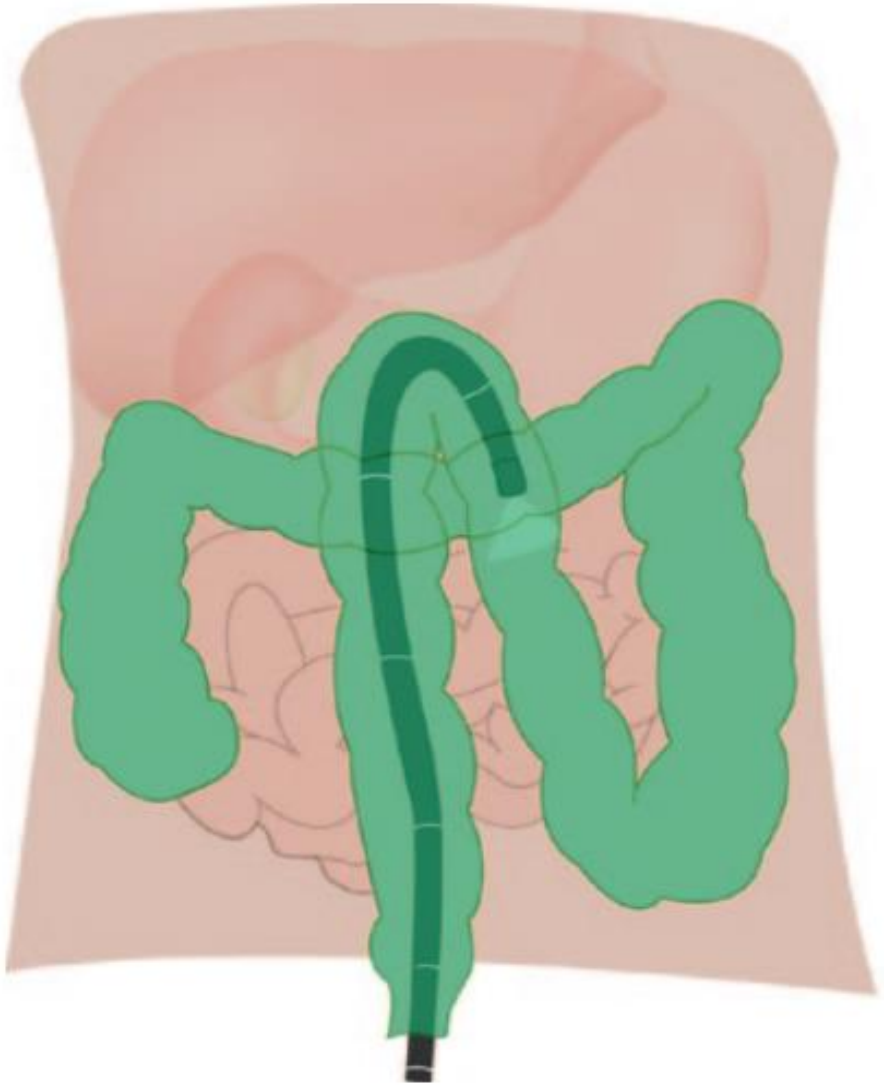
Mucho aire
Nunca
40-70cm

Rectificar Rectificar
Mínimo aire
30-35 cm!

William CB, En Waye J, Rex DK, Colonoscopy Principles and Practice 2003:319-38



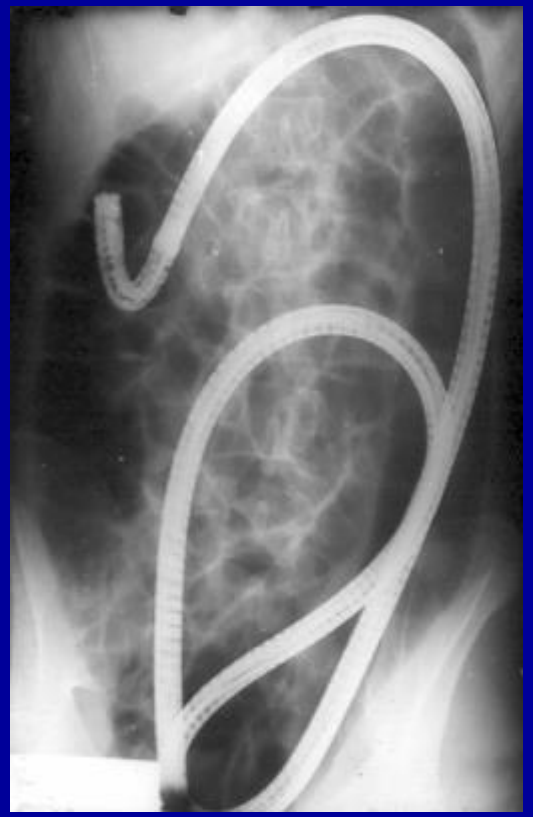
Asa en N

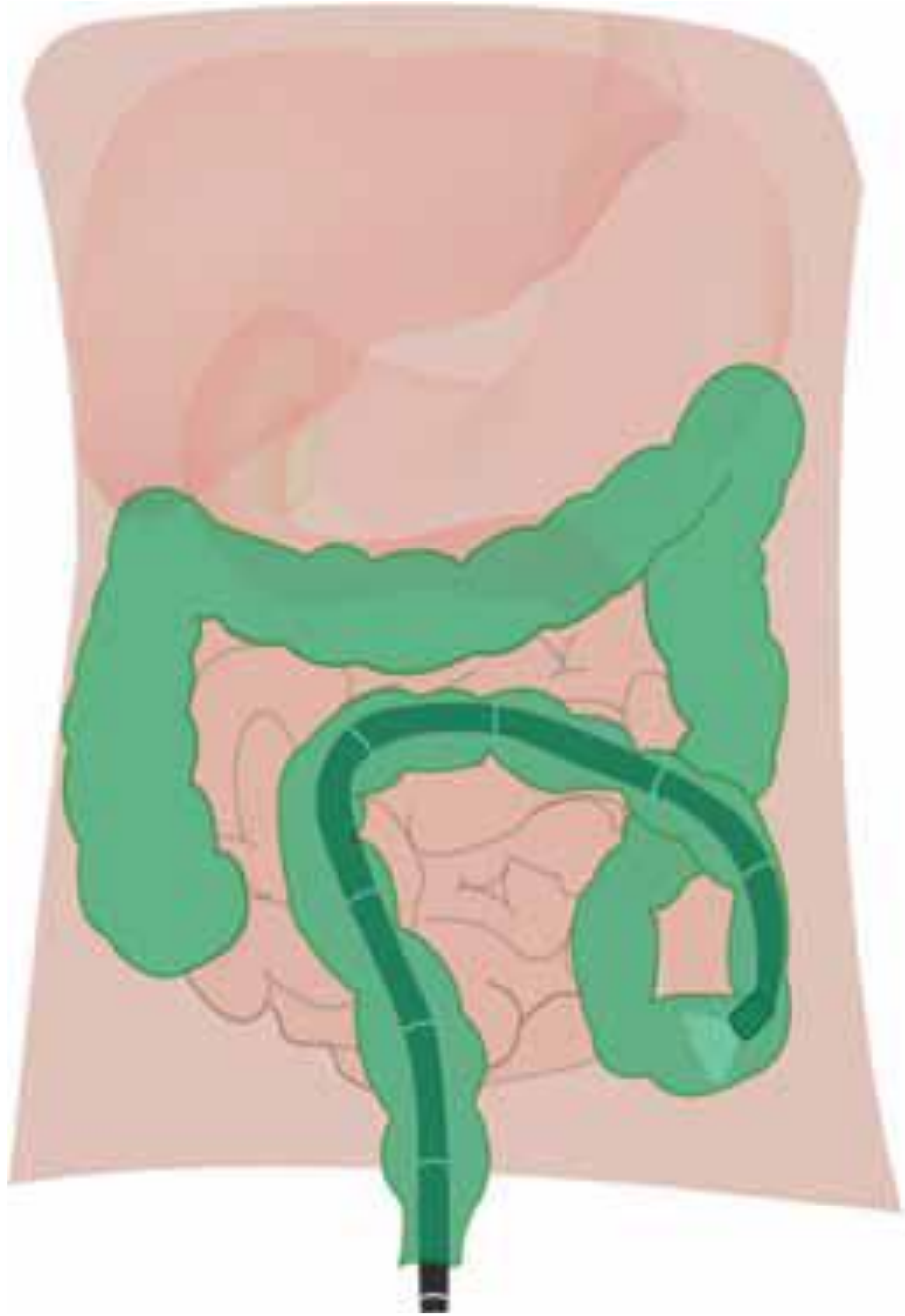


Salir con torque
A la derecha

Bourke MJ, Rex D, Am J Gastroenterol 2012;107:1467-72

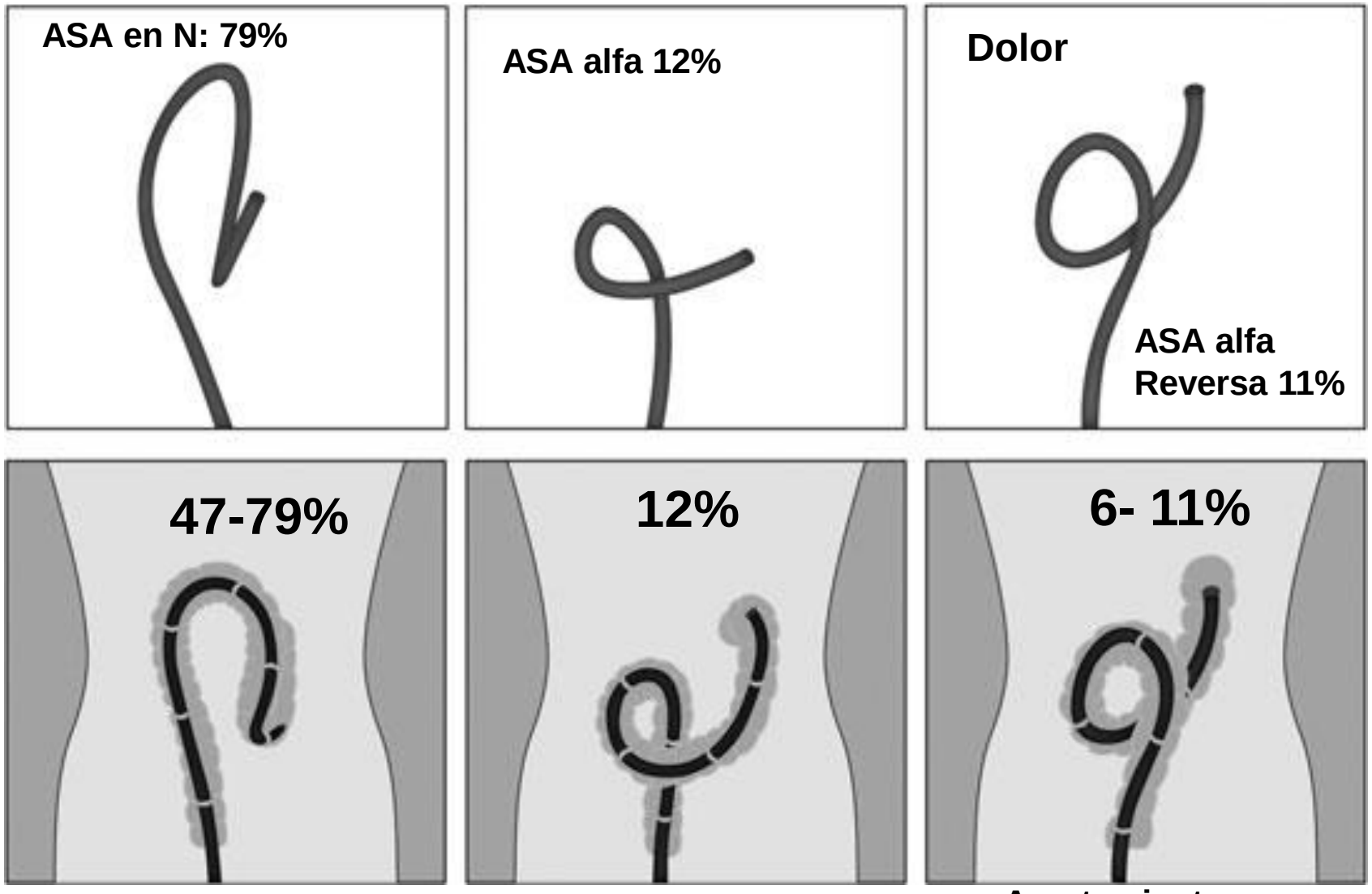
“Lo que mal comienza Mal termina”





El sigmoides se puede estirar
Tanto como 80 cm!
Con rotaciòn horaria (Torque) y
Reitrada 25-30 cm

Sigmoides



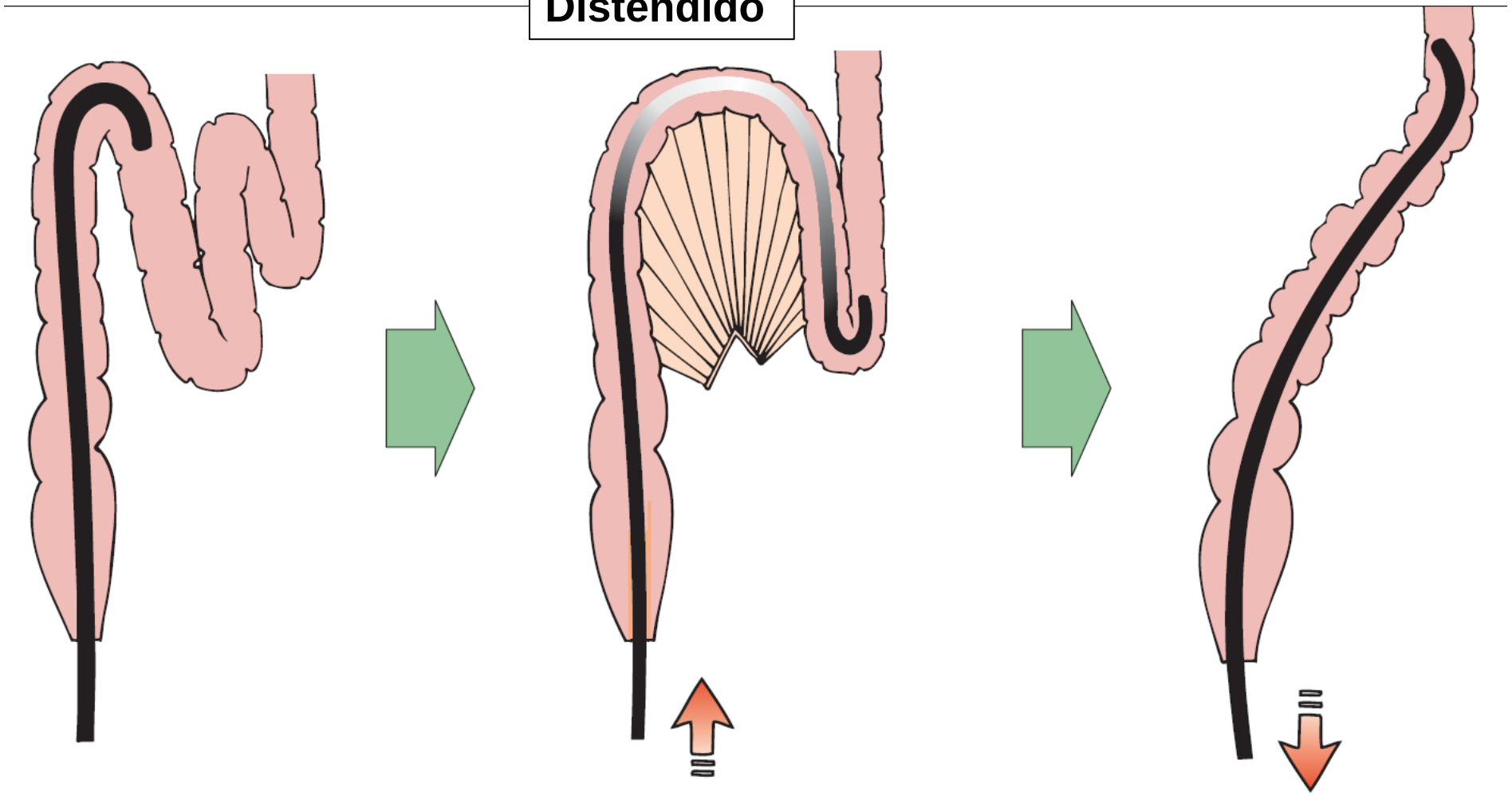
Acortamiento
Succión

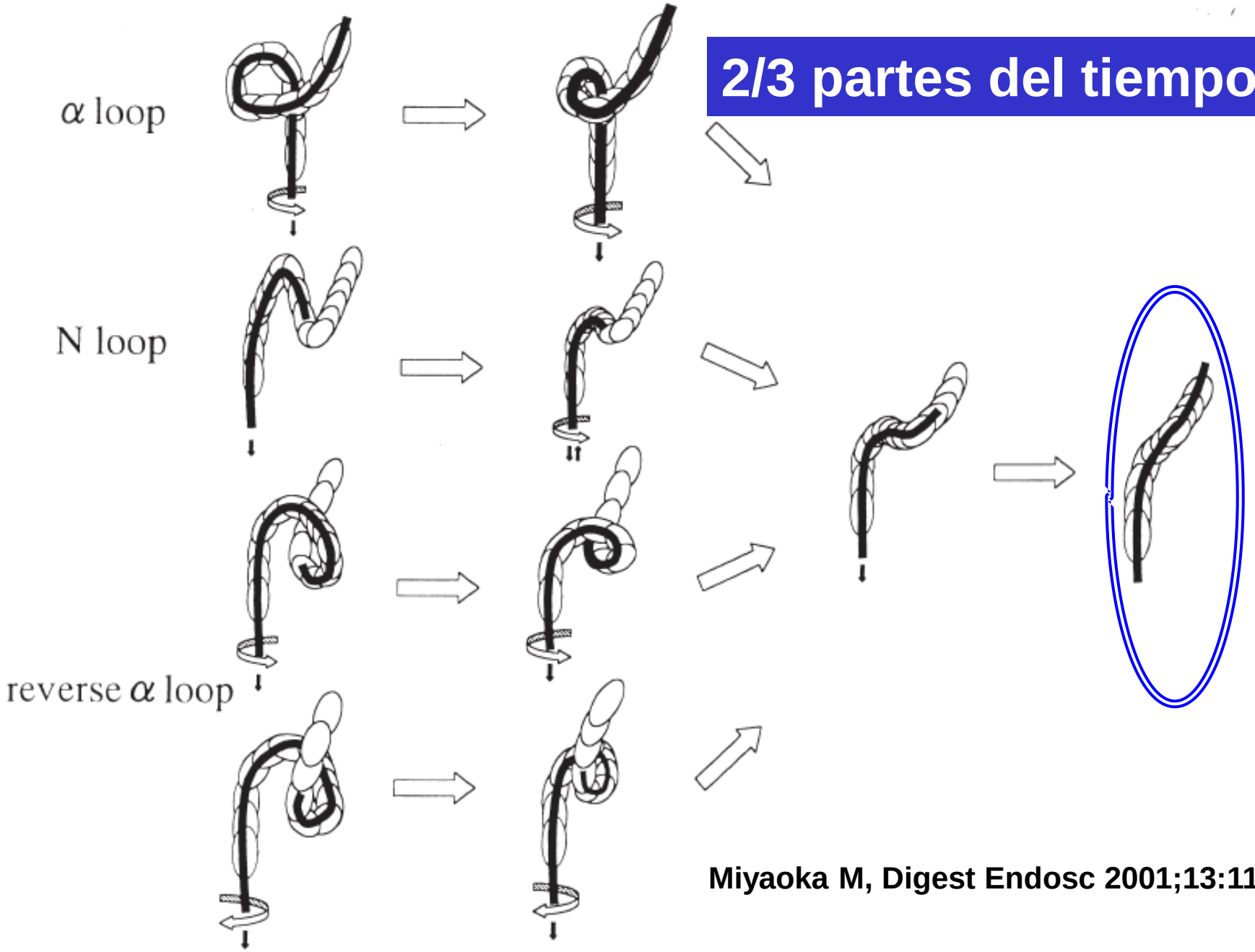
Acortamiento
Torque a la derecha
200-300 ml

Acortamiento
Torque a la izquierda

Shah SG, Gastrointest Endosc 2000;52:1-8
Sato K, Gastrointest Endosc 2008;67:AB77

Distendido





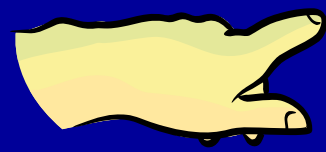
2/3 partes del tiempo

Miyaoka M, Digest Endosc 2001;13:111-5

Sigmoides difícil

Angulo recto-sigmoideo muy agudo
Cirugía abdomino-pélvica
Histerectomía
Enfermedad diverticular severa
Mujeres jóvenes

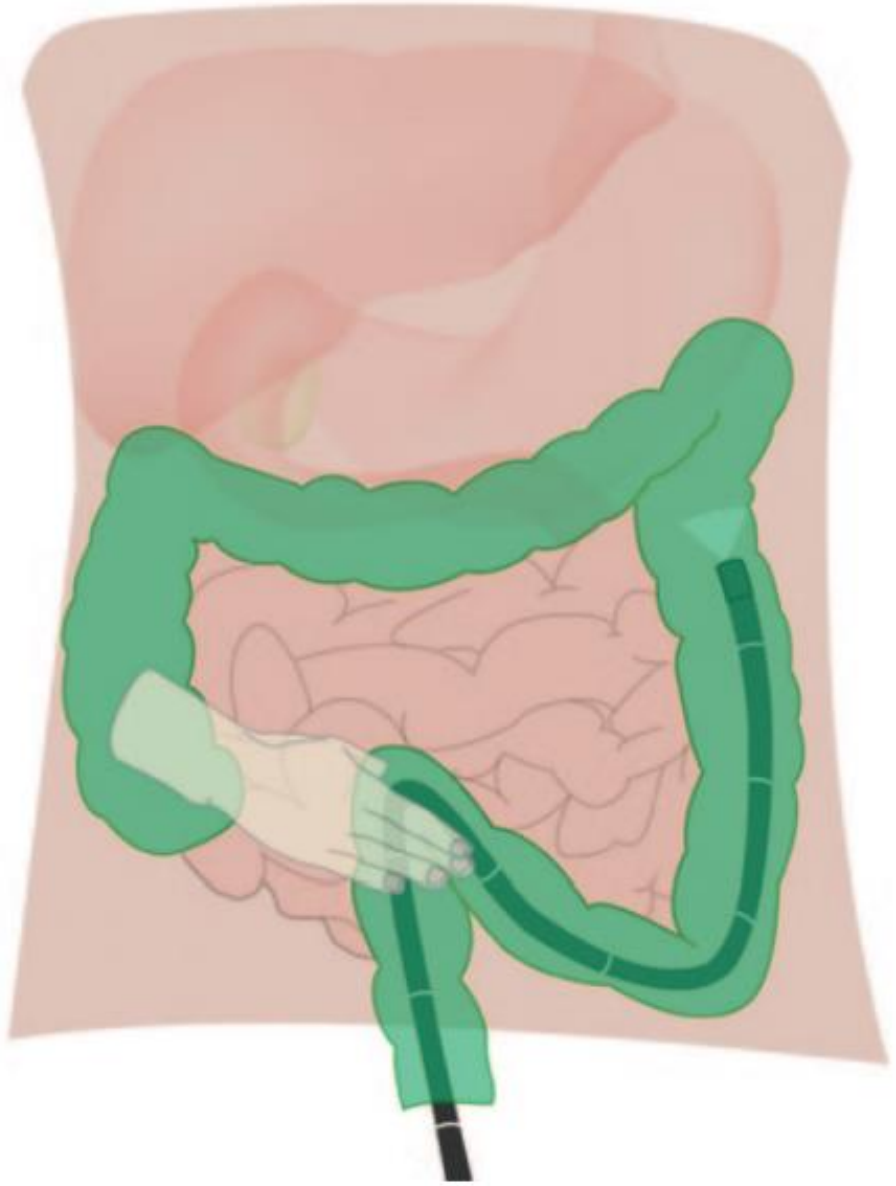
Utilizar un equipo más delgado
Endoscopio alto



180°

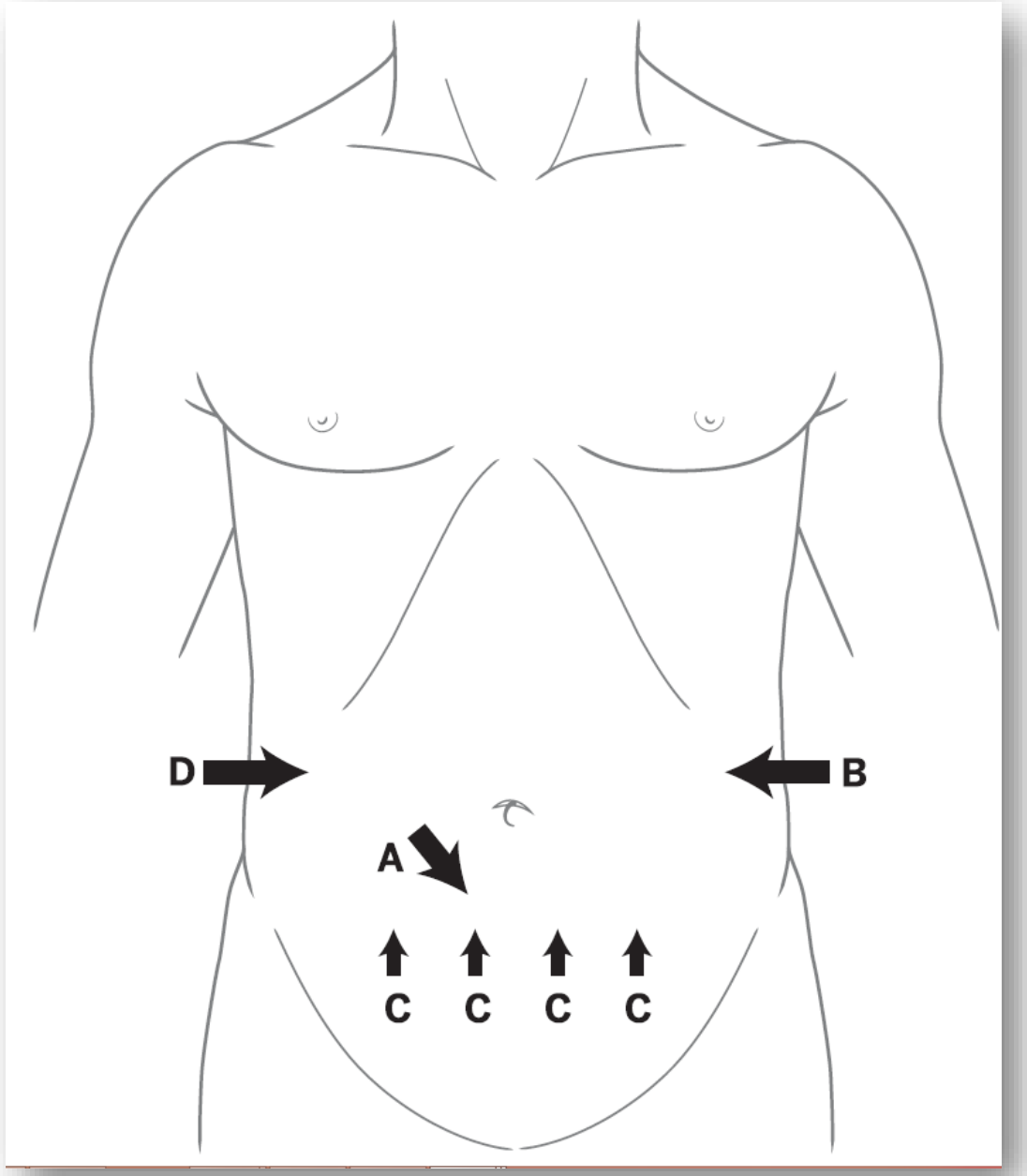
Bourke MJ, Rex DK, Am J Gastroenterol 2012;107:1467-72
Rex DK, Am J Gastroenterol 2008;67:938-44

Compresión profiláctica



Bourke MJ, Rex D, Am J Gastroenterol 2012;107:1467-72

Eficacia
37%



Rex DK. Am J Gastroenterol 2020 epub ahead Dic 10
Shah Gastrointest Endosc 2000;52:1-8

Colonoscopia

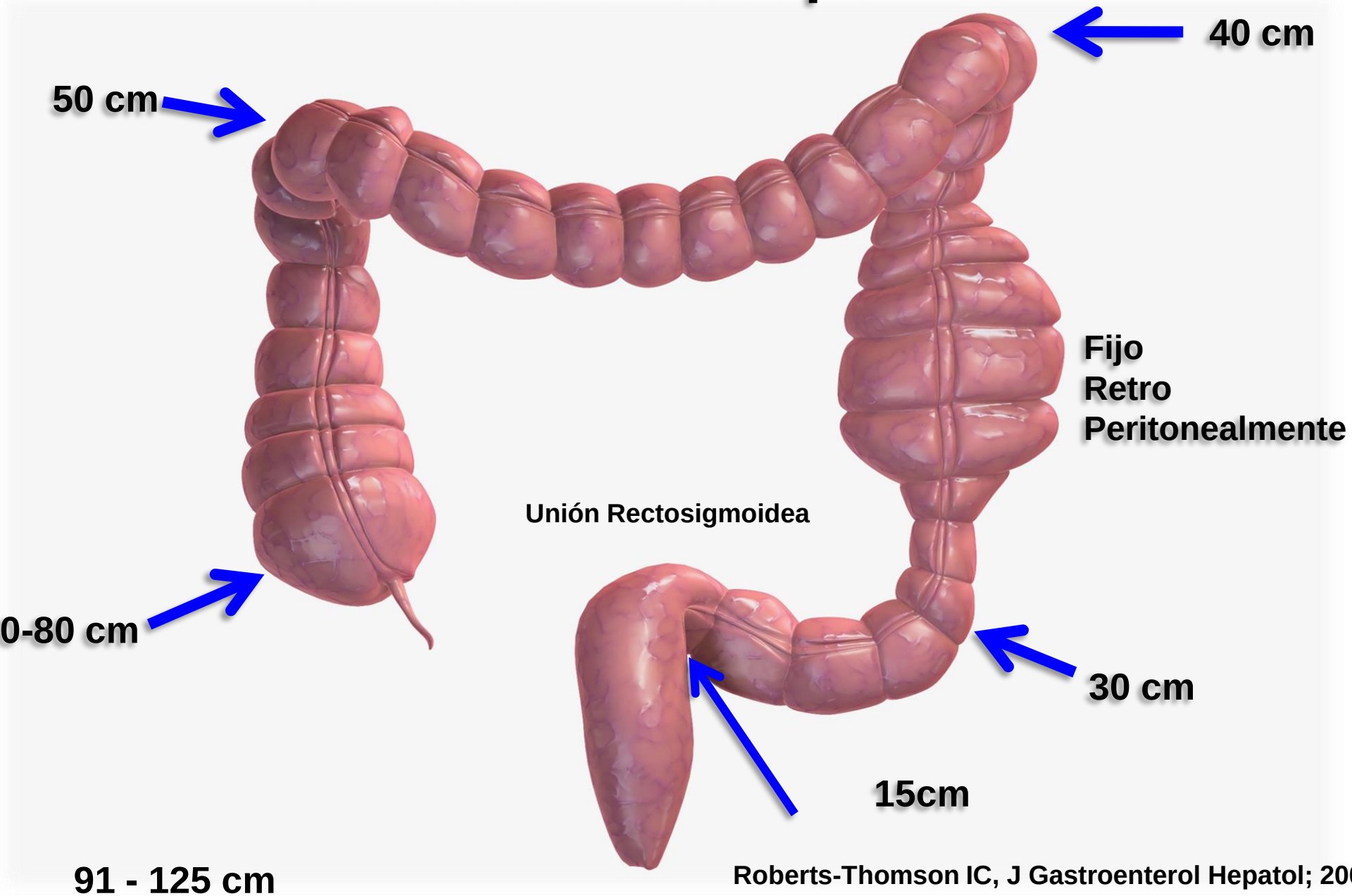
Con cada avance
Siempre

Asas en el sigmoides

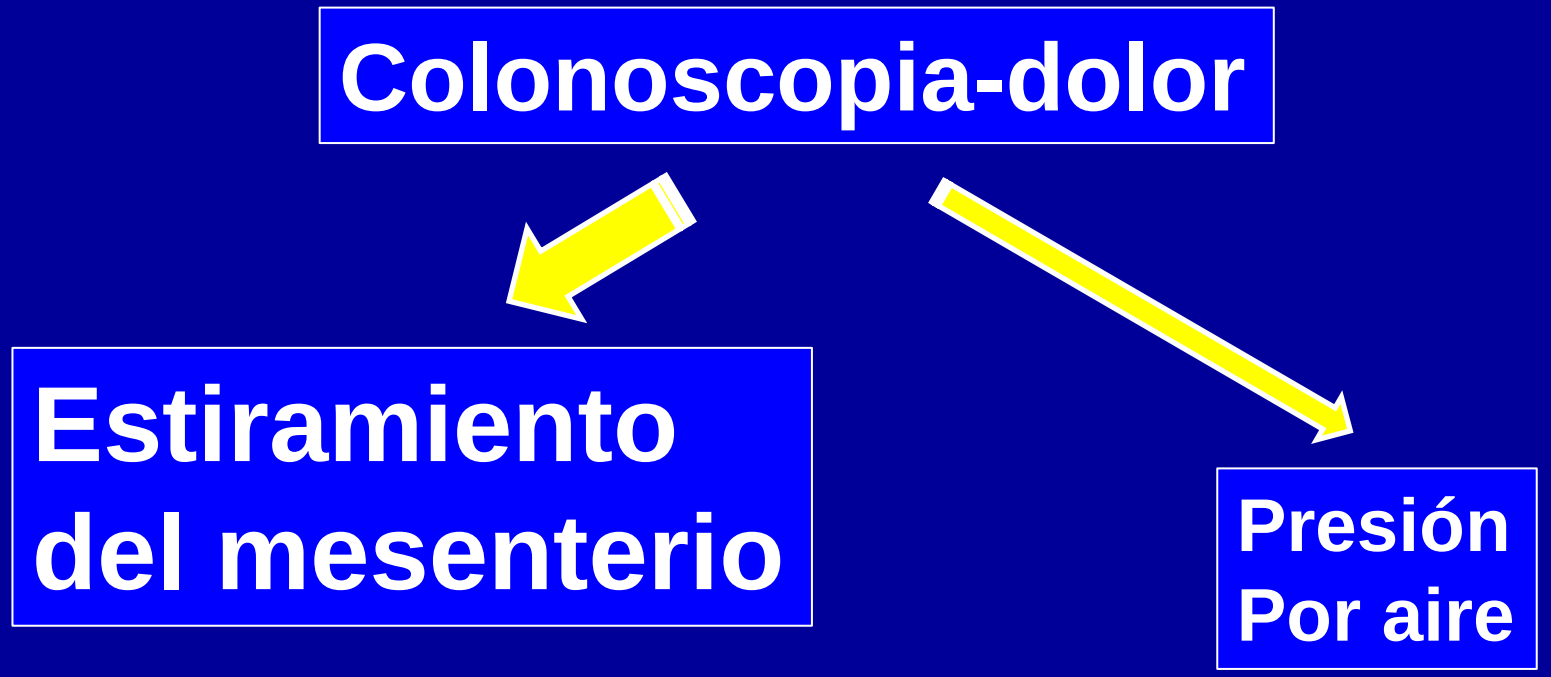
Rotación y
Rectificación
Constante
Después de
cada avance

Waye JD, Am J Gastroenterol 2004;

Técnica colonoscopía

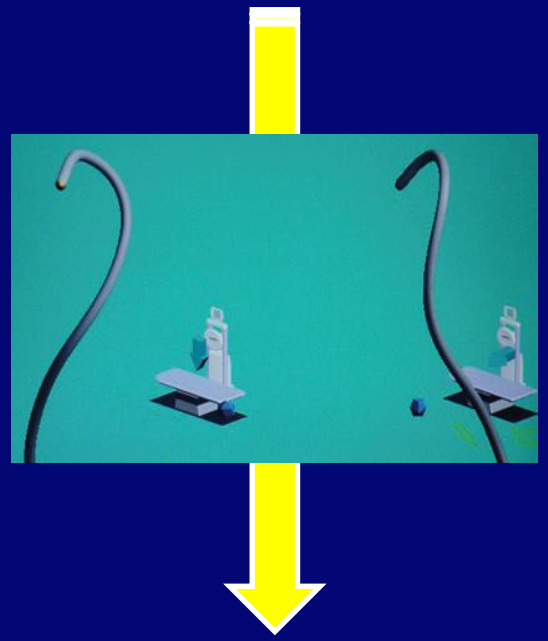


Roberts-Thomson IC, J Gastroenterol Hepatol; 2009:180-4



Waye JD, Endoscopy 2002;34:489-91

Colonoscopia-dolor



Punta en el sigmoides

Waye JD, Am J Gastroenterol 2004;

Colonoscopio rectificado

Avance es 1 a 1

Witte TN, Can J Gastroenterol 2007;21:487-90

No hay avance

Avanzar por deslizamiento 5-10 cm
Enganchar con Up + torque a la derecha y retirar
Si no hay avance, devolverse

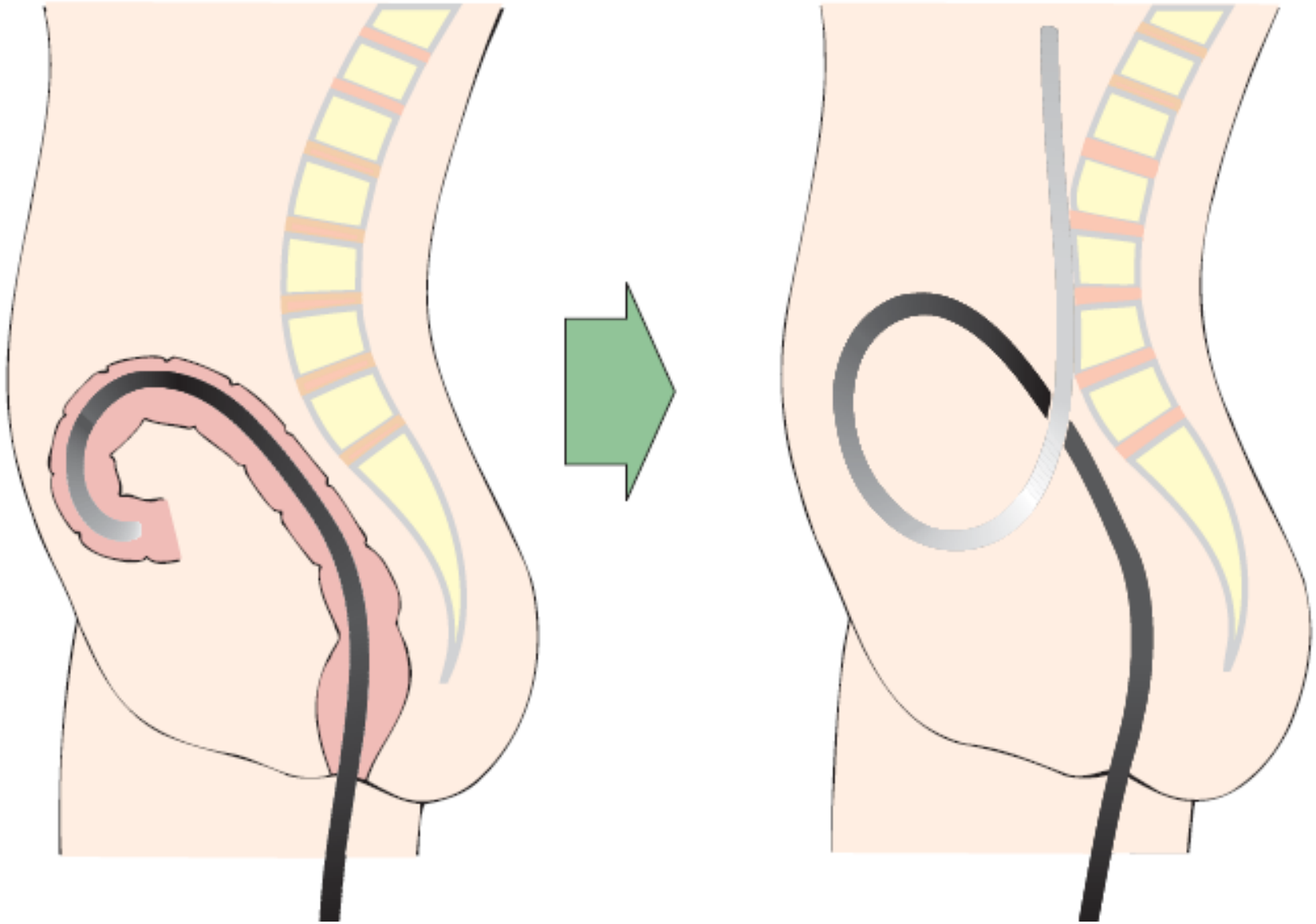
Bourke M. Endoscopy Handbook. Gastroenterological Society of Australia, 2016
Otero W. Colonoscopy Handbook 2020 en preparación

Sigmoides es una espiral *muy* importante en todo momento durante la colonoscopia

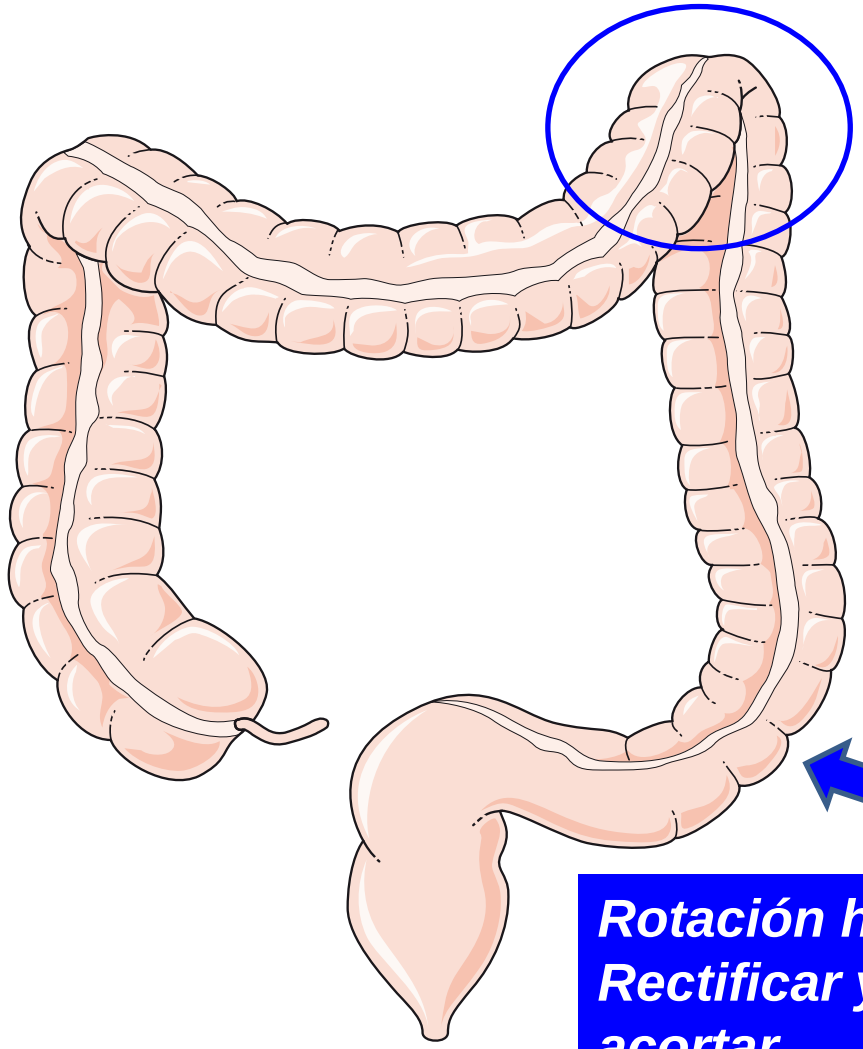
Siempre que Se avanza

Estiramiento mesenterio Del sigmoides

Waye JD, Gastrointest Endosc 2018;87:621-4.



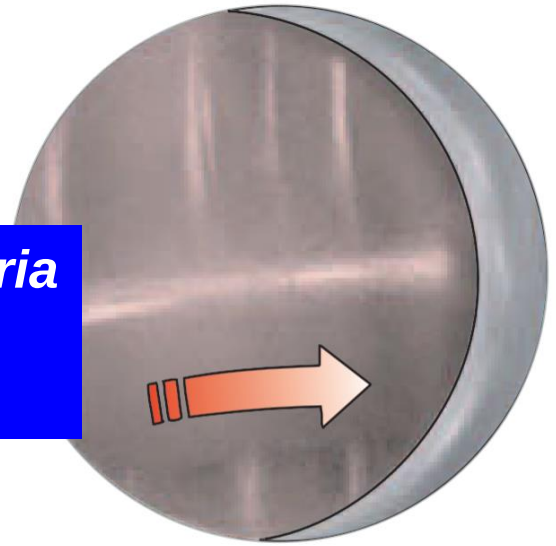
Williams C, En “Colonoscopy, Waye J, ed, 2003



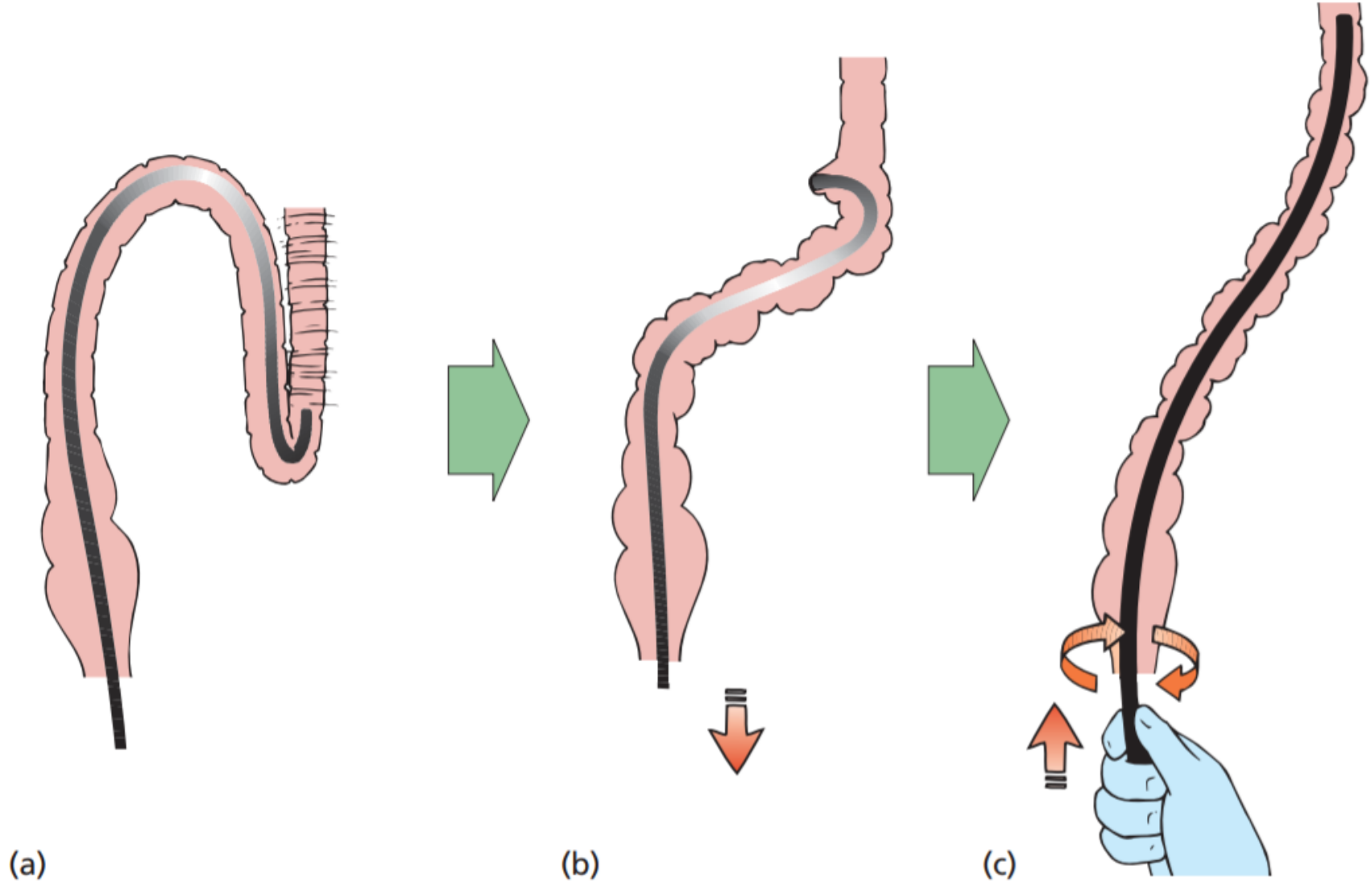
Punto para Parar

Revisar si hay asas Retirar y rectificar El colonoscopio

Colonoscopio In

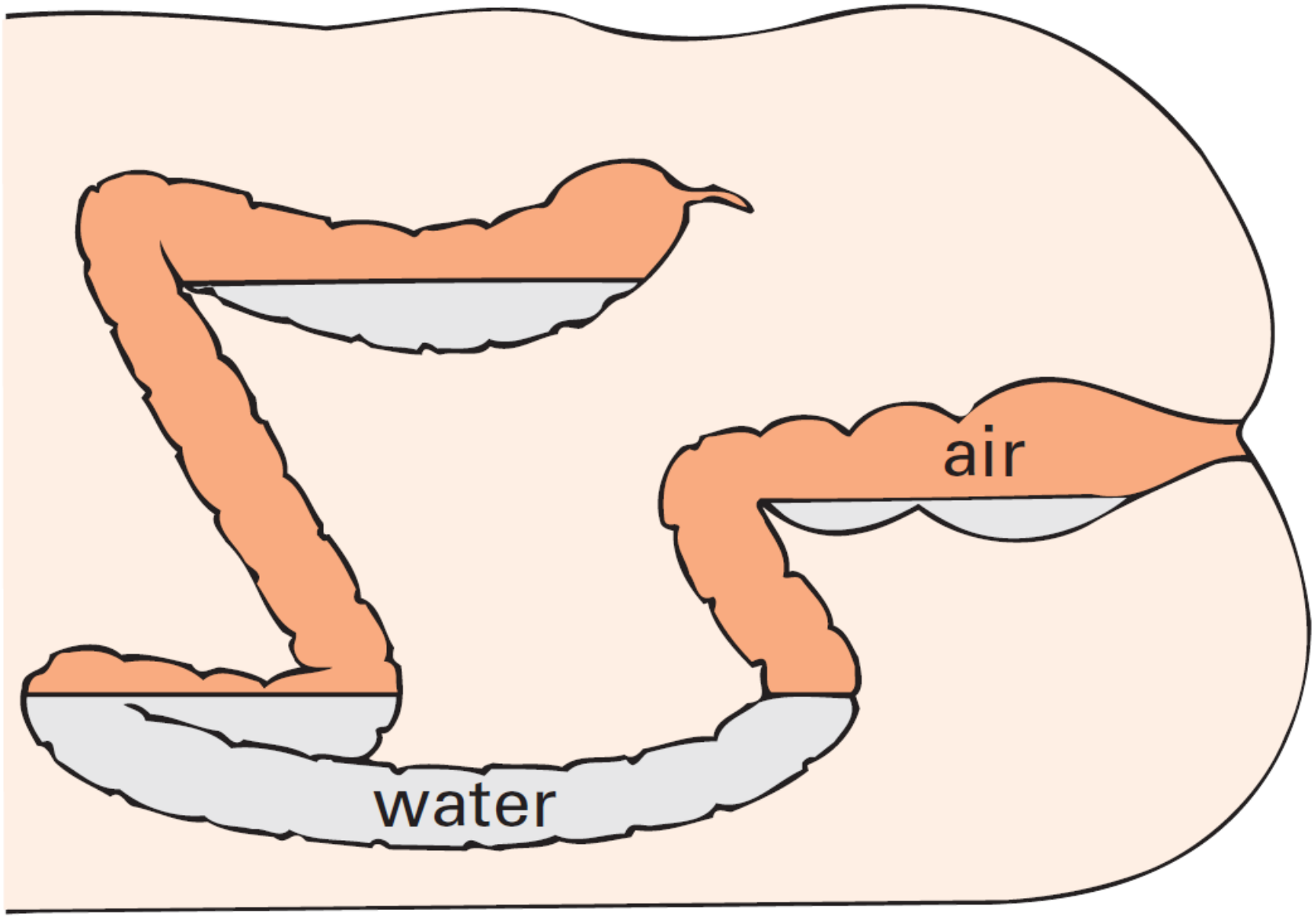


Rotación horaria Rectificar y acortar

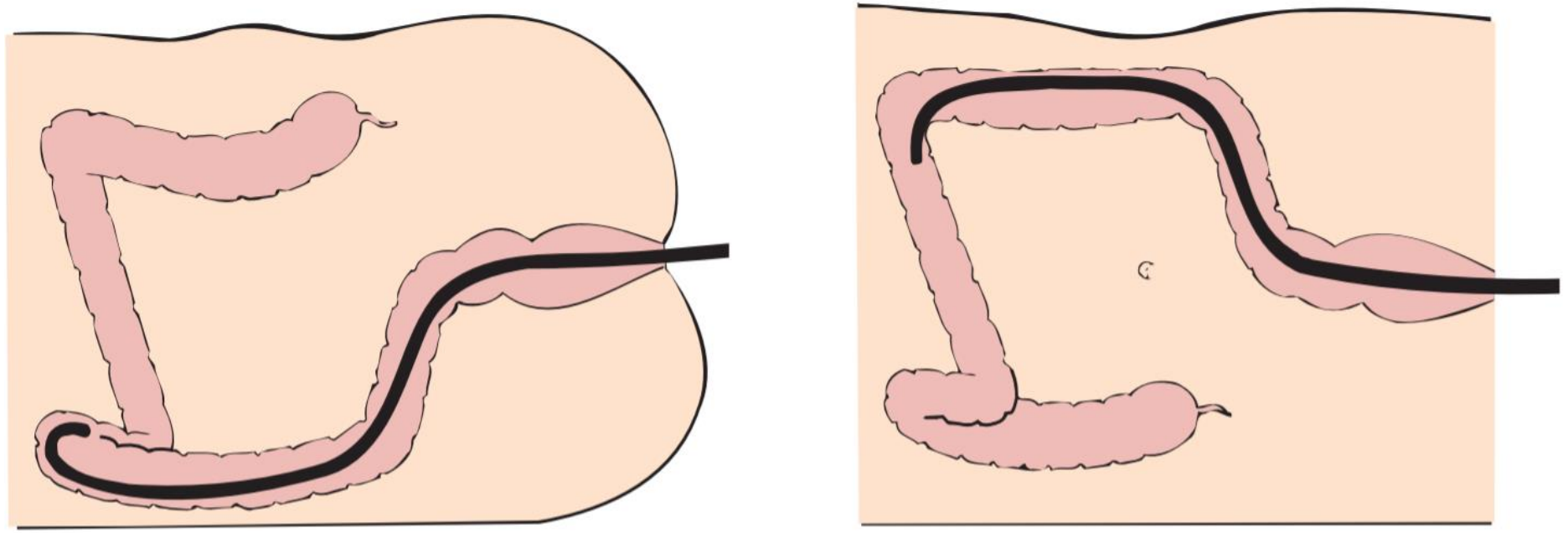


Rotar a la derecha
Y Avanzar

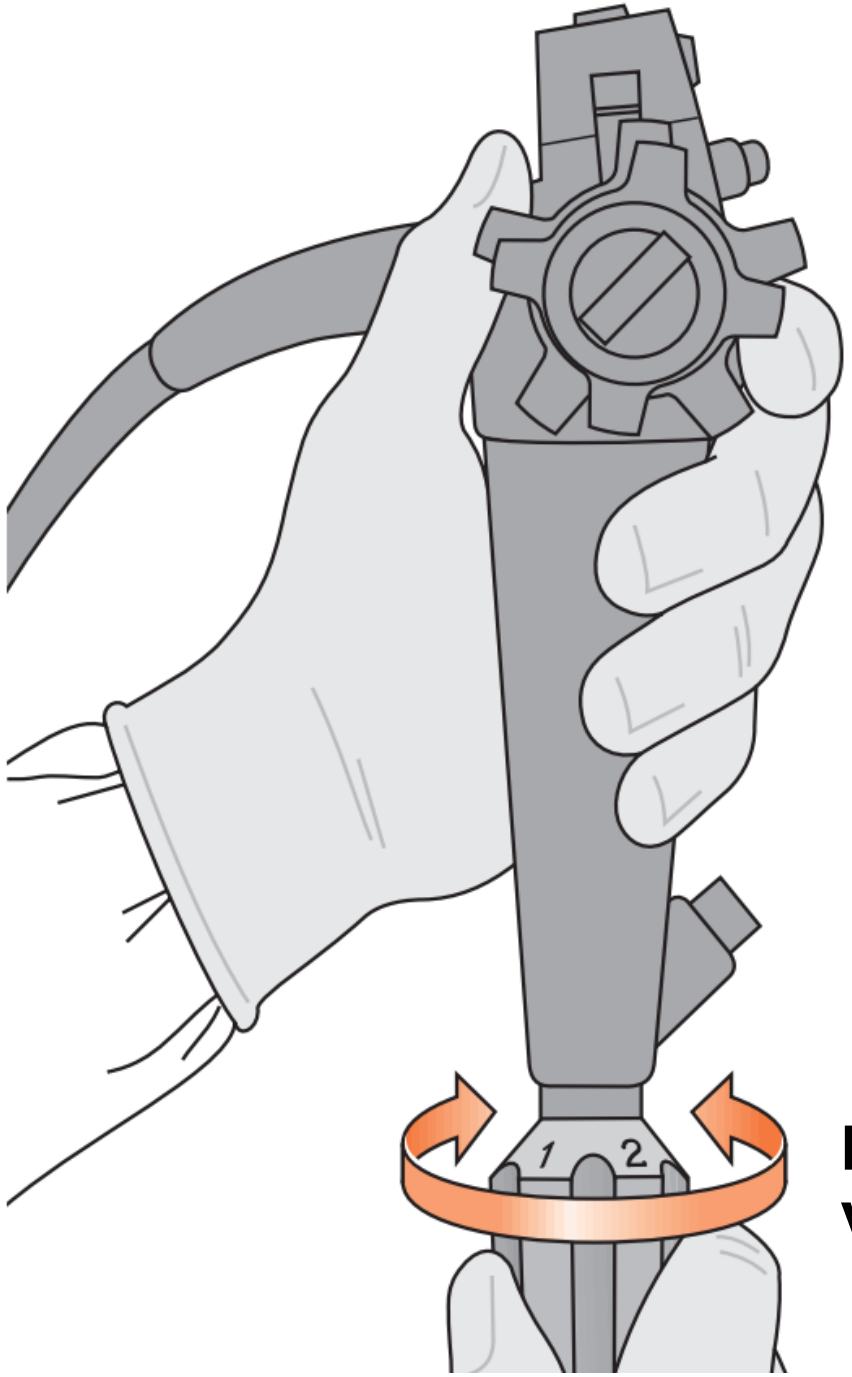
William CB, En Waye J, Rex DK, Colonoscopy Principles and Practice 2003:319-38



Cotton PB, Williams C. Practical Gastrointestinal Endoscopy Wiley &Son 2014



Williams CB, En Waye J, Rex DK, Colonoscopy Principles and Practice 2003:319-38



Rigidez Variable

Xie *et al. BMC Gastroenterology* 2012, **12**:151
http://www.biomedcentral.com/1471-230X/12/151

BMC Gastroenterology

RESEARCH ARTICLE Open Access

Does the variable-stiffness colonoscope makes colonoscopy easier? A meta-analysis of the efficacy of the variable stiffness colonoscope compared with the standard adult colonoscope

Qin Xie[1], Bin Chen[1], Liu Liu[1] and Huatian Gan[2*]

Tasa de intubación cecal

Study or Subgroup	VSC Events	VSC Total	SAC Events	SAC Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Al-Shurieki 2005	115	120	114	118	14.7%	0.99 [0.94, 1.04]
Brooker 2000	55	57	39	43	5.7%	1.06 [0.96, 1.18]
Horiuchi 2004	117	123	114	125	14.4%	1.04 [0.97, 1.12]
Lee 2007	108	111	102	110	13.1%	1.05 [0.99, 1.12]
Shumaker 2002	115	122	114	127	14.2%	1.05 [0.98, 1.13]
Sola-Vera 2011	52	56	49	54	6.4%	1.02 [0.91, 1.14]
Sorbi 2001	25	25	22	25	2.9%	1.13 [0.96, 1.33]
Yoshikawa 2002(1)	103	104	101	103	12.9%	1.01 [0.98, 1.04]
Yoshikawa 2002(2)	127	129	125	131	15.8%	1.03 [0.99, 1.08]
Total (95% CI)		**847**		**836**	**100.0%**	**1.03 [1.01, 1.06]**
Total events	817		780			

Heterogeneity: $Chi^2 = 6.53$, df = 8 (P = 0.59); $I^2 = 0\%$

Test for overall effect: Z = 2.92 (P = 0.004)

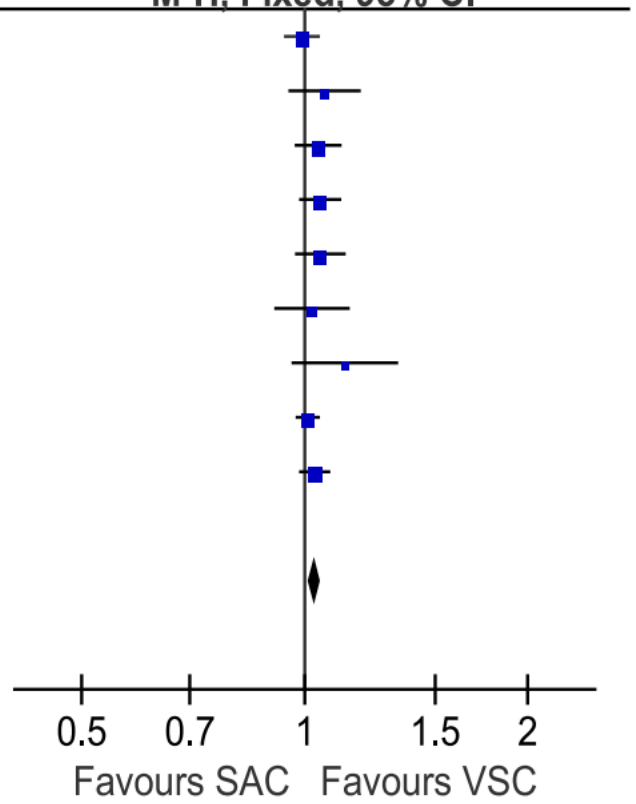


Figure 1 Cecal intubation rate comparing VSC with SAC; relative risk (RR) with 95% confidence intervals (CI). Yoshikawa 2002(1) represented the experienced group; Yoshikawa 2002(2) represented the limited experience group. VSC: variable-stiffness colonoscope; SAC: standard adult colonoscope.

Xie et al. BMC Gastroenterology 2012;12:151

Necesidad de presión abdominal durante colonoscopia

Study or Subgroup	VSC Events	VSC Total	SAC Events	SAC Total	Weight	Risk Ratio IV, Random, 95% CI
Akira Horiuchi 2004	81	123	86	125	21.8%	0.96 [0.80, 1.14]
Al-Shurieki SH 2005	35	120	38	118	13.4%	0.91 [0.62, 1.33]
Ichiro Yoshikawa 2002(1)	10	104	15	103	5.6%	0.66 [0.31, 1.40]
Ichiro Yoshikawa 2002(2)	45	129	59	131	16.4%	0.77 [0.57, 1.05]
Lee WH 2007	26	111	41	110	12.3%	0.63 [0.42, 0.95]
Shumaker DA 2002	71	122	53	127	18.3%	1.39 [1.08, 1.80]
Sola-Vera J 2011	25	56	24	54	12.2%	1.00 [0.66, 1.52]
Total (95% CI)		**765**		**768**	**100.0%**	**0.92 [0.75, 1.12]**
Total events	293		316			

Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 15.29$, df = 6 (P = 0.02); $I^2 = 61\%$

Test for overall effect: Z = 0.82 (P = 0.41)

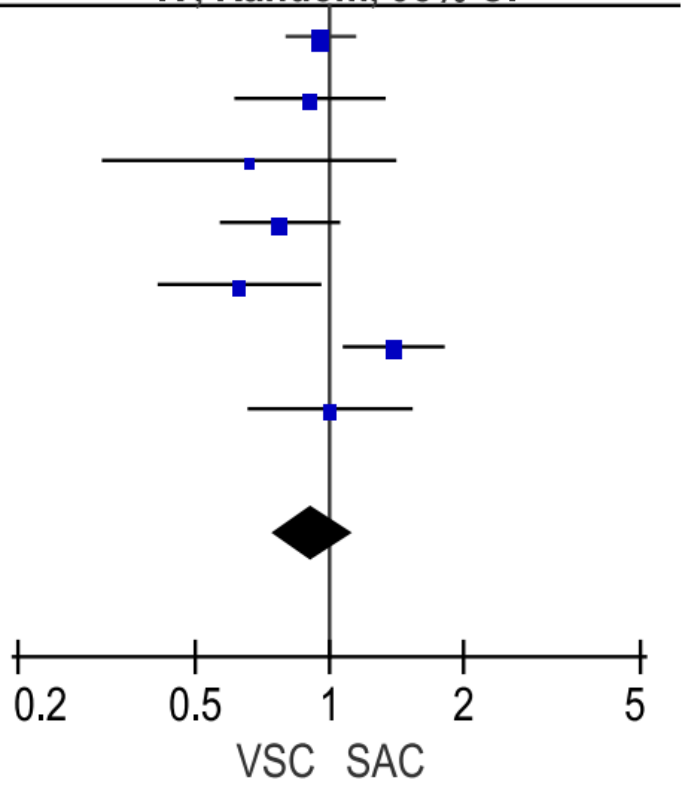
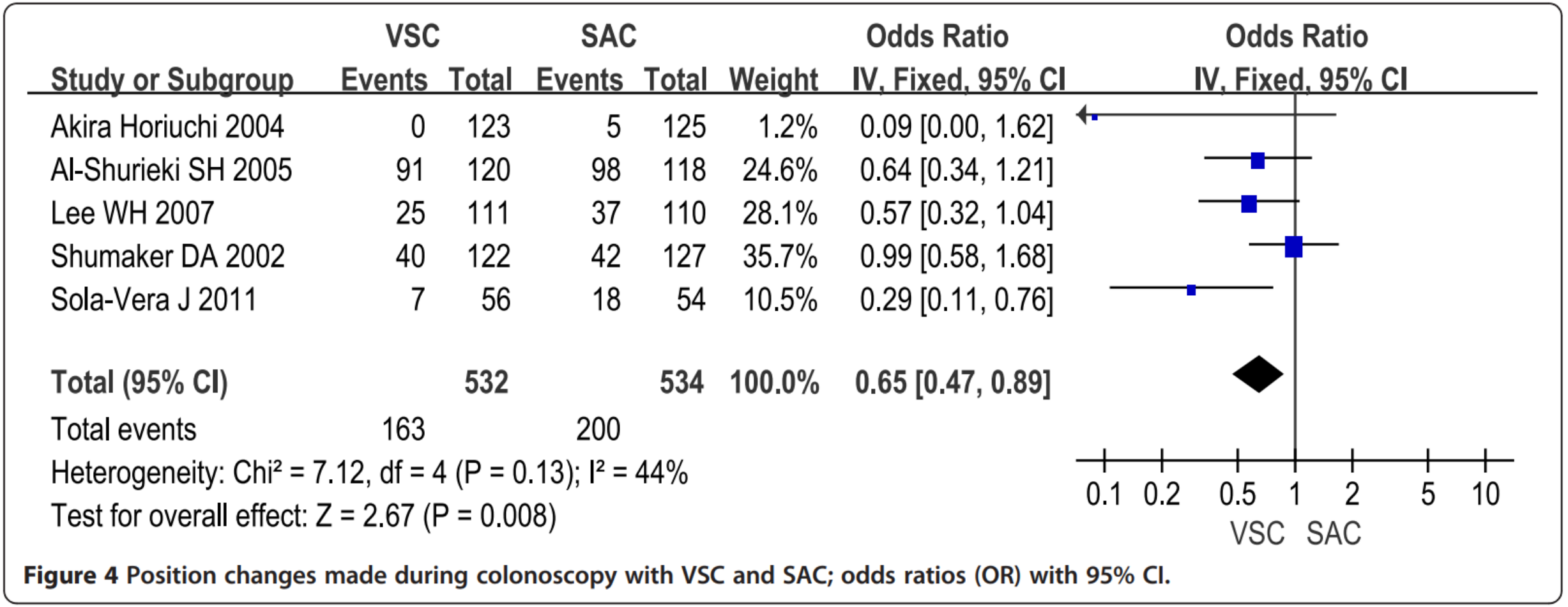


Figure 3 Use of abdominal pressure during colonoscopy with VSC and SAC; relative risk (RR) with 95% CI.

Xie et al. BMC Gastroenterology 2012;12:151

Cambios de posición durante la colonoscopia



Study or Subgroup	VSC Events	VSC Total	SAC Events	SAC Total	Weight	Odds Ratio IV, Fixed, 95% CI
Akira Horiuchi 2004	0	123	5	125	1.2%	0.09 [0.00, 1.62]
Al-Shurieki SH 2005	91	120	98	118	24.6%	0.64 [0.34, 1.21]
Lee WH 2007	25	111	37	110	28.1%	0.57 [0.32, 1.04]
Shumaker DA 2002	40	122	42	127	35.7%	0.99 [0.58, 1.68]
Sola-Vera J 2011	7	56	18	54	10.5%	0.29 [0.11, 0.76]
Total (95% CI)		**532**		**534**	**100.0%**	**0.65 [0.47, 0.89]**
Total events	163		200			

Heterogeneity: Chi² = 7.12, df = 4 (P = 0.13); I² = 44%

Test for overall effect: Z = 2.67 (P = 0.008)

Figure 4 Position changes made during colonoscopy with VSC and SAC; odds ratios (OR) with 95% CI.

Xie et al. BMC Gastroenterology 2012;12:151

Tiempo de intubación cecal

Study or Subgroup	adult VSC Mean	SD	Total	SAC Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
Lee 2007	12.4	6.8	111	13.2	11.7	110	13.5%	-0.80 [-3.33, 1.73]
Sola-Vera 2011	6.14	3.5	56	7.7	3.8	54	46.0%	-1.56 [-2.93, -0.19]
Sorbi 2001	10.6	8	25	10.6	8.5	25	4.1%	0.00 [-4.58, 4.58]
Yoshikawa 2002(1)	9.8	6.6	104	10.6	7.2	103	24.3%	-0.80 [-2.68, 1.08]
Yoshikawa 2002(2)	15.7	9.7	129	18.5	12.1	131	12.1%	-2.80 [-5.46, -0.14]
Total (95% CI)			**425**			**423**	**100.0%**	**-1.36 [-2.29, -0.43]**

Heterogeneity: Chi² = 2.07, df = 4 (P = 0.72); I² = 0%

Test for overall effect: Z = 2.87 (P = 0.004)

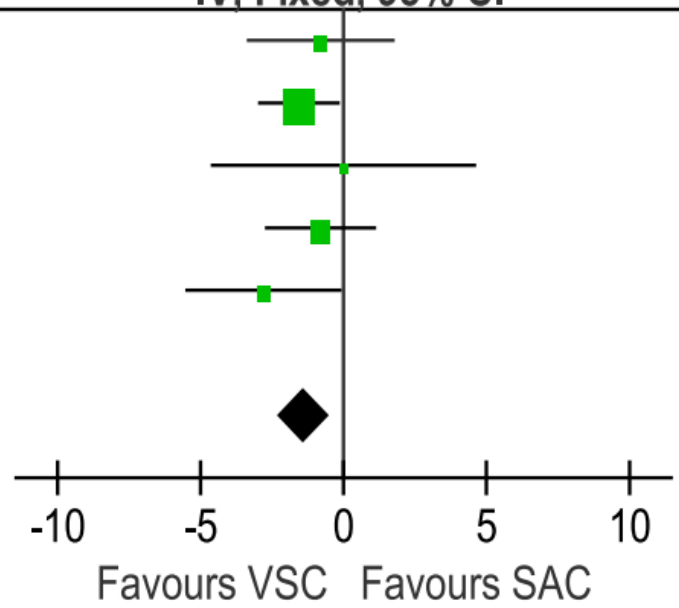
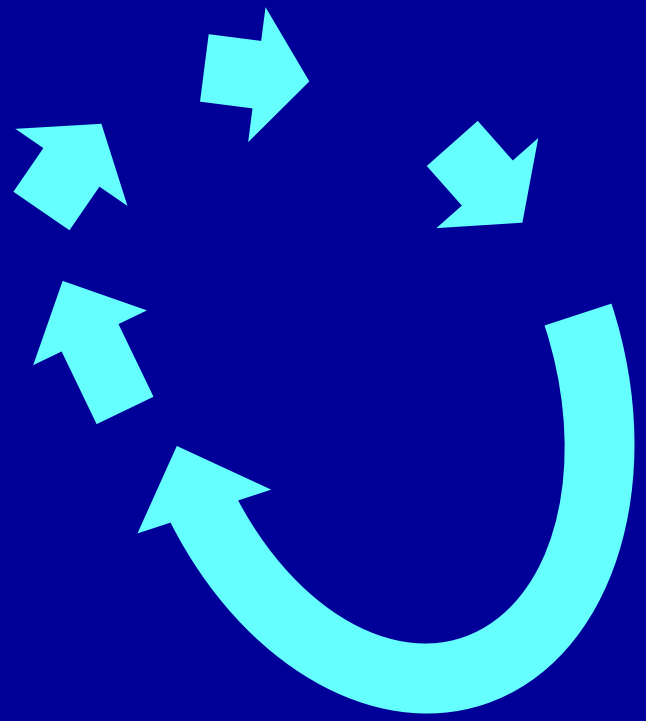


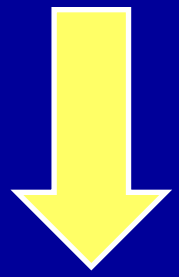
Figure 6 Cecal intubation time: subgroup analysis of trials comparing adult VSC with SAC; mean differences with 95% CI.

Xie et al. BMC Gastroenterology 2012;12:151

Acortamiento con rotación constante a la derecha
Lo suficiente incluso más de 180°
Si no funciona: al contrario!
Si se hace lo mismo el resultado no cambia!!!



Ángulos muy agudos:
Up + Right



Después de “negociar cada curva
Acortamiento + “Torque a la derecha”
Retirada

Colon transverso

Uno de los segmentos
Más fáciles

Similar al sigmoides:móvil
Mantener el equipo rectificado

Shinya H, Surg Clin N Am 1982;62:869-74

Colonoscopio rectificado

↓

Avance es 1 a 1

↓

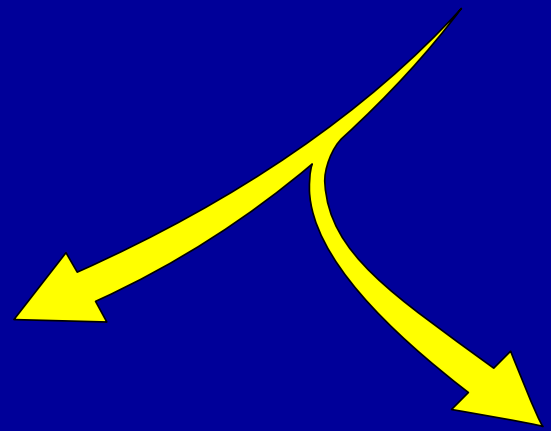
Si no es 1:1

↓

Hay mucho equipo Introducido= ASAS

Witte TN, Can J Gastroenterol 2007;21:487-90

Dificultad para avanzar en el transverso

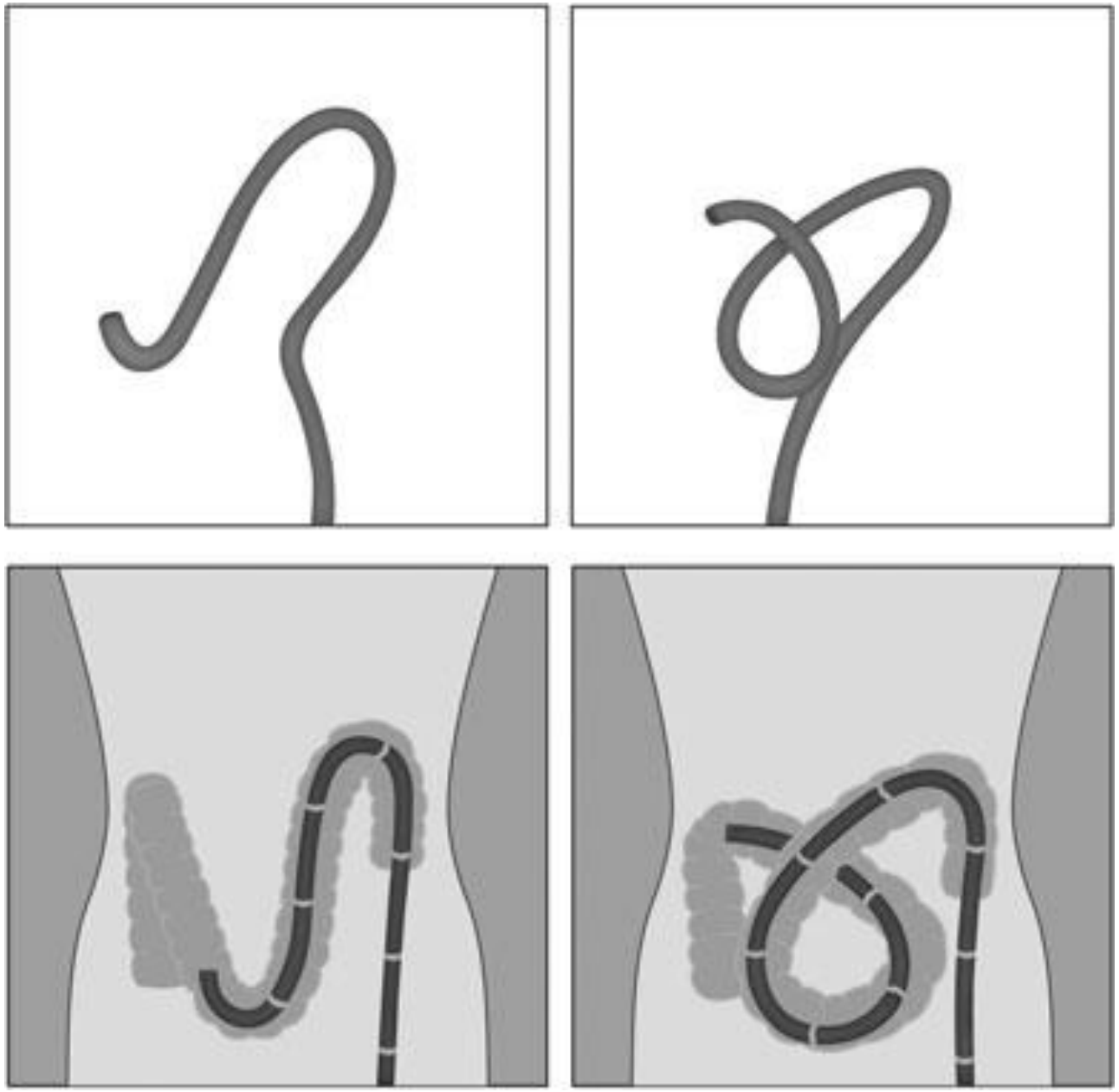


Asas

Transverso Redundante

Todos los expertos
Shinya H, Waye J, Bourke MJ, Rex DK

Colon transverso: ASAS hasta la pelvis



Shah SG, Gastrointest Endosc 2000;52:1-8

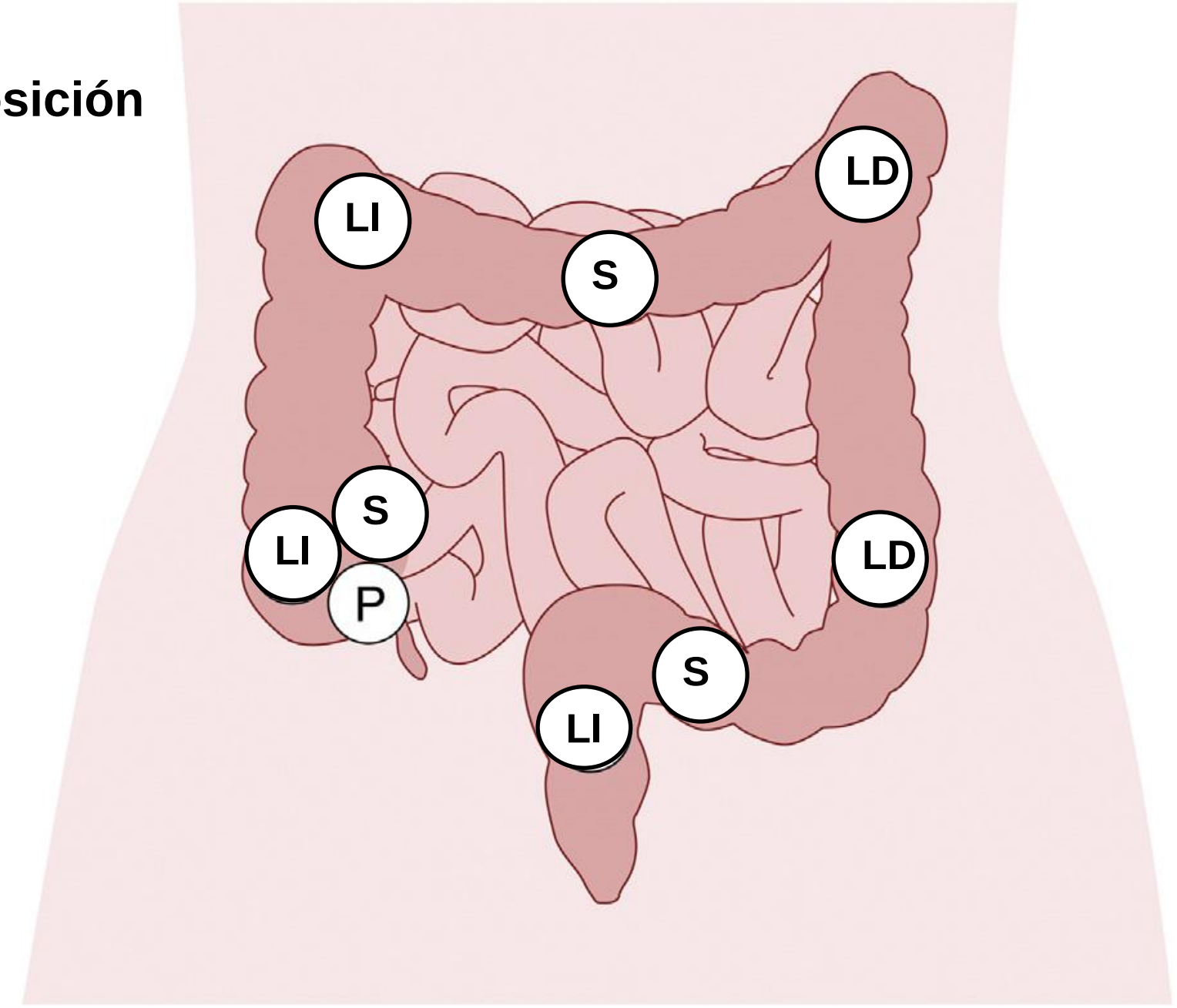
Dificultad para avanzar en el transverso

Transverso redundante

Avanzar al àngulo medio.
Up + Torque a la derecha+ retirada
Rectificaciòn y acortamiento

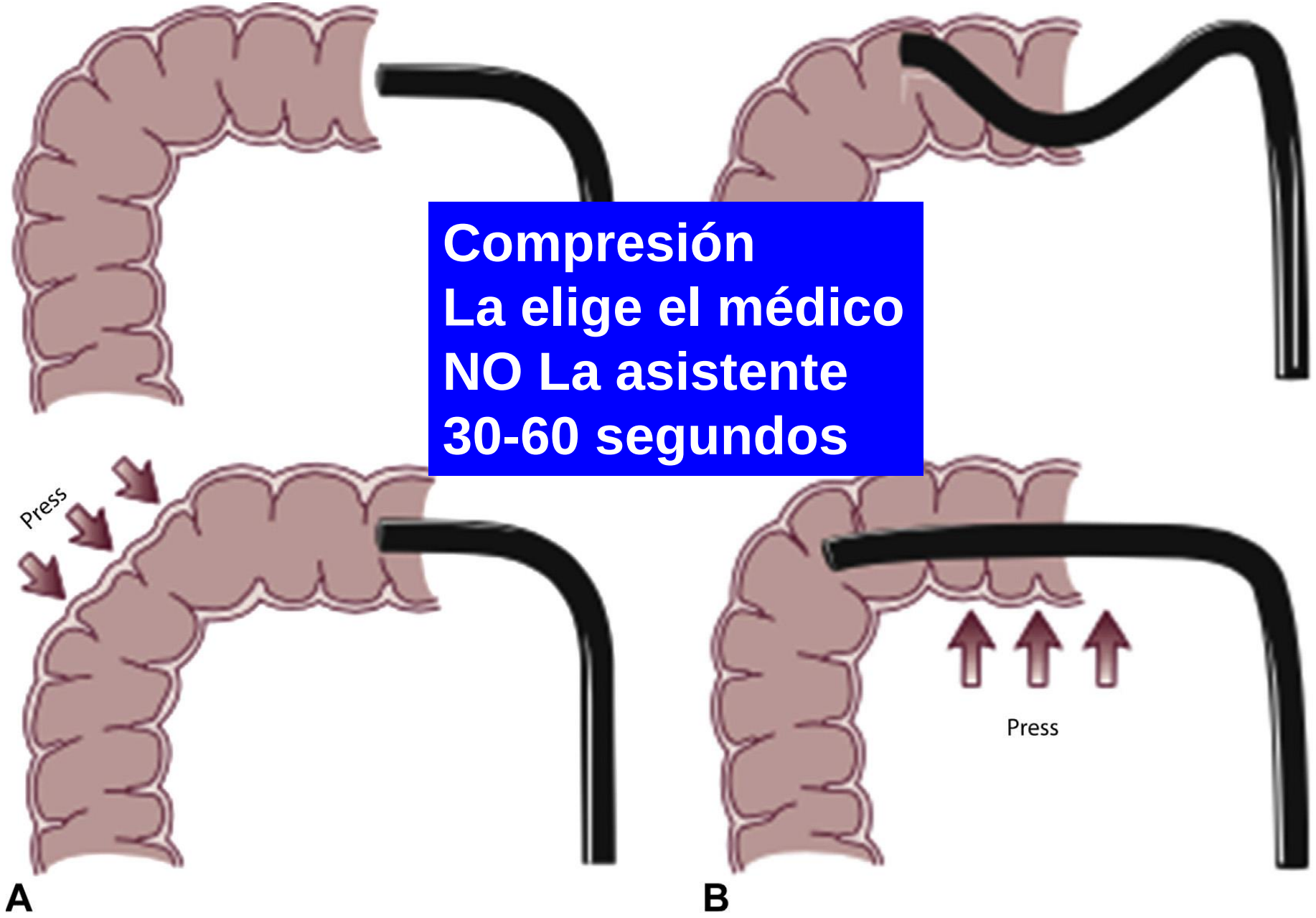
Hinja H, Waye J, Bourke MJ,

Cambios de posición
Para cada sitio



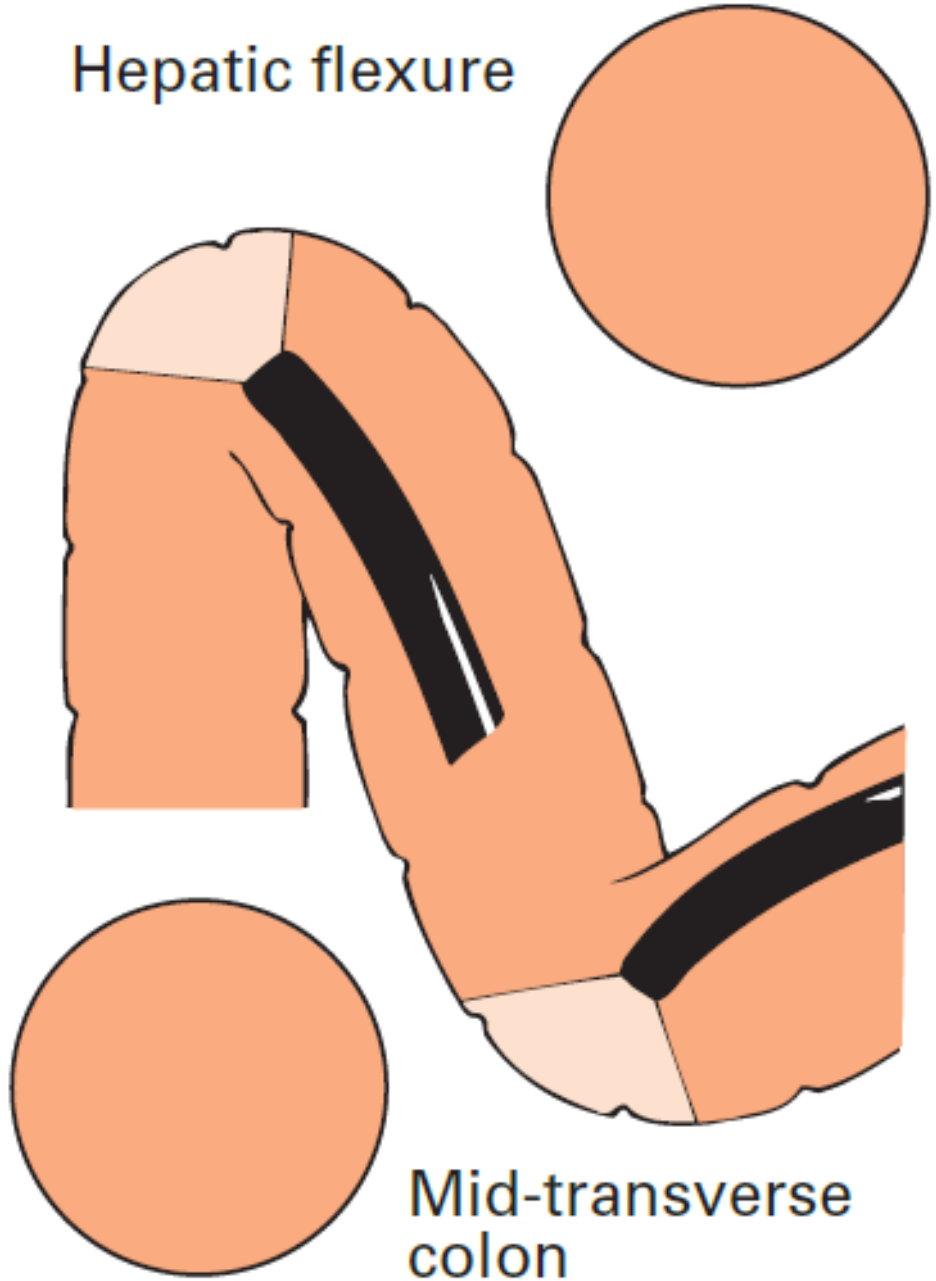
Eficacia 66%

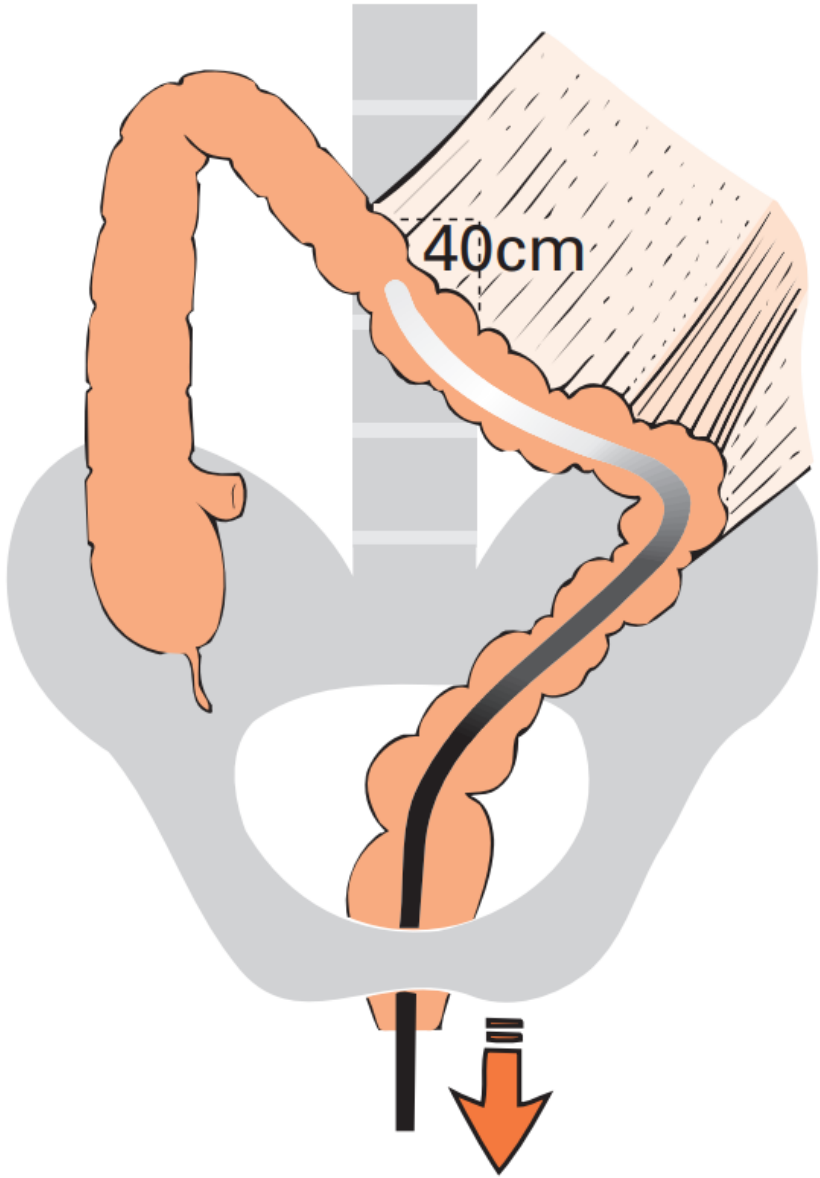
Waye JD, Gastrointest Endosc 2018;87:621-4
Shah Gastrointest Endosc 2000;52:1-8

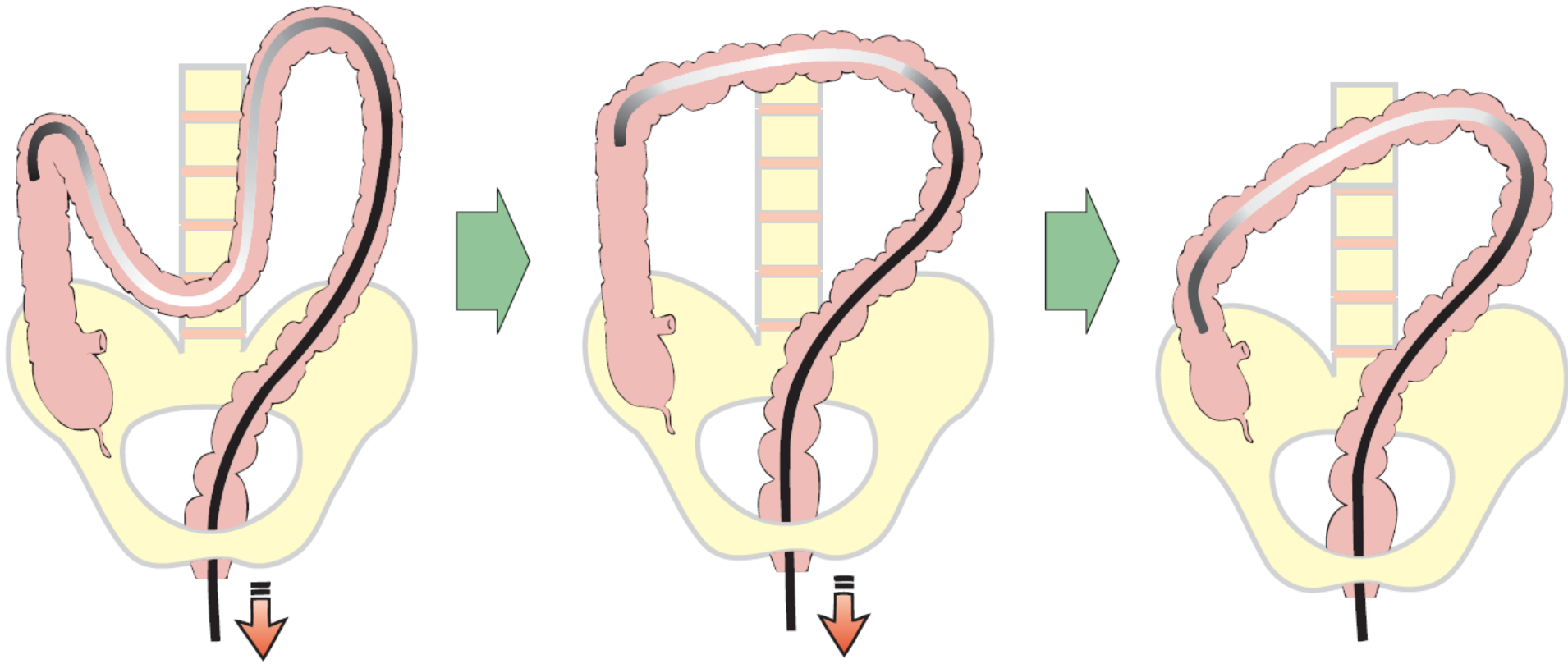


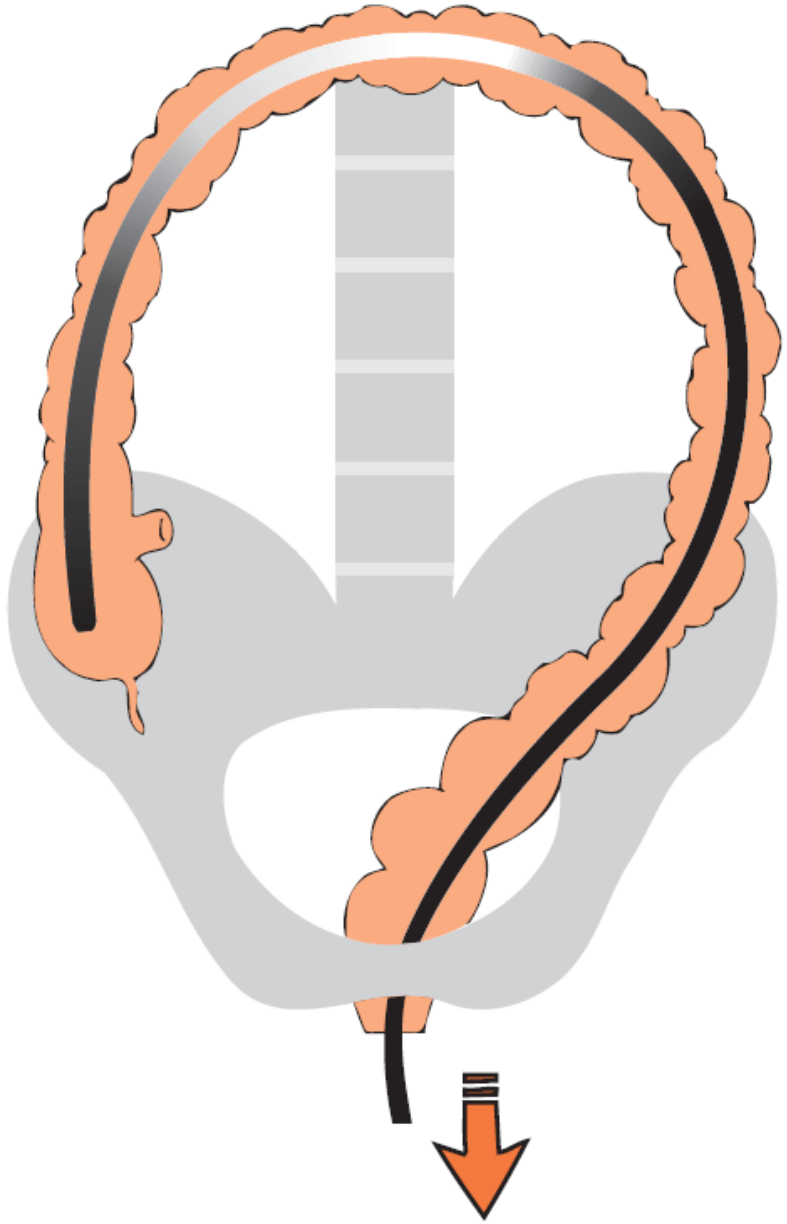
Compresión
La elige el médico
NO La asistente
30-60 segundos

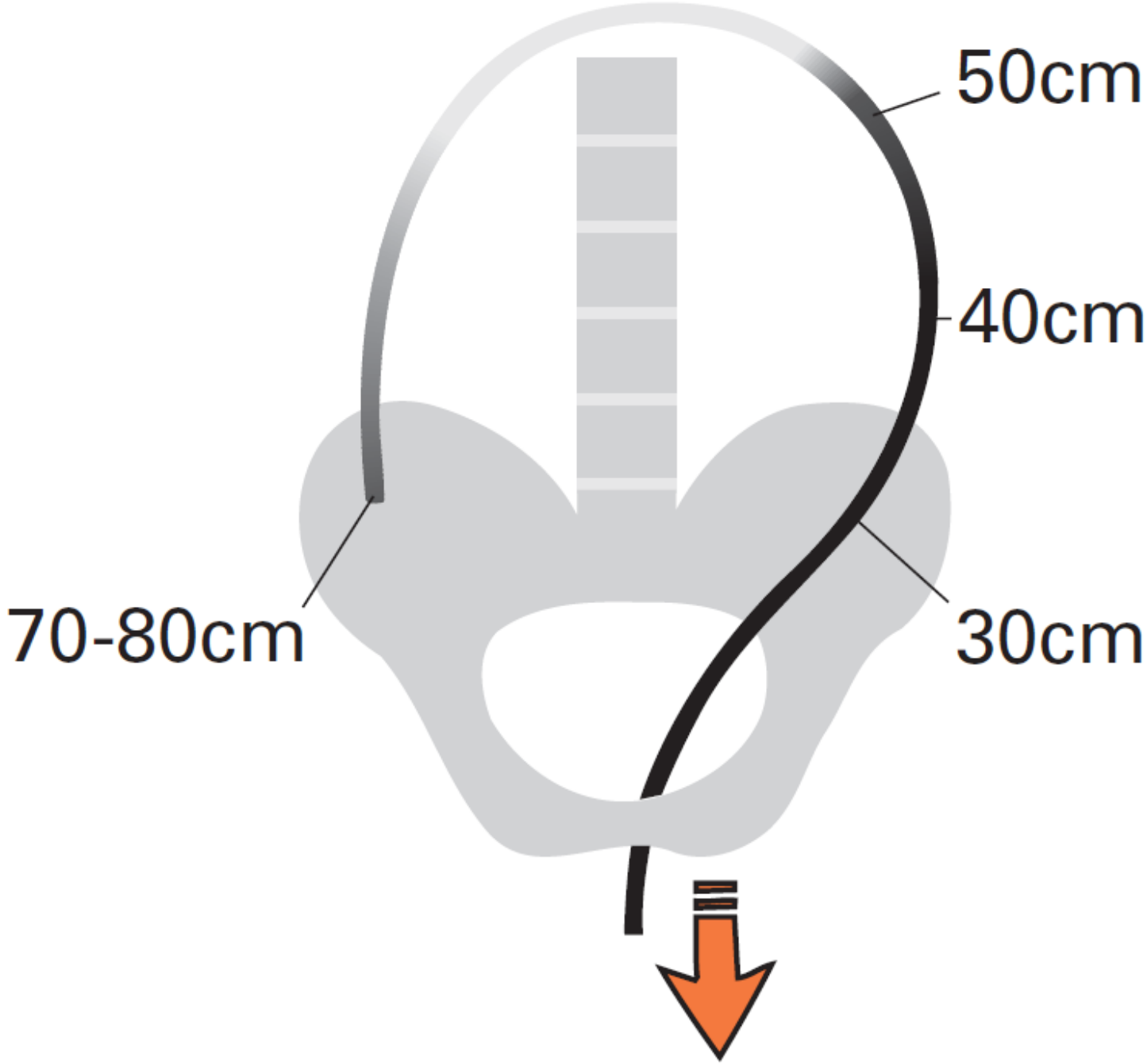
Waye JD, Aisenberg J, Rubin PH. Practical colonoscopy. Wiley Blackwell 2013


Hepatic flexure
Mid-transverse colon


40cm






50cm
40cm
70-80cm
30cm

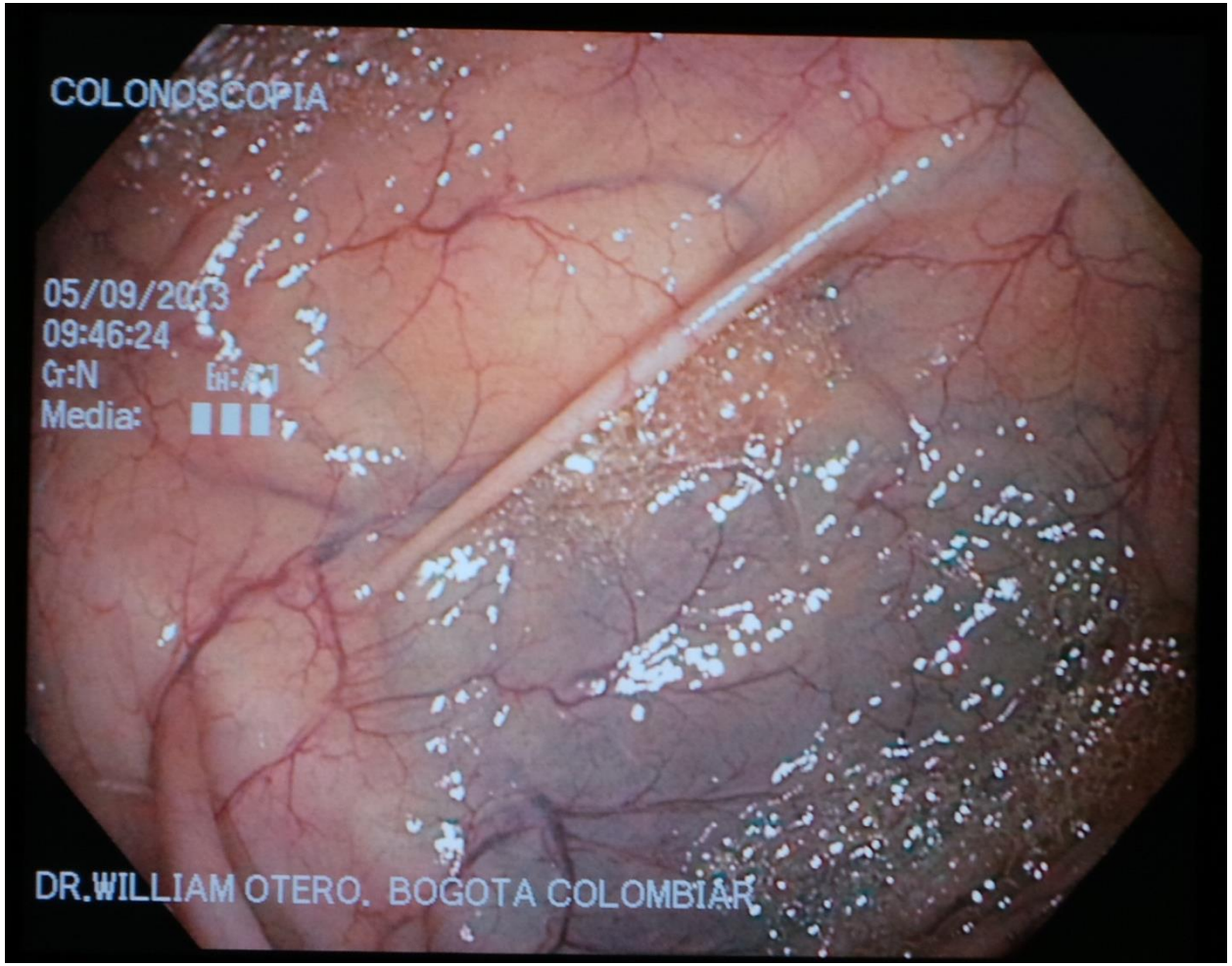
Dificultad en ángulo hepático

Distancia
A 50 cm?

Rectificar
Torque a la derecha
Retroceder-entrar

Cambiar de posición
DLD, DLI

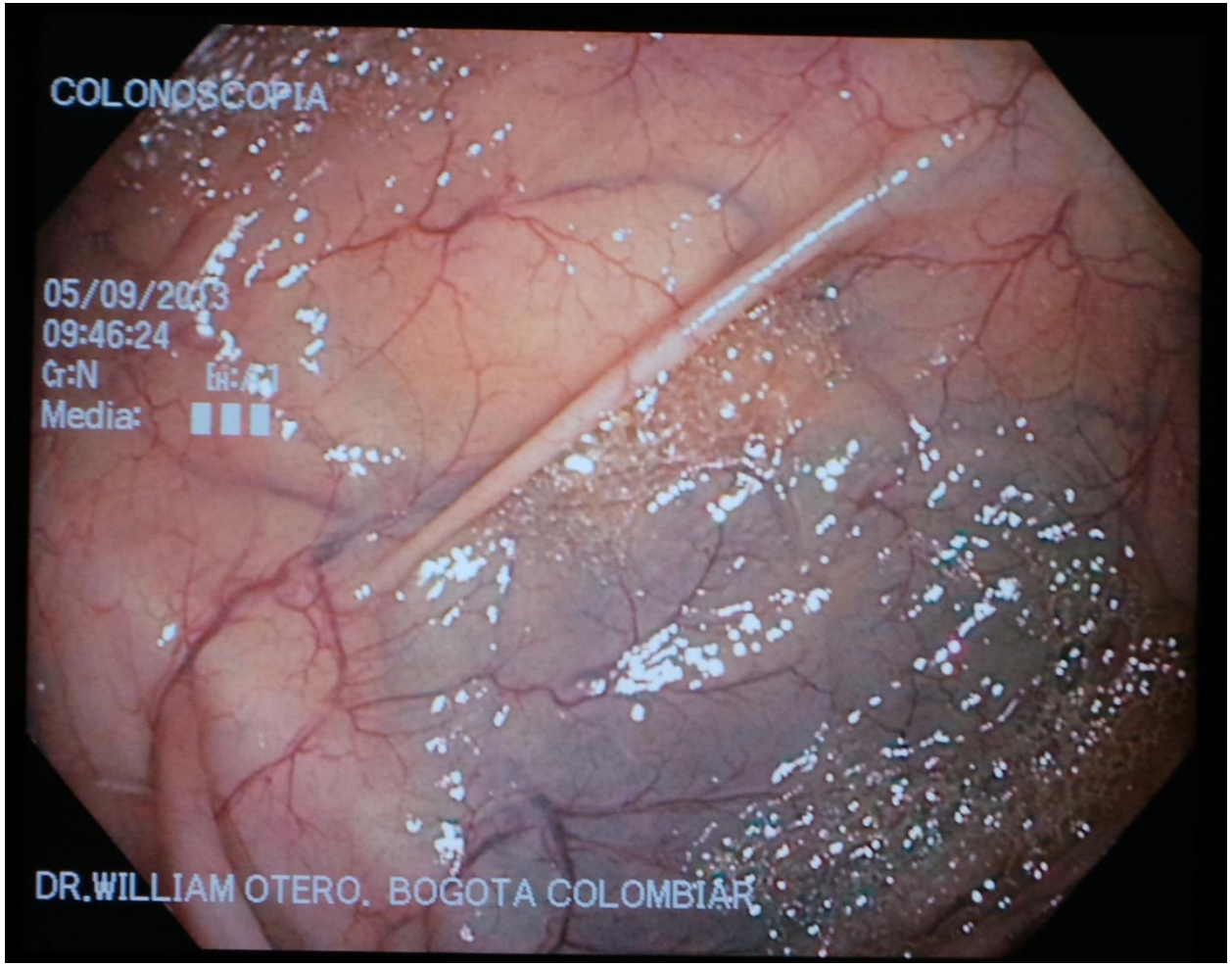
Bourque M, Shinya H, Witte TN, Waye J



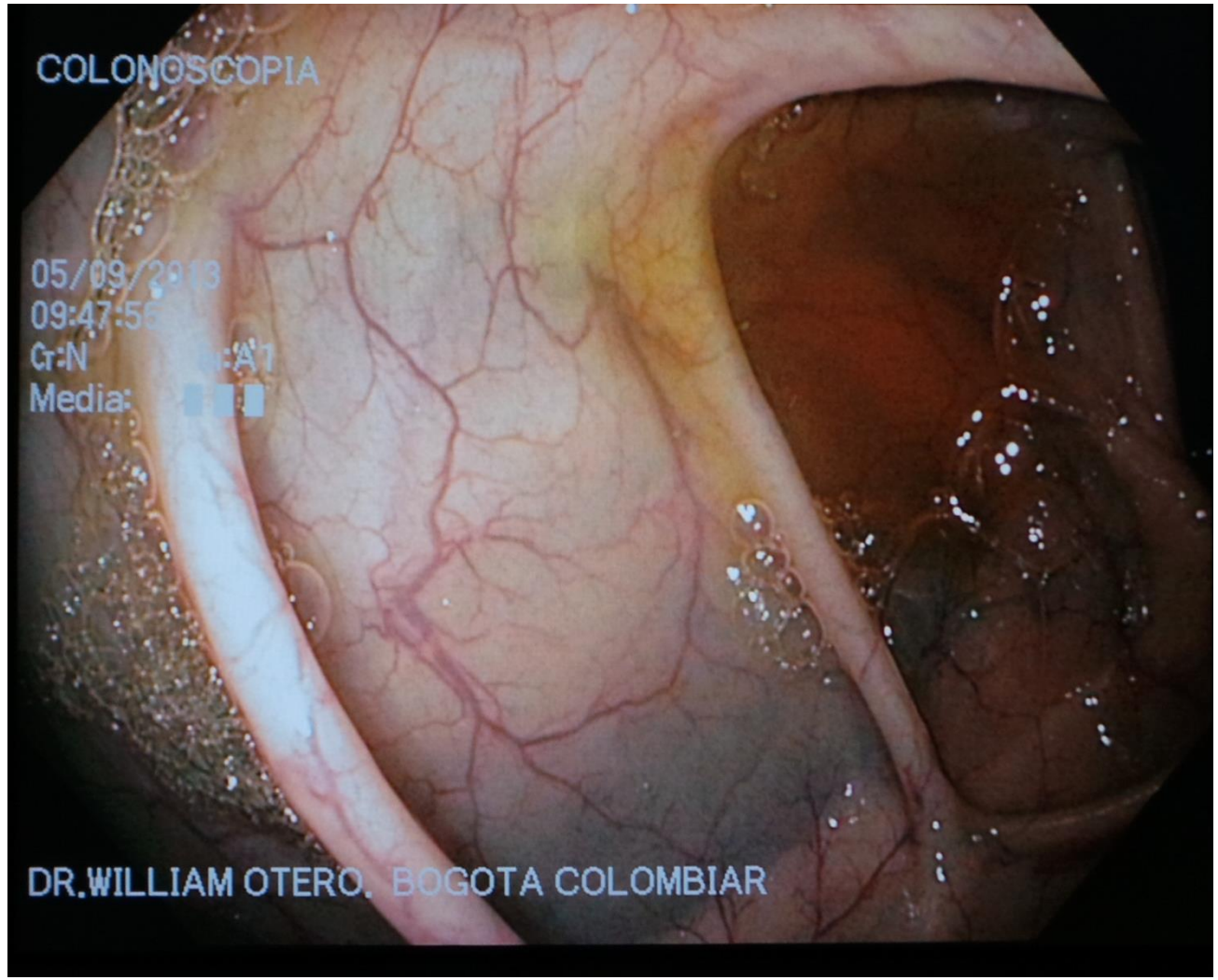
50 cm

Angulo hepático es más amplio y más fácil de intubar ubicado 6 del reloj.
En esa posición , torque a la derecha, UP y avanzar

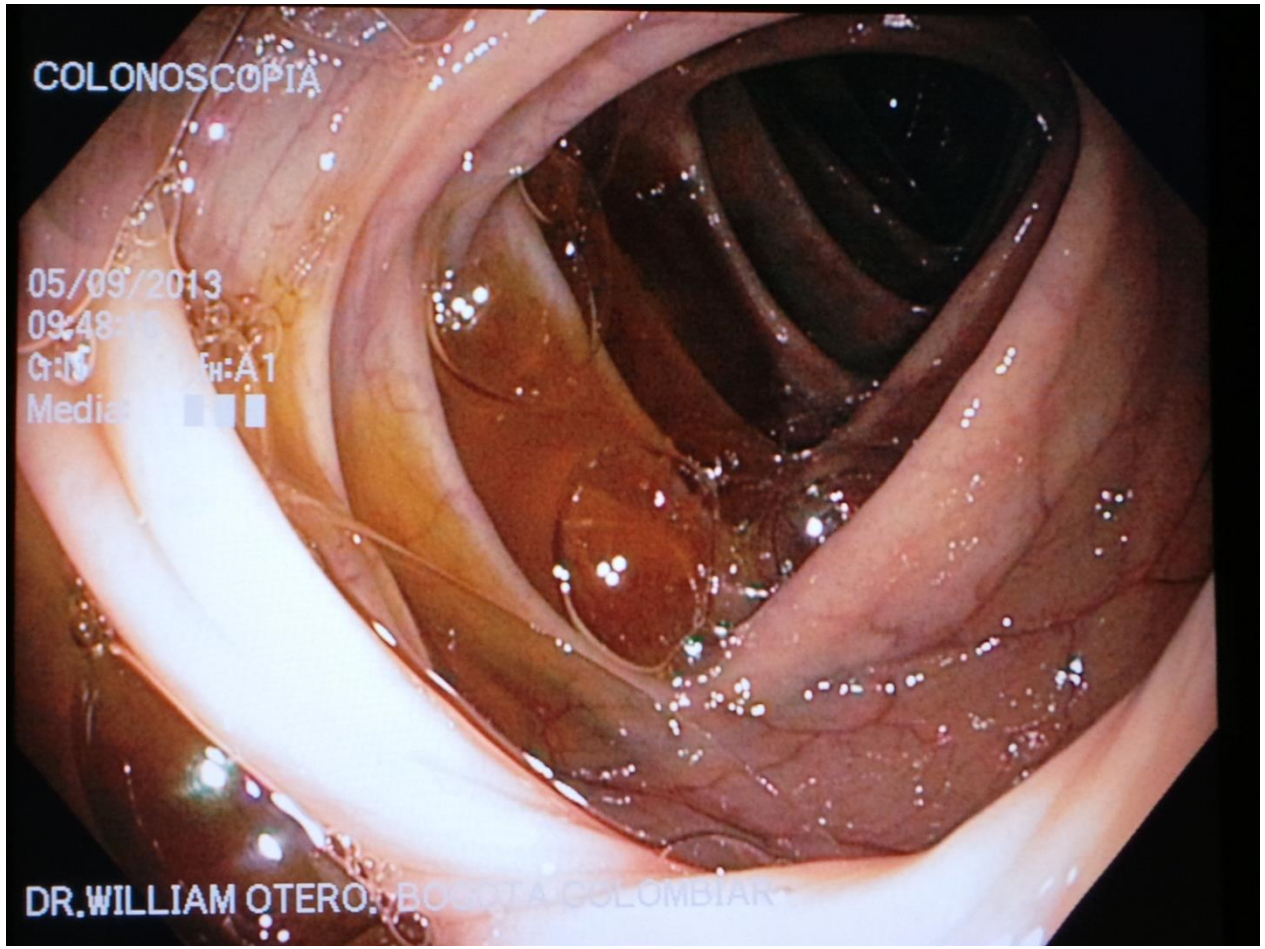
SI No se logra avanzar despuès de dos intentos con giro a la derecha, se debe Girar completamente a la izquierda, y alcanzar la misma posicion previa. Con Esa maniobra se rectifica el equipo

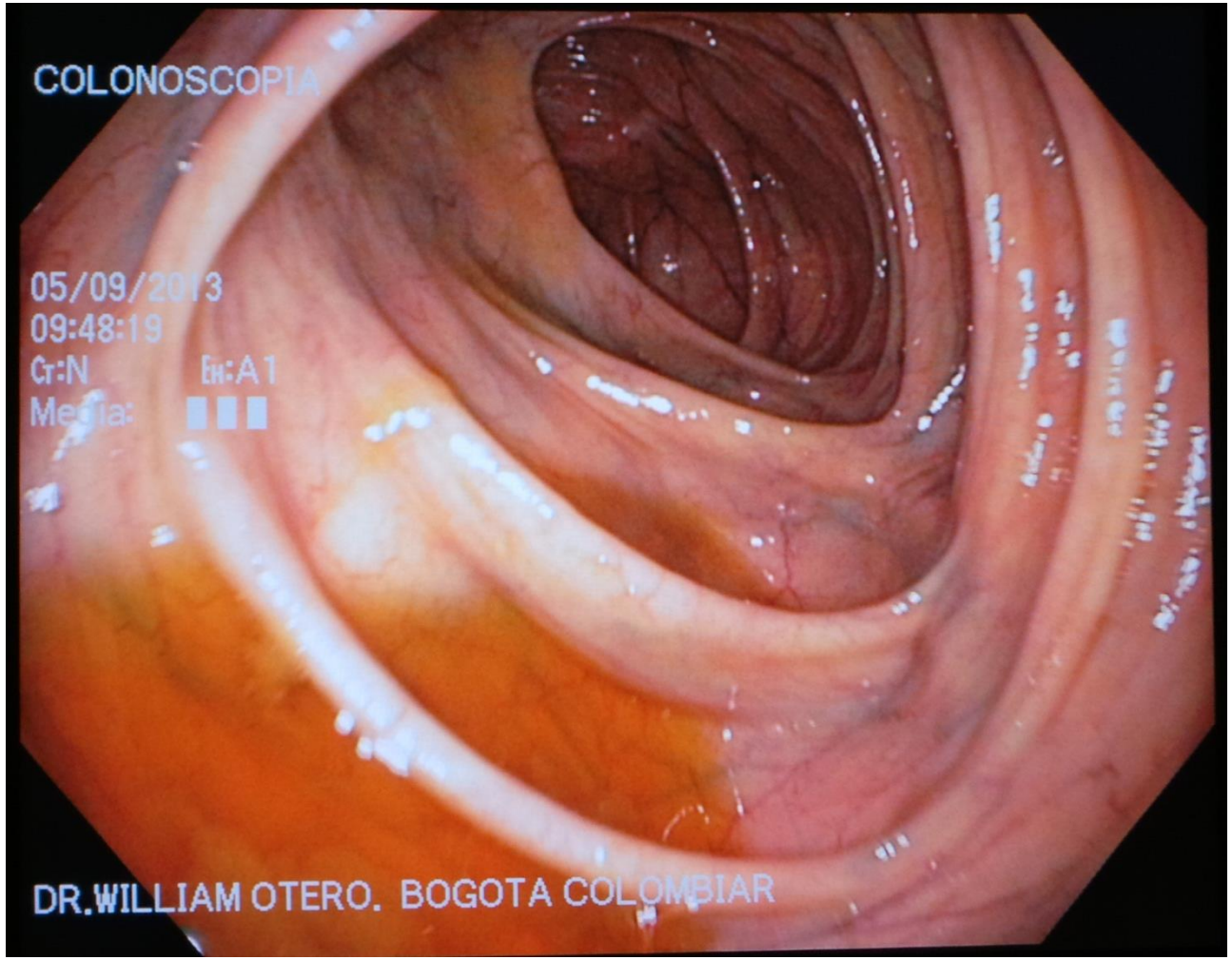


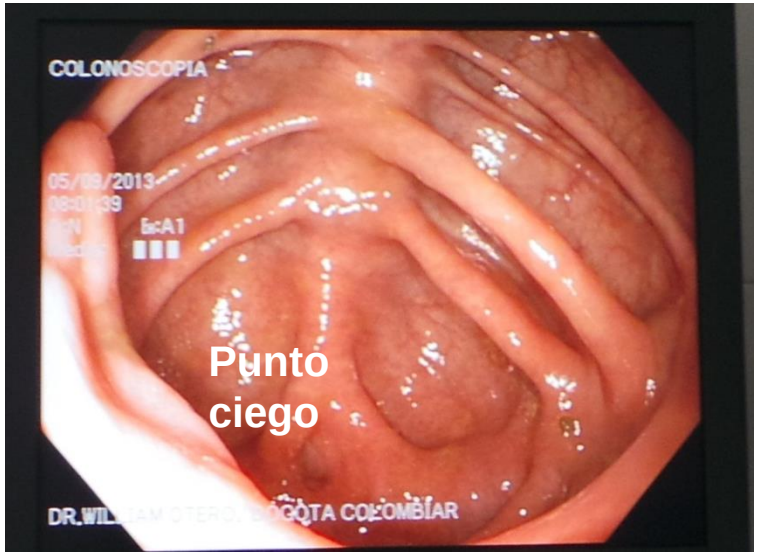
Si no es posible, entonces Girar el paciente
Colocarlo en decubito lateral derecho.
ROL COL Am J Gastroenterol 2015

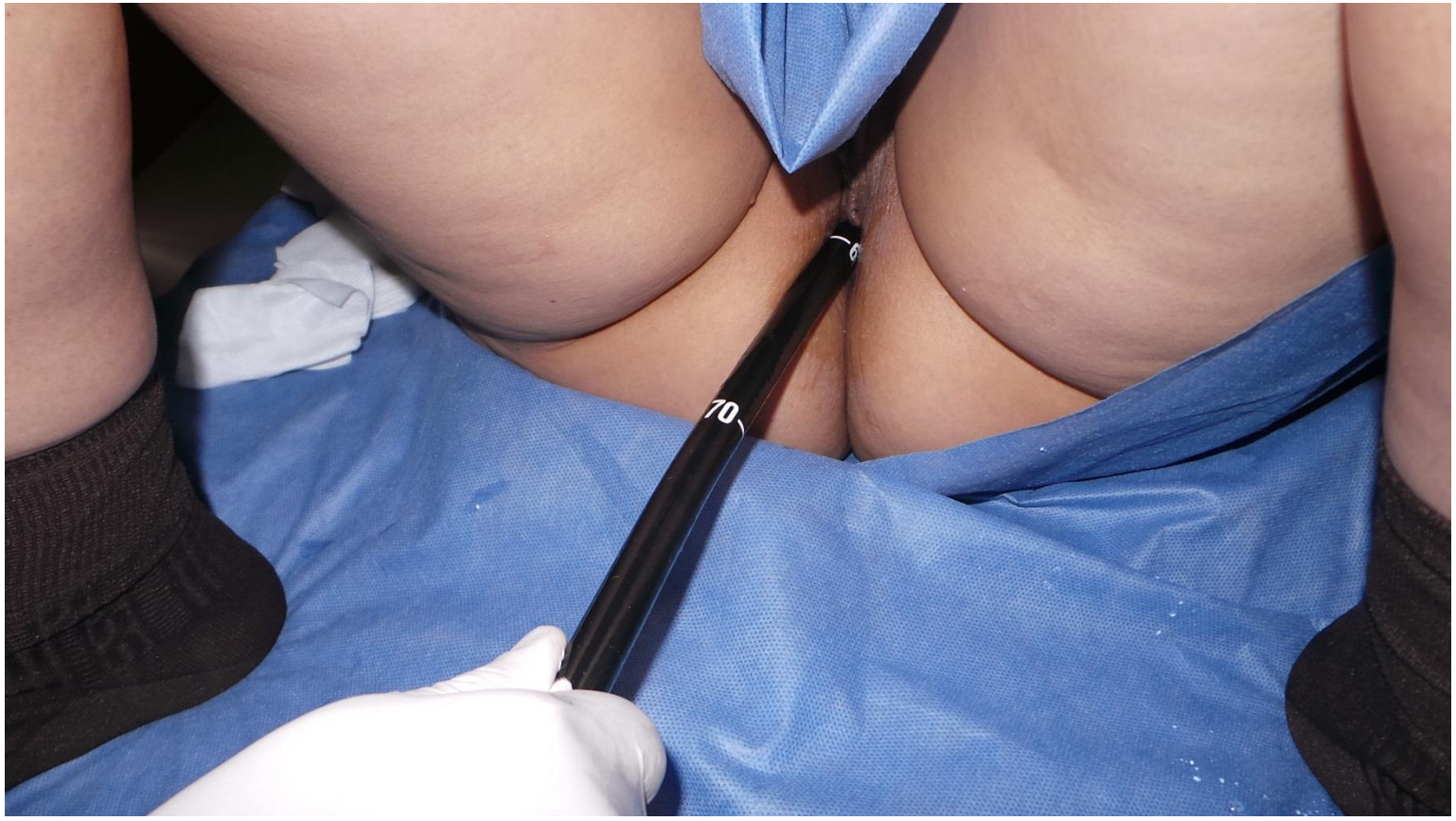

COLONOSCOPIA
05/09/2013
09:47:55
Gr:N
:A1
Media:
DR.WILLIAM OTERO. BOGOTA COLOMBIAR

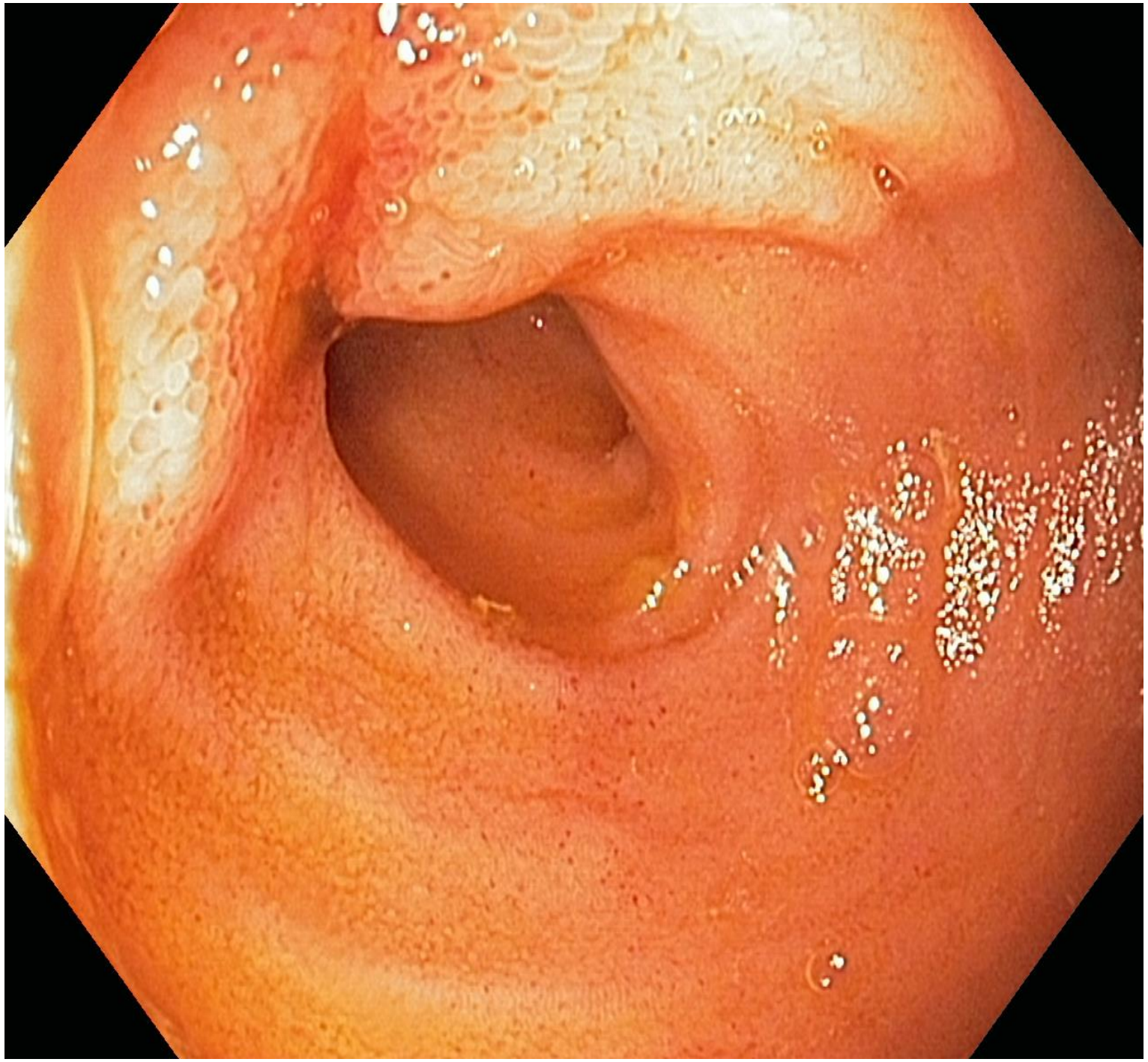
Ángulo para avanzar
Bourke M: 6-12
Nosotros entre 11-2




COLONOSCOPIA
05/09/2013
09:48:19
Cr:N
En:A1
Media:
DR.WILLIAM OTERO. BOGOTA COLOMBIAR


COLONOSCOPIA
Punto
ciego


70

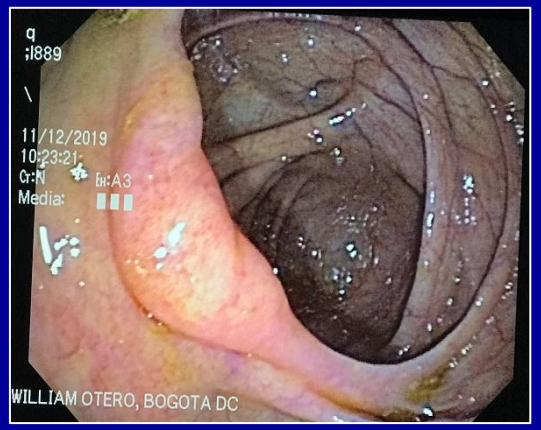


Tipos de vàlvula ileocecal

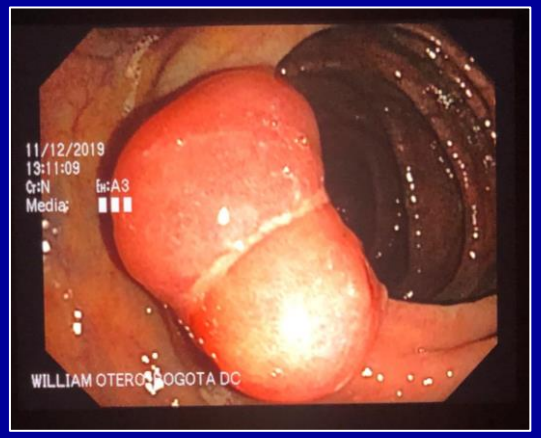
Tipo 1
Apertura mucosa delgada

La más difícil de intubar

Tipo 2
Labios mucosos Gruesos

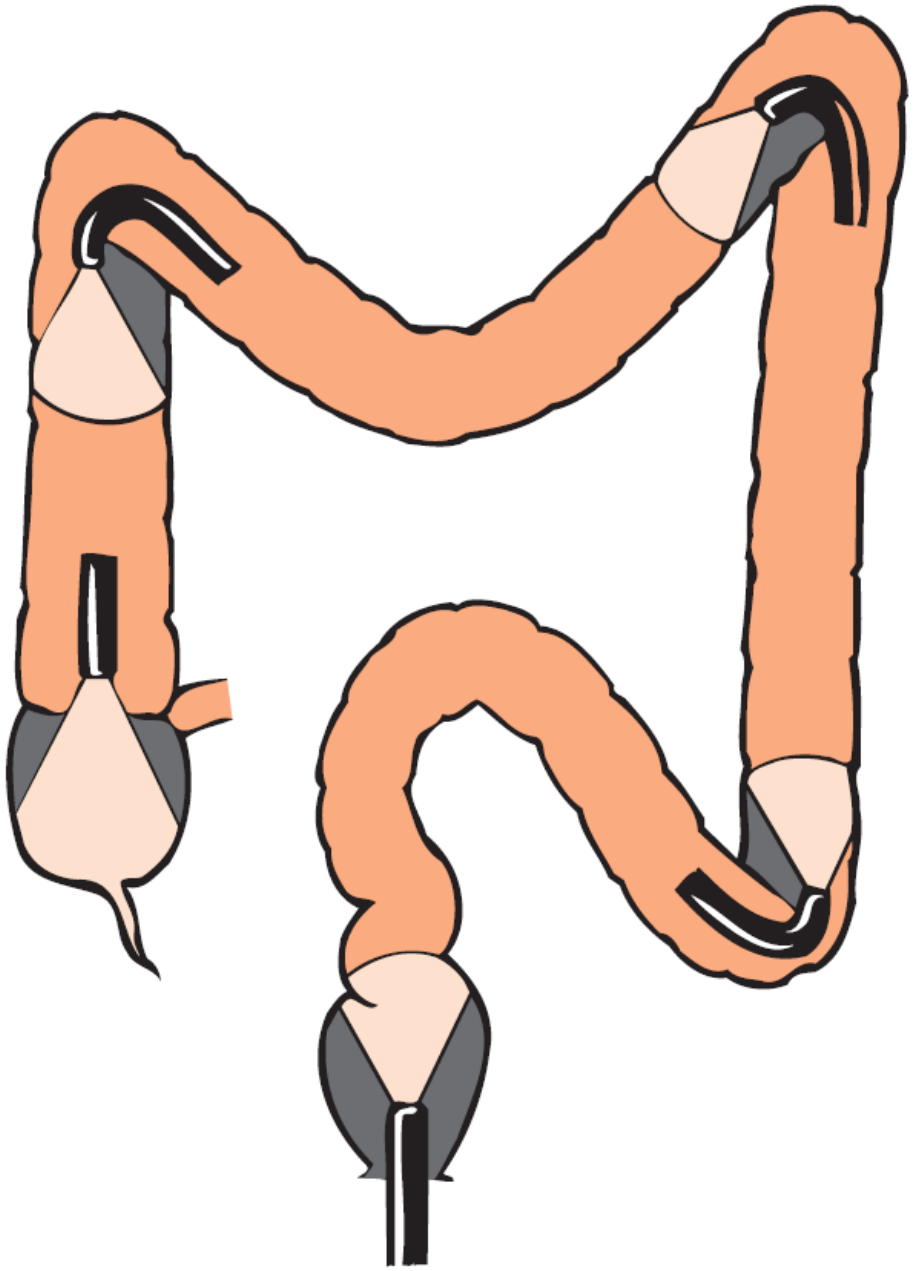


Tipo 3
Forma Oval prominente

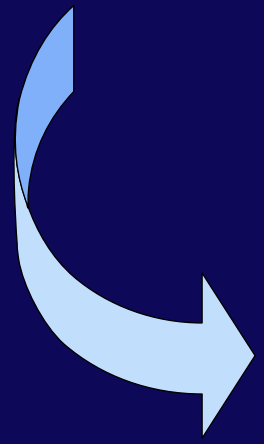


Shinya H, 1982

Áreas ciegas



Durante todo El examen

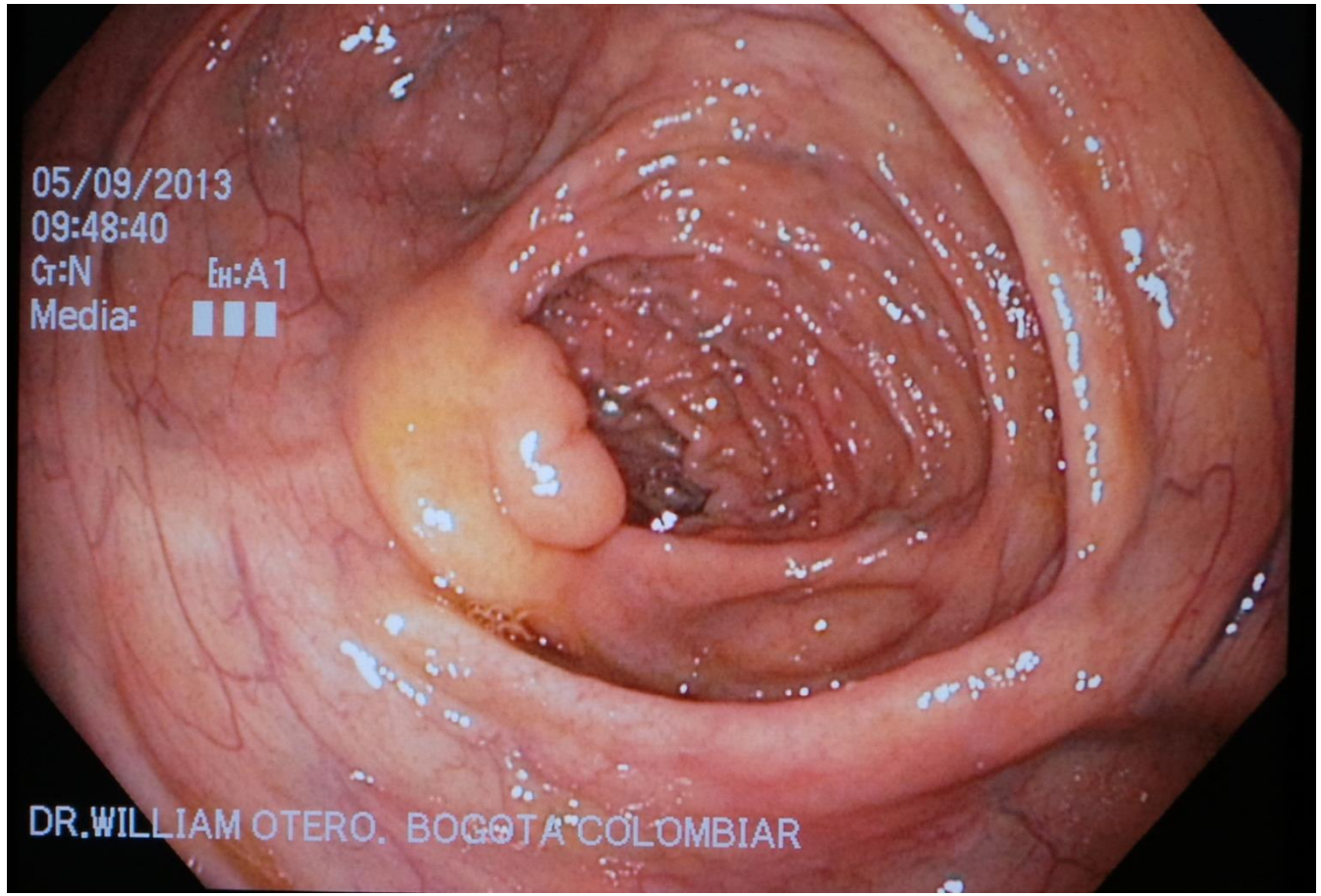


Estrategias para Evitar asas

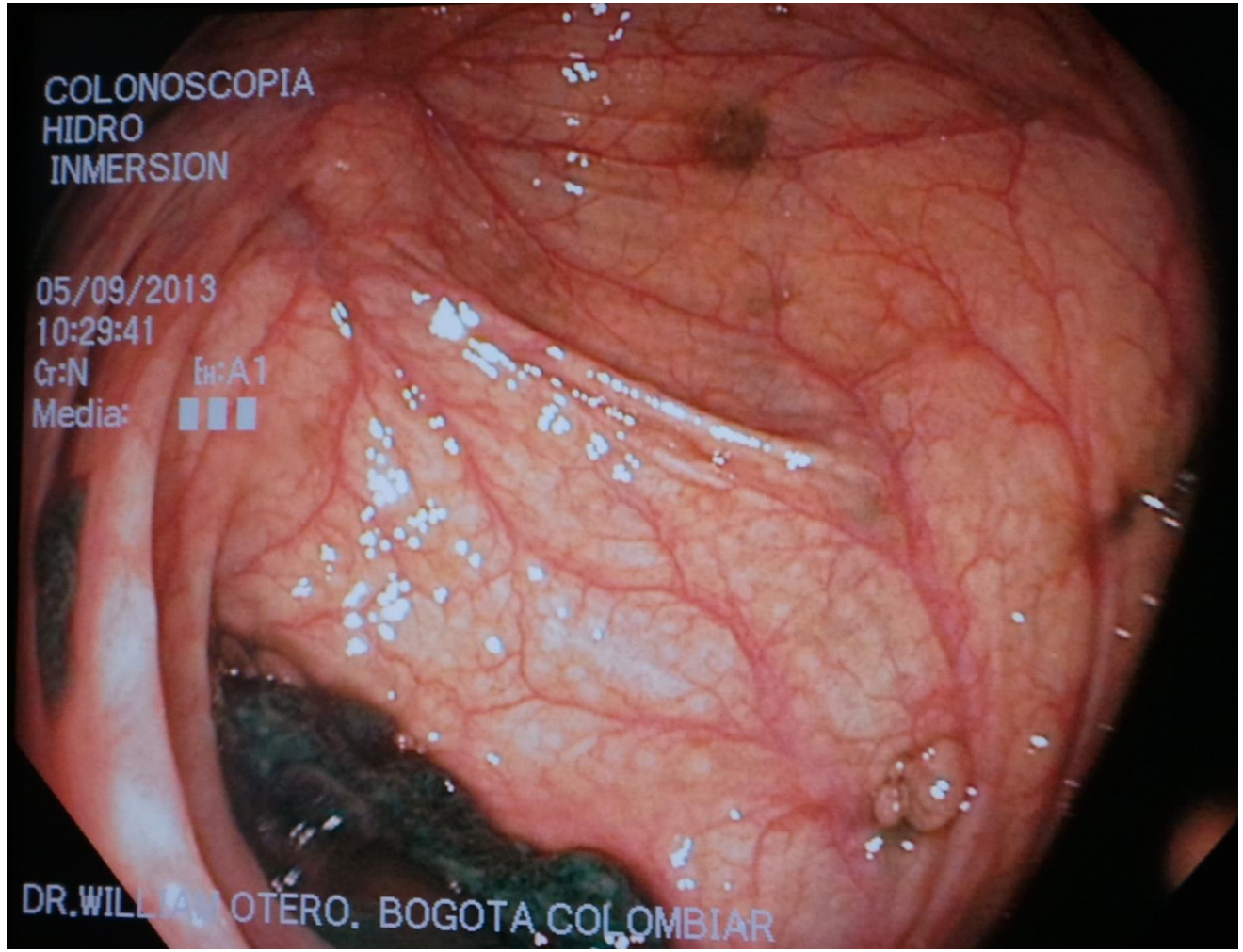
Colonoscopia

Durante todo El examen

Mínima cantidad de aire insuflado (“low”)
Acortamiento constante del colon
“Torque” a la derecha y retirada
Rectificación permanente del colonoscopio
Aspiración constante de aire NO de líquido
Siempre el equipo recto sin asas externas
Colon Redundante: agua y no gas


05/09/2013
09:48:40
Cr:N
En:A1
Media:
DR.WILLIAM OTERO. BOGOTA COLOMBIAR


COLONOSCOPIA
09/2013
20:37
M:A1
DR.WILLIAM OTERO. BOGOTA COLOMBIAR


COLONOSCOPIA
HIDRO
INMERSION
05/09/2013
10:29:41
Cr:N
Im:A1
Media:
DR.WILL OTERO. BOGOTA COLOMBIAR

Tasas de intubación cecal

>90%
Sintomáticos
Diagnóstica

>95%
Asintomáticos
“Screening”

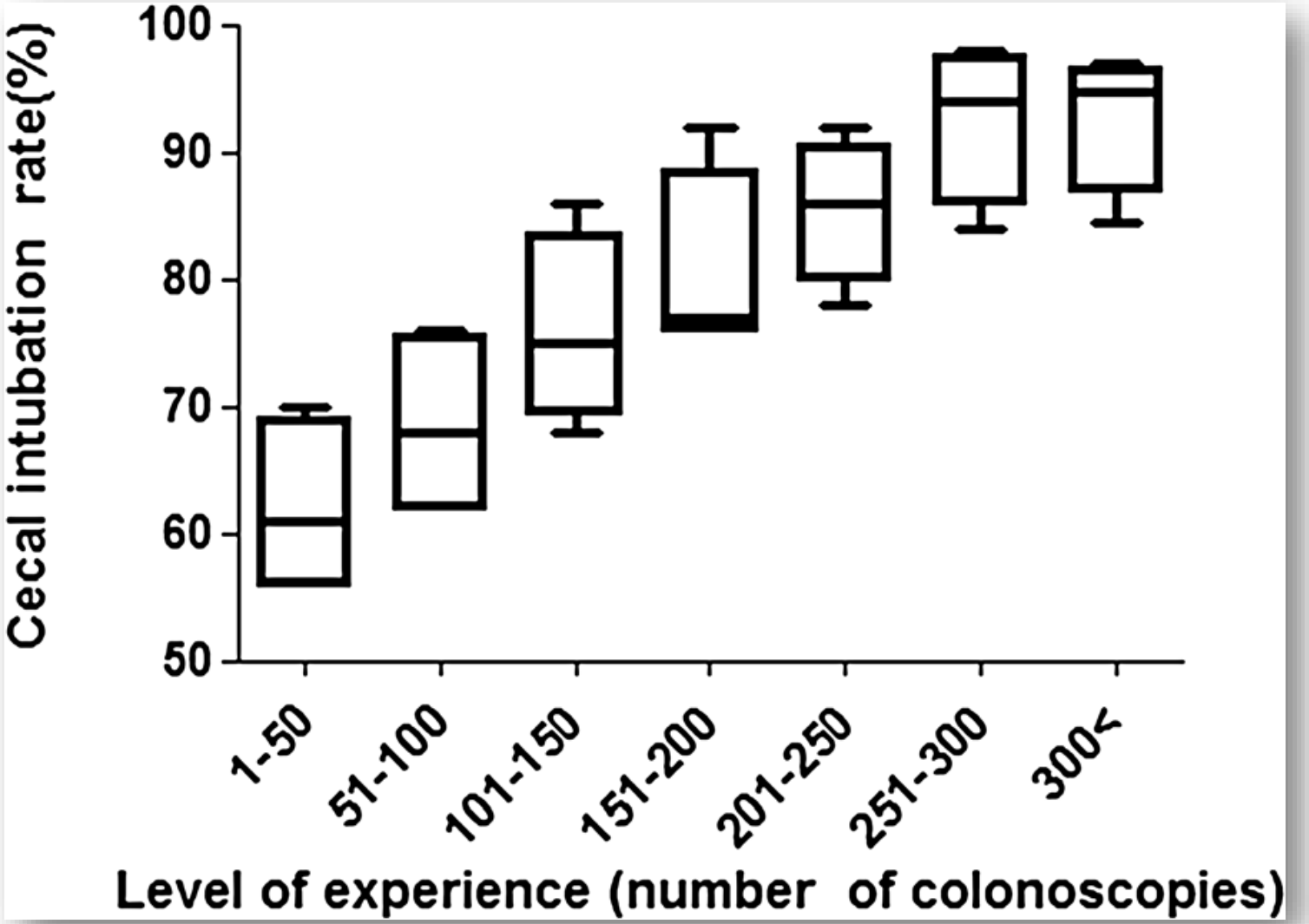
Rex DK, Am J Gastroenterol 2006;101:873-85

Tasa de intubación cecal
Grandes studios

Bowles	RU	2004	76.9%
Aslinia	USA	2006	85.1%
Shah	Canadá	2007	86.9%
Regula	Polonia	2006	91.1%

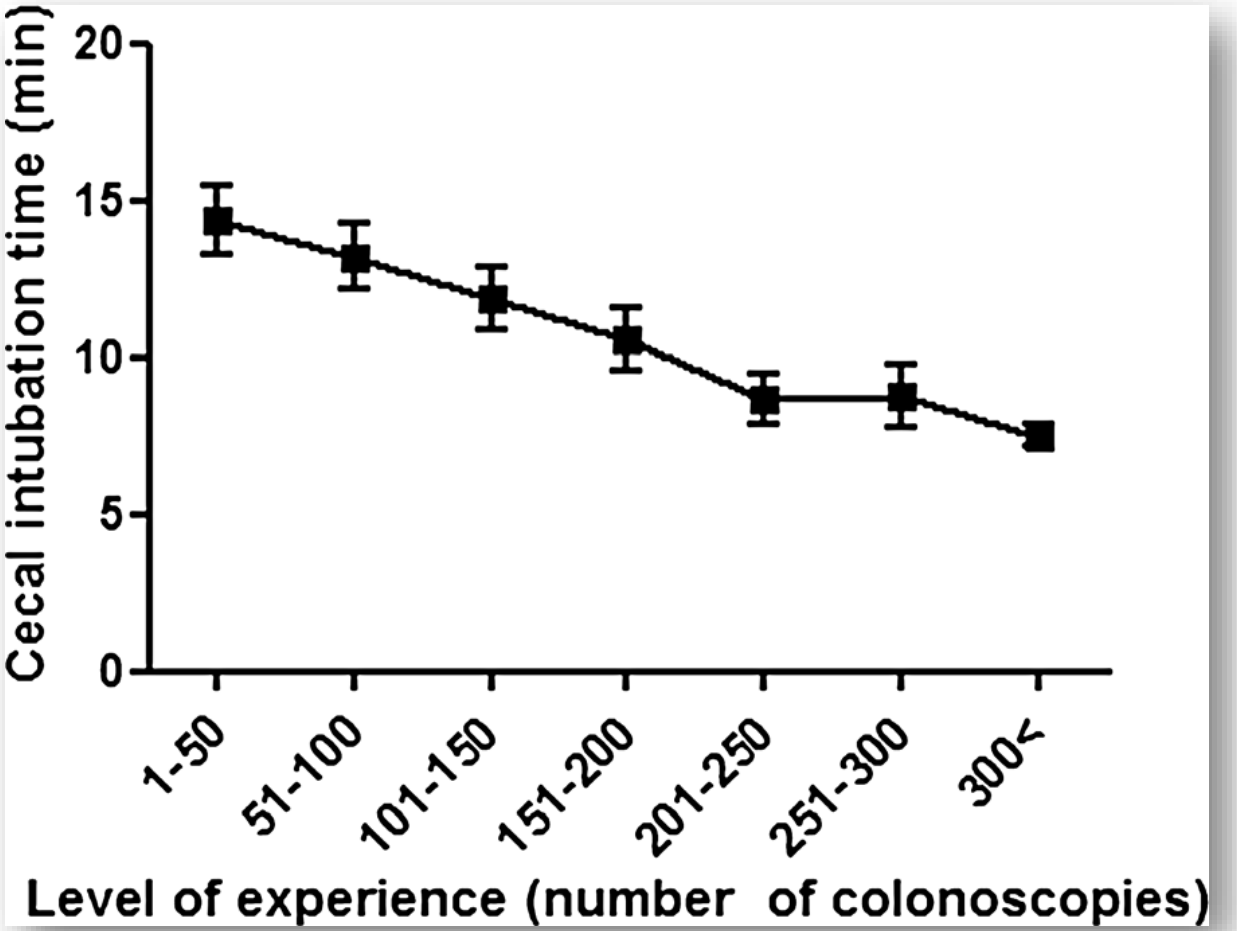
Meta

Tasas de intubación cecal, curva de aprendizaje



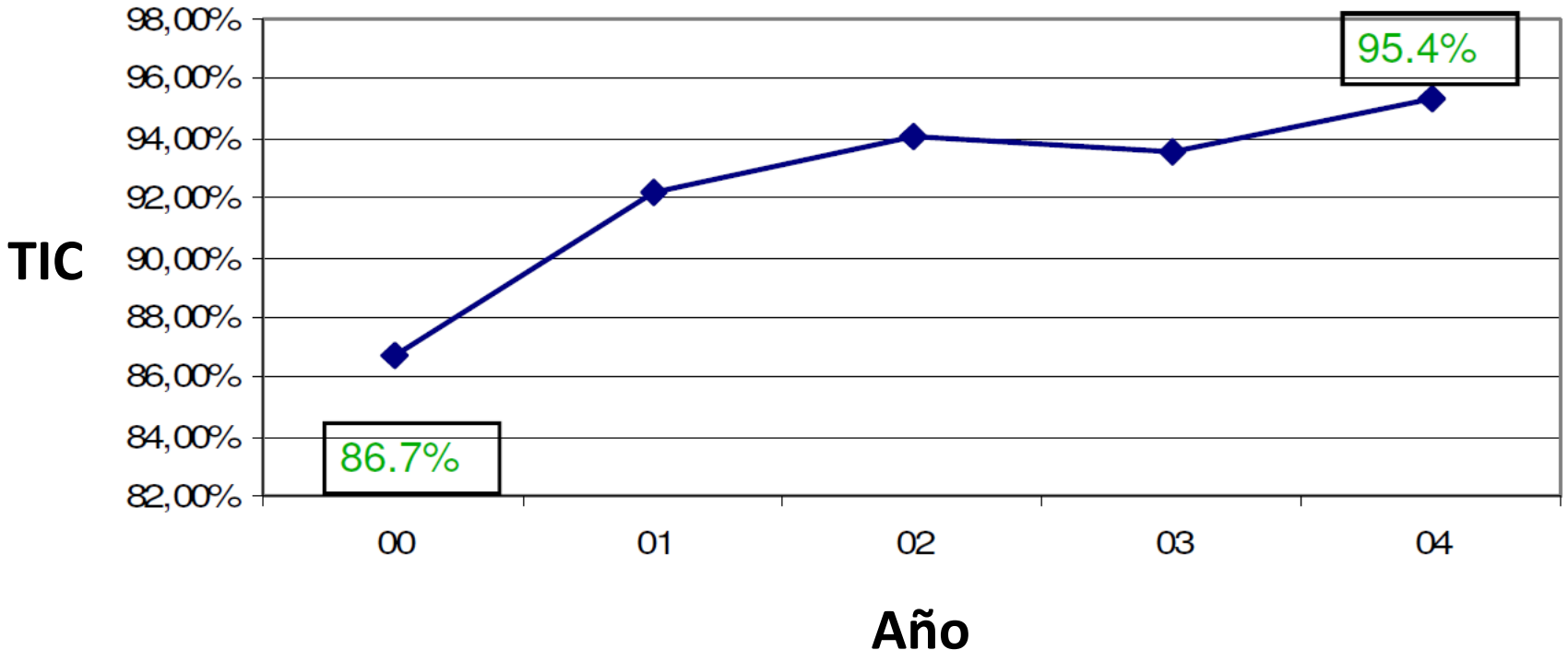
Park HJ, BMC Medical Education 2013;13:1-7

Tasas de intubación cecal, curva de aprendizaje



Park HJ, BMC Medical Education 2013;13:1-7

Tasa de Mejoría de intubación cecal (5 centros, 5 años, 24.520 colonoscopias)



Colonoscopia, Tècnica bàsica

Dificultades para avanzar

Rectificaciòn constante

Buscar soluciones ràpidamente

Intentar una estrategia màximo 2 veces

Los expertos no tienen màs destrezas

Toman mejores decisiones, no repiten, no hacen maniobras sin sentido

Cambios de posiciòn

Cambio de equipo

Rigidez variable

Bourke MJ, Rex DK, Am J Gastroenterol 2012;107:1467-72

Fase de retirada es la más importante para detectar lesiones

Hay que esmerarse en ver lo pequeño, para que no se nos pase lo grande

Rex DK. Completing colonoscopy. ASGE video 2006

Durante la retirada

Insuflar lo suficiente para ver todo
Aspirar después de examinar el área
Rotar el liquido hacía las 6 para aspirarlo
Siempre examinar detrás de pliegues y flexuras
Reinsertar el colonoscopio si no se vio bien
Cambiar de posición si un área no se ve bien

Waye JD, Thomas-Gibson S. Gastrointest Endosc 2018;87:621-4

Colonoscopic Withdrawal Times and Adenoma Detection during Screening Colonoscopy

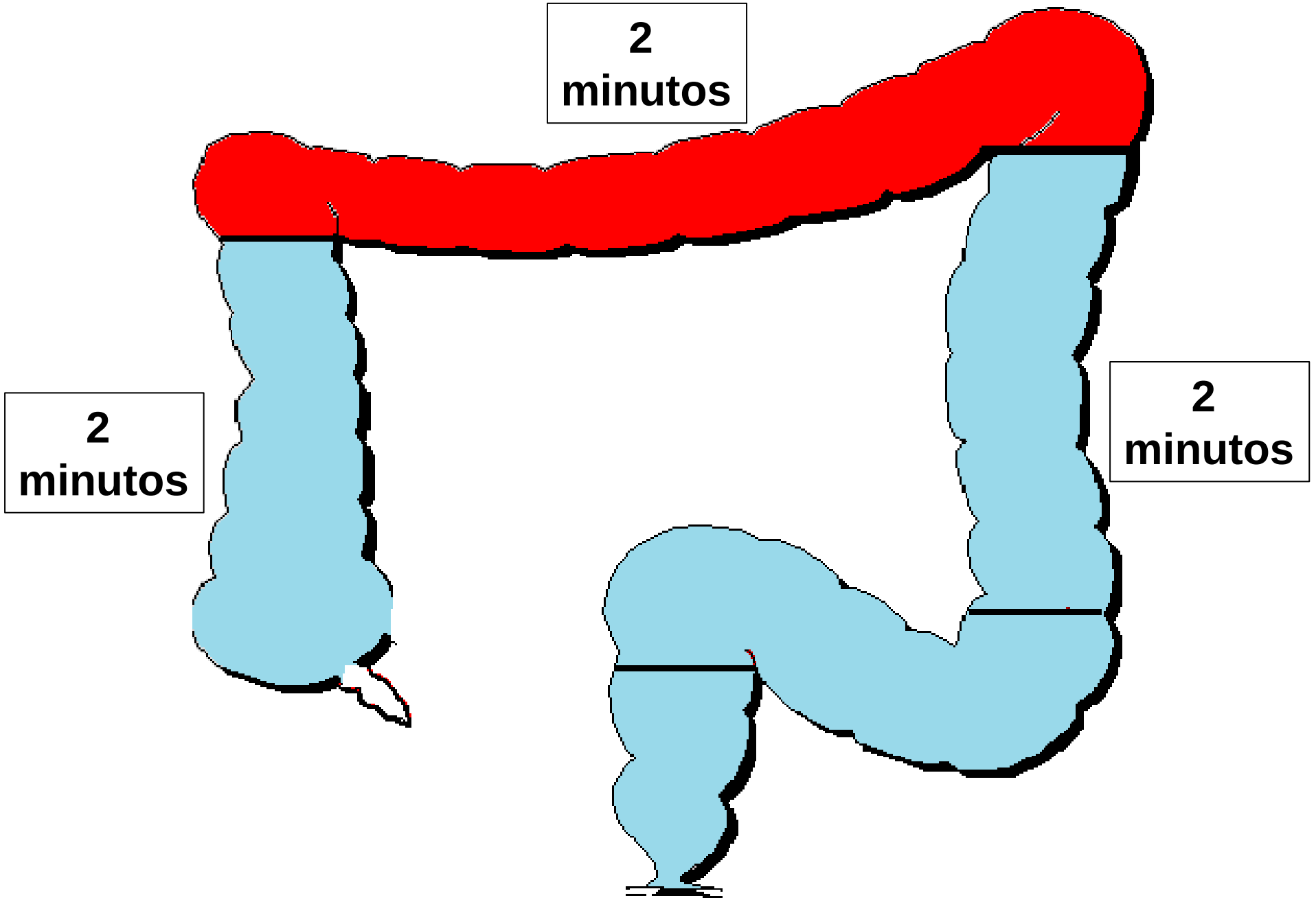
Robert L. Barclay, M.D., Joseph J. Vicari, M.D., Andrea S. Doughty, Ph.D., John F. Johanson, M.D., and Roger L. Greenlaw, M.D.

NEJM 2006;355:2533-41

Table 4. Rates of Detection of Lesions According to Mean Withdrawal Time for Procedures in Which No Polyps Were Removed.*

Variable	All Physicians (N=12)	Less Than 6 Minutes (N=3)	6 Minutes or Longer (N=9)	P Value†
Subjects with adenomas (%)	24.2±8.3	11.8±2.2	28.3±4.0	<0.001
Adenomas per subject screened (no.)	0.50±0.26	0.17±0.07	0.61±0.20	0.006
Subjects with advanced neoplasia (%)	5.5±2.3	2.6±1.1	6.4±1.7	0.005
Advanced neoplastic lesions per subject screened (no.)	0.06±0.03	0.03±0.01	0.07±0.02	0.005
Cancers per subject screen			0.005	0.30
Subjects with hyperplasia (			10.9	0.03

6 minutos o más


2
minutos
2
minutos
2
minutos

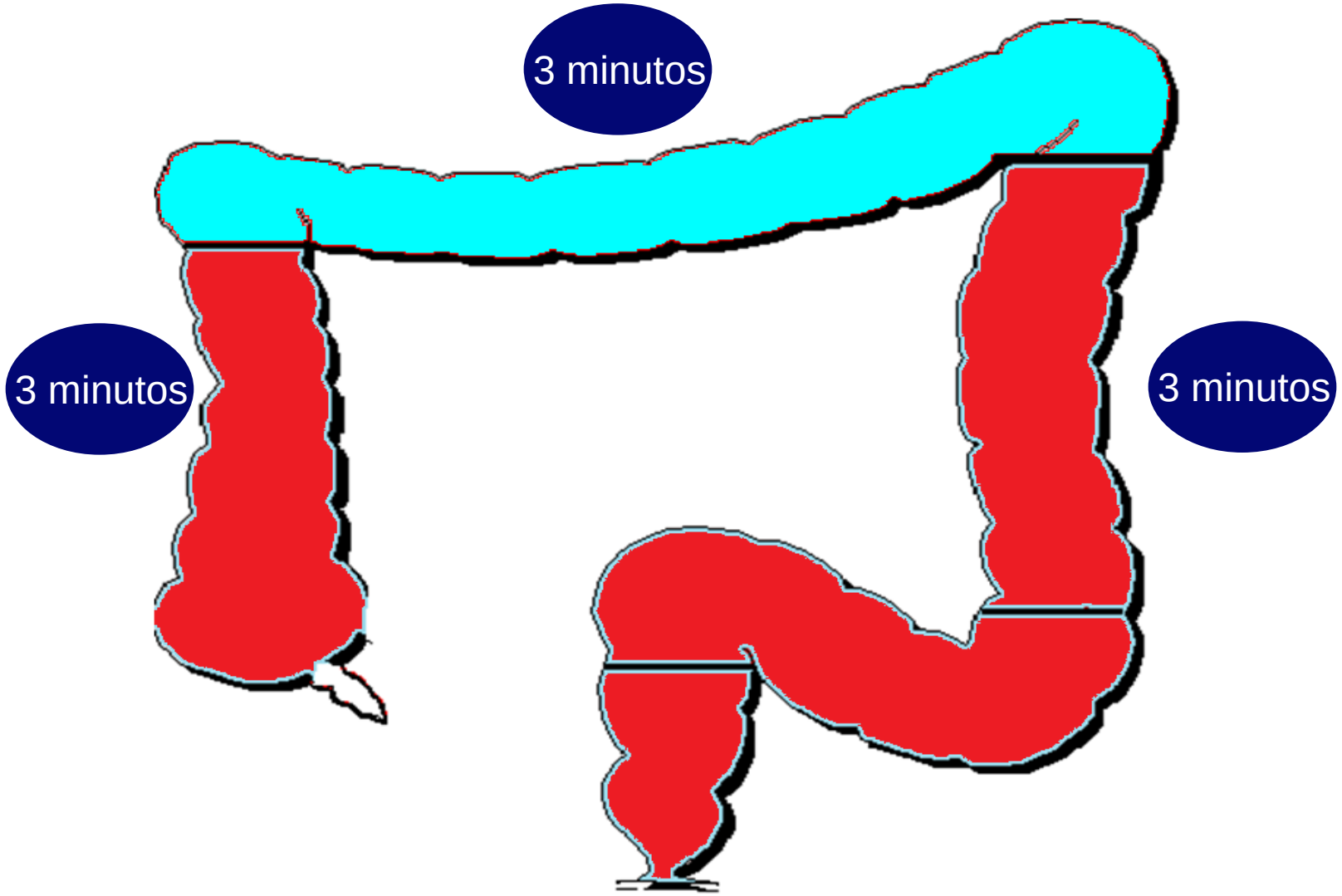
Serrated and Adenomatous Polyp Detection Increases With Longer Withdrawal Time: Results From the New Hampshire Colonoscopy Registry

Lynn Butterly, MD[1,2], Christina M. Robinson, MS[3], Joseph C. Anderson, MD[2,4], Julia E. Weiss, MS[3], Martha Goodrich, MS[3],

***Am J Gastroenterol* 2014; 109:417–4**

	Endoscopists				
Median endoscopist NWT (min)	*N*	%	PDR rate % (95% CI)	ADR rate % (95% CI)	SDR rate % (95% CI)
3–5	5	11.9	38.7 (35.6–42.0)	20.1 (17.5–22.8)	3.9 (2.8–5.4)
6	5	11.9	42.6 (39.5–45.7)	23.8 (21.3—26.6)	5.0 (3.7–6.5)
7	2	4.8	50.8 (48.2–53.5)	30.2 (27.8–32.7)	8.3 (6.9–9.9)
8	12	28.6	52.0 (49.5–54.6)	30.4 (28.1–32.8)	10.2 (8.7–11.9)
9	8	19.0	53.1 (50.2–56.1)	33.6 (30.9–36.4)	9.5 (7.9–11.4)
10	4	9.5	43.1 (40.3–45.9)	24.5 (22.1–27.0)	8.7 (7.2–10.4)
>10	6	14.3	47.8 (44.2–51.4)	20.8 (18.0–23.8)	11.8 (9.6–14.2)

9 minutos es superior a 6 minutos
9 minutos o más son iguales



Butterly L, Am J Gastroenterol **2014; 109:417–4**

Tiempo de retirada

Fellow

10 minutos

Gromoski MA, Surg End 2012;26:1337-42

Principios básicos que han resistido
Los avances tecnológicos

Mantener el colonoscopio recto
Torque a la derecha
Mínima insuflación de gas
No “empujar” si no se sabe dónde está la punta
Nunca quitar el pulgar izquierdo de UP/Down
Cambios de posición y presión abdominal

Waye JD, Gastrointest Endosc 2018;87:621-4.

Consejos para mejorar la destreza del endoscopista

Identificar que existe el problema
Asimilar y seguir técnicas adecuadas
Monitoreo constante
Auditoría

Dificultades para intubación cecal de 100%

Dolicocolon
Malestar del paciente
Cirugía abdominal previa
Mujer, Obesidad

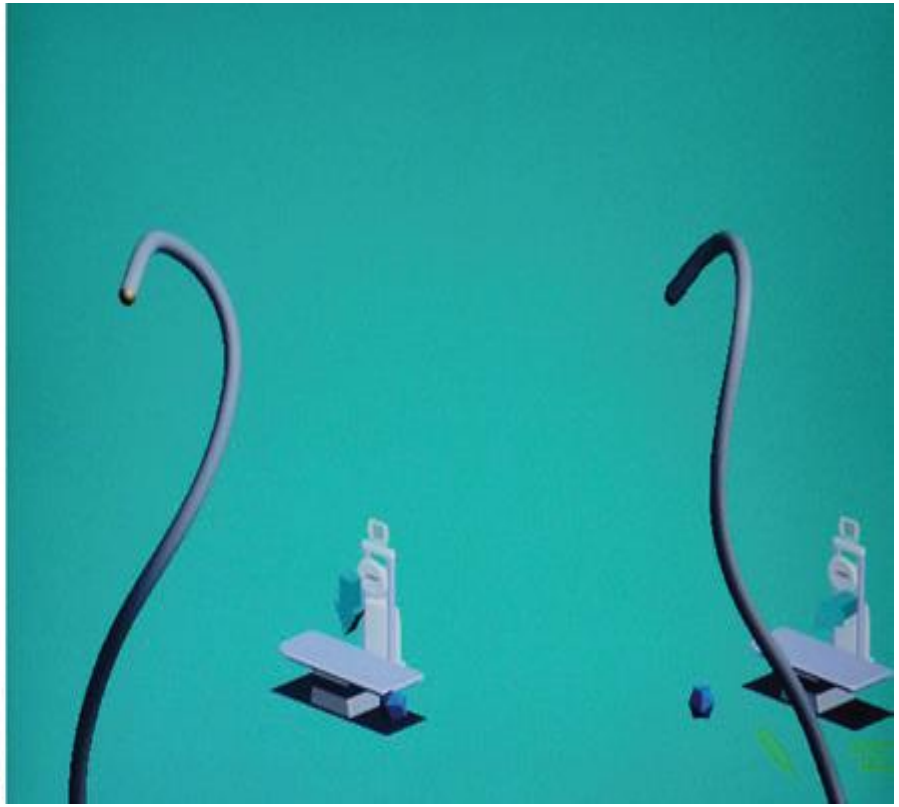
Mala preparación
Estenosis

Colonoscopio pediátrico

Rigidez variable

Imagen magnética

Endoscopia con imagen magnética



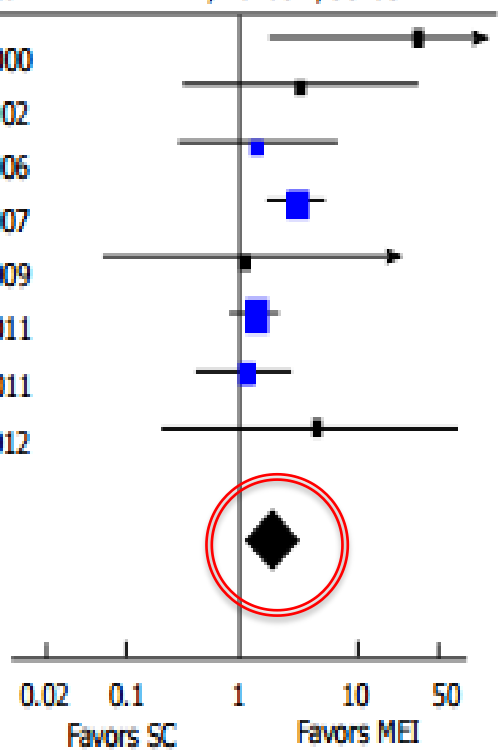
Colonoscopio estándar Vs con Imagen magnética: Meta-análisis

A

Study or subgroup	MEI Events	MEI Total	SC Events	SC Total	Weight	Odds ratio M-H, Random, 95%CI	Year
Shah SG 2000	150	150	132	146	3.2%	32.94 [1.95, 557.53]	2000
Shah SG 2002	61	62	57	60	4.7%	3.21 [0.32, 31.76]	2002
Cheung 2006	57	60	56	60	9.1%	1.36 [0.29, 6.34]	2006
Hoff G 2007	190	212	153	207	28.3%	3.05 [1.78, 5.23]	2007
Franciosi JP 2009	19	20	17	18	3.2%	1.12 [0.06, 19.28]	2009
Holme Ö 2011	385	419	350	391	30.2%	1.33 [0.82, 2.14]	2011
Dechêne A 2011	481	490	500	510	18.4%	1.07 [0.43, 2.65]	2011
Shergill AK 2012	65	65	73	75	2.8%	4.46 [0.21, 94.52]	2012
Total (95%CI)		1478		1467	100.0%	1.92 [1.13, 3.27]	
Total events	1408		1338				

Heterogeneity: $Tau^2 = 0.18$; $\chi^2 = 11.74$, $df = 7$ ($P = 0.11$); $I^2 = 40\%$

Test for overall effect: $Z = 2.42$ ($P = 0.02$)



Chen YI, World J Gastroenterol 2013;19:7197-204

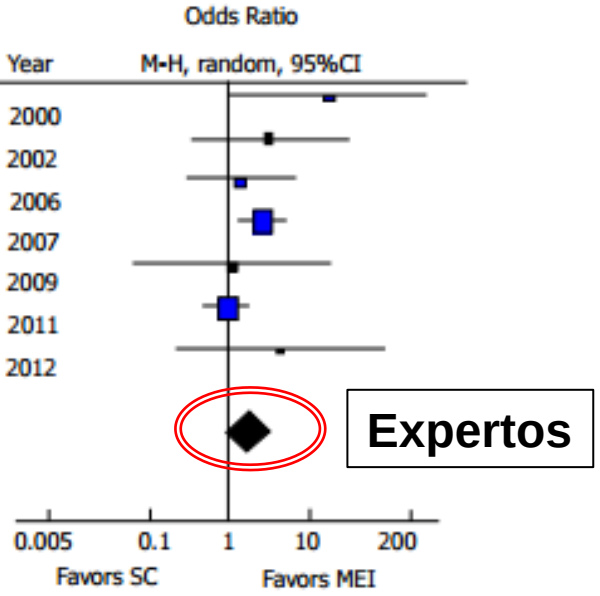
Colonoscopio estándar Vs con Imagen magnética: Meta-análisis

C

Study or subgroup	MEI Events	MEI Total	SC Events	SC Total	Weight	Odds Ratio M-H, random, 95%CI	Year
Shah SG 2000	92	92	83	91	4.5%	18.83 [1.07, 331.31]	2000
Shah SG 2002	61	62	57	60	6.7%	3.21 [0.32, 31.76]	2002
Cheung 2006	57	60	56	60	12.8%	1.36 [0.29, 6.34]	2006
Hoff G 2007	137	152	115	148	33.2%	2.62 [1.36, 5.06]	2007
Franciosi JP 2009	19	20	17	18	4.6%	1.12 [0.06, 19.28]	2009
Holme Ö 2011	343	365	321	340	34.1%	0.92 [0.49, 1.74]	2011
Shergill AK 2012	65	65	73	75	4.0%	4.46 [0.21, 94.52]	2012
Total (95%CI)		816		792	100.0%	1.84 [0.97, 3.48]	
Total events	774		722				

Heterogeneity: $Tau^2 = 0.21$; $\chi^2 = 8.95$, $df = 6$ ($P = 0.18$); $I^2 = 33\%$

Test for overall effect: $Z = 1.87$ ($P = 0.06$)

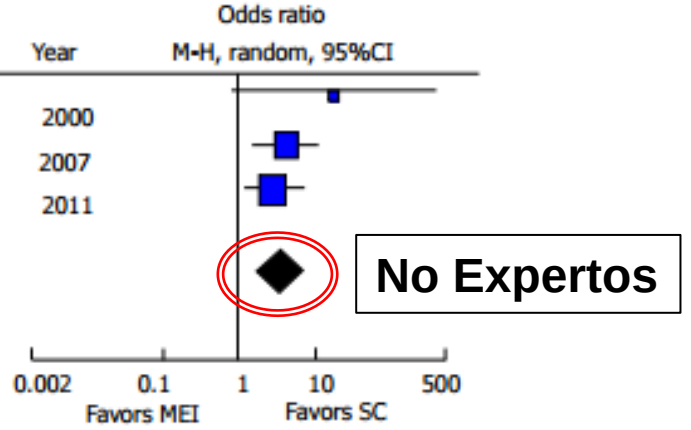


D

Study or subgroup	MEI Events	MEI Total	SC Events	SC Total	Weight	Odds ratio M-H, random, 95%CI	Year
Shah SG 2000	58	58	49	55	4.5%	15.36 [0.84, 279.57]	2000
Hoff G 2007	53	60	38	59	42.2%	4.18 [1.62, 10.83]	2007
Holme Ö 2011	42	54	28	51	53.3%	2.88 [1.23, 6.70]	2011
Total (95%CI)		172		165	100.0%	3.63 [1.96, 6.74]	
Total events	153		115				

Heterogeneity: $Tau^2 = 0.00$; $\chi^2 = 1.37$, $df = 2$ ($P = 0.50$); $I^2 = 0\%$

Test for overall effect: $Z = 4.09$ ($P < 0.0001$)



Chen YI, World J Gastroenterol 2013;19:7197-204

Colonoscopia total

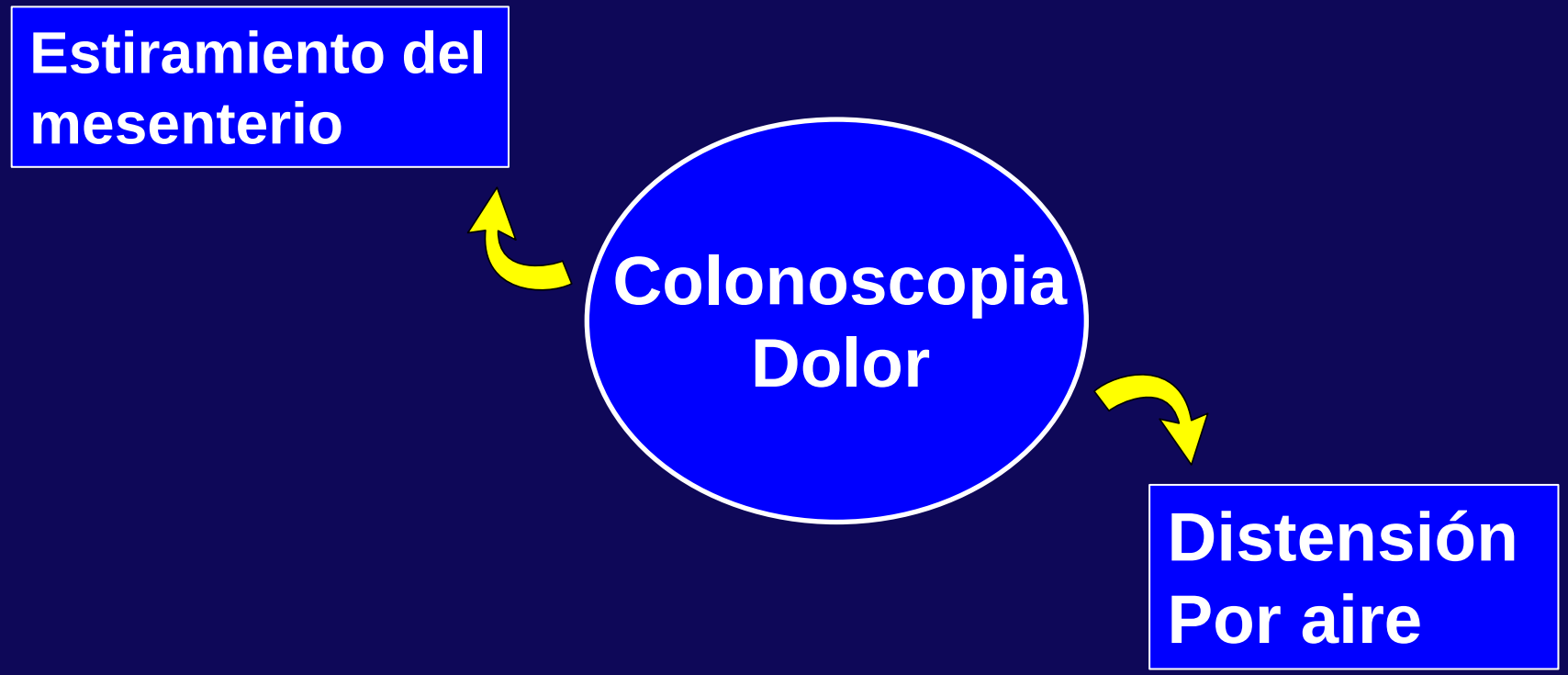
Desafiante

Paciente

Dolor
Prolongado
Temor
Perforación, sangrado

Médico

Difíciles
Estrés, decidir:
Riesgo complicaciones
Vs probabilidad completarla



Waye JD, Am J Gastroenterol 2004;

Colonoscopia sin dolor

Rex D, Am J Gastroenterol 2012;107:1467-72

Sedación

Mayoría
EE. UU.
"Examen doloroso"
98-99%
Preferencia de paciente 6%

Minoría
Finlandia

"A demanda"

Nosotros antes:10%
Hoy 100% ("mercadeo"

Rex DK, Gastrointest Endosc 1999;49:554-9

La técnica *siempre* es la misma!!

A new composite measure of colonoscopy: the Performance Indicator of Colonic Intubation (PICI)

Authors
Roland M. Valori[1], Sarah Damery[2], Daniel R. Gavin[3], John T. Anderson[4], Mark T. Donnelly[5], J. Graham Williams[6], Edwin T. Swarbrick[7]

Endoscopy. 2018;50:40-51.

Maniobras con agua

The NEW ENGLAND JOURNAL of MEDICINE

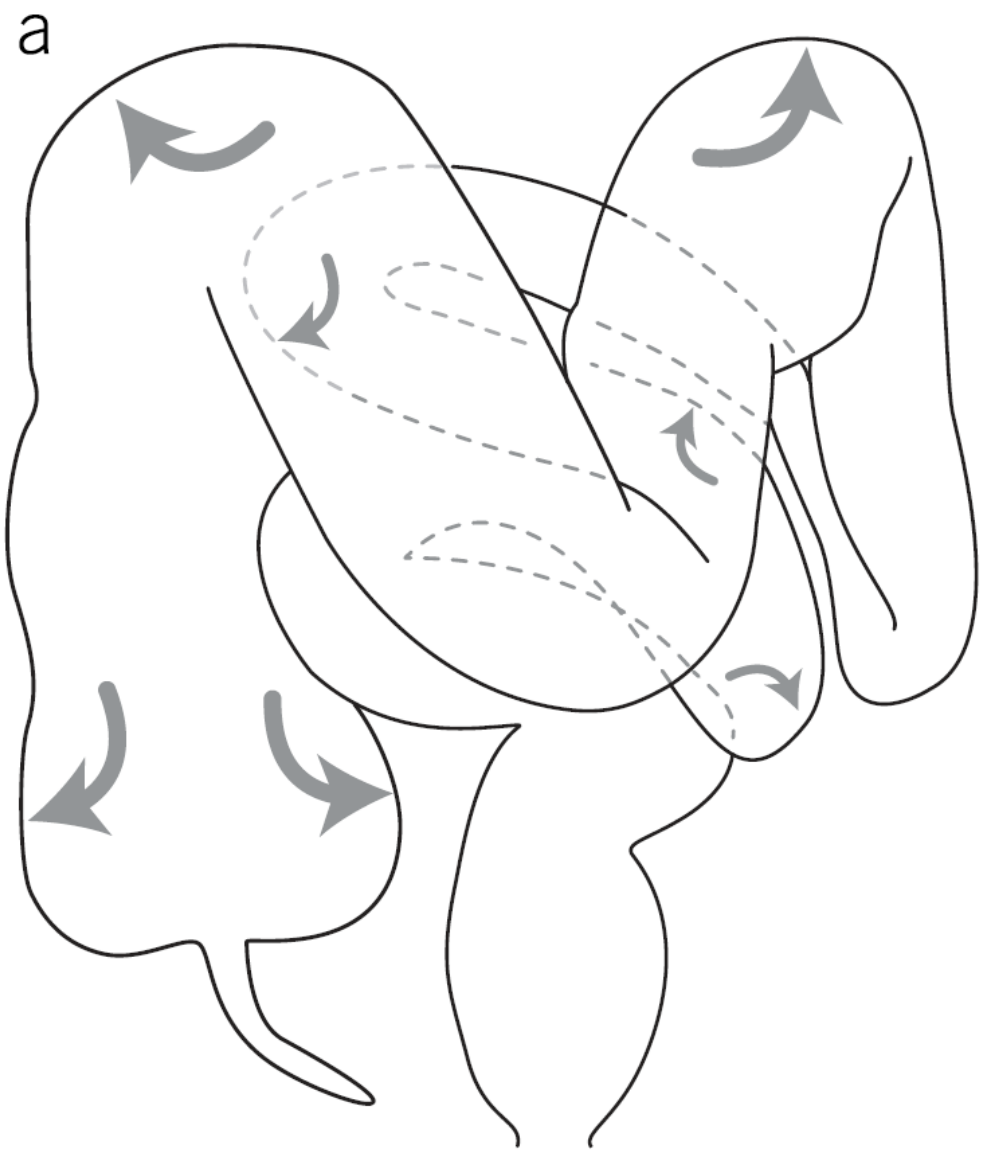
CORRESPONDENCE ARCHIVE

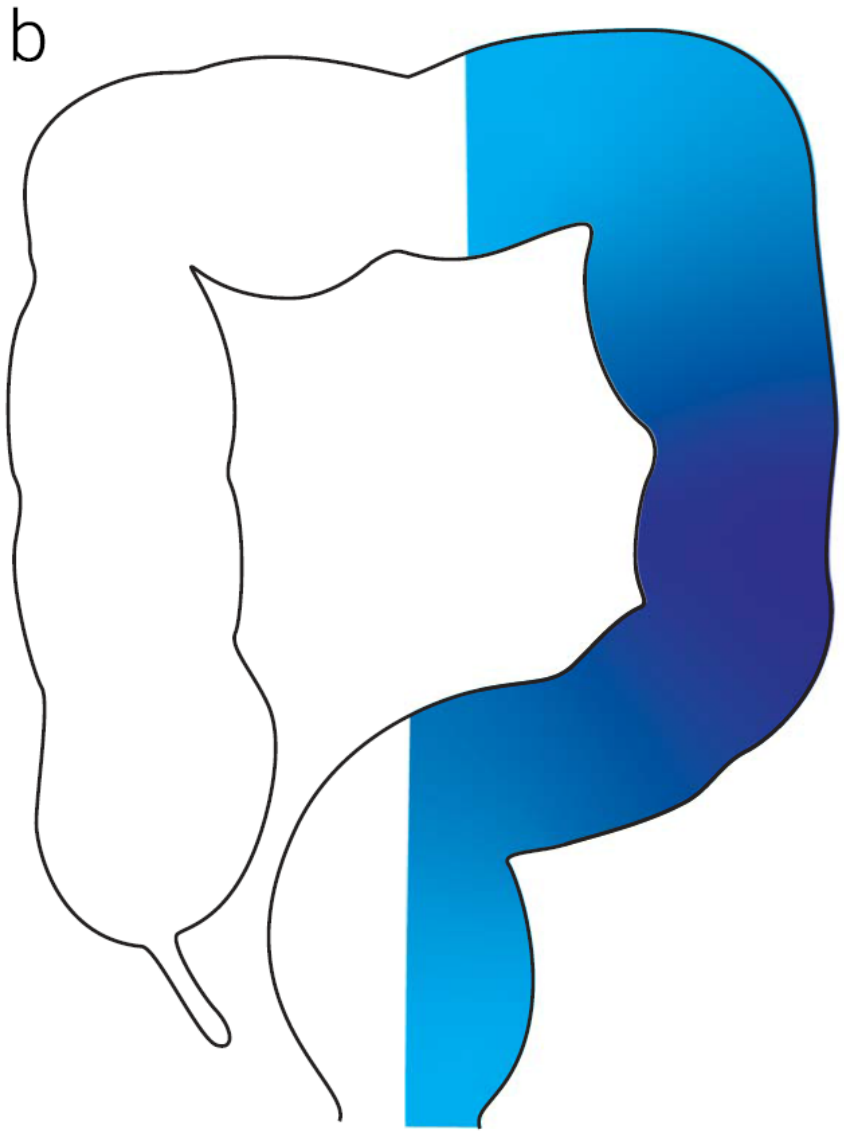
A Technique to Facilitate Colonoscopy in Areas of Severe Diverticular Disease

N Engl J Med 1984; 310:598 | March 1, 1984 | DOI: 10.1056/NEJM198403013100919

No extract is available for articles shorter than 400 words.

Aire



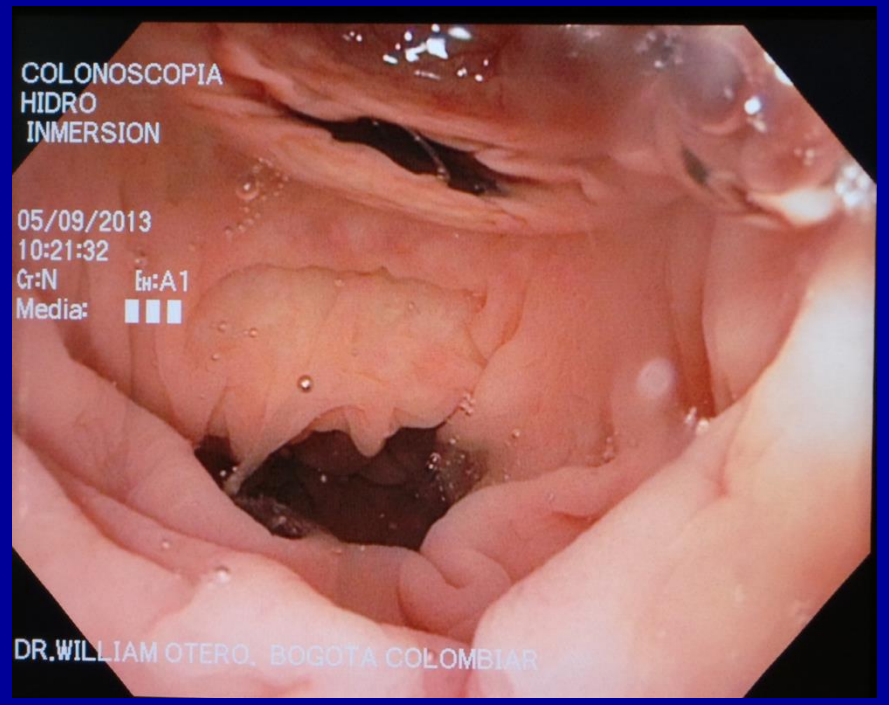


Agua

Rex DK. Am J Gastroenterol 2020 epub ahead Dic 10

Maniobra con agua. Técnica de Intercambio

200-300 ml



Maniobras con agua

200-300 ml a 37°
Disminuir : Molestias, dolor, espasmos
Acorta el sigmoides y lo encoge hacía CII
El aire lo empuja al abdomen medio
y produce ángulos agudos

Succión durante
La Inserción
Intercambio

Succión durante
La retirada
Inmersión

Híbrida
Agua + aire

Leung FW, Gastrointest Endosc 2012;76:657-66

Leun FW, Endoscopy 2011;43:816-21

Digestive Endoscopy 2013; **25**: 231–240 doi: 10.1111/den.12018

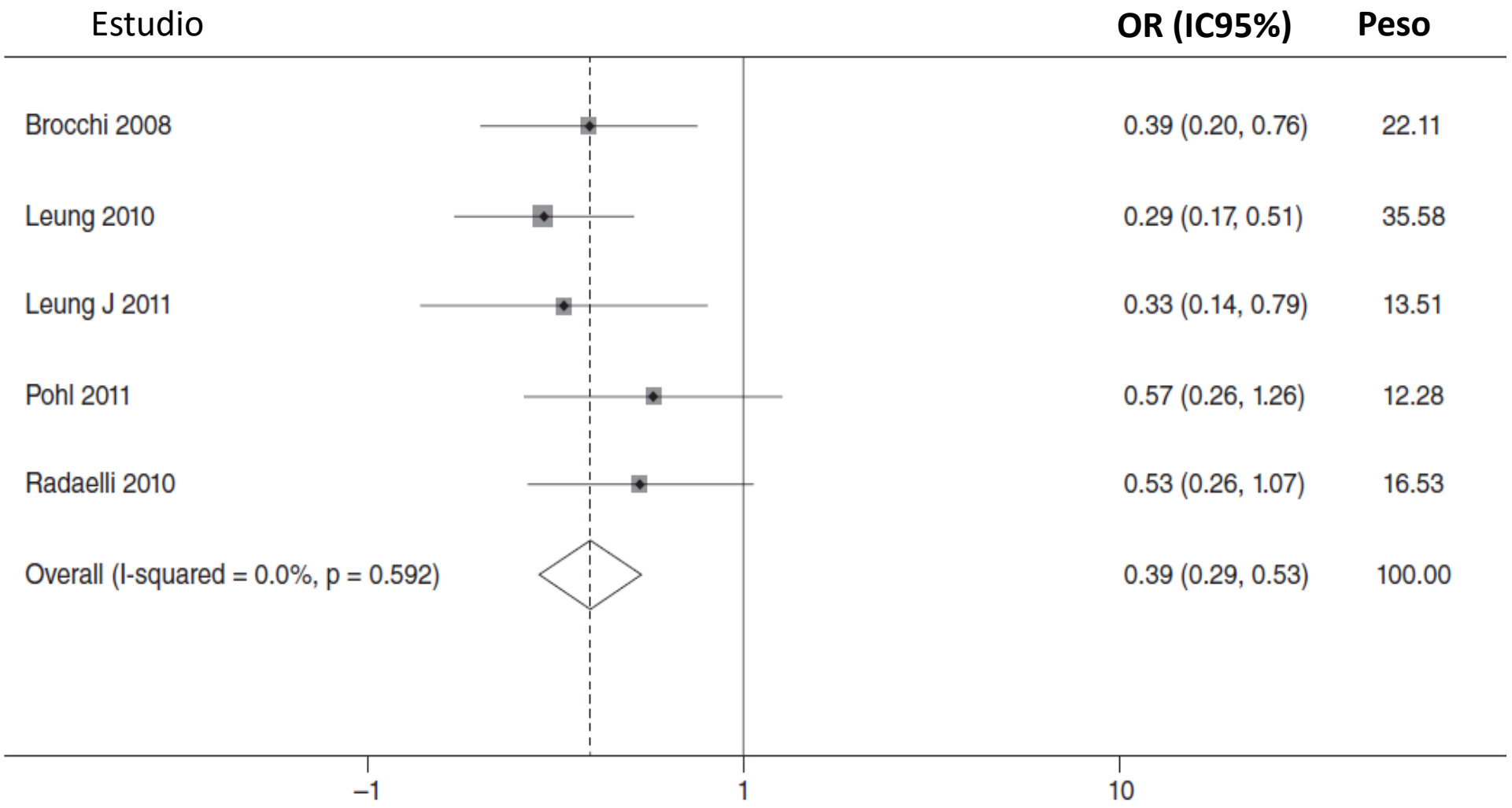
Review

Water intubation method can reduce patients' pain and sedation rate in colonoscopy: A meta-analysis

Siheng Lin,[1] Wei Zhu,[1] Kun Xiao,[1] Peizhu Su,[1] Yangyang Liu,[1] Pingyan Chen[2] and Yang Bai[1]

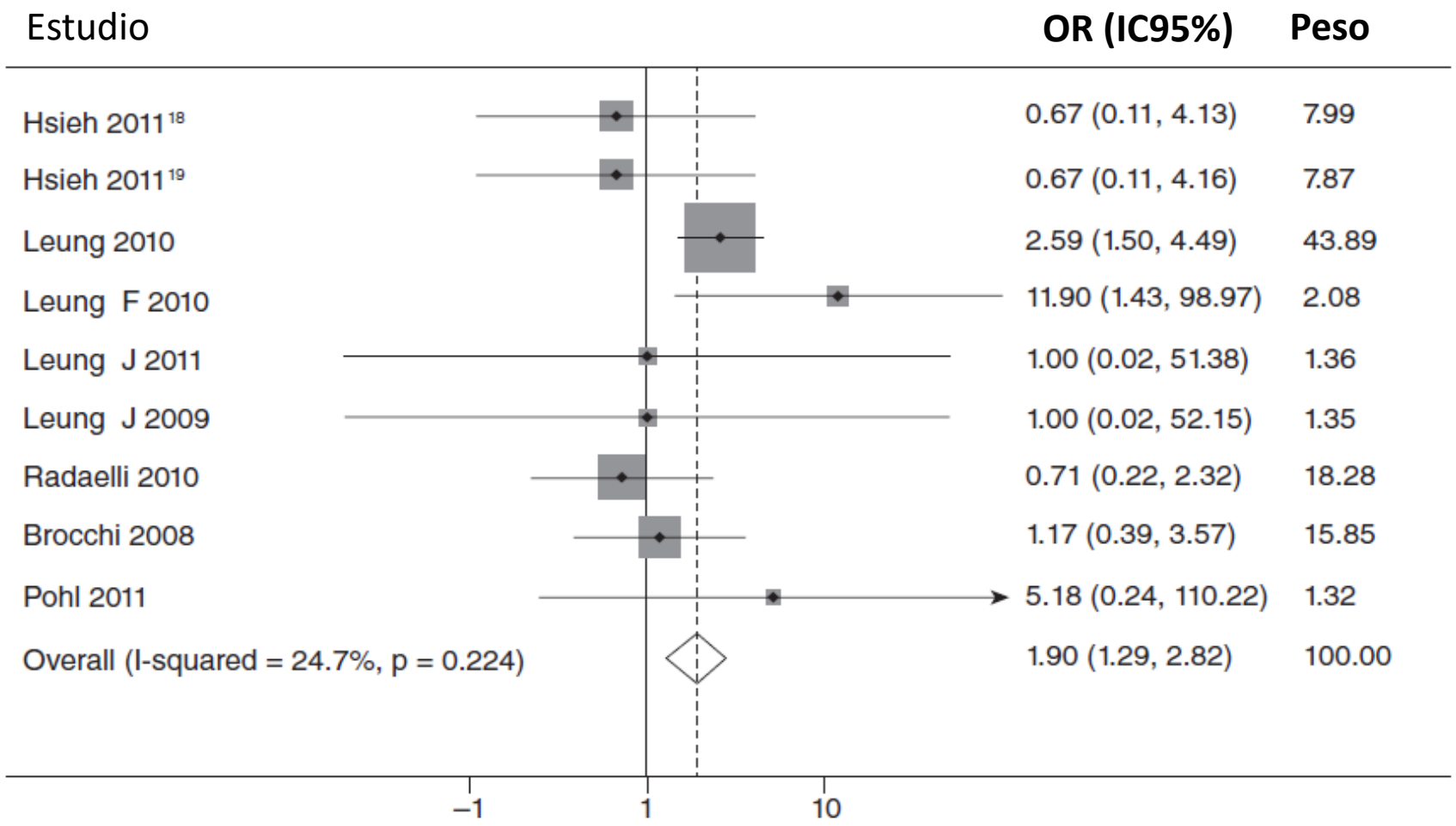
[1]*Department of Gastroenterology, Guangdong Provincial Key Laboratory of Gastroenterology, Nanfang Hospital and* [2]*Biostatistics Unit, Southern Medical University, Guangzhou, China*

Inmersión: Menos sedación



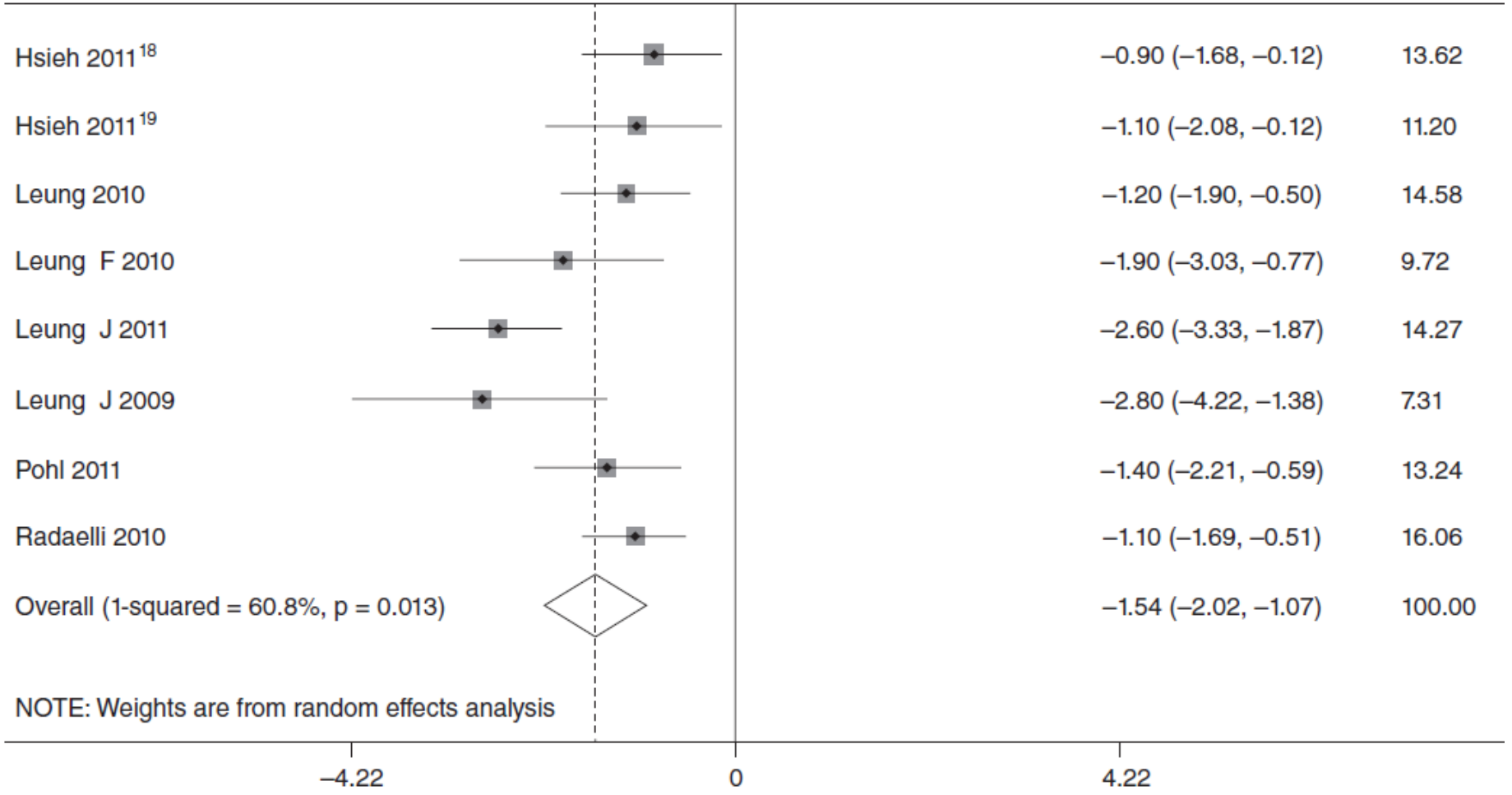
Lin S, Dig Endosc 2013;25:231-40

Inmersión : > tasa de llegada al ciego



Lin S, Dig Endosc 2013;25:231-40

Inmersion : MENOS Dolor



Lin S, Dig Endosc 2013;25:231-40

Inmersión

Tasa de detección de pólipos
Tiempo de llegada al ciego
NS

Lin S, Dig Endosc 2013;25:231-40

Leung FW, Gastrintest Endosc 2012;76:1182-7

Tiempo llegada
Al ciego inmersión

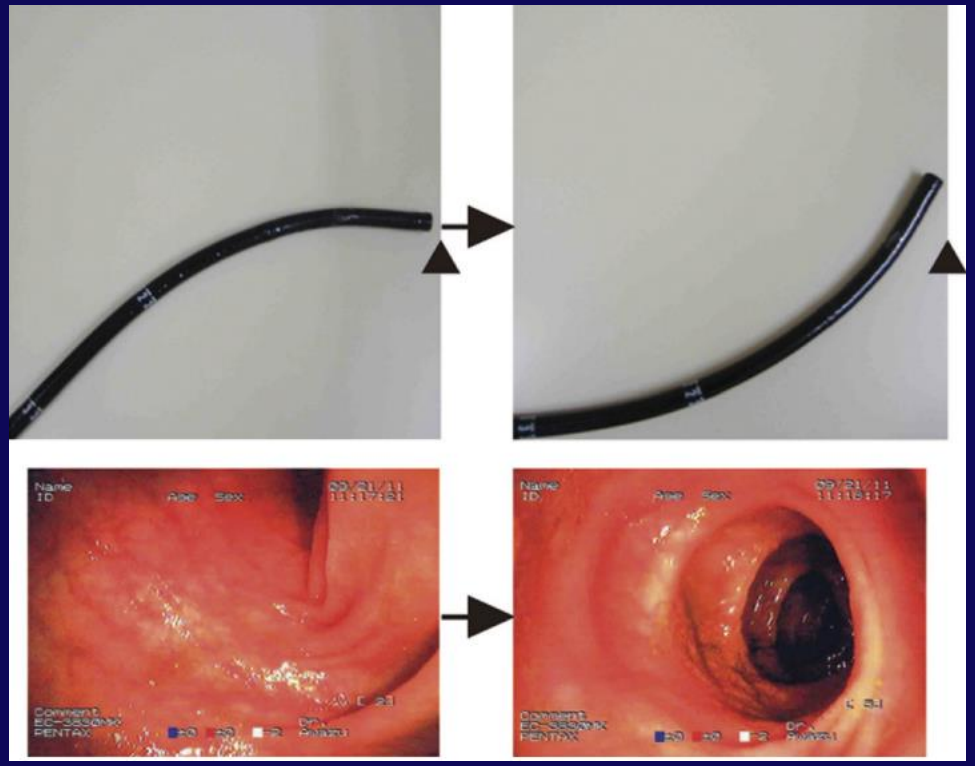
5-13 minutos

Leung FW, Gastrintest Endosc 2012;76:1182-7

Por azar

Decúbito lateral izquierdo

Decúbito prono



Awazu S, Gastrointest Endosc 2012,75:702-3

Dig Dis Sci (2013) 58:782–787
DOI 10.1007/s10620-012-2468-x

ORIGINAL ARTICLE

Prone Positioning of Obese Patients for Colonoscopy Results in Shortened Cecal Intubation Times: A Randomized Trial

Fatema S. Uddin · Ramiz Iqbal · William V. Harford ·

Table 2 Study outcomes

Outcome	Standard ($N = 50$)	Prone ($N = 51$)	p value
Time to cecum (s)	550	420	**0.03**
Cecal intubation rate	100 %	100 %	1.0
Patients repositioned	14 (28 %)	4 (8 %)	**0.009**
Sedation			
Midazolam (mg)	3.1 ($n = 48$)	3.0 ($n = 48$)	0.47
Fentanyl (mcg)	62.9 ($n = 29$)	71.5 ($n = 30$)	0.61
Meperidine (mg)	50 ($n = 19$)	58.3 ($n = 18$)	0.19
Unsedated	2	3	
Pain			
Number with pain	27 (56 %)	30 (59 %)	0.95
Average pain score (0–10)	3.7	3.8	0.79

Video de colonoscopia total

Bogotá Colombia 2009

Colonoscopia difícil

Dificultad para llegar al ciego

- Técnica H_2O, CO_2
- Rigidez variable
- Colonoscopios delgados
- Cambios de posición
- Reducción de asas
- Compresión abdominal

Una enfermera experta Hace la diferencia entre el éxito o fracaso

CO2

CO_2

250 ml/ Min

Gas retenido.
1 hora pos procedimiento
CO_2: 90% pacientes trazas
Aire: 96% en todo el colon
18%: diámetro >10 cm

Dolor, 6 horas:
CO_2: 3% Vs 50% (p=0.0005)
24 horas
5% vs 36% p=0.01

Bretthauer M, Gastrointest Endosc 2003;58:203-6
Stevenson GW, Gastrointest Endosc 38:564-7
Sumanac K, Gastrointest Endosc 2002;56:190-4

Colonoscopia difícil

Paciente

“Sufre más”

Médico

“Sufre y suda para alcanzar el ciego”

Colonoscopistas 1000-5000, Difícil 10-20%

Witte TN, Can J Gastroenterol 2007;21:487-90
Roberts-Thompson IC, J Gastroenterol Hepatol 2009;24:180-4

Colonoscopia difícil

No hay Meta-análisis

No hay ensayos clínicos Que comparen dos técnicas!!!!

Proximas conferencias Del curso “Colonoscopia”

Colonoscopia difícil
Indicadores de calidad
Preparación del colon
Polipectomía básica

Mensajes para la casa

La tasa de intubación del ciego 90/95%
El colonoscopio se debe coger como un lápiz
Mínima insuflación de aire
Maniobras de rotación y Rectificación constante
No empujar contra resistencias
Si hay dificultad para avanzar retirar el equipo
RS 15, S-descendente 30 cm, Ciego 70-80 (90 cm)
Siempre hay posibilidad de mejorar!
Nadie es iluminado

“Uno de mis mejores privilegios es La perseverancia”

Albert Einstein

Si no siempre llegas al ciego
No te afanes, sigue adelante
Mañana vuélvelo a intentar
No te afanes en quedar bien
Afánate por aprender

“Con un talento ordinario y una perseverancia extraordinaria, todas las cosas son posibles“

Thomas E. Buxton

Si no lo entiendes pregunta
No lo aceptes sino lo puedes entender !!

Muchas gracias!!