

## SURGICAL METHODS OF TREATMENT OF INTESTINAL PASSAGE DISTURBANCES WITH THE CHARACTERISTICS OF CONSTIPATION IN PATIENTS WITH INTESTINAL STOMA BASED ON OWN EXPERIENCE

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Stoma is an intestinal fistula created in emergency or by elective indications, and it is done to drain out the digestive tract content. In some patients there is a disturbance passage of gastric contents through the stoma, which may take the form of chronic constipation or even periodic subileus that will sooner or later require surgical treatment.

**The aim of the study** was the assessment of the causes and method of treatment of constipation in patients with intestinal stoma.

**Material and methods.** A total of 331 patients with stoma followed by Ostomy and Proctology Out-patient Clinic were included in the study in the years 2011-2014. The study included 146 women and 185 men and the average age was  $61.3 \pm 12.7$  years. Within the entire group, 273 patients had the end stoma performed whereas in 58 patients the loop stoma was created. The highest percentage of patients were the ones with diverticulosis and colorectal cancer, i.e. 132 and 114 patients respectively. A stoma was created in 35 patients due to inflammatory bowel disease (IBD), in 23 patients because of cancer, in 14 as a result of injuries and in 13 due to rectovaginal fistula.

**Results.** Out of the entire group subject to study (331 patients) 93 patients (28.1%) suffered from constipation. 50 patients with constipation required surgical intervention. The most common indication for surgical treatment was the parastomal hernia (36 patients, 72%), other indications were the narrowing of the stoma (5 patients, 10%), its collapse (6 patients, 12%) or prolapse (3 patients, 6%). Parastomal hernia was responsible for 84% of constipation within the stoma and 86.1% were treated with laparotomy (31 out of 36 patients). Other causes of constipation were the stomal stenoses (5 patients), collapse of the stoma (6 patients) and stomal prolapse (3 patients). All patients were treated surgically with a good final result.

**Conclusions.** Constipation associated with dysfunction of the stoma in most cases should be treated surgically. Parastomal hernia is the most common cause of constipation in the stoma. Treatment should be performed in due time because of the possibility of developing complications, especially dangerous one is a strangulated parastomal hernia and ischemia of stoma.

**Key words:** end colostomy, loop colostomy, constipation, parastomal hernia

Stoma is an intestinal fistula created in emergency or by elective indications, and it is done to drain out the digestive tract content (liquid or gaseous). Intestinal stomas may be created temporarily or permanently within the small and large intestine; these fistulas may be created in the form of loop (double-barrel)

stoma or end (single-barrel) stoma (1). The necessity to create an artificial anus is connected with intentional decompression when performing the routine anastomoses or with enabling the passage of food (in case of end stomas due to cancer). In some cases the creation of stoma is directed at the improvement

of quality of life of the patient (chronic constipation, encopresis) (2).

Constipation is defined as too rare (less than 2 times a week) or hindered defecation, many times with an associated feeling of incomplete bowel emptying. In physiological conditions a human defecates 1-2 times a day, sometimes every other day (3). Constipation is a frequent problem, usually connected with wrong diet. Among other causes of constipation the following are indicated: mechanical ones (intestinal stenosis due to malignant infiltration, inflammatory infiltration or compression from the outside), toxic (lead and arsenium poisoning, some of the drugs), functional (atonic constipation in bedridden patients and the elderly), psychic (higher level of stress, depression).

In patients with stoma it is hard to indicate the correct frequency of defecation. Thus diagnosing constipation constitutes a material diagnostic problem. However own experience indicate that among patients of Ostomy and Proctology Clinics there is a group of persons suffering from problems with defecation.

Due to the texture and nature of food the term constipation refers to the patients with defecation disorders and a colostomy. A constipation is a situation when bowel movements occur with lower frequency, there are longer periods of time without defecation or a patient passes a stool of incorrect texture, which may cause pain and discomfort in abdominal cavity and flatulence.

Problems with passage of intestinal content in patients with intestinal stoma are very often neglected, and the frequency of their occurrence is difficult to assess due to the difficulty in assessing the frequency of defecation and the texture of the stool by the very patients. There are not many publications with respect to the subject of constipation in patients with artificial anus. However it is worth noting that the predisposing factors for the occurrence of constipation in patients with stoma may be the following conditions: recently occurring long-term constipation, creation of stoma due in the course of cancer, dietary errors, including not consuming enough fluids, or using drugs causing constipation.

The occurrence of difficulties with passing a stool in patients with stomas may cause not only discomfort and flatulence in the abdominal region, but may also be the cause of pain in the abdominal cavity, parastomal hernia

formation, stoma prolapse, and also the diverticula in the remaining part of the intestine, as the implications of long-term constipation.

In most of the cases of difficulties with defecation due to stoma, it can be cured with appropriately chosen diet or pharmacological treatment, or stoma irrigation. However, there is a certain percentage of patients in which the abovementioned procedures are not enough and the surgical treatment is necessary. Surgical treatment is indicated in case of: parastomal hernia, stoma stenosis, stoma collapse or prolapse, intestinal obstruction, disease (cancer) relapse in the stoma (3, 5).

The aim of the study was the assessment of the causes and method of treatment of constipation in patients with intestinal stoma.

## MATERIAL AND METHODS

A total of 331 patients with stoma followed by Ostomy and Proctology Outpatient Clinic were included in the study in the years 2011-2014. The study included 146 women and 185 men and the average age was  $61.3 \pm 12.7$  years. Average body mass index (BMI) was  $29.9 \text{ kg/m}^2$ .

Within the entire group 273 patients had end stoma and 58 – loop stoma. Out of 331 patients, in 132 patients the stoma was created due to complications of diverticular disease, in 114 patients due to rectal cancer, in 35 of them – because of irritable bowel diseases (IBD), in 23 – due to other types of cancer, in 14 – as a result of injuries and in 13 of them due to rectovaginal fistulae. Table 1 contains a summary of basic clinical data of the study group.

Out of all the patients 281 (84.9%) were qualified for conservative treatment and 50 patients (15.1%) required surgical treatment.

Patients with parastomal hernia were assessed according to the classification prepared in Bielański Hospital, the so called Bielański Hospital Classification. Parastomal hernias were treated with the use of direct approach or using classical method (open surgery) and synthetical material (pre-peritoneal, subcutaneous or fascial mesh implantation, or with the use of key-hole method).

For the supply of stomal stenosis the local plasty was used and in the case of more advanced lesions in the intestine: stoma correc-

Table 1. The characteristics of the studied group

Cause of colostomy	Total	Diverticular disease	Rectal cancer	IBD	Other types of cancer	Injuries	Rectovaginal fistulae
Age in the group (average $\pm$ standard deviation)	61,3 $\pm$ 12,7	63,8 $\pm$ 14,6	60,2 $\pm$ 14,9	48,6 $\pm$ 11,9	56,6 $\pm$ 9,8	42,1 $\pm$ 8,7	46,7 $\pm$ 10,3
Gender structure (females, males)	146/185	61/71	36/78	19/16	11/12	6/8	13/0
BMI (mean $\pm$ SD / mean $\pm$ SD)	29,6 $\pm$ 6,6	33,2 $\pm$ 6,5	27,6 $\pm$ 4,5	21,3 $\pm$ 7,2	24,4 $\pm$ 6,7	26,2 $\pm$ 3,3	24,3 $\pm$ 4,5
Number of patients in the group	331	132	114	35	23	14	13
End stoma	273	96	106	33	18	11	9
Loop stoma	58	36	8	2	5	3	4

tion and abdominoplasty or laparotomy with the resection of the stenosed section of intestine and re-creation of stoma in the same place.

Treatment of stoma collapse consisted in local supply with the mobilization of the proximal part of intestine accessed through stoma. Patients with stoma prolapse underwent Altemeier's procedure with perineal approach, and in the case of development of ischemic lesions the laparotomy with the resection of the prolapsing section of intestine and re-suturing of stoma.

#### Constipation diagnosis criteria

Due to lack of established criteria for the constipation diagnosis in patients with stomas, the general criteria for the diagnosis of constipation were applied. The constipation was recognised when there were periods without defecation lasting 3 days, and disturbance in its passage leading to discomfort in abdominal cavity, flatulence and pain.

#### Inclusion and exclusion criteria

Patients with intestinal stoma that complied with the above constipation diagnosis criteria were qualified for observational study. And the following patients were excluded from the study:

- patients with terminal cancer,
- patients who did not give their consent to participate in the study and to inform about the nature and frequency of defecation,
- patients without full self-assessment awareness (neurological diseases and disorders, alcohol abuse, mental disorders).

#### Frequency and scope of follow-up visits

During the first visit at the Proctology Clinic the patients were asked about their problems connected with passing stool caused by stoma. All of the patients, including those with diagnosed constipation were subjected to stoma examination by the surgeon. In patients, in case of which the organic disorders were excluded as a cause of constipation the dietary treatment was commenced. Patients with significant stoma dysfunction hindering defecation were referred for further surgical treatment. 4-6 weeks after the end of surgical treatment the patients reported for another visit in Proctology Clinic, where after questioning with respect to the occurrence of certain conditions, the patients were examined by the surgeon.

Subsequent follow-up visits, of both the patients treated with diet as well as those treated with procedural techniques, were taking place every 3 months (the patients reported to receive the conclusions and their stoma supplies).

## RESULTS

Out of the entire group subject to study (331 patients) 93 patients (28.1%) suffered from constipation. 50 of them (15.1% out of the whole studied group) required surgical treatment. Out of the whole group the highest percentage of patients suffered from diverticular disease (132 patients) and among them the frequency of constipation was also the highest (40.1% of all patients with constipation). The most common indication for surgical treatment was the parastomal hernia (36 patients, 72% who were subjected to surgical treatment).

Other indications were the narrowing of the stoma (5 patients, 10%), its collapse (6 patients, 12%) or prolapse (3 patients, 6%) (fig. 1).

Average body mass index was 29.9 kg/m<sup>2</sup> and the highest was noted in the subgroup of patients with diverticular disease (33.2 kg/m<sup>2</sup>). In the same subgroup of patients the highest average age of patients was noted too and it amounted to 63.8 years.

Among patients with parastomal hernia 18 patients were diagnosed with type 1 parastomal hernia according to Bielański Hospital Classification, 7 patients were diagnosed with type 2 parastomal hernia, 9 patients – type 3 and 2 patients with type 4 (fig. 2). Parastomal hernias in 86.1% of the cases (31 patients) were treated with the use of classical method (open surgery) with the use of synthetical material. In 15 patients the mesh was placed in the pre-peritoneal area, in 12 of the cases subcutaneously and in 4 patients the key-hole method was applied. Only in 13.8% of the cases (5 patients) the parastomal hernia was supplied using direct approach.

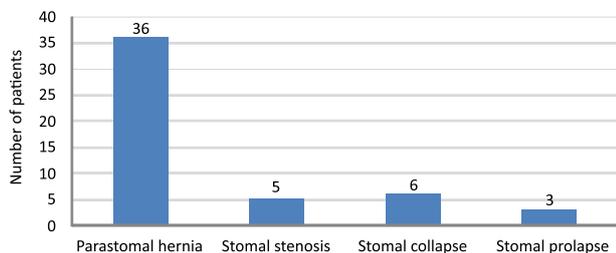


Fig. 1. Causes of constipation in stoma in the studied group

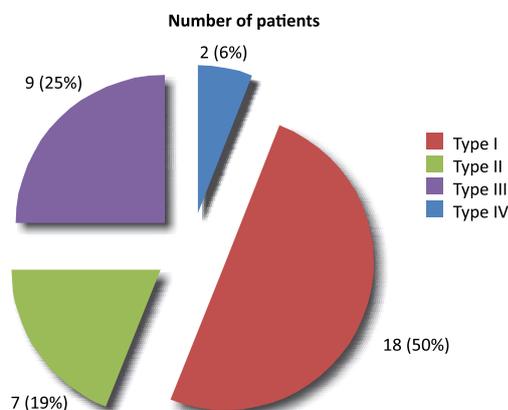


Fig. 2. List of patients with parastomal hernias according to the classification developed in Bielański Hospital

In 3 out of 5 patients the stoma stenoses were supplied with the use of local plasty. In one of the cases stomal stenosis was treated with stoma correction and abdominal wall plasty, and in another one -laparotomy with the resection of the stenosed section of intestine and re-creation of stoma in the same place.

In 5 patients (83.3%) stoma collapse was supplied locally with the mobilization of the proximal part of intestine accessed through stoma. In case of one patient laparotomy with re-creation of stoma in the same location was performed.

Stoma prolapse was diagnosed in 2 patients, out of which 1 underwent Altemeier's procedure with perineal approach and the other patients required laparotomy with the resection of the prolapsing section of intestine and re-suturing of stoma due to the development of ischemic lesions. Table 2 presents the summary of the causes of constipation and of the implemented procedure in patients with stoma.

## DISCUSSION

Constipation in patients with intestinal stoma is an often neglected problem. Additional difficulty is inability to establish the actual frequency and volume of the passed stool by the patients with intestinal stoma. In some patients who underwent colostomy the problem with the passage of food content significantly impedes every day functioning and reduces the comfort of life.

In the studied group of patients constipation was a fairly frequent problem and it referred to more than 28% of patients with intestinal stoma in total. Out of this group in more than half of the patients (54%) the constipation was connected with mechanical dysfunction of stoma, which required surgical treatment. It is estimated that complications after stoma creation occur in 21 to 70% of patients (6).

The most common indication for surgical intervention in patients with exteriorized intestinal stoma suffering from constipation was the presence of parastomal hernias. Parastomal hernia occurred in 36 out of 331 patients (10.9%) and in 36 out of 50 patients with constipation problems in stomas (72% of patients). Authors of publications assess that parasto-

Table 2. Analysis of causes and implemented procedures in the group of patients with exposed stoma and constipation connected with the dysfunction of the intestinal fistula (n = 331)

Cause of colostomy	Total	Diverticular disease	Rectal cancer	IBD	Other types of cancer	Injuries	Rectovaginal fistulae
Number of patients with constipation	93	54	21	7	5	3	3
Cause of constipation in stoma (surgical treatment applied)	50	26	15	5	2	0	2
Parastomal hernia in general	36	21	13	0	2	0	0
Laparotomy (parastomal hernia)	31	18	11	0	2	0	0
No laparotomy (parastomal hernia)	5	3	2	0	0	0	0
Stomal stenosis	5	1	1	2	0	0	1
Stomal collapse	6	1	1	3	0	0	1
Stomal prolapse	3	3	0	0	0	0	0

mal hernia may occur in as many as 78% of patients with stomas within 2 years after their creation (7, 8). However, the frequency of occurrence of parastomal hernia in loop and end colostomy amounts to respectively, 0 – 30.8% and 4 – 48.1% (9). In our study we used classification developed in Bielański Hospital as the one enabling to indentify the patients requiring distinct treatment better and additionally enabling to compare their results (10). Age, high BMI, higher waist size, cancer, diabetes as well as the presence of other hernias in abdominal cavity are the risk factors for parastomal hernia (11, 12).

In the study carried out in our center an average BMI was 29.9 kg/m<sup>2</sup> and average age was more than 60 years, which complies with referential data concerning the risk of parastomal hernia development. Most of the authors state that surgical treatment in case of parastomal hernias is reserved for the cases complicated with entrapment, obstruction, chronic constipation or leaks. Ripoché et al. claims that 15% of patients with developed parastomal hernia had at least one episode of stomal obstruction (8). Currently the plasty of stoma with the use of mesh is a golden standard for parastomal hernias treatment. This is also confirmed by the data from our center, where most of the procedures of this type are performed in case of parastomal hernia diagnosis.

The second as to the frequency, but much more rare cause of constipation in intestinal stoma is its stenosis. It is estimated that intestinal stoma stenoses occur in 2 to 15% of patients (13). The significant risk factor for the development of intestinal stoma stenosis is a Crohn's disease. This complication may de-

velop at any time after surgery, however it has been proved that most of the stenoses occur within up to 5 years of stoma creation (11, 14). The treatment method of choice is a procedure with the use of Hegar's dilator, but their results are doubtful. The final treatment included revision of stoma with its re-creation in the same location or with its relocation. Recently, Beraldo et al. described a new technique of W-plasty in the treatment of stomal stenoses (13).

Other complications that may lead to obstruction and in consequence to constipation in intestinal stomas is its collapse below the skin surface. Stomal collapse is a complication that may occur in as many as 22% cases after stoma creation (15). Drawing in of the stoma may be caused by too shallow exteriorization or increase of patient's weight after surgery. As a consequence it may lead to cutting of the mucocutaneous sutures. The basic method of treatment applied in surgical practice is laparotomy with the stomal revision and pulling up of the intestine with possible resection of the end section of the collapsed intestine. Local revision of stoma (by cutting the skin in its proximity) with the mobilization of the proximal section of intestine is also possible.

Another cause of constipation in stomas is its prolapse above the skin surface in a degree much higher than it is created. It is estimated that occurrence of this complication after loop colostomy amounts to 25% and approximately 12% in case of end colostomy (11, 15). The devastation to the patient's body, obesity, large stomal opening made by the surgeon during surgical procedure, postoperative increase in intra-abdominal pressure (16). This complication very often is associated with no manifesta-

tion of clinical symptoms, however any sign of ischemia should be treated as an indication for urgent surgery. Surgical treatment usually consists in the removal of the part of the exposed intestine and re-suturing of stoma (17).

## CONCLUSIONS

Constipation occurring upon the exposure of stoma may be a strong factor reducing the comfort of life of the patients and increasing the number of visits in the Ostomy Clinic. The

cause of constipation may have its source in the very dysfunction of the exteriorized stoma, as well as in functional disorders not connected with the stoma. Postoperative parastomal hernia is the most common cause of constipation in the stoma. When the constipation result from the complications connected with stoma, the treatment of first choice is surgical procedure. The treatment should be commenced at the right time due to the possibility of development of severe complications, such as strangulated parastomal hernia and ischemia of the proximal section of the exposed intestine or of the stoma itself.

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