S.Matasov

Prospects of CRC endoscopic screening

Part 2
Antegrade intubational method of colon washing

Annotation

The proposed method pursues quick and qualitative colon preparation immediately before urgent or planned colonoscopy. Todays means – traditional colon preparation and retrograde method of colon washing does not ensure colonoscopy.

1. Traditional method of preparation for colonoscopy takes about whole day and comprises: non-slags diet, reception of laxatives, liquid, rectal enemas [1-4]. In the recent publication in American Journal of Gastroenterology [5] there is made estimation of quality of preparing for colonoscopy of 1387 patients:

- 31,6% - of them have bad preparation,
- 75% - satisfied,
- 15,3% - excellent/good.

Thus on even every third colonoscopy walls and cavity of large intestine are polluted with fecal material. This “dirt” is among the reasons which cause risk to miss 32,8% of polyps and 31,4% adenomas [6].

2. Retrograde method of colon washing with the help of tube inserted into rectum or sigmoid colon [7], is unacceptable for preparation for urgent colonoscopy as it exclude liquid circulation: first portions of water, after filling of sigma, prevent both its further retrograde feeding and its evacuation from proximal sections of large intestine. Besides, retrograde method does not ensure full emptying of descending, transversal, ascending colon and caecum. Presence of liquid in colon, as is known, complicate colonoscopy.

3. The Antegrade intubational method of colon washing is based on the complex Intestinal intubator with drain and irrigator [8-15], which is used in the Adequate method of single-moment colon resection (see section 1 of website, slide 6). The complex ensures:

1. Transanal colon intubation.
2. Antegrade liquid feeding into caecum.
3. Full colon emptying.

3.1. Transanal colon intubation is realized by 2 forces, interacting according the “push-and-pull” principle. The force “pull” is created by invaginator – thin-walled sleeve, everted under the air pressure. During evertion, invaginator both with the drain enclosed therein, rolls over mucosa (see the same, slide 7), thus ensuring atraumatic intubation. The source of “push” force is feeder; in course of intubation it pushes invaginator with drain into inflated part of invaginator. Step-by-step intubation is ensured by pedal of feeder of invaginator with drain.

Experience of transanal intubation showed that passing of sharp angles: recto-sigmoidal, sigmoid-descending, splenic, liver requires a control. During operation the control is palpatory – it is realized by surgeon, in non operation intubation could be only apodactile. Focus of renewed Intestinal intubator with drain and irrigator – distance change of invaginator’s evertion direction.

3.2. Antegrade liquid feeding ensures everted invaginator, opened after intubation into caecum. Invaginator with diameter of 18-20 mm allows the liquid flow with the speed up to 10 l/min. After filling of caecum the flow moves towards the rectum, carrying colon contents into receiving wessel. Colon lavage till the “clear water” requires dozens of liters of liquid, its level over intestine should be minimal - 5-10 cm.

3.3. The full colon emptying from clean washing waters is ensured by spiral-mesh drain, comprising the sleeve with punctures (see the same, slide 9). Flexible spiral excludes overbendings of drain, the mesh excludes entering of large particles inside it. The liquid which is feeded into sleeve, recanalizes the drain, ensures washing of mesh and mucosa. Negative pressure which evacuates remains of washing waters, should be minimal – about 30 cmH_2O.

Conclusion. Antegrade method of colon washing pursues ensuring of qualitative urgent, as well as planned colonoscopy. The method is protected by patents of Australia, EAPO, EPO, Canada, China, Latvia, Ukraine; solving of the problem of apodactile colon intubation – is the know-how. Juridical protection of this new invention will start after receiving of means for realization of the Method. Please note: new intubation facilitates surgeon work during realization of the Adequate method of single-moment colon resection.

Basic sources of information

1. http://www.livestrong.com/article/288421-diet-for-bowel-preparation-before-a-colonoscopy Diet for bowel preparation before a colonoscopy. J. Saccone. 2011.
2. http://www.intechopen.com/books/endoscopic-procedures-in-colon-and-rectum/preparing-for-colonoscopy-2 Preparing for Colonoscopy. P. Deepak
3. http://m.gastroendonews.com/Article.aspx?d=Clinical+Reviews&d_id=192&i=March+2012&i_id=819&a_id=20452 Bowel preparation for colonoscopy: Maximizing Efficacy, Minimizing Risk. L.B.Cohen, 2013.
4. http://www.science-education.ru/102-5722 Сравнительная оценка методов кишечного лаважа при подготовке к фиброколоноскопии. Шапкин Ю.Г. и др., 2012.
5. http://www.beckerasc.com/gastroenterology-and-endoscopy/follow-up-colonoscopy-effect-of-bowel-cleansing-quality-on-recommendations.html Follow-Up Colonoscopy: Effect Bowel Cleansing Quality on Recommendations. ASCReview, 2014.
6. http://www.medscape.com/viewarticle/748898 Evolving Techniques in Colonoscopy, 2011
7. healthland.time.com/2011/08/01/colon-cleansing-not-so-cleansing-after-all Colon Cleansing: Not So Cleansing After All, Time, 2011.
8. http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20080514&DB=EPODOC&locale=en_EP&CC=EP&NR=1615539B1&KC=B1&ND=4 Matasov S., Disposable Intestinal Intubator with Drain and Irrigator, European patent 1615539, 14.05.2008.
9. http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20080630&DB=EPODOC&locale=en_EP&CC=EA&NR=010137B1&KC=B1&ND=4 Матасов С.А., Одноразовый интубатор колон с дренажом и ирригатором, Евразийский патент 010137, 30.06.2008.
10. http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20031231&DB=EPODOC&locale=en_EP&CC=CA&NR=2493909A1&KC=A1&ND=4 Matasov S., Disposable Intestinal Intubator with Drain and Irrigator, patent of Canada CA2493909, 31.12.2003.
11. http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20080731&DB=EPODOC&locale=en_EP&CC=AU&NR=200326491B2&KC=B2&ND=4 Matasov S., Disposable Intestinal Intubator with Drain and Irrigator, patent of Australia AU2003264913, 31.07.2008.
12. http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20091230&DB=EPODOC&locale=en_EP&CC=CN&NR=100574818C&KC=C&ND=4 Matasov S., Disposable Intestinal Intubator with Drain and Irrigator, patent of China CN100574818, 30.12.2009.

Basic sources of information

13. http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20071112&DB=EPODOC&locale=en_EP&CC=UA&NR=80828C2&KC=C2&ND=4 Matasov S.,Disposable Intestinal Intubator with Drain and Irrigator, patent of Ukraine UA80828, 12.11.07
14. http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20030320&DB=EPODOC&locale=en_EP&CC=LV&NR=12963B&KC=B&ND=4 Matasov S., Disposable anal Intubator with drainage and recanalizator-Irrigator, patent of Latvia LV12963, 20.03.2003.
15. Матасов С.А., Кишечный дренаж, авторское свидетельство СССР № 927254, 1982. Бюллетень 18.
16 . Матасов С.А. Проблемы и перспективы интубации кишечника, www.coloncancer.lv/book.pdf , 2012