Original Article

What is the value of proctography for diagnostic of outlet obstruction?

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ABSTRACT: The diagnosis of constipation is complicated due to the multiplicity and complexity of the causes. Regarding diagnostic tests, proctography is the best choice because it provides information on functions and visualization of abnormalities. Objective: To measure the isolated value of proctography in patients with obstructed defecation. Method: We evaluated 40 constipated patients at the Coloproctology Clinic of *Santa Casa de Misericórdia de São Paulo.* The test was performed by introducing 120 mL of barium contrast in the rectum and by analyzing the different stages of evacuation. Three x-rays were performed in the lateral position: rest, anal contraction and evacuation. Results: The diagnoses were: rectocele: 2 (5.0%); anismus: 8 (20.0%); perineal descent: 13 (32.5%); sigmoidocele: 6 (15.0%); internal invagination: 10 (25.0%); rectocele + sigmoidocele 9 (22.5%); rectocele + internal invagination 11 (27.5%); rectocele + anismus: 18 (45.0%). Several patients presented multiple disorders. Conclusion: Constipation by obstructed defecation depends on multiple factors and it is important to have an accurate diagnosis. Proctography is essential, but insufficient as a single procedure. The other tests contribute with the diagnosis, therefore, they should be included in the investigation.

Keywords: constipation; defecation; defecography.

INTRODUCTION

Constipation is a disorder characterized by twice or less bowel movements per week, having difficult evacuation, hard stool and the sensation of incomplete evacuation[1-6].

It is classified in two types: slow transit or colonic inertia and obstructed defecation. Inertia is the less common disorder, and it is caused by slower transit. The obstructed defecation is an evacuation disorder such as the inability to evacuate the rectal volume, the full rectum feeling, rectal pain, descent of the pelvic diaphragm and excessive effort[1-6]. The most common disorder in obstructed defecation is the non-relaxation of the puborectal muscle or anismus[1-6].

Proctography is a dynamic and anatomic study that provides information on different abnormalities aspects[1,3,4,7-10]. It is common to find associated disorders in proctography, such as paradoxal contraction of

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puborectalis, rectocele, invagination, prolapse, rectocele, hernia and perineal descen. It is also possible to measure perineal descent and anorectal angle at rest, contraction and evacuation[1,3,4,7-10].

The objective of this study was to assess the importance of proctography diagnosing constipation by obstructed defecation.

PATIENTS AND METHOD

In this study, 40 proctographies of patients presenting with constipation at the Coloproctology clinic of *Santa Casa de Misericórdia de São* Paulo were analyzed. They were refractory to the treatment and diagnosed with obstructed defecation. Their proctographies were compared to those of the asymptomatic control group, comprised of 20 patients.

Proctography consisted of the introduction of 120 mL of barium contrast in the rectum by a rectal probe 14, with the patient in supine, left lateral position. Afterwards, the contrast marker was placed with the same barium contrast, fixated on the sacrum and pubis.

After the introduction of the contrast, three x-rays in the lateral position were performed. The patient was sitting on the chair for the proctography: at rest, anal contraction and evacuation. The following guidelines were determined after the analysis of the x-rays:

a) pubococcygeus: between the upper pubis and the coccyx;
b) anal canal: from the anus to the anorectal junction;
c) rectal axis: posterior rectum.

Afterwards, the following measures were defined:

a) position of pelvic diaphragm: between the upper extremity of the anal canal and the pubococcygeus muscles through a perpendicular line;
b) perineal position: between the lower extremity of the anal canal and the pubococcygeus muscles through a perpendicular line;
c) Length of the anal canal;
d) Anorectal angle: between the rectum axis and the anal canal at the intersection of lines.

Data were analyzed by the Student's *t* test, with significance of 0.05%.

RESULTS

Forty proctographies of patients who were constipated due to obstructed defecation were compared with 20 proctographies of patients in the control group. The measurements of the proctographies in the positions at rest, contraction and evacuation are demonstrated in Tables 1 to 3, respectively. At rest, pelvic diaphragm was lower, as well as the anorectal angle

Table 1. *Proctography measurements at rest in constipated patients, compared with the control group.*

Proctography measurements	Constipated	Control	p
Anorectal angle	105.60±15.83	120.38±14.17	<0.05
Length of anal canal	3.49±1.31	3.76±1.04	ns
Position of pelvic diaphragm	6.29±2.26	3.95±1.12	<0.05
Perineal position	8.87±2.13	6.62±1.66	<0.05
Anorectal angle at contraction	84.77±13.29	103.28±15.86	<0.05

ns: not significant.

Table 2. *Proctography measurements at contraction position in constipated patients, compared with the control group.*

Proctography measurements	Constipated	Control	p
Anorectal angle	84.77±13.29	103.28±15.86	<0.05
Length of the anal canal	6.42±4.67	4.71±0.96	ns
Position of pelvic diaphragm	4.13±1.62	3.05±1.12	ns
Perineal position	7.46±1.51	6.19±1.63	<0.05

ns: not significant.

Table 3. *Proctography measurements at evacuation position in constipated patients, compared with the control group.*

Proctography measurements	Constipated	Control	p
Anorectal angle	114.85±12.41	130.71±16.20	<0.05
Length of anal canal	2.30±1.24	1.86±0.91	ns
Position of pelvic diaphragm	6.75±2.44	5.90±1.90	ns
Perineal position	8.33±2.09	6.90±2.00	ns

ns: not significant.

and the perineal position; at contraction, the anorectal angle was lower, as well as the perineal position; at evacuation, anorectal angle was lower. The other measurements were not statistically different.

The differences between proctographies of patients with different specific diagnoses were compared to those of the patients in the control group at rest, contraction and evacuations. These differences are demonstrated in Tables 4 to 6. There were many differences, marked with *, except as to the length of the anal canal, since there was no variation between the groups.

In relation to diagnostics, many patients presented more than one diagnosis at proctography, with the following rates:

a) rectocele: 2 (5.0%);
b) puborectal paradoxal contraction: 8 (20.0%);
c) perineal descent: 13 (32.5%);
d sigmoidocele: 6 (15.0%);
e) internal invagination: 10 (25.0%);
f) rectocele + sigmoidocele: 9 (22.5%);
g) rectocele + invagination: 11 (27.5%);
h) rectocele + paradoxal contraction: 18 (45.0%).

DISCUSSION

Constipation caused by inertia or obstructed defecation is complex and little understood. It is multifactorial and includes factors regarding diet, age, gender, general

Table 4. *Proctography measurements at rest and diagnoses of causes for constipation.*

	Rectocele	Puborectal paradoxal contraction	Invagination	Sigmoidocele	Control	p
Anorectal angle	102.40±12.51*	100.70±1.08*	105.80±15.89*	100.20±9.64*	120.38±14.17	<0.05
Length of anal canal	3.16±1.43	3.79±1.09	2.91±1.22	2.75±1.21	3.76±1.04	ns
Position of pelvic diaphragm	6.56±2.27*	6.22±2.31*	7.16±2.33*	5.93±2.04	3.95±1.12	<0.05
Perineal position	9.19±2.30*	8.96±2.32*	9.01±2.44*	7.85±2.25	6.62±1.66	<0.05

ns: not significant.

Table 5. *Proctography measurements at contraction and diagnoses of causes for constipation.*

	Rectocele	Puborectal paradoxal contraction	Invagination	Sigmoidocele	Control	p
Anorectal angle	79.83±11.24*	79.74±0.26*	86.90±9.62*	84.00±7.01*	103.28±15.86	<0.05
Length of anal canal	6.63±6.48	5.59±2.22	5.42±2.18	5.05±1.99	4.71±0.96	ns
Position of pelvic diaphragm	4.36±1.59*	4.32±1.49*	4.97±1.45*	4.47±0.97	3.05±1.12	<0.05
Perineal position	7.82±1.30*	7.50±0.97*	8.00±1.89*	7.08±2.43	6.19±1.63	<0.05

ns: not significant.

Table 6. *Proctography measurements at evacuation and diagnoses of causes for constipation.*

	Rectocele	Puborectal paradoxal contraction	Invagination	Sigmoidocele	Control	p
Anorectal angle	111.17±2.88*	111.74±9.70*	117.40±14.15*	114.33±16.47*	130.71±16.20	<0.05
Length of anal canal	1.88±0.99	2.28±0.76	2.16±1.64	1.70±1.02	1.86±0.91	ns
Position of pelvic diaphragm	8.08±2.16*	6.41±2.39	7.84±2.74	7.58±3.36	5.90±1.90	<0.05
Perineal position	9.21±2.02*	7.81±1.92	9.31±2.51*	8.70±3.20	6.90±2.00	<0.05

ns: not significant.

conditions, hormones and intestinal polypeptides, parity, neurological lesions and physiology of pelvic organs[1-6].

Pelvic functional phenomena related to evacuation and analyzed by anal physiology tests are prevalent for obstructed defecation. Clinical diagnoses are based on history and markers, manometry, proctography, electromyography, and latency of the pudendal nerve[1-6].

Rectocele is a common diagnosis, being present in almost all constipated patients. It varies as to dimension and is usually associated with other alterations. Proctography images are clear and a good way to diagnose[1-4,7-12].

In our sample, diagnoses were based on the association of clinical, manometric and radiological data, as well as electromyography in selected patients after the correction of eating and hygiene habits and the exclusion of associated diseases. The previous selection of patients excluded those who were constipated due to colonic inertia. Among the tests, we separated the results obtained by proctography with the objective to assess its diagnostic potential in an isolated way. It was clear that, because of the multiplicity and association of causes, the approach to these patients required the use of different physiological methods.

We believe that proctography is useful to analyze constipation. The method should be investigated due to its importance, because it not only enables current diagnoses, but also a more detailed analysis of the pelvic diaphragm. In spite of that, when we perform this test on asymptomatic patients, normal findings may occur[9]. The possible alterations in young asymptomatic patients are perineal descent, invagination and rectocele, and their importance is not clear at the proctography[9].

In our sample, the measurements of anorectal angles in constipated patients were lower than the control group in all phases of the test, and the differences were significant. At rest, we observed that the values of the constipated patients were lower than the control group, as well as at contraction and evacuation. The length of the anal canal increases at the moment of contraction, and decreases at evacuation, with no statistical differences as to the control group. At rest, the position of the pelvic diaphragm presented significant higher values for the constipated patients, because they were located at a lower position; however, there were no differences during contraction and effort.

For those who have rectocele, sigmoidocele and invagination, radiographic evidence is essential and confirms the diagnosis; however, at puborectal paradoxal contraction, we observed perineal descent and lower anorectal angle. This difference may be important, because the other possible way to diagnose this disorder is electromyography. For sigmoidocele, there were no significant differences in proctography measurements in comparison to those who do not have this condition, except for the radiographic evidence of the presence of colon loop, which presses the rectum.

In relation to the position of the pelvic diaphragm and the perineal position, we observed perineal descent. This is in accordance with the usually accepted idea that the efforts made by constipated patients lead to alterations in the position of the pelvic diaphragm. Factors such as age, gender, parity, associated conditions and obstetric trauma certainly interfere in the results, but they were not considered for not being the objective of this study. On the other hand, when series of patients are investigated, the mean values positively contribute to the interpretation of the disorders.

Proctography has demonstrated many findings and is important to assess constipation; however, it is

important to remember that patients with refractory constipation at clinical treatment should be fully assessed, because only one examination may lead to a wrong diagnosis of the cause of constipation. A very important example is the presence of rectocele (frequent diagnosis at proctography), associated with puborectal paradoxal contraction. The former would be surgically treatable, but the outcomes could be negative in case there was associated puborectal paradoxal contraction. The latter is clinically treatable, and proctography is not gold standard for this diagnosis.

Proctography usually finds signs of perineal descent, because this may suggest that the patient may present innervation compromise of the pelvic diaphragm; in this case, it is recommended to investigate fecal continence.

CONCLUSION

Proctography proved to be important to assess constipation through diagnoses and measurements, and it is useful as an examination associated with the full evaluation of the constipated patient.

RESUMO: O diagnóstico da constipação é difícil pela multiplicidade e complexidade das causas. Dos exames diagnósticos, a proctografia é preferida, fornecendo informações da função e visualização de anormalidades. Objetivo: Medir o valor isolado da proctografia, em pacientes com diagnóstico de defecação obstruída. Método: Avaliamos 40 pacientes com constipação intestinal do Ambulatório de Coloproctologia da Santa Casa de Misericórdia de São Paulo. O exame foi feito introduzindo-se 120 mL de contraste no reto e analisando-se as diferentes fases da evacuação. Foram realizadas três radiografias na posição lateral: repouso, contração anal e evacuação. Resultados: Os diagnósticos foram: retocele: 2 (5,0%); contração paradoxal do puborretal: 8 (20,0%); descida perineal: 13 (32,5%); sigmoidocele: 6 (15,0%); invaginação interna: 10 (25,0%); retocele + sigmoidocele: 9 (22,5%); retocele + invaginação: 11 (27,5%); retocele + contração paradoxal: 18 (45,0%). Vários pacientes apresentaram distúrbios múltiplos. Conclusão: Constipação por defecação obstruída depende de múltiplos fatores e é importante o diagnóstico preciso. A proctografia é essencial, mas insuficiente como procedimento isolado. Os outros exames são importante contribuição para firmar o diagnóstico, devendo ser incluídos na investigação.

Palavras-chave: constipação intestinal; defecação; defecografia.

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