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Functional constipation in children: Is there a place for surgical treatment

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Dear Editor,

An analysis of the articles, including those published in the Journal of Pediatric Surgery, which are dealing with colorectal surgery, shows that children's surgeons ignore the results of studies done by pediatricians, adult surgeons, and physiologists.

In 2005, known children's surgeons described 17 patients with idiopathic constipation who had sigmoid resection [1]. Long-term results of this method are still not published. In a recent article, it is stated that "... open sigmoid resection as a surgical option, but this did not sufficiently reduce the laxative need" [2]. Then the same authors, without any justification, suggested a transanal approach, like that used in Hirschsprung disease [3]. Based on the observation of 14 patients with more than 3 months of follow-up, the authors concluded that it is a useful alternative to other surgical options. Long-term results of this method are still not published. From a recent article, we learned that 50% of these patients encountered soiling for over 6 months in the postoperative period owing to extensive stretching of the anal canal and loss of the rectal reservoir [2]. Currently, authors recommend laparoscopic sigmoid resection combined with Malone appendicostomy in order to reduce the dose of Senna [2,4]. Is it reasonable to offer a complicated surgery with a high risk of serious complications just to reduce the dose of Senna? I am convinced that a median follow-up of 10.3 months is not enough to recommend this procedure. Moreover, in these articles, there are no medical justifications for

the prolonged use of large doses of Senna and the frequent recurrent performance of X-ray studies. No clear indications for surgery and the choice of the surgical method are mentioned.

1. Indications for surgery

There is no evidence in the literature that large doses of Senna have an advantage over polyethylene glycol (PEG).

First, the clean colon (without contents) for a long time is not safe, not only for the colon, but for the body because the colon function is severely impaired.

In my opinion, if Senna provokes severe symptoms of abdominal distention, cramping and vomiting, those are manifestations of inappropriate treatment. If the patients are still soiling during the application of Senna, this indicates a weakness of the puborectalis muscle. If patients do not take the prescribed amount of Senna either for social reasons, economic barriers, or cultural beliefs, in my opinion they must have other medicines administered. However, the authors of the program considered that these three categories of patients are nonmanageable and a colonic resection was offered to them in attempt to reduce the amount of Senna [5].

Second, the authors use about 10 radiographs in order to make sure that the colon is empty. Despite the fact that there are no reported cases of harmful effect of ionizing radiation in children, it is reliably established that its damaging effect could manifest during the adult life. Therefore, Rome criteria IV recommend applying radiographs only as a last resort.

Third, prolonged use of large doses of Senna is not safe, as it has toxic properties, has a carcinogenic effect, and can impair the colon function.

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Although these effects were not described in childhood, we cannot neglect the possibility of these side effects' appearance in the adult life [6].

The efficacy of conservative treatment of functional constipation (FC) with polyethylene glycol and other laxatives has been well established. The treatment programs offered by pediatricians and the Rome IV criteria are consistent with the basic principles of treatment for FC. At the same time, the long-term use of large doses of Senna is not safe, and its efficacy is not proven. The proposed trial and error treatment program is not scientifically justified. Indications for surgery are pathophysiologically unjustified and not ethical. (Is it ethical to operate children with FC only because they cannot take large doses of Senna for various reasons?).

2. Surgical methods

This group of authors “resuscitated” the old method used for megacolon in adults. It is known, that the mechanism of FC is an outlet obstruction. As a result, the rectum is always distended. The more feces accumulate in the anal canal, the more the rectum and left colon dilate. Since the sigmoid colon has a mesentery, it not only expands, but also lengthens. Resection of the sigmoid colon does not eliminate the main causes of constipation and fecal incontinence: megarectum and damaged anal canal, including weakness of the pelvic floor muscles. Therefore, this method is no longer used in adults. Temporary relief of constipation will inevitably be replaced by a return of the symptoms, first because the Malone procedure (appendicostomy) cannot function indefinitely, and second, the accumulation of feces in the expanded rectum will inevitably lead to the accumulation of feces in the descending colon proximal to the anastomosis resulting in recurrence of megacolon.

The authors introduced the concept of segmental colonic dilation to support theoretically the resection of the sigmoid colon [7]. In this article, the authors refer to their other work, where they tried to determine the maximum limit of the normal width of the rectum [8]. In this work, as a result of methodological errors, the authors came to the absurd conclusion that the maximum width of the rectum in children 1–6 years old can be the same as in adults [8,9]. As a result of this error, in fact, the dilated rectum is considered normal, which supposedly confirms the possibility of “segmental dilation of colon”.

3. Conclusion

1. Authors who publish works devoted to surgical treatment of the FC in children ignore the modern achievements on this issue, adopted among pediatricians, adult surgeons and physiologists.
2. The program of examination of children with prolonged use of large doses of Senna is unreasonable and unsafe.
3. The indications for the operation are not substantiated and not ethical.

4. There is no evidence confirming the efficacy of the proposed procedures. Meanwhile there are:
 - a) Misconceptions about the pathophysiology of FC: segmental colonic dilation instead of outlet obstruction.
 - b) The Rome IV Criteria do not provide indications for surgical treatment in children with FC.
 - c) The same authors publish each time a small number of observations and only preliminary (intermediate) results.
5. Since there are no long-term results reported and no control groups observed, there is no reason to believe that the quality of life of patients who underwent the surgery improved more than after prolonged conservative treatment.

It is not clear why scientifically unreasonable experiments are widely published in respectful scientific journals. They opened Pandora's Box. In some countries, operations to remove megacolon are put on the conveyor. This is the money gusher for some doctors.

It is necessary to discuss the FC problem openly, in order to return back to a scientific basis.

With respect.

References

- [1] Levitt MA, Peña A. Surgery and constipation: when, how, yes, or no? *J Pediatr Gastroenterol Nutr* 2005;41(Suppl. 1):S58–60 [No abstract available].
- [2] Gasior A, Brisighelli G, Diefenbach K, et al. Surgical management of functional constipation: preliminary report of a new approach using a laparoscopic sigmoid resection combined with a Malone appendicostomy. *Eur J Pediatr Surg* 2017;27(4):336–40. <https://doi.org/10.1055/s-0036-1593606> [Epub 2016 Oct 25].
- [3] MA Levitt, Martin CA, Falcone Jr RA, et al. Transanal rectosigmoid resection for severe intractable idiopathic constipation. *J Pediatr Surg* 2009;44(6):1285–90. <https://doi.org/10.1016/j.jpedsurg.2009.02.049> [discussion 1290–1].
- [4] Gasior A, Reck C, Vilanova-Sanchez A, et al. Surgical management of functional constipation: an intermediate report of a new approach using a laparoscopic sigmoid resection combined with malone appendicostomy. *J Pediatr Surg* 2018;53(6):1160–2. <https://doi.org/10.1016/j.jpedsurg.2018.02.074> [Epub 2018 Mar 7].
- [5] Bischoff A, Brisighelli G, Dickie B, et al. Idiopathic constipation: a challenging but manageable problem. *J Pediatr Surg* 2017. <https://doi.org/10.1016/j.jpedsurg.2017.09.022> [pii: S0022-3468(17)30628-0. Epub ahead of print].
- [6] Levin MD. Letter to the Editor. *J Pediatr Surg* 2018;53(8):1634–5. <https://doi.org/10.1016/j.jpedsurg.2018.03.007> [Epub 2018 Mar 20. No abstract available].
- [7] Koppen IJN, Thompson BP, Ambeba EJ, et al. Segmental colonic dilation is associated with premature termination of high-amplitude propagating contractions in children with intractable functional constipation. *Neurogastroenterol Motil* 2017;29(10):1–9. <https://doi.org/10.1111/nmo.13110> [Epub 2017 May 19].
- [8] Koppen IJ, Yacob D, Di Lorenzo C, et al. Assessing colonic anatomy normal values based on air contrast enemas in children younger than 6 years. *Pediatr Radiol* 2017;47(3):306–12. <https://doi.org/10.1007/s00247-016-3746-0> [Epub 2016 Nov 29].
- [9] Levin MD. Reaction to Koppen et al., ‘Assessing colonic anatomy normal values based on air contrast enemas in children younger than 6 years’. *Pediatr Radiol* 2018. <https://doi.org/10.1007/s00247-018-4181-1> [Epub ahead of print].