

# Treatment of Puborectalis Syndrome with Progressive Anal Dilatation

Giorgio Maria, M.D., Gerardo Anastasio, M.D., Giuseppe Brisinda, M.D.,  
Ignazio Massimo Civello, M.D.

*From the Department of Surgery, University Hospital "Agostino Gemelli," Catholic University, Rome, Italy*

**PURPOSE:** The aim of this study is to assess the ability of progressive anal dilations to improve frequency of spontaneous bowel movements in patients with puborectalis syndrome (PRS). **METHOD:** Thirteen patients (9 females and 4 males; mean age, 37 years) with severe, chronic constipation caused by PRS were treated with daily, progressive anal dilatation for a three-month period. Three dilators of 20, 23, and 27 mm in diameter were used. Dilators were inserted every day for 30 minutes (10 minutes each dilator). Patients were evaluated with anorectal manometry and defecography halfway through treatment, at the end of treatment, and six months after the end of treatment. At six months, patients also underwent physical examination. **RESULTS:** There was a significant improvement of weekly mean spontaneous bowel movements from zero to six ( $P < 0.0001$ ), and the need for laxatives decreased from 12 patients with a weekly mean of 4.6 to 2 patients once per week ( $P < 0.001$ ). Enemas used before treatment by eight patients who had a weekly mean of 2.3 were, after treatment, needed only by three patients once per week ( $P < 0.01$ ). During straining, tone measured with anorectal manometry decreased from 93 to 62 mmHg after six months of the end of therapy ( $F = 6.97$ ;  $P < 0.01$ ), and anorectal angle measured with defecography during the strain increased from  $95^\circ$  to  $110^\circ$  ( $P =$  not significant). **CONCLUSIONS:** Daily progressive anal dilatation should be considered as the first and most simple therapeutic approach in patients with PRS. [Key words: Puborectalis syndrome; Anal dilators; Anorectal manometry; Defecography; Chronic constipation]

Maria G, Anastasio G, Brisinda G, Civello IM. Treatment of puborectalis syndrome with progressive anal dilatation. *Dis Colon Rectum* 1997;40:89-92.

Functional chronic constipation is divided into two groups: slow transit constipation as a result of colonic inertia and outlet obstruction,<sup>1-10</sup> which is mainly caused by puborectalis syndrome (PRS). Physical examination, anorectal manometry (ARM), electromyography (EMG), balloon evacuation proctography, and defecography are key examinations for diagnosis.<sup>8</sup> Other useful investigations are digital scan defecography, defecography-computerized tomography scan, long-lasting rectosigmoid manometry with mechanical or drug-induced stimulation, and computerized anorectal manometry with three-dimensional study of the sphincter.

At physical examination, patients with PRS show a paradoxical puborectalis contraction. During straining, failure of pelvic floor muscles to relax and an increased intraluminal pressure were detected. With balloon evacuation proctography, anorectal angle profile and its modifications during straining are studied. Defecography shows, besides anorectal angle modifications, the presence of rectocele and/or internal mucosal prolapse. Electromyography is useful during straining in showing a pathologic involvement of puborectalis function.

PRS, although simple to diagnose using the previously described methods, has always been difficult to treat. The aim of this study is to assess the ability of progressive anal dilations in improving the frequency of spontaneous bowel movements in patients with PRS.

## PATIENTS AND METHODS

Thirteen patients (9 females and 4 males) with a mean age of 37 (range, 17-73) years who had severe chronic constipation ("outlet" type) were studied in our colorectal unit from 1993 to 1994. Diagnosis was made with physical examination, barium enema, colonoscopy, colonic transit time study, anorectal manometry, and defecography. Only three patients underwent electromyography.

All patients reported a history of incomplete, prolonged, and difficult evacuation with the need for constant use of enemas, laxatives, and digital defecation. In eight patients, physical examination during straining showed failure to relax the puborectalis muscle and an increased contraction of muscles in five patients. Defecography in all 13 patients showed increased activity of the puborectalis muscle and failure to expel rectal contents during defecation. All patients underwent ARM, which revealed high pressure levels during straining.

We treated the 13 patients with progressive anal dilatation by daily insertion of three dilators (20, 23, and 27 mm in diameter) for a period of ten minutes each from the smallest to largest for a three-month period.

Address reprint requests to Dr. Maria: Istituto di Clinica Chirurgica Generale, Policlinico Universitario Agostino Gemelli, Largo Agostino Gemelli, 8, 00168 Rome, Italy.

Patients were followed up with ARM and defecography halfway through treatment, at the end of treatment, and six months after the end of treatment. Clinical assessment was performed before and six months after the end of therapy. Wilcoxon's signed-rank test was used as a test of statistical significance to correlate clinical findings, and functional examinations were statistically correlated using analysis of variance.

## RESULTS

Six months after the end of treatment, all patients reported good clinical outcome. All were satisfied with this therapy; and none complained of incontinence. Natural bowel movements (*i.e.*, no laxatives, bowel stimulants, or suppositories) increased for a mean of 0 to 6 per week ( $P < 0.0001$ ; Table 1). Laxative need before treatment was reported by 12 patients as being a mean of 4.6 times per week; after treatment, laxatives were needed by only two patients and in both cases only once per week ( $P < 0.001$ ; Table 1).

Similarly, before treatment eight patients required the use of enemas a mean of 2.3 times per week, whereas after treatment enema use was required by only three patients once per week ( $P < 0.001$ ; Table 1). During straining, tone, measured with ARM, decreased from a mean of 93 mmHg before treatment to a mean of 77 mmHg halfway through treatment and 57 mmHg at end of treatment. At six months after treatment, a mean pressure of 62 mmHg was revealed

( $F = 6.97$ ;  $P < 0.01$ ; Table 2). Anorectal angle measured during straining increased from a mean of  $95^\circ$  before treatment to a mean of  $105^\circ$  halfway through treatment and  $114^\circ$  by the end of treatment. Six months after treatment, it was approximately  $110^\circ$  ( $P =$  not significant; Table 2).

## DISCUSSION

PRS was first described by Wasserman<sup>11</sup> in 1964 and is caused by the failure of the puborectalis muscle to relax during evacuation. More complex alterations of all pelvic floor musculature<sup>6</sup> might coexist, but the deficit of puborectalis muscle is the most typical alteration directly connected with the disease.

The advent of many anorectal physiologic testings, such as ARM, electromyography, and defecography, has enhanced our ability to diagnose PRS. Yoshioka and Keighley<sup>12</sup> reported that defecography or EMG can be equally used to identify inappropriate puborectalis contraction. In accord with Corman,<sup>2</sup> we believe that defecography is preferable to that of EMG for making this diagnosis, because EMG is so uncomfortable and invasive. All 13 patients studied underwent defecography, and all showed increased activity of the puborectalis muscle and failure to expel rectal contents during defecation.

The role of ARM is still not clear.<sup>1</sup> We performed ARM in all patients and detected high pressure during straining.

Patients with PRS are usually first managed with a high-residue food diet to elicit rectal voiding. The next step is use of increasing doses of laxatives and enemas.<sup>13</sup>

Neither procedure is able to solve the problem. A wide variety of surgical and pharmacologic therapeutic approaches has been proposed to elicit puborectalis muscle relaxation.<sup>13</sup>

Anorectal myectomy, attempted with good results in Hirschsprung's disease, is not recommended for this syndrome. It does not show any lasting benefit and produces incontinence as a complication in 10 percent of patients.<sup>12, 14</sup> More disappointing results

**Table 1.**  
Individual Improvement with Progressive Anal Dilatation

	Before	After
Spontaneous BMS*	0.15 ± 0.37	6.23 ± 4.10†
Laxative-assisted BMS*	4.61 ± 2.63	0.15 ± 0.37‡
Enema-assisted BMS*	2.30 ± 2.32	0.23 ± 0.43§

\* BMS = bowel movements per week.

†  $P < 0.0001$ .

‡  $P < 0.001$ .

§  $P < 0.01$ .

**Table 2.**  
ARM (During Straining, mmHg) and Anorectal Angle Grades at Defecography

	Before	Mid Point	End	6 Months After
ARM	93.07 ± 28.90	77.69 ± 20.06	56.92 ± 14.36	62.30 ± 15.35*
Defecography	95.38 ± 5.93	105.76 ± 5.34	114.23 ± 8.37	109.61 ± 10.60†

ARM = anorectal manometry.

\*  $F = 6.97$ ;  $P < 0.01$ .

†  $P =$  not significant.

have been obtained with the controlled anal dilation with the Park's retractor.<sup>12</sup>

Local injection of *Clostridium botulinum* Type A toxin has been reported as another possible form of therapy.<sup>4</sup> Botulinum toxin seems to be a promising treatment, but it is overshadowed by reports of a high morbidity rate. However, patients who have undergone treatment thus far are too few to conclude this with any degree of certainty. In our colorectal unit, work is now in progress to better test its efficacy.

Surgical division of the puborectalis muscle is now abandoned because of a high rate of postoperative incontinence.<sup>15</sup> Several recent reports suggest that biofeedback training is the most effective treatment in PRS and has the highest success rate and lowest morbidity.<sup>13</sup> Use of this procedure for treatment of PRS was first reported by van Baal and colleagues<sup>16</sup> (one case treated) in 1984 and later by Weber *et al.*<sup>17</sup> (six cases) in 1987. In 1990, Loening-Baucke<sup>7</sup> reported results of biofeedback training in chronically constipated children with encopresis. His report supported the efficacy of this procedure. In the work of Wexner and colleagues,<sup>18</sup> biofeedback training also appeared to be effective for treating adult patients affected with PRS with an 89 percent success rate.

In the present study, we report use of daily progressive anal dilations to treat PRS. We believe that using anal dilators affects not only the internal sphincter muscle but also the external sphincter and puborectalis muscles. Dilators oppose the resting physiologic contraction of the external sphincter and puborectalis muscles, decreasing the puborectalis paradoxical contraction that characterizes PRS. Anal dilators have already been successfully used in therapy of anal fissures,<sup>19</sup> and we now think they can be of great help in treatment of PRS. All 13 patients treated with daily progressive anal dilation showed good clinical outcome. The most striking evidence is the appraisal of natural evacuations and the great decrease in use of laxatives and enemas. None of our patients was incontinent for formed stool, and none experienced mild mucus or urgency incontinence.

These objective results are correlated with an improvement of functional examinations. Moreover, this treatment is inexpensive, is easy to perform, can be done at home, can be repeated as many times as needed, and can be added to biofeedback training. We are now enrolling more patients to verify the promising results and following up the study patients to test how long the benefits last.

## CONCLUSIONS

We believe that daily, progressive anal dilation should be considered first line therapy for patients with PRS and might help biofeedback training.

## ACKNOWLEDGMENTS

The authors thank Rosa Laura Tartaglia, M.D., for helpful assistance.

## REFERENCES

1. Ger G-C, Wexner SD, Jorge JM, Salanga VD. Anorectal manometry in the diagnosis of paradoxical puborectalis syndrome. *Dis Colon Rectum* 1993;36:816-25.
2. Corman ML. *Colon and rectal surgery*. 3rd ed. Philadelphia: JB Lippincott, 1993:262-92.
3. Durthie GS, Bartolo DC. Anismus: the cause of constipation? Results of investigation and treatment. *World J Surg* 1992;16:831-5.
4. Hallan RI, Williams NS, Melling J, Weldron DJ, Wormack NR, Morrison JF. Treatment of anismus in intractable constipation with botulinum A toxin. *Lancet* 1988; 2:714-6.
5. Jones PN, Lubowski DZ, Swash M, Henry MM. Is paradoxical contraction of puborectalis muscle of functional importance? *Dis Colon Rectum* 1987;30:667-70.
6. Kuijpers HG, Bleijenberg G. The spastic pelvic floor syndrome: a cause of constipation. *Dis Colon Rectum* 1985;28:669-72.
7. Loening-Baucke V. Modulation of abnormal defecation dynamics by biofeedback treatment in chronically constipated children with encopresis. *J Pediatr* 1990;116: 214-22.
8. Maria G, Anastasio G, Brisinda G, Liberatore E, Civello IM. Severe chronic constipation: our experience concerning diagnostic examinations. *Coloproctology* 1995; 17:105-10.
9. Meunier P. Rectoanal dyssynergia in constipated children. *Dig Dis Sci* 1985;30:784-6.
10. Preston DM, Lennard-Jones JE. Severe constipation of young women: idiopathic slow transit constipation. *Gut* 1986;27:41-8.
11. Wasserman IF. Puborectalis syndrome (rectal stenosis due to anorectal spasm). *Dis Colon Rectum* 1964;7: 87-98.
12. Yoshioka K, Keighley MR. Randomized trial comparing anorectal myectomy and controlled anal dilatation for outlet obstruction. *Br J Surg* 1987;74:1125-9.
13. Whitehead WF, Chaussade S, Corazziari E, Kumar D. Report of an international workshop on management of constipation. *Gastroenterol Int* 1991;4:99-113.
14. Pinho M, Yoshioka K, Keighley MR. Long term results of anorectal myectomy for chronic constipation. *Br J Surg* 1989;76:1163-4.

15. Barnes PR, Hawley PR, Preston DM, Lennard Jones JE. Experience of posterior division of the puborectalis muscle in the management of chronic constipation. *Br J Surg* 1985;72:475-7.
16. van Baal JG, Leguit P Jr, Brummelkamp WH. Relaxation biofeedback conditioning as treatment of a disturbed defecation reflex: report of a case. *Dis Colon Rectum* 1984;27:187-9.
17. Weber J, Ducrotte Ph, Touchais JY, Roussignol C, Denis Ph. Biofeedback training for constipation in adults and children. *Dis Colon Rectum* 1987;30:844-6.
18. Wexner SD, Cheepe JD, Jorge JM, Heymen J, Jagelman DG. Prospective assessment of biofeedback for the treatment of paradoxical puborectalis contraction. *Dis Colon Rectum* 1992;35:145-50.
19. Bottini G, Maria G, Mattana C, Anastasio G, Pescatori M. Il dilatatore anale nella terapia conservativa della ragade. *Riv Ital Colonproct* 1990;9:61-6.