Effectiveness of treatment using fecal incontinence biofeedback isolated or associated with electrical stimulation

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A b s t r a c t

Introduction: The prevalence of fecal incontinence (FI) has increased in recent decades, due to an aging population; and result in negative impacts on quality of life. Therefore, it is essential to search for an effective treatment in order to minimize the morbidity caused by incontinence.

Objective: To evaluate the effect of perineal training in the treatment of patients with fecal incontinence by biofeedback.

Method: This is a prospective study which evaluated 85 patients with FI from January 2009 to January 2014, at the Coloproctology outpatient clinic of the Hospital São Lucas/Cascavel, Paraná.

Results: Mean age was 47 years and the duration of treatment ranged from 5 to 25 sessions (mean, 13 sessions). From the women involved in the study, 70% (50) had vaginal deliveries and 34 (40%) participants were submitted to some orificial surgery. The FI score at baseline was 10.79 (6–17) and post-treatment FI was 2 (0–14) (p < 0.001). In the population studied, 49.4% (42) of the patients had an associated pre-BFT UI; and only 8.2% (7) had post-BFT UI (p < 0.001).

Conclusions: The data presented in this study confirm that perineal training through biofeedback was effective in the treatment of patients with fecal incontinence without immediate indication for surgery, still ensuring for this technique the advantages of being effective, painless and of low cost.

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Eficácia do tratamento de incontinência fecal utilizando o biofeedback isolado ou associado a eletroestimulação

RESUMO

Introdução: A prevalência de incontinência fecal (IF) vem aumentando nas últimas décadas devido ao envelhecimento da população; e resulta em impactos negativos na qualidade de vida. Logo, torna-se fundamental a busca de um tratamento efetivo, a fim de minimizar a morbidade ocasionada pela incontinência.

Objetivo: Avaliar o efeito do treinamento perineal no tratamento de pacientes portadores de incontinência fecal através do biofeedback.

Método: Estudo prospectivo, que avaliou 85 pacientes com IF no período de janeiro de 2009 a janeiro de 2014, no ambulatório de Coloproctologia do Hospital São Lucas/Cascavel, Paraná.

Resultados: A média de idade foi de 47 anos e a duração do tratamento variou de 5 a 25 sessões (média de 13 sessões). Das mulheres envolvidas no estudo, 70% (50) tiveram partos vaginais e 34% (40%) indivíduos fizeram alguma cirurgia orificial. O escore de IF na avaliação inicial foi de 10,79 (6 a 17) e no pós-tratamento foi de 2 (0 a 14) (p < 0,001). Na população estudada, 49,4% (42) dos pacientes apresentaram IU associada no pré-TBF e apenas 8,2% (7) no pós-TBF (p < 0,001).

Conclusões: Os dados demonstrados neste estudo confirmam que o treinamento perineal através do biofeedback mostrou-se eficaz no tratamento de pacientes com incontinência fecal sem indicação imediata de cirurgia, assegurando ainda para essa técnica as vantagens de ser eficaz, indolor e de baixo custo.
The aim of this study was to evaluate the effect of perineal training in the treatment of patients with fecal incontinence through biofeedback.

**Patients and methods**

This is a prospective study carried out between January 2009 and January 2014, involving 85 patients, 71 women and 14 men (83.5% and 16.4%, respectively), all of them with FI. These patients were attended at the Coloproctology outpatient clinic, Hospital São Lucas/Cascavel, Paraná by three colorectal surgeons. Patients were evaluated clinically, and the Fecal Incontinence Score proposed by Jorge-Wexner was applied; they also underwent physical examination. Then, these patients were evaluated by colonoscopy and anorectal electromanometry. Patients complaining of FI with and without anorectal electromanometry changes and without surgical indication at the time were included in this study. The perineal training in the treatment with BFT was performed by two physiotherapists (KR and MS).

The protocol consisted of a physiotherapeutic clinical assessment (collection of personal data, medical history and physical examination) and perineal training. The physical examination included skin inspection, presence of scars, and anal–vulvar distance; then, a digital palpation of the anus was performed to assess the possible contractile capacity of pelvic muscles, according to the table of Ortiz, graduated from 0 to 5 (Table 1). In the treatment with BFT, an electromyographic apparatus Miotool 400 (Miotec biomechanical equipment, Porto Alegre/Brazil) was used. This device consists of a 4-channel system with a gain of up to 8 times each, with 14-bit resolution and sampling frequency of 2000 Hz per channel. Only one channel was used, to which two differential surface sensors SDS500 were attached and connected with disposable electrodes (diameter 1.9 cm). The surface electrodes were applied in alignment over the perineum, and a reference electrode (ground) was fixed over the anterior superior iliac spine.

The patients followed the instructions for the treatment, which was divided into four phases: (1) contraction 10 times the pelvic floor muscles (PFM) with the highest possible strength and quickness, resting only for 1 s between each contraction (5 repetitions); (2) contraction of PFM as hard as possible during 5 s and resting for 5 s (10 reps); (3) contraction of PFM as hard as possible during 10 s, resting for 10 s (5 reps); (4) defecation training: patient orientation during the defecation straining, in order to increase the abdominal pressure (Valsalva), in order to guide a proper puborectalis relaxation. The recommendations for maintaining the joint accessory muscles’ (abdominals, glutei and adductors) non-contraction were followed. Patients were instructed and encouraged to perform home exercises and recommendations during the treatment and at its end.

All training was oriented according to the results of anorectal electromanometry: (1) patients who had normality at rest and contraction and anismus: the sessions consisted entirely of BFT (group I); (2) patients presenting with contraction hypotonia: in addition of BFT, electrical stimulation was associated with the use of Neurodyn Evolution (framed), a device which transmits low-amplitude electric current through a trans-anal electrode at a frequency of 50 Hz (the duration of the stimulation ranged from 15 to 30 min, and its intensity was determined in terms of patient comfort; the stimulation procedure was continued until the patient showed contractile ability of the muscles to start BFT) (group II); (3) patients who presented hypotonia at rest: in addition of BFT, the patient was submitted to 10 sessions of posterior tibial electromanomethod with Neurodyn Evolution (framed), with low-amplitude current and frequency of 10 Hz and pulse duration of 200 μs. The stimulation time was 20 min for each session, with two surface electrodes: one applied over the medial malleolus and the other 10 cm above that point (group III).

The treatment protocol consisted of nine initial sessions; at the tenth session, a reassessment of the initial symptoms was performed, as a determinant factor to release the patient, or to proceed with the sessions until his/her release. The patient was released when a report of decreased frequency and/or intensity, or of absence of leakage and other associated symptoms was obtained. Then, along with the pre- and post-BFT Wexner score, the patient returned to the requesting physician.

The Student's t test was applied to evaluate the training response in relation to FI and urinary incontinence (UI).

Patients requiring surgery for incontinence, patients without cognitive understanding and those who did not agree to participate in this study were excluded. All patients signed a free informed consent and agreed to participate in the study, which was approved by the Ethics Committee of the Faculdade Assisi Gurgacz (FAG).

**Table 1 – Functional classification of the pelvic floor muscles.**

<table>
<thead>
<tr>
<th>AFA score</th>
<th>Clinical observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Without objective perineal function, even to palpation</td>
</tr>
<tr>
<td>1</td>
<td>Absence of objective perineal function, identified only</td>
</tr>
<tr>
<td></td>
<td>to palpation</td>
</tr>
<tr>
<td>2</td>
<td>Poor objective perineal function, identified by palpation</td>
</tr>
<tr>
<td>3</td>
<td>Objective perineal function, without opposing resistance to palpation</td>
</tr>
<tr>
<td>4</td>
<td>Objective perineal function and opposing resistance not held to palpation</td>
</tr>
<tr>
<td>5</td>
<td>Objective perineal function and opposing resistance held to palpation during more than 5 s</td>
</tr>
</tbody>
</table>

AFA, functional assessment of the pelvic floor muscles by digital palpation (Contreras Ortiz et al.15).

**Results**

The mean age of patients was 47 (29–81) years. The duration of treatment ranged from 5 to 25 (mean, 13) sessions. From the women involved in the study, 70% (50) had vaginal deliveries; and 34 (40%) patients had undergone at least one type of surgical surgery. The mean duration of incontinence was 14 years (range, 6 months to 43 years).
However, patients with sphincter hypotonia and/or impaired rectal sensitivity.

Thus, BFT should be offered to all patients who did not respond to medical interventions for FI, because this is a safe, cheap and long-term effective technique. 

Elderly patients with normal physiology for defecation seem to respond well.

Advanced anorectal physiology tests such as manometry, pelvic defecography, MRI, and pudendal nerve terminal motor latency testing do not seem to predict who will respond best to BFT. Patients with mild to moderate FI and who have not responded well to medical treatments are probably the best candidates for BFT.

In this study, patients who underwent treatment with a mixed technique, chosen from the results of anorectal electromanometry, showed a fall of FI score, from 10.76 to 2, with statistically significant difference. The techniques associated with biofeedback were: intracavitary (anal) electric stimulation and posterior tibial nerve stimulation. And even when the groups were separated, the difference was statistically significant. These data allow the achievement of better rates of success than those reported in the literature. This may be due to the fact that the technique was chosen because of a prior correct evaluation of the sphincteric apparatus by the colorectal surgeon.

Conclusion

The data presented in this study confirm that the perineal training through biofeedback was effective in the treatment of patients with fecal incontinence without immediate indication for surgery, as this is a technique with the advantages of being effective, painless and of low cost.

Conflicts of interest

The authors declare no conflicts of interest.

References
