ARTIGO ORIGINAL / ORIGINAL ARTICLE

INTRODUCTION

Constipation is a clinical symptom present in patients suffering from slow transit and/or obstructed defecation. Proper treatment requires the identification of all associated dysfunctions and the quantification of symptoms (most often excessive straining, feeling of incomplete evacuation, difficult evacuation, infrequent evacuation and the need for digitally assisted evacuation) by means of a scoring system(1, 2, 19).

Obstructed defecation syndrome is associated with anatomic changes (rectocele, intussusception, mucosal prolapse and perineal descent) and/or functional changes (non-relaxation or paradoxical contraction/anismus) a complete clinical investigation is required, if possible with techniques capable of identifying all dysfunctions.

Rectocele is a common cause of constipation due to obstructed defecation, although it may also be observed in asymptomatic subjects(29, 31). Radiologic methods for the dynamic evaluation of the obstructed defecation syndrome (ODS) include defecography, magnetic resonance imaging and ultrasonography, each of which has its advantages and limitations(4, 5, 6, 10, 14, 18, 22, 24, 32). Different dynamic ultrasound techniques have been used to evaluate pelvic floor dysfunctions and demonstrated good correlation with conventional defecography(4, 6, 10, 28). One such technique, echodefecography (three-dimensional dynamic anorectal ultrasonography), developed

MANAGEMENT OF PATIENTS WITH RECTOCELE, MULTIPLE PELVIC FLOOR DYSFUNCTIONS AND OBSTUCRED DEFECATION SYNDROME

Sthela Maria MURAD-REGADAS1, Francisco Sergio P. REGADAS2, Lusmar Veras RODRIGUES3, Graziela Olivia da Silva FERNANDES4, Guilherme BUCHEN4 and Viviane T. KENMOTI4

ABSTRACT – Context - Management of patients with obstructed defecation syndrome is still controversial. Objective - To analyze the efficacy of clinical, clinical treatment followed by biofeedback, and surgical treatment in patients with obstructed defecation, rectocele and multiple dysfunctions evaluated with echodefecography. Methods - The study included 103 females aged 26–84 years with obstructed defecation, grade-II/III rectocele and multiple dysfunctions on echodefecography. Patients were distributed into three treatment groups and constipation scores were assigned. Group I: 34 (33%) patients with significant improvement of symptoms through clinical management only. Group II: 14 (14%) with improvement through clinical treatment plus biofeedback. Group III: 55 (53%) referred to surgery due to treatment failure. Results - Group I: 20 (59%) patients had grade-II rectocele, 14 (41%) grade-III. Obstructed defecation syndrome was associated with intussusception (41%), mucosal prolapse (41%), anismus (29%), enterocele (9%) or 2 dysfunctions (23%). The average constipation score decreased significantly from 11 to 5. Group II: 11 (79%) grade-II rectocele, 3 (21%) grade-III, associated with intussusception (7%), mucosal prolapse (43%), anismus (71%) or 2 dysfunctions (29%). There was significant decrease in constipation score from 13 to 6. Group III: 8 (15%) grade-II rectocele, 47 (85%) grade-III, associated with intussusception (42%), mucosal prolapse (40%) or 2 dysfunctions (32%). The constipation score remained unchanged despite clinical treatment and biofeedback. Twenty-three underwent surgery had a significantly decrease in constipation score from 12 to 4. The remaining 32 (31%) patients which 22 refused surgery, 6 had low anal pressure and 4 had slow transit. Conclusions - Approximately 50% of patients with obstructed defecation, rectocele and multiple dysfunctions presented a satisfactory response to clinical treatment and/or biofeedback. Surgical repair was mainly required in patients with grade-III rectocele whose constipation scores remained high despite all efforts.

by Murad-Regadas et al.\(^{(28)}\), has been shown to correlate well with defecography and was validated in a prospective multcenter study\(^{28, 32}\). Echodefecography provides a visualization of all pelvic floor structures and changes during straining, making it possible to evaluate voiding disorders affecting posterior compartment (rectocele, rectal intussusception, anismus and mucosal prolapse) or the middle compartment (entero/sigmoidocele grade III).

Different treatment modalities have been proposed for the management of patients with ODS. Unfortunately, results have so far been conflicting and no clear consensus has been reached\(^{13, 21, 27}\).

The purpose of the present study was to analyze the efficacy of clinical, biofeedback, and surgical treatment in patients with obstructed defecation, rectocele and multiple dysfunctions evaluated with echodefecography.

**METHODS**

Between March 2008 and February 2009, 175 female patients with ODS (excessive straining, vaginal splinting and sensation of incomplete evacuation) aged 54 years on the average (range: 26–84) with a Wexner’s\(^{(5)}\) constipation score of ≥ 6.0 (range: 6–18) were submitted to physical examination and anamnesis. All patients were evaluated with dynamic 3D anorectal ultrasonography (echodefecography) to identify pelvic floor dysfunctions in the posterior compartment involving anal canal and inferior rectum (including Grade I, II and III rectocele, rectal intussusception, prolapse of the anal canal mucosa and anismus or non-relaxation) and in the middle compartment involving vagina and uterus (Grade III enterocele/sigmoidocele). Patients with anal sphincter injury, fecal incontinence, symptoms of stress and urge urinary incontinence and/or history of colorectal and proctological surgery were excluded, as were patients without rectocele or non significant rectocele (grade I). A total of 103 patients with ODS and significant rectocele (Grade II or III) on echodefecography, isolated or associated with other dysfunctions, were included in the study.

Initially, all patients received clinical treatment for 3 months. Based on individual assessments, patients were subsequently assigned to three treatment groups according to observed improvement of symptoms and echodefecographic findings: patients in Group I continued to receive clinical treatment only, in view of the success of the first 3 months of management. Group II included patients with insufficient response to initial clinical management and diagnosis of anismus or absence of relaxation on echodefecography. These patients were assigned to clinical management combined with biofeedback therapy. Finally, due to insufficient response to clinical management and biofeedback therapy, patients in Group III were referred to surgical treatment. Complementary tests, including anorectal manometry, rectal sensitivity, maximum tolerable volume and colonic transit analysis (patients reporting less than three defecations per week) were performed prior to surgery. It was determined that low anal canal pressure on anorectal manometry and slow transit on colonic transit analysis were surgical contraindications. Treatment success was defined as ≥40% decrease in constipation symptoms as reflected by improvements in Wexner’s\(^{(5)}\) constipation score. The patients were followed for 3–6 months.

The evaluated parameters (age, history of vaginal delivery and constipation score before and after treatment) were compared between the groups.

The study was previously approved by the hospital’s research ethics committee and all patients gave their informed consent.

**3-D dynamic anorectal ultrasonography (echodefecography)**

3-DAUS was performed with a 3-D ultrasound scanner (Pro-Focus, endoprobe model 2052, B-K Medical®, Herlev, Denmark) as described in previous publications by Murad-Regadas et al.\(^{(28)}\). Following rectal enema, patients were examined in the left lateral position. Images were acquired by three automatic scans and analyzed in the axial, sagittal and, if necessary, in the oblique plane by a single colorectal surgeon (SMMR) with experience in 3-DAUS.

**Scanning**

- **Scan 1** - evaluation of the anatomical integrity of the anal sphincters at rest.
- **Scan 2** - the transducer was positioned at 6.0 cm from the anal verge. The patient was requested to rest during the first 15 seconds, strain maximally for 20 seconds and then relaxes again, with the transducer following the movement. The purpose of the scan was to evaluate the movement of the PR and the external anal sphincter during straining, identifying normal relaxation, non-relaxation or paradoxical contraction (anismus) and prolapse of the anal canal mucosa.
- **Scan 3** - following injection of 120–180 mL ultrasound gel into the rectal ampulla, the transducer was positioned at 7.0 cm from the anal verge. The scanning sequence was the same as in Scan 2, visualizing and quantifying all anatomical structures and functional changes associated with voiding (rectocele, intussusception, Grade-III sigmoidocele/enterocele).

Rectocele grade was previously defined through a comparison between echodefecography and defecography\(^{(28, 32)}\) (Figures 1 and 2). The measurement of rectocele grade was calculated by first drawing two parallel horizontal lines along the posterior vaginal wall, with one line placed in the initial straining position and the other line drawn at the point of maximal straining. The distance between the two vaginal wall positions determined the size of the rectocele, grade I (< 6.0 mm), grade II (6.0-13.0 mm), or grade III (> 13.0 mm).

**Clinical treatment**

Clinical treatment included the administration of a fiber-rich diet (up to 30 g bran/day), liquid (up to 2 L/day) and bulk laxative for 3 months.

---

Biofeedback therapy

Patients were submitted to biofeedback therapy twice a week for up to 10 sessions. All subjects were managed as outpatients. Patients were given detailed information about biofeedback therapy and the anatomy and physiology of the pelvic floor. Expulsion was practiced using anorectal manometry and an 8-lumen catheter with a balloon attached to the tip. The catheter was inserted in the anal canal and the subjects were allowed to view the pressure recordings. Patients were instructed to look for changes in pressure, with special attention to the response of the anal sphincter during squeezing and straining, and were taught how to relax the sphincter during expulsion of the rectal balloon at the urge threshold (indicated by a decrease in basal pressure), relax the pelvic floor muscles and delicately press downwards using the abdominal muscles.

Anorectal manometry, rectal sensitivity and maximum tolerable volume

Anorectal manometry was performed using a flexible, water-perfused polyethylene catheter with an 8-channel ProcatoMaster Dynamed® manometer, calculating the length of the anal canal, the anal canal pressure at rest, maximum anal squeezing; the capacity required to sustain squeeze pressure and the rectoanal reflex. Rectal sensitivity (corresponding to the first sensation of rectal filling) and the maximum tolerable volume were measured. All evaluations were performed by the same examiner.

Colonic transit study

The colonic transit time was measured using radiopaque markers for detection of slow transit, as described by Hinton et al. Anorectal manometry was performed using a flexible, water-perfused polyethylene catheter with an 8-channel ProcatoMaster Dynamed® manometer, calculating the length of the anal canal, the anal canal pressure at rest, maximum anal squeezing; the capacity required to sustain squeeze pressure and the rectoanal reflex. Rectal sensitivity (corresponding to the first sensation of rectal filling) and the maximum tolerable volume were measured. All evaluations were performed by the same examiner.

Surgical technique

All patients were operated on by a team of 3 colorectal surgeons specialized in coloproctology (Brazilian Board of Colorectal Surgery). The TRREMS procedure (transanal
repair of rectocele and rectal mucosectomy using a single circular stapler) was used, as previously described by Cruz et al. After a full mechanical bowel preparation, patients were placed in the Lloyd-Davis position under spinal anesthesia. Broad-spectrum antibiotic prophylaxis was administered prior to surgery. A circular anal dilator was inserted into the anal canal and maintained secured to the perianal skin with two stay sutures (anterior and posterior). The rectocele was pushed through the anal canal with a finger inserted into the vagina to identify the apex of the rectocele (Figure 3).

A running horizontal suture (Greek suture technique) was placed through the base of the rectocele, including mucosa, submucosa and the muscle layer, approximately 1.5 cm above the dentate line, depending on the size of the rectocele. Following that, the whole rectocele wall is excised with an electrical scalpel, just above the running suture (Figure 4). A continuous purse string rectal mucosa suture was then placed enveloping only mucosa and submucosa. The stapler was then inserted through the pursestring suture, which was subsequently tied around the stapler’s center rod, taking care to include the tissue with the running horizontal suture anteriorly (Figure 5). The stapler was fired, producing a circular suture, and withdrawn.

**Statistical analysis**

Student’s *t* test and the Chi-square test were used to compare all measurements. The level of statistical significance was set at *P*<0.05. All analyses were performed with SPSS version 13.0 for Windows®.
RESULTS

Group I included 34/103 (33%) patients (mean age: 51.6 ± 2.066; range 26–72). Of these, 14 (41%) had a history of at least one vaginal delivery. The distribution of the dysfunctions is shown in Table 1. The average constipation score fell from 10.85 ± 0.5943 (range: 6–18) before clinical management to 5.41 ± 0.2502 (range: 3–8) after clinical management ($P<0.0001$). Fourteen patients with mucosal prolapse were treated with rubber band ligation without complications.

Group II included 14/103 (14%) patients (mean age: 59.50 ± 4.328; range: 34–81). Of these, 6 (43%) had a history of at least one vaginal delivery. The distribution of the dysfunctions is shown in Table 1. The average constipation score fell from 13.18 ± 0.7112 (range: 8–16) before clinical management to 6.54 ± 0.3900 (range: 4–8) after clinical management ($P<0.0001$). Six patients with mucosal prolapse were treated with rubber band ligation without complications.

Group III included 55/103 (53%) patients (mean age: 53.58 ± 1.485; range: 34–73). Of these, 20 (23%) had a history of at least one vaginal delivery. The average preoperative constipation score (12.27 ± 0.2454; range: 10–16) was not affected by clinical treatment combined with biofeedback. All patients referred to surgery were submitted to anorectal manometry and determination of rectal sensitivity and maximum tolerable volume. Eight of these also had a colonic transit study. Twenty-three of the patients in Group III (23/103; 22%) underwent surgery. Of these, 16 (70%) had Grade-III rectocele and 7 (30%) had Grade-II. Rectocele was associated with rectal intussusception in 10 (44%), mucosal prolapse in 6 (26%), absence of relaxation in 2 (9%) and more than two dysfunctions in 10 (44%) patients. No intraoperative complications were observed. Two (8.7%) patients experienced minor postoperative complications: one developed stricture on the stapled suture subsequently treated with digital dilatation (3 sessions), the other complained of persistent rectal pain for 2 weeks. When reevaluated 3–6 months after surgery, the average constipation score had fallen from 12.39 ± 0.4013 (range: 10–16) to 3.78 ± 0.5106 (range: 1–7) ($P<0.0001$). The remaining 32 patients (31%) were not submitted to surgery due to refusal (n = 22) or surgical contraindications (low anal pressure n = 6; slow transit n = 4).

No statistical significance was found between the groups with regard to age and presence of vaginal delivery. Constipation scores were significantly higher in Group II (13.18) and Group III (12.27) than in Group I (10.85) ($P = 0.0099$). Grade-III rectocele was significantly more frequent in Group III ($P<0.0001$), but the groups did not differ significantly with regard to intussusception, mucosal prolapse, anismus or Grade-III enterocele/sigmoidocele (Table 1) (Figure 6). The

---

**TABLE 1.** Distribution of grade II or III rectocele and multiple pelvic floor dysfunctions in the groups

<table>
<thead>
<tr>
<th>Pelvic floor dysfunctions</th>
<th>Group I n = 34 (33%)</th>
<th>Group II n = 14 (14%)</th>
<th>Group III n = 55 (53%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectocele (grade II)</td>
<td>20 (59%)</td>
<td>11 (79%)</td>
<td>8 (15%)</td>
</tr>
<tr>
<td>Rectocele (grade III)</td>
<td>14 (41%)</td>
<td>3 (21%)</td>
<td>47 (85%)</td>
</tr>
<tr>
<td>Rectal intussusception</td>
<td>14 (41%)</td>
<td>1 (7%)</td>
<td>23 (42%)</td>
</tr>
<tr>
<td>Mucosal prolapse</td>
<td>14 (41%)</td>
<td>6 (43%)</td>
<td>22 (40%)</td>
</tr>
<tr>
<td>Anismus or non-relaxation</td>
<td>10 (29%)</td>
<td>14 (100%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>Enterocele/sigmoidocele</td>
<td>3 (9%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(grade III)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two dysfunctions</td>
<td>8 (23%)</td>
<td>4 (29%)</td>
<td>18 (32%)</td>
</tr>
<tr>
<td>Decrease in constipation score</td>
<td>10.85–5.41 ($P&lt;0.0001$)</td>
<td>13.18–6.54 ($P&lt;0.0001$)</td>
<td>12.39–3.78 ($P&lt;0.0001$)</td>
</tr>
</tbody>
</table>

**FIGURE 6.** Algorithm for the management of patients with significant rectocele, multiple pelvic floor dysfunctions and obstructed defecation syndrome.
anorectal manometry findings were normal for 23 patients in Group III. In 6 patients the mean basal pressure was reduced by 20%–30%. Colonic transit was normal in 23 patients from Group III. Slow transit was observed in the left part of the colon in 4 patients.

**DISCUSSION**

Obstructed defecation may involve anatomic and functional changes that are potentially difficult to manage. Many forms of treatment have been proposed with varying results, including fiber ingestion, laxatives, biofeedback therapy, electromyography of the anal sphincter (electrostimulation, sacral nerve stimulation and surgical repair) (8, 9, 12, 13, 21, 23, 27).

A total of 175 patients with obstructed defecation syndrome and a Wexner's constipation score ≥6.0 were assessed with 3-D dynamic anorectal ultrasonography (echodefecography) to identify pelvic floor dysfunctions in the posterior compartment (rectocele, intussusception, mucosal prolapse and anismus) and the middle compartment (Grade-III enterocele/sigmoidocele). Eventually, 103 patients with clinically significant rectocele were selected to analyze the efficacy of clinical treatment, clinical treatment combined with biofeedback therapy, and surgical repair. Although a specific scoring system for obstructed defecation syndrome has been proposed (1), at our institution, Wexner's constipation score has been widely used in investigations involving functional constipation symptoms.

The echodefecography techniques and parameters used in the present study have been described previously by Murad-Regadas et al. (20) and Regadas et al. (12), who also demonstrated the agreement between echodefecography and defecography. The advantage of echodefecography lies in the possibility of visualizing all the anatomical structures of the pelvic floor, changes during straining and evacuation disorders without exposing the patient to radiation. On the other hand, the technique can not be used to quantify contrast retention. Some authors have suggested that rectocele should not be repaired if the contrast is completely eliminated during defecography (20). Others have failed to demonstrate any correlation between defecography findings and surgical outcome (14, 16). Nevertheless, rectocele is rather frequently observed in asymptomatic nulliparous volunteers (34).

In this study the constipation score improved without surgical repair in approximately half the patients (clinical management alone = 33%; clinical management + biofeedback = 13.6%). Dietz et al. (11) believe that when determining the etiology of symptoms of obstructed defecation, stool quality is of greater relevance than the presence of rectocele. Rectocele was associated with anismus or absence of relaxation in 28/103 (27%). In the literature, anismus is associated with clinically significant rectocele in 20%–80% of cases (17, 26). Biofeedback therapy with anorectal manometry was administered to 18/103 patients with multiple dysfunctions and anismus or non-relaxation. Symptoms improved in 14/18 (77.8%; Group II). The remaining 4 (22%; Group III) were referred to surgical repair. Our results match findings from other series (12, 26). The two most common forms of biofeedback therapy are anal manometry (used in the present study) and electromyography of the anal sphincter (13). On the other hand, symptoms improved without biofeedback therapy in 10/103 patients (10%; Group I) with multiple dysfunctions and anismus treated with fiber and bulk laxatives.

Different techniques have been used to treat patients with obstructed defecation associated with anatomical abnormalities such as rectocele, rectal intussusception and mucosal prolapse (18, 21). Successful outcomes have been reported in 62%–85% of cases, but the available data are difficult to analyze due to differences in indications (symptoms and laboratory findings) and criteria for the evaluation of results.

In this study, 55 patients were referred to surgical repair because clinical management with or without biofeedback therapy did not improve symptoms sufficiently. After excluding patients with slow transit and reduced anal pressure, 23 subjects were submitted to rectocele repair with the TRERMS procedure (transanal repair of rectocele and rectal mucosectomy with a single circular stapler) which makes it possible to remove the anorectal mucosa circumferentially and reinforce the anterior anorectal junction wall with the use of a single circular stapler and a novel surgical device kit (9). The few observed complications (2/23; 8.7%) were easily treated during hospitalization. In the literature, minor complications have been reported for stapled transanal resection (14, 16). In this respect, our results compare favorably to those of other series (11). Thus, we suggest considering the criteria for surgical indication and surgical training carefully. The present study was limited by the small number of patients submitted to surgery (23 patients refused surgical treatment) and the short follow-up period (3–6 months).

Our series consisted of patients with anatomical and functional abnormalities. Clinical management was chosen as primary treatment, followed by biofeedback therapy for patients with associated anismus or non-relaxation, leading to a satisfactory decrease in constipation symptoms in approximately half the patients. Thus, the selection criteria for surgery included persistent symptoms (despite clinical management and biofeedback therapy), a constipation score of ≥10, diagnosis of significant rectocele (isolated or associated with other dysfunctions) and normal colonic transit and anorectal manometry findings.

The choice of selection criteria for surgery is a controversial matter. In fact, other researchers believe specific symptoms such as the need for vaginal or rectal manipulation to empty the rectal ampulla should be included among the criteria. Although the outcome of rectocele repair tends to be poor in patients with slow transit (26), some authors advocate surgical repair to improve the results of future colonic surgery (26). Likewise, reduced anal pressure was considered a contraindication for surgery in this study since fecal incontinence has often been reported following stapled transanal repair (24, 25).

Twenty-three subjects were submitted to rectocele repair (two of whom presented no relaxation despite biofeedback therapy) followed by improvement in symptoms. In contrast, some studies have reported poor results after rectocele repair.
in patients with associated anismus\(^{(7)}\). In another series, no significant difference was observed\(^{(35)}\).

Our patients were evaluated up to 6 months after clinical/biofeedback management and 3–6 months after surgery. Symptoms decreased by at least 40%. However, to establish an optimal treatment strategy, a much longer follow-up period would be required. In a multicenter study, the outcome of stapled rectal resection and biofeedback for the treatment of outlet obstruction was evaluated for 1 year after treatment: surgical repair and biofeedback therapy were successful in 81% and 33% of cases, respectively\(^{(21)}\). Roman et al.\(^{(33)}\) reported high recurrence rates after transanal rectocele repair over long-term follow-up (30–128 months) and concluded that preoperative clinical and laboratory findings are of no use in the identification of patients with high risk of recurrence.

Proper management of patients with ODS requires a complete clinical evaluation and simultaneous identification of all potential pelvic floor dysfunctions. Clinical management and biofeedback therapy should be considered as initial treatment.

In conclusion, approximately 50% of the patients with obstructed defecation symptoms, clinically significant rectocele and multiple dysfunctions presented a satisfactory response to clinical treatment and/or biofeedback therapy. Surgical repair was mainly required in patients with Grade-III rectocele and normal colonic transit whose constipation scores remained high despite all efforts.