

## Bowel transit reconstruction: factors that influence the implementation

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### ABSTRACT

The objective of this study was to identify the factors that influence bowel transit reconstruction in people with a temporary stoma. This was a descriptive-analytical, quantitative study, involving 117 people with a temporary stoma who were interviewed about the sociodemographic and clinical aspects and the reason for the lack of stoma reconstruction up to the time of data collection. A descriptive analysis of the variables was performed, with tests being applied to verify the existence of a relationship between the reasons for the delay in reconstruction and other variables. Most participants were male, and neoplasia predominated as the pathology requiring the creation of the stoma. The surgeries were urgent, with colectomy being the most frequent. Age affects both the cause of the stoma and the lack of reconstruction, as well as the presence of comorbidities and the persistence of the preoperative cause, leading to reflection on the importance of health promotion actions and the prevention of intestinal diseases.

**Descriptors:** Ostomy; Surgical Stomas; Nursing Care; Health Profile.

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## INTRODUCTION

The creation of intestinal stomas is common in gastrointestinal tract surgeries and the main purpose is the elimination of feces and gases<sup>(1)</sup>. The nomenclature varies according to the organ or part of it that has been externalized, being referred to as ileostomy when there is exteriorization of the ileal segment and colostomy when referring to the colic segment<sup>(1)</sup>.

The intestinal stoma can be created as a result of several diseases and their complications, such as fistulae and acute abdomen, which may be of the obstructive type, caused by neoplasias, volvulus and megacolon, among others, or perforating, mainly due to neoplasias, diverticular diseases, inflammatory bowel diseases and traumas. The surgeon may also opt for the technique of stoma creation prior to an anastomosis for protection<sup>(1)</sup>.

According to the location, organ and cause of stoma creation, the surgeon may consider the surgical techniques and choose the most beneficial for each case<sup>(1)</sup>. The definitive technique is chosen when the patient does not present any possibility of bowel transit reconstruction after the stoma is implemented. When there is a possibility of reconstruction it is referred to as temporary. However, even when bowel transit reconstruction is possible, it is not always performed. This is due to individual factors intrinsic and extrinsic to this procedure, such as the cause of the stoma, the surgical technique used and the presence of comorbidities, reflecting in the reconstruction impacting on morbidity and mortality rates<sup>(1-4)</sup>. Considering the morbimortality indexes in bowel transit reconstruction, it is prudent to evaluate the necessity and restrict the creation when possible, especially with Hartmann type terminal stomas, considering the rate of complications in the reconstruction<sup>(5)</sup>.

Patients submitted to intestinal stomas need a collection bag which requires specific care with the skin, hygiene and bag exchange. Using a bag can lead to changes in body image and in routine activities, leading to negative feelings about oneself, reduced self-esteem, dissatisfaction with life, uncertainty about the future and fear of rejection<sup>(6-7)</sup>. Thus, such factors should also be considered in the evaluation before performing this procedure.

It is important to emphasize that the evaluation for bowel transit reconstruction draws from recommendations contained in the guidelines for health care of people with a stoma, within the scope of the Unified Health System (SUS), which establish that the attributions of care services to people with stomas are related to the formation of health care teams, to the constant updating of the registry of people with a stoma and accompanying them from the preoperative phase through to the bowel transit reconstruction<sup>(8)</sup>. In this scenario, these elements make it possible to monitor the factors that can influence the reconstruction procedure, providing adequate care planning, intestinal reconstruction in a shorter period according to each case and more effective rehabilitation.

In view of the above, the objective of this study was to identify the factors that influence the bowel transit reconstruction in people with a temporary stoma.

## METHOD

This is a descriptive, quantitative study carried out on patients with a temporary intestinal stoma, treated in an Ostomy Care Service Center located in the State of São Paulo. This center serves a region of 90 municipalities, made up of the municipality where the service is based, a microregion comprised of 30 nearby municipalities and

a macroregion comprising 59 municipalities located geographically distant from the service unit. It has a team consisting of a coloproctologist, an enterostomal therapist, a nutritionist, a psychologist and a social worker, which provides specialized and interdisciplinary assistance to people with a stoma, aiming at rehabilitation, including guidance for self-care, prevention and treatment of complications in the stoma, and training and supply of collecting equipment and protection and safety adjuvants.<sup>(8)</sup>.

The study population consisted of people with a provisional stoma registered at the aforementioned Ostomy Care Service Center who met the following criteria for inclusion and exclusion: aged 18 years or older; do not have cognitive and mental alterations that would make it impossible to participate, are not bedridden and consent to voluntary participation by signing of the Free and Informed Consent Form.

To carry out data collection, all medical records for people with a stoma registered in the said center were initially collected and, from these, those with a provisional or temporary stoma were selected. Thereby, of the 470 persons with a stoma registered at the center, 117 (24.89%) had a provisional stoma and matched the inclusion criteria, corresponding to the final study sample.

Data were collected through primary data sources (structured interviews) and secondary data sources, from September to November 2015. In order to carry out the interviews, people with a provisional stoma were approached as they came to the service, applying a structured data collection instrument, prepared by the researchers and based on a literature review. The instrument included sociodemographic variables (sex, age, marital status, schooling, religion, current occupation, time away from work after surgery, comorbidities such as cardiovascular diseases, and chronic diseases such as systemic arterial hypertension (SAH), diabetes mellitus (DM), dysentery and its consequences, acute myocardial infarction (AMI) and stroke and family income) and clinical variables (date the stoma was implemented, pathology, length of time with stoma, type of stoma, reason for lack of reconstruction and type and amount of equipment in use). Prior to data collection, it was pre-tested in a pilot study, involving 10 patients, with the objective of verifying the suitability regarding the specificity and clarity of the variables, avoiding possible bias of non-understanding or interviewer influence. At the end of the pre-test, the instrument was not modified and the interviews were included in the final sample.

Although there is no consensus in the literature on the optimal time for stoma reconstruction, the possibility for bowel transit reconstruction is clinically considered as being from four to six months post-reconstruction. In this study, a "reconstruction delay" was considered to be a period of more than six months with a stoma.

The data were initially stored in a Microsoft Excel spreadsheet, using the technique of double entry. After verifying transcription errors, the data were exported to Minitab 17 Software (Minitab Inc.), through which the study analyses were performed.

Data were analyzed using descriptive and/or analytical statistics. To verify the relationship, we used the chi-square test on the variables, reasons for the delay in the reconstruction of the bowel transit in relation to the pathology, type of surgery, type of surgery and type of stoma.

To verify the relationship between age and the mean duration of stoma implantation with the type of pathology that led to the manufacture of the stoma, surgery performed, type of stoma, character of the surgery, reasons for the reconstruction delay and the return to work, the Analysis of Variance (ANOVA) and Mann-Whitney

test were applied, with Tukey's multiple comparison test or Games-Howell post-hoc. A level of significance of 5% was used in the application of all tests.

This study was approved by the Committee of Ethics in Research (CEP) involving human subjects from the Faculty of Medicine of São José do Rio Preto (FAMERP), under referral no. 1.228.105, following the recommendations of Resolution no. 466/2012 of the National Health Council.

## RESULTS

The sociodemographic and clinical characteristics of the study participants are described in the Table 1.

**Table 1:** Characterization of the people with stoma. São José do Rio Preto, SP, Brazil, 2015.

Sociodemographic and clinical data		N=117	%
Sex	Feminine	53	45.3
	Masculine	64	54.7
Marital Status	Married	70	59.9
	Single	47	40.1
	None	8	6.9
Education	To 8 years old	83	70.9
	From 9 to 11 years old	21	17.9
	After 11 years old	5	4.3
Work activity prior to stoma implementation	Retired	39	33.4
	Unpaid	16	13.7
	Paid	62	52.9
Age Range	20-39	9	7.60
	40-59	37	31.7
	60-79	55	47.0
	Over 80	16	13.7
Family Income	Up to 2 Minimum Salaries*	79	67.5
	Between 3 and 4 Minimum Salaries	35	29.9
	5 or more Minimum Salaries	3	2.6
Away from work after surgery	No	57	48.7
	Yes	60	51.3
Return to Work	Retired	39	33.3
	No	53	45.3
	Yes	25	21.4
	Acute abdomen	37	31.6
Pathology	Neoplasia	56	47.9
	Others <sup>1</sup>	24	20.5
	Colectomy	54	46.1
Surgery Type	Rectosigmoidectomy	49	41.9
	Others <sup>2</sup>	14	12.0
Surgery Character	Elective	55	47.0
	Urgent	62	53.0
Stoma Type	Colostomy	88	75.2
	Ileostomy	29	24.8
	Comorbidities	26	22.2
Reason for Reconstruction Delay	Post-surgical complications	25	21.5
	Difficulty of access (exams, consultations and vacancy)	19	16.2
	Persistence of the preoperative cause	26	22.2
	Others <sup>3</sup>	21	17.9

**Notes:** \* Value of the minimum salary: BRL 788.00 as of decree 8381/2014 published in the official gazette on 12/30/2014; <sup>1</sup> Grouped: fistula, Fournier's syndrome, external causes, inflammatory bowel diseases and chagas disease without perforation or obstruction of the colon; <sup>2</sup> Grouped: exploratory laparotomy, enterectomy and ileostomy; <sup>3</sup> Grouped: got accustomed to the stoma, fear of surgery, contraindication of the doctor.

It was found that age significantly interferes in both the pathology and reason for the delay in reconstruction of the bowel transit ( $p < 0.05$ ). In the analysis of age in relation to the pathology, it was verified that

people with acute abdomen and neoplasia stomas were significantly older than those who presented other types of pathologies (Table 2).

**Table 2:** Results of the comparison of the age with other variables concerning the people with a stoma evaluated in the study. São José do Rio Preto, SP, Brazil, 2015.

Variables	Age			P Value	
	N	Mean±SD	Median		
Pathology	Acute Abdomen	37	68.3±13.2 a	69.0	<0.001
	Neoplasia	56	64.5±11.6 a	66.5	
	Others	24	51.2±16.3 b	52.0	
	Comorbidities	26	72.6±12.5 a	77.0	
	Post-surgical complications	25	62.2±13.9 b	62.0	
Reason for delay in reconstruction	Difficulty of access (exams, consultations and vacancy)	19	56.1±14.5 b	56.0	<0.001
	Persistence of the preoperative cause	26	56.9±13.9 ab	60.0	
	Others	21	65.7±11.3 b	68.0	

**Legend:** <sup>1</sup> P value for the Analysis of Variance test (ANOVA) at P <0.05; Different letters in the same column indicate significant differences in the Tukey multiple comparison test at P <0.05.

Patients with estrogenic comorbidities were significantly older than those who presented other reasons for non-reconstruction.

No statistically significant differences were found in the comparison between the time with the stoma and the pathology (p=0.099), type of surgery (p=0.342), stoma type (p=0.709) and surgery character (p=0.590), as presented in Table 3.

**Table 3:** Results of the comparison of the duration of stoma implementation with other variables of those evaluated in the study. São José do Rio Preto, SP, Brazil, 2015.

Variables	Time with stoma (years)			P Value <sup>1</sup>	
	N	Media±SD <sup>2</sup>	Median		
Pathology	Acute abdomen	37	6.3±5.0	5.2	0.099 <sup>1</sup>
	Neoplasia	56	3.9±4.4	2.2	
	Others	24	5.9±5.9	3.6	
	Comorbidities	26	7.5±4.7 a	6.1	
	Post-surgical complications	25	4.9±3.6 a	4.1	
Reason for delay in reconstruction	Difficulty of access (exams, consultations and hospital beds)	19	1.3±1.3 b	1.1	<0.001 <sup>1</sup>
	Persistence of the preoperative cause	26	2.2±2.5 b	8.9	
	Others	21	9.4±6.5 a	1.1	
Surgery Type	Colectomy	54	5.8±5.3	3.6	0.342 <sup>1</sup>
	Rectosigmoidectomy	49	4.9±5.2	2.4	
	Others	14	3.2±2.8	1.7	
Type of Stoma	Colostomy	88	5.1±5.2	2.8	0.709 <sup>3</sup>
	Ileostomy	29	4.9±4.4	2.4	
Surgery Character	Elective	55	4.8±4.9	2.5	0.590 <sup>3</sup>
	Urgent	62	5.4±5.1	2.8	
	Inactive	39	6.1±4.5 a	5.5	
Return to Work	No	53	3.8±4.3 b	1.3	0.041 <sup>1</sup>
	Yes	25	6.3±6.6 a	2.2	

**Legend:** <sup>1</sup> P value for the Analysis of Variance test at P<0.05; <sup>2</sup> Different letters in the same column indicate significant differences by the Games-Howell multiple comparison test, assuming different variances, at P<0.05; <sup>3</sup> P value for the Mann-Whitney test at P<0.05.

On the other hand, the time with stoma presented statistically significant differences when compared to the reason for the delay in the reconstruction of the transit (p<0.001) and the return to work (p=0.041).

Comorbidities, postoperative complications and persistence of the preoperative cause were the reasons for the delay in transit reconstruction for those having the stoma for more time. People who reported difficulty in access as the reason for the delay in the reconstruction of the bowel transit presented less time with stoma (Table 3).

The mean duration of stoma implementation for inactive people and those who returned to work was significantly higher than those who did not return to work (Table 3).

Table 4 shows the percentages of relationship between the mentioned variables.

**Table 4.** Association of the reasons for the delay in bowel transit reconstruction in relation to the pathology, type of surgery, surgery character and type of stoma. São José do Rio Preto/São Paulo, Brazil, 2015.

Qualitative Variables		Reason for delay in reconstruction									
		Comorbidities		Post-surgical complications		Difficulty of access		Persistence of the preoperative cause		Others	
		N26	%	N25	%	N19	%	N26	%	N21	%
Pathology	Acute abdomen	14	37.8	4	10.8	8	21.6	2	5.4	9	24.3
	Neoplasia	10	17.9	15	26.8	8	14.3	17	30.4	6	10.7
	Others	2	8.3	6	25.0	3	12.5	7	29.2	6	25.0
P Value <sup>1</sup>		0,004									
Surgery Type	Colectomy	10	18.5	15	27,8	4	7.4	11	20.4	14	25.9
	Rectosigmoidectomy	12	24.5	8	16,3	10	20.4	13	26.5	6	12.2
	Others	4	28.6	2	14,3	5	35.7	2	14.3	1	7.1
P Value <sup>1</sup>		0.092									
Stoma Type	Colostomy	22	25.0	18	20.5	17	19.3	18	20.5	13	14.8
	Ileostomy	4	13.8	7	24.1	2	6.9	8	27.6	8	27.6
	P Value <sup>1</sup>		0.180								
Surgery Character	Elective	11	20.0	11	20.0	6	10.9	16	29.1	11	20.0
	Urgent	15	24.2	14	22.6	13	20.9	10	16.1	10	16.13
	P Value <sup>1</sup>		0,326								

Legend: <sup>1</sup> P value for the chi-square test at P<0.05.

The results indicate the presence of a significant relationship between the reasons for the delay in the reconstruction of the bowel transit and the type of pathology (p=0.004). Most of those who had acute abdomen, presented comorbidities as the main reason for delay in reconstruction; people with neoplasia and other pathologies, on the other hand, presented the persistence of the preoperative cause as the main reason for the delay in reconstruction of the transit.

There were cases of people with other reasons for delay in transit reconstruction, although these percentages were not relevant. Other relationships were not statistically significant.

Analysis of the influence of pathology and type of stoma on the return to work indicated absence of statistically significant relationship for both the pathology (p=0.633) and the type of stoma (p=0396).

## DISCUSSION

That the majority of the sample is male may be related to the culture of this population: not performing preventive measures, routine follow-up and not paying attention to initial symptoms, thus delaying the search for assistance, because they consider invulnerable. The difficulty of access to health services generated by both the workload and the opening hours of primary health units, which is often the same as that of the worker, also

contribute to this reality. This delay in the search for help often leads people to enter the health system due to the exacerbation of a symptom that has not previously been evaluated, in many cases meaning the need for an emergency surgical procedure<sup>(9)</sup>.

As it was possible to demonstrate, most of the surgical procedures were performed as a matter of urgency, due to neoplasia, which can be performed on an elective basis if diagnosed in time. This reinforces the need to improve the processes of prevention, orientation and early detection of neoplasias<sup>(10-11)</sup>.

Age is a factor that exerts a significant influence on the pathology that determined the construction of the stoma. The change in the epidemiological scenario, with an increase in life expectancy together with unhealthy living habits, contributes to the increase of chronic diseases in Brazil, with neoplasias among them<sup>(10)</sup>.

According to the National Cancer Institute (INCA), the risk of developing neoplasia increases with age and most cases occur in middle-aged or elderly adults. The same institution estimated, for the 2016-2017 period in the south-east region, that colon cancer would be the second most prevalent in both sexes, behind only prostate and breast cancer, not including skin cancer<sup>(11)</sup>.

Age also exerts some influence for lack of reconstruction of the bowel transit. People with a stoma who did not reconstruct the transit due to the comorbidities presented superior age when compared with other causes. The aging of the individual is accompanied by the development of chronic health conditions, and these morbidities can increase the morbimortality in the reconstruction of the transit, culminating in the procedure not being carried out due to the risks involved<sup>(10)</sup>.

Similar sociodemographic and clinical aspects were found in other studies conducted in different regions of Brazil<sup>(12-17)</sup>, as well as in Europe<sup>(18)</sup> and Asia<sup>(19)</sup>.

The majority of the population had some paid work before the surgical procedure that led to the creation of the stoma. Analyzing this population, it can be seen that people with a stoma who returned to work had the stoma for a longer time than those who did not return, which may be related to difficulties in re-entering the labor market. Returning to work is an important tool in the rehabilitation process, contributing to the recovery of self-esteem and helping in their own livelihood as well as in their family's.<sup>(15)</sup>

The legislation favors the return to work of those with a stoma, including them as handicapped<sup>(20)</sup>. It is therefore necessary to plan and execute more effective procedures for the sectors, institutions and people involved in the rehabilitation process, so that the return to work does not take such a long period. Working conditions should be suitable for those with a stoma, either in the activity performed prior to surgery, or in an adapted activity if necessary, according to the nature of the role performed<sup>(15)</sup>.

The length of time with the stoma varied widely. Comorbidities, post-surgical complications, and persistence of the preoperative cause were reported as a reason for delay in reconstruction by people who had a stoma longer. The mean duration for provisional stoma implementation was higher than the data found in the literature<sup>(2,3,19,21-22)</sup>.

Although there is no consensus in the literature regarding the ideal time for reconstruction, some studies present the possibility of early reconstruction in cases of protective ileostomies<sup>(21)</sup>. The use of ileostomy for anastomosis protection and its benefits to prevent post-surgical complications is well defined among surgeons and in the scientific environment<sup>(22)</sup>. In this study we found the prevalence of colostomies over ileostomies. This

fact may be related to the surgical technique employed, since there was a prevalence of colectomy with a stoma of one opening, followed by Hartman type rectosigmoidectomy; in both techniques a terminal colostomy was performed.

Although the type of surgery and stoma did not significantly influence the increase of the mean duration of stoma implementation in the results, the literature highlights that the reconstruction of transit in Hartman type surgery has considerable rates of morbimortality, resulting in a lower reconstruction rate after this procedure. Therefore, it is necessary to analyze the true need to perform this technique on a case-by-case basis, restricting the indication when possible<sup>(5,19)</sup>.

The pathology that determined the creation of the stoma was significant as a cause for lack of bowel transit reconstruction. Those with acute abdomen presented a higher age and reported comorbidities as the main reason for delay in reconstruction. Cardiovascular complications, diabetes and arterial hypertension were the main reasons. A European study<sup>(18)</sup> evidenced an important presence of chronic cardiovascular diseases and a similar situation was also found in Asia<sup>(19)</sup>.

People with neoplasia and other pathologies presented the persistence of the preoperative cause as the reason for lack of reconstruction. In most cases, the treatment of neoplasias includes the use of chemotherapy or radiotherapy, in addition to the surgical procedure. The recurrence of neoplasia or its persistence is indicated as a risk factor for lack of transit reconstruction in the case of provisional stomas<sup>(23)</sup>. In the 'other pathologies' category, several pathologies – such as inflammatory bowel diseases, disease of sores and fistulas, were grouped - which may persist even with appropriate treatment.

Although the difficulty in accessing exams, consultations and for surgery itself has not presented statistical relevance in increasing the time for transit reconstruction, it is understood that this finding may be reflecting the difficulties generated by the overload of the health system<sup>(24)</sup>. As a consequence, there is an extension in the mean duration of time as a person with a stoma, which has an impact on the quality of life and costs to the health system. The increase in costs is due to the expense of further exams and preoperative medical assessments, as well as to the acquisition of devices, adjuvants, maintenance of qualified staff to care for the person with a stoma, and social security costs, among others which overwhelm and burden government systems even more.

Among the main limitations of this study, not evaluating records from the institutions where stomas were performed and reconstruction assessed can be cited, as this would have provided important data on the real causes for lack of bowel transit reconstruction. This process was unfeasible due to the execution time, quantity of institutions and the physical distance between them.

An analysis of medical records, from the stoma creation to the consultations for the assessment of the reconstruction, together with interviews with the practitioners of the reconstruction referral team, could provide more information and better explain questions that were not clarified in this first moment.

## CONCLUSION

The main reasons related for the delay in intestinal reconstruction were the presence of comorbidities, the persistence of the preoperative cause, post surgical complications and difficulty of access to exams, appointments and surgery. Age is a factor that significantly influences both the pathology and the reason for delay in



reconstruction. The presence of comorbidities due to aging and the persistence of the preoperative cause, mainly in the case of neoplasias, were statistically relevant for the lack of bowel transit reconstruction. These factors should be evaluated, and their interference taken into account, preferably prior to the construction of the stoma, with the person and family members being kept informed throughout.

The delay in return to the labor market and the maintenance of services and materials for care and rehabilitation of the person with a stoma have costs that could be reduced with integrated actions of services and sectors, with network articulation to develop both the return to work in suitable conditions and the bowel transit reconstruction.

It is believed that preventive and educational campaigns on risk factors, prevention, signs and symptoms and early detection for colonic neoplasia, similar to those already carried out for breast and prostate cancer, could reduce the absolute number of cases and emergency surgeries.

We believe that the structuring of a network care protocol, with the involvement and integration of all services could contribute to the identification of obstacles and the search for efficient solutions, improving the quality of life of people with a stoma, qualifying the rehabilitation process and reducing costs.

The enterostomal therapist, as a member of the multidisciplinary team, contributes singularly to the rehabilitation process of the person with a stoma, identifying situations for the team's performance and directing care in a humanized way. This professional can make a great contribution to the improvement of the described scenario in the structuring, implantation and evaluation of the protocol that we suggest.

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