Functional constipation in children in the works of pediatric colorectal surgeons.

М.Д. Левин

nivel70@hotmail.com;

michael.levin@dorot.health.gov.il

http://www.anorectalmalformations.com

Functional constipation (FC) in children arises in early childhood results from intentional withholding of stool following a painful experience with defecation [10]. It is believed that not paying attention to the rectal urge and/or suppression of the urge to defecation can lead to fecal retention, with the development of the rectal hyposensitivities, increased compliance, and megarectum [1,2]. Manometric studies have shown that pressure in the rectum, which normally leads to relaxation of the anal canal, in patients with FC, causes a contraction of the anal canal, which prevents emptying. These conditions are called anismus, dyssynergic defecation, or obstructive constipation [3,4]. Gradually, the retention of large volumes of feces in the rectum causes megarectum and the expansion and lengthening of the sigmoid colon - megadolihosigma (megacolon). Thus, in the pathogenesis of FC, both the dilated rectum, which forms large feces and the reaction of the anal canal to the introduction of wide feces into the anal canal play a role. Obviously, the thickened walls of the expended colon create a different manometric picture during its contraction. However, this is not the cause of chronic constipation, but a reflection of megacolon.

Pediatric colorectal surgeons call it "idiopathic constipation" because the cause of the disease is believed to be unknown. Instead of studying the nature of the disease before proposing treatments, or at least studying the large body of literature available, the authors refer to high-resolution manometry: "Decreased

colonic motility is poorly defined and is generally referred to as idiopathic constipation" [5].

So, for example, in the initial period of their experiments (**2005**), they have been performing a sigmoid resection for the treatment of the17 patients with constipation. "The degree of improvement in these patients varied. Following sigmoid resection, 10% of patients did not require any more laxatives, have bowel movements every day, and no soiling. Thirty percent of patients decreased the laxative requirement by 80%. The remaining 60% of patients decreased the laxative requirement by 40%" [5]. The authors are not yet aware of the long-term results, but since they are not satisfied with the results described above, they are planning new experiments. "An alternative could be to resect the rectosigmoid including the rectum, down to the pectinate line in a similar manner as for patients with Hirschsprung's disease and anastomose the non-dilated colon (that is assumed to have normal motility) to the rectum above the pectinate line" [5].

In **2009**, these authors reported performing transanal rectosigmoid resection in 15 patients, after more than 3 months of follow-up. They recommended this operation because "transanal rectosigmoid resection for medically intractable idiopathic constipation resulted in a dramatic reduction or elimination in laxatives use while preserving continence. It is a useful alternative to surgical options such as other colonic resections, antegrade enemas, and stomas" [6].

In **2017**, the previous experiments were summed up. "The senior author (Levitt) has previously reported: 1) open sigmoid resection as a surgical option, but this did not sufficiently reduce the laxative need, then 2) a transanal approach (with resection of rectosigmoid), but this led to a high rate of soiling due to extensive stretching of the anal canal and loss of the rectal reservoir". (3) The authors describe the following experiment. Six patients underwent laparoscopic sigmoid and left colon resection, or only sigmoid resection (a low anterior resection). Two

patients had postoperative colitis treated with oral antibiotics. The median follow-up was 52 days (range, 8-304 days) [7].

As in the previous two unfounded experiments, despite the small number of patients and the short follow-up period, the authors write about supposedly good results and recommend a third method for the treatment of functional constipation.

1. **Experiments on humans are not allowed.** You cannot advise (publish) operations that are not scientifically justified based on a small number of observations after a short observation time.

2. **The proposed operations were not physiologically justified.**

A) During transanal resection of the rectosigmoid, down to the pectinate line was removed 2/3 of the anal canal length. These patients developed true fecal incontinence [8], because of which they became disabled. This is further evidence that pediatric colorectal surgeons do not understand the role of the anal canal and destroy it as in low anorectal malformations.

B) Megacolon is not the cause of chronic constipation, but its consequence. Many surgeons have used rectosigmoid resection in patients with FC throughout the 20th century. Bernard Duhamel summed up many years of experience: "Recto-sigmoidectomy does not improve these children" [9]. Resection of the rectosigmoid was performed to significantly reduce the amount of Senna for the immediate period after the operation. However, since the function of the anal canal, is disrupted, the megacolon will inevitably develop again over time.

C) Children have the opportunity for complete recovery if for a long time with enemas, laxatives, or Botox injections, complete emptying of the rectum is normalized so that the rectum does not continue to expand. With the growth of the child, the age-related expansion of the anal canal occurs, which can lead to the correspondence of its width to the width of the stool.

3. **Conservative treatment of FC with large doses of Senna is harmful, cruel to the child, and contrary to pharmacology and common sense.**

Abdominal pain, is one of the many side effects of Senna overdose.

a) Scientifically Based Doses of Senna. In children age 12 and over, the usual dose is 2 tablets, with 8.6 mg sennosides per tablet, once daily. The maximum dose is 4 tablets (34.4 mg sennosides) twice daily. In children ages 6 to 11 years, the usual dose is 1 tablet (8.6 mg sennosides) daily. The maximum dose is 2 tablets (17.2 mg sennosides) twice daily. In children ages 2 to 5 years, the usual dose is 1/2 tablet (4.3 mg sennosides) daily. The maximum dose is 1 tablet (8.6 mg sennosides) twice daily.

b) **Senna doses used by pediatric surgeons** (from De la Torre et al) [10] (**Figure 1).**

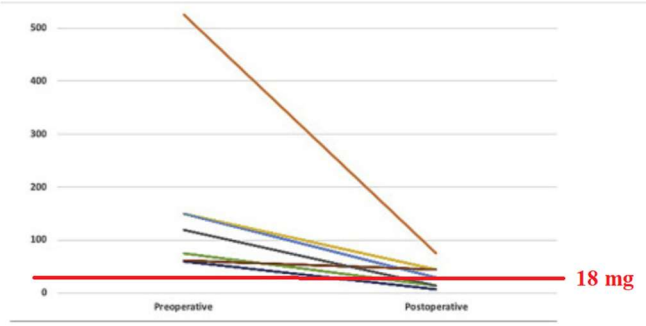

Fig. 8 Preoperative and postoperative milligrams of Senna dosage in 9 patients

Figure 1. Graph from the article by De la Torre et al [10]. The red horizontal line represents the maximum recommended dose for children (drawn by me).

c) Prescribing Senna at doses 29 or more times the maximum allowed is **child abuse** (excerpts from De la Torre et al are given below) [10].

- "Those patients on daily rectal enemas seek and request other options. Unfortunately, the presence of a megarectosigmoid is a lifelong condition in many patients. For these patients, the dosage of stimulant laxatives is usually very high and can rarely be reduced over time.

- We operated on a 21-month-old girl. At the time of the operation, she had an extraordinary megarectosigmoid. Although she was treated according to our

protocol, she suffered from recurrent fecal impaction with severe side effects from the laxative dosage. The side effects were abdominal pain, loss of appetite, nausea, and vomiting every time she had the laxative. Having to regularly administer enemas created significant familial and social problems for the mother.

- 2 teenagers with long-standing severe pseudofecal incontinence suffered depression and anxiety and 1 of them attempted suicide" [10].

d) **These are not Indications for surgery but are compulsion to an operation.**

- "In 9 patients, indication for surgery was chronic intake (>4 years) of a daily high dose of Senna with failed weaning trials. The parents in this group refused to continue giving their children the laxative.
- The indication in the other 4 patients was because they could not tolerate the stimulant laxative and rejected the rectal enemas" [10].

First, in all operated patients, the use of high doses of Senna was not effective in the treatment of FC. Secondly, they all suffered from severe abdominal pain due to a chronic overdose of Senna, and cleansing enemas caused great suffering for children and parents. Third, the doctors told them they had no choice. They were forced to agree to the operation.

Against the background of numerous articles by Peña, Levitt, and their followers, the number of articles on alternative methods of conservative treatment of FC is several times less, which may give the impression that they are of little importance. However, treatment with other laxatives [11] and botulinum toxin injection is safe [12] and effective in patients with intractable constipation unresponsive to medication, regardless of anal sphincter dynamics [13,14,15,16,17].

It follows from this that pediatric surgeons tricked children and parents into agreeing to surgical treatment, so as not to cure, but to reduce the dose of Senna. This is evidenced by both the above results of operations and a systematic review of published studies, Siminas and Losty. "Forty-one (91%) studies were case series reporting low-quality evidence (level 4). Most studies involved small numbers of patients. Forty studies stated "medical failure" as the primary

indication for surgical intervention. Outcomes showed wide variability in the many studies published. Success was defined by study authors as (1) alleviation of clinical symptoms (58%), (2) reduction in requirement for laxatives (45%), (3) improved bowel frequency (43%), and (4) ongoing use of ACE stoma (8%). The median length of follow-up in studies analyzed was 1.5 years" [18].

There was no justification for causing suffering to a 21-month-old baby, especially since the diagnosis was clearly wrong.

4. Large doses of Senna prevent rectal emptying.

Senna, as a stimulant laxative, is known to increase colon tone. Large doses of Senna, firstly, cause not peristalsis spasm. Second, the anal canal also responds with an increase in tone to the same extent as the entire colon. As a result, large doses of Senna not only do not contribute to the emptying of the rectum, but, on the contrary, prevent it. An example is the radiograph from De la Torre et al [10] **(Figure 2).**

Figure 2. Spasm of the entire colon, including the rectosigmoid around the wide stool.

Polyethylene glycol and large volume retrograde enema are effective and easily tolerated by patients for fecal disimpaction and maintenance therapy [2,11].

Antegrade enema has no functional advantages over retrograde enema. It is often forced to use it, despite numerous complications since children taking large doses of Senna cannot tolerate retrograde enemas, because a distension of the colon causes intolerable pain in them.

Conclusion. Teams of pediatric colorectal surgeons led by Drs. Peña and Levitt, without doing scientific research and neglecting (or not knowing) the normal physiology of anorectum and the pathological physiology of functional constipation, make unfounded experiments on children with functional constipation and widely recommend their methods in scientific journals.

1. Not knowing that the pectinate line is located between the lower and middle third of the anal canal, they performed a transanal rectosigmoid resection above the pectinate line, that is, they removed most of the anal canal. In these patients, sometime after the operation, true fecal incontinence developed.

2. They refuse to admit that the cause of functional constipation is of an obstructive nature and neglecting the experience of pediatric surgeons of previous generations, they resect an extended rectosigmoid, which is not a cause but a consequence of obstructive constipation. They perform serious operations in order to reduce the dose of Senna. Dissatisfied with the early results of the operation, they each time suggest a different length of rectal resection, different approaches (laparoscopic), or in combination with antegrade enema. Long-term results are not published because the reduction in laxative doses is temporary.

3. The use of high doses of Senna, which are more than 20 times higher than the maximum recommended dose, has no scientific justification. Such treatment is contrary to the scientific advice of pharmacologists. Chronic consumption of such doses causes many side effects, one of which is severe abdominal pain, especially during enemas. This leads to non-peristaltic spasm of the colon and an increase

in the tone of the anal canal, which does not contribute to the emptying of the rectum but prevents it.

4. High doses of Senna inflict severe distress on children. Pediatric surgeons deceive parents and children that there is no alternative treatment, forcing them to agree to surgery to reduce the Senna dose.

5. I have analyzed many articles of these authors and have not found a single publication that would contain reliable scientific information. I wrote many letters to the editors of the journals of pediatric surgery and radiology with indignation about the publication of false and contrary to common sense publications. Only 4 of them were published because the lack of common sense was overwhelming. I am surprised at the silence of the scientific community as pediatric colorectal surgery plunges into the darkness of prejudice.

References

1. Park M[1], Bang YG[1], Cho KY[2]. Risk Factors for Functional Constipation in Young Children Attending Daycare Centers. J Korean Med Sci. 2016 Aug;31(8):1262-5. doi: 10.3346/jkms.2016.31.8.1262.
2. Croffie JM. Constipation in children. Indian J Pediatr. 2006 Aug;73(8):697-701.
3. Pisano U, Irvine L, Szczachor J, et al. Anismus, Physiology, Radiology: Is It Time for Some Pragmatism? A Comparative Study of Radiological and Anorectal Physiology Findings in Patients With Anismus. Ann Coloproctol. 2016 Oct;32(5):170-174. doi: 10.3393/ac.2016.32.5.170.
4. Podzemny V, Pescatori LC, Pescatori M. Management of obstructed defecation. World J Gastroenterol . 2015 Jan 28;21(4):1053-60. doi: 10.3748/wjg.v21.i4.1053.
5. Levitt MA, Peña A. Surgery and Constipation: When, How, Yes, or No? J Pediatr Gastroenterol Nutr. Sep 2005, 41 Suppl 1, S58-60. DOI: 10.1097/01.scs.0000180308.02052.b2
6. Levitt MA, Martin CA, Falcone RA, Peña P. J Pediatr Surg. 2009 Jun;44(6):1285-90; discussion 1290-1. doi: 10.1016/j.jpedsurg.2009.02.049.

7. 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 Aug;27(4):336-340. doi: 10.1055/s-0036-1593606.
8. Glasser JG, Nottingham JM, Durkin M, et al. Case series with literature review: Surgical approach to megarectum and/or megasigmoid in children with unremitting constipation. Ann Med Surg (Lond). 2017 Dec 27;26:24-29. doi: 10.1016/j.amsu.2017.12.009.
9. Duhamel B. Physio-pathology of the internal anal sphincter. Arch Dis Chiid, 1969,44:377-81.
10. De la Torre L, Cogley K, Cabrera-Hernández MA, et al. Transanal proximal rectosigmoidectomy. A new operation for severe chronic idiopathic constipation associated with megarectosigmoid. J Pediatr Surg. 2019 Nov;54(11):2311-2317. doi: 10.1016/j.jpedsurg.2019.04.009.
11. Hoekman DR, Benninga MA. Functional constipation in childhood: current pharmacotherapy and future perspectives. Expert Opin Pharmacother. 2013 Jan;14(1):41-51. doi: 10.1517/14656566.2013.752816.
12. Halleran DR, Lu PL, Ahmad H, et al. Anal sphincter botulinum toxin injection in children with functional anorectal and colonic disorders: A large institutional study and review of the literature focusing on complications. J Pediatr Surg. 2019 Nov;54(11):2305-2310. doi: 10.1016/j.jpedsurg.2019.03.020.
13. Ahmadi J, Azary S, Ashjaei B, et al. Intrasphincteric botulinum toxin injection in treatment of chronic idiopathic constipation in children. Iran J Pediatr. 2013 Oct;23(5):574-8.
14. Maria G, Cadeddu F, Brandara F, et al. Experience with type A botulinum toxin for treatment of outlet-type constipation. Am J Gastroenterol. 2006 Nov;101(11):2570-5. doi: 10.1111/j.1572-0241.2006.00791.x.
15. Zar-Kessler C, Kuo B, Belkind-Gerson J. Botulinum toxin injection for childhood constipation is safe and can be effective regardless of anal sphincter dynamics. J Pediatr Surg. 2018 Apr;53(4):693-697. doi: 10.1016/j.jpedsurg.2017.12.007.
16. Keshtgar AS, Ward HC, Sanei A. et al. Botulinum toxin, a new treatment modality for chronic idiopathic constipation in children: long-term follow-up of a double-blind randomized trial. J Pediatr Surg. 2007; 42: 672-680. doi: 10.1016/j.jpedsurg.2006.12.045.

17. Ding S, Ding Y, Wang L. Does acupuncture have any effect on obstructed defecation syndrome? Pelviperineology 2021;40(1):24-31. DOI: 10.34057/PPj.2021.40.01.004
18. Siminas S[1], Losty PD. Current Surgical Management of Pediatric Idiopathic Constipation: A Systematic Review of Published Studies. Ann Surg. 2015 Dec;262(6):925-33. doi: 10.1097/SLA.0000000000001191.