

Modified Left Hemicolectomy With Colonic Fixation For Chronic Constipation Syndrome

S Potemin, M Gurdjian, S Gumeniuk, V Kaushansky, V Anikin

Citation

S Potemin, M Gurdjian, S Gumeniuk, V Kaushansky, V Anikin. *Modified Left Hemicolectomy With Colonic Fixation For Chronic Constipation Syndrome*. The Internet Journal of Surgery. 2001 Volume 3 Number 2.

Abstract

INTRODUCTION

Chronic idiopathic constipation is a major medical problem of modern society. The majority of the patients respond to diet or to the therapy with laxatives. However, patients with slow transit constipation or anismus are very difficult to treat effectively. The majority (87%) of patients with constipation belong to the slow transit group [1]. They usually suffer from colonic inertia but the function of the rectum remains normal. These patients are mostly (91%) women, who have symptoms of chronic autointoxication caused by long standing absorption of fecal toxic amines. Modern medical treatment is usually effective but approximately 10% of patients may benefit from surgery.

Total colectomy with ileorectal anastomosis is usually recommended for severe persistent constipation [2,3,4]. However, one third of the patients experience frequent bowel movements, watery diarrhoea or both after such a treatment. Partial resection of the abnormal segment of colon with prolonged transit time is a logical option [5,6]. However, delayed transit in the ascending colon may be merely secondary to distal obstruction [7]. Right colonic stasis is very seldom limited to that site and practically always associated with overall colorectal delayed transit [8,9,10].

We postulated that resection of the abnormal left part of the colon and creation a position, which most closely reminds normal anatomy of the colon, should be beneficial for patients with idiopathic chronic constipation. To achieve this a modified left hemicolectomy with colonic fixation has been developed and tested in our clinic as a method of treatment of chronic constipation syndrome due to slow transit.

PATIENTS AND METHODS

From March 1979 to August 1999 thirty six females between

16 and 43 (mean 32.4) years had a modified left hemicolectomy for persistent chronic constipation. They all had bowel frequency of less than two per week lasting from ten to twenty years. Optimised dietary management and medical therapy were ineffective. All other possible causes that could result in constipation were excluded. Preoperative investigation included clinical assessment, standard clinical and biochemical blood tests, barium enema and colonoscopy. The serum level of indican was checked before surgery, after colonic preparation, next day after surgery, before discharge and during postoperative follow up. Redundant colon with loops, severe angulated hepatic flexure, severe angulated and highly fixed splenic flexure, low and mobile caecum were routinely detected on barium enema films in supine (Fig. 1) and vertical (Fig. 2) position. Elongated sigmoid and transverse colon was often located in the pelvis. Colon motility tests demonstrated a decrease in the frequency and duration of propulsive movements. Anorectal functions tests included anal sphincter resting and squeeze pressures and rectoanal inhibitory reflex they were normal in all patients.

Figure 1

Figure 1. Barium enema before left modified hemicolectomy (horizontal position)



Figure 2

Figure 2. Barium enema before left modified hemicolectomy (vertical position)



Surgery was considered to be indicated in patients with persistent constipation lasting for at least one week at a time, progressive body weight loss and failure of conservative therapy. These patients had anatomical features of the colon redundancy and malfixation with long term severe inflammatory changes of the left colon, caused by long standing constipation.

All patients had complete postoperative follow-up from 2 to 20 years. They were assessed using a questionnaire, clinical examination, motility tests, biochemical analysis and barium enema.

OPERATIVE TECHNIQUE

Standard pre-operative colon preparation and antibiotic prophylactic are used. A midline laparotomy is performed. The colon is fully mobilised from the ileo-caecal area to the recto-sigmoid junction dividing the lateral peritoneal folds, inflammatory and embryonic adhesions. Once the colon is completely free and solely attached by the mesentery the appearance and the length of the colon is estimated. Usually a significant redundancy of completely mobilised colon is

evident. The colon is adjusted around the perimeter of the abdominal cavity without overlapping, recreating a physiological position. Operation proceeds fixing the caecum and ascending colon with non-absorbable sutures by the lateral tenia to the ileo-psoas muscle and parietal peritoneum. The shortened transverse colon is fixed to the root of the mesentery approximately at the level of the second lumbar vertebra. A segment of the colon from the mid transverse portion to the rectum is resected. Colica media artery and rectal superior arteries were preserved. A transverse-rectal end-to-end double layers anastomosis is performed at the level of the sacral promontory. Following completion of the anastomosis the remaining colon is fixed in the left lateral groove in the same way as on the right side.

Patients resumed oral food intake on the fourth day and the first stool was usually achieved on the fifth post-operative day.

RESULTS

There was no perioperative mortality or significant morbidity. The operating time ranged from 4 to 5 (mean 4.6) hours. The mean length of the resected colon was 85 cm. Postoperative hospital stay ranged from 10 to 14 (mean 12) days. Improvement was noted in all patients (Table 1). Thirty-two (88.9%) patients had good results. They had normal stools, no or lower requirement for laxatives and enemas, reduction of abdominal pain and improvement with call to stool. Postoperative barium enema demonstrated shortened colon with normal outlines either in horizontal or in vertical position (Fig. 3, 4). Satisfactory results were achieved in 4 (11.1%) patients when regular and spontaneous stool without medication was not consistently present. However, by addition of a diet supplemented with fibre and vegetable oils, physical exercise and small doses of laxative their stool was normalised. Serum indicane level dropped immediately after surgery and remained low during further follow up (Fig. 5). Sixteen patients have returned to their previous work, from which they had to resign because of their illness.

Figure 3

Table 1. Symptoms in patients with idiopathic chronic constipation before and after modified left hemicolectomy

Symptom	Before surgery		After surgery	
	Number	%	Number	%
Constipation	36	100.0	4	11.1
Incomplete emptying	23	63.9	5	13.9
Use of laxatives	33	91.7	6	16.7
Use of enemas	21	58.3	2	5.6
Pain/bloating	25	69.4	6	16.7
Call to stool	12	33.3	29	80.6

Figure 4

Figure 3. Barium enema six months after left modified hemicolectomy (horizontal position)



Figure 5

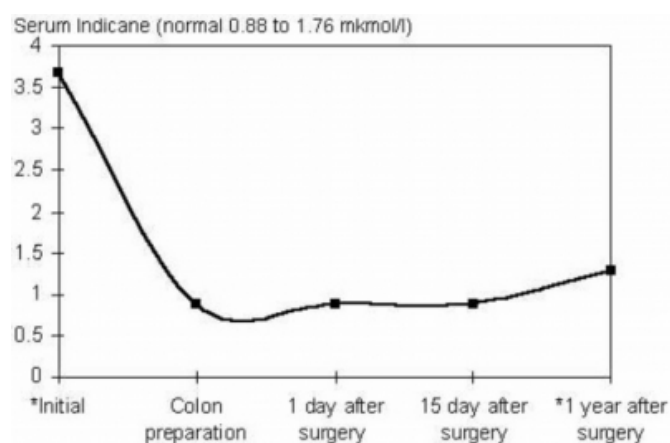
Figure 4. Barium enema six months after left modified hemicolectomy (vertical position)



Histological investigation of all resected specimens demonstrated chronic colitis due to colonic stasis and had shown no significant changes of the colon wall muscle fibers. The number of the ganglion cells in the submucosa was normal.

Figure 6

Figure 5. Serum indicane in patients with chronic constipation (*P< 0.001)



DISCUSSION

Chronic constipation syndrome is a widespread medical problem of the modern society but only a small fraction of patients will require surgical treatment. These patients would usually have a long history of chronic constipation syndrome due to colonic slow transit with typical radiological features.

This is characteristic in females and symptoms first became evident at the age of puberty and gradually deteriorate after child delivery [11]. In our opinion, which is consistently supported by typical radiological presentation, redundant colon and malfixation are the basis for slow transit constipation. Colon position changes significantly depending on horizontal or vertical position of the patient. Fixation of the constipated redundant colon is usually inadequate and when the patient assumes an upright position this segment of the colon drops down into the small pelvis. The situation is exacerbated by the fact that most of the day the patient remains in a vertical position.

Recent studies also suggest that the left part of the colon is more likely to be involved in the pathological process than the right part [9,12,13]. Motility tests [9], enterochromaffin [12] and Cajal [13] cells number are significantly different in the left and the right part of the colon in patients with chronic constipation. In these patients the right colon usually looks normal and the findings [12,13] are comparable with those in healthy persons. This supports the tendency to preserve the right part of the colon in patients with chronic constipation.

Abnormal rectal function may also contribute to the pathogenesis of chronic constipation. Rectum and pelvic floor disorders have been found in 59% of patients with chronic constipation syndrome [14] and some authors consider it as a frequent cause of chronic constipation [15] contrary to other trials [16, 17]. In our opinion the majority of rectal disturbances are secondary to dysmotility of the left part of the colon.

Total colectomy is currently recommended as a procedure of choice for chronic slow transit constipation [18,19], but this operation may cause diarrhoea. Preservation of the right colon is physiologically important and may prevent many long term postoperative problems.

A rational colonic resection with reliable fixation is the procedure, which significantly improves the colon function and prevents recurrence of the disease.

We recommend a modified left hemicolectomy with colon fixation as the preferred operation in the treatment of chronic slow transit constipation syndrome. It offers no postoperative mortality, very few complications and a high level of patients' satisfaction with the results.

CORRESPONDENCE TO

Dr. SN Potemin M.D. Ph.D. Gagarin str. 73\б, ap. 28,
Krasnodar, 350062, Russia. Home phone (0078612) 535195.
E-mail: spotemin@hotmail.com

References

1. Verduron A, Devroede G, Bouchoucha M, Arhan P, Schang JC, Poisson J, Hemond M, Hebert M. Megarectum. *Dig Dis Sci* 1988; 33(9):1164-74
2. McKinley AJ, Keenan RA. Restorative proctocolectomy. *J R Coll Surg Edinb* 46; 2001:20-8
3. Pluta H, Bowes KL, Jewell LD. Long-term results of total abdominal colectomy for chronic idiopathic constipation. Value of preoperative assessment. *Dis Colon Rectum* 1996; 39(2):160-6
4. Platell C, Scache D, Mumme G, Stitz R. A long-term follow-up of patients undergoing colectomy for chronic idiopathic constipation. *Aust N Z J Surg* 1996; 66(8):525-9
5. You YT, Wang JY, Changchien CR, Chen JS, Hsu KC, Tang R, Chiang JM, Chen HH. Segmental colectomy in the management of colonic inertia. *Am Surg* 1998; 64(8): 775-8
6. Ghosh S, Papachrysostomou M, Batool M, Eastwood MA. Long-term results of subtotal colectomy and evidence of noncolonic involvement in patients with idiopathic slow-transit constipation. *Scand J Gastroenterol* 1996; 31(11): 1083-91
7. Likongo Y, Devroede G, Shang JC, Arhan P, Vobecky S, Navert H, Carmel M, Lamoureux G, Storm B, Duguay C. Hindgut dysgenesis as a cause of constipation with delayed colonic transit. *Dig Dis Sci* 1985; 31: 993-1003
8. Wald A. Colonic transit and anorectal manometry in chronic idiopathic constipation. *Arch Intern Med* 1986; 146(9): 1713-16
9. Chaussade S, Khyari A, Roche H, Garret M, Gaudric M, Couturier D, Guerre J. Determination of total and segmental colonic transit time in constipated patients. Results in 91 patients with a new simplified method. *Dig Dis Sci* 1989; 34(8): 1168-72
10. Ducrotte P, Rodomanska B, Weber J, Guillard JF, Lerebours E, Hecketsweiler P, Galmiche JP, Colin R, Denis P. Colonic transit time of radiopaque markers and rectoanal manometry in patients complaining of constipation. *Dis Colon Rectum* 1986; 29(10): 630-4
11. Preston DM, Lennard-Jones JE. Severe chronic constipation of young women: 'idiopathic slow transit constipation'. *Gut* 1986; 27(1): 41-8
12. Zhao R, Baig MK, Wexner S, Chen W, Singh JJ, Nogueras JJ, Woodhouse S. Enterochromaffin and serotonin cells are abnormal for patients with colonic inertia. *Dis Colon Rectum* 2000; 43(6): 858-63
13. He CL, Burgart L, Wang L, Pemberton J, Young-Fadok T, Szurszewski J, Farrugia G. Decreased interstitial cell of Cajal volume in patients with slow-transit constipation. *Gastroenterology* 2000; 118: 14-21
14. Koch A, Voderholzer W, Klauser A, Muller-Lissner S. Symptoms in chronic constipation. *Dis Colon Rectum* 1997; 40(8): 902-6
15. Nyam DC, Pemberton JH, Ilstrup DM, Rath DM. Long-term results of surgery for chronic constipation. *Dis Colon Rectum* 1997; 40(3): 273-9
16. Schouten WR, Briel JW, Auweda JJA, van Dam JH, Gosselink MJ, Ginai AZ, Hop WCJ. Anismus: Fact or Fiction? *Dis Colon Rectum* 1997; 40(9): 1033-41
17. Read NW. *Gastrointestinal Motility: Which Test?* Wrightson Biomedical Publishing Ltd, 1989: 277-82
18. Hosie KB, Kmiet WA, Keighley MRB. Constipation: another indication for restorative proctocolectomy. *Br J Surg* 1990; 77: 801-2
19. Kamm MA, Hawely PR, Lennard-Jones JE. Outcome of colectomy for severe idiopathic constipation. *Gut* 1998; 29: 969-73

Author Information

SN Potemin

Department of General Surgery, State Medical Academy

MD Gurdjian

Department of General Surgery, State Medical Academy

SE Gumeniuk

Department of General Surgery, State Medical Academy

VB Kaushansky

Department of General Surgery, State Medical Academy

VA Anikin

Department of General Surgery, State Medical Academy