PELVIC FLOOR REHABILITATION AFTER ASSISTED VAGINAL DELIVERY

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Abstract

Introduction: Assisted vaginal delivery is an important risk factor for pelvic floor dysfunction (urinary incontinence [UI] and anal incontinence [AI]). A pelvic floor rehabilitation program (behavioral therapy [BT], electrostimulation [ES] and biofeedback [BF]) three months postpartum improves long-term pelvic floor dysfunction.
The objective of this study was to determine the improvement of pelvic floor dysfunction in patients after an operative vaginal delivery.

Materials and methods: Simple retrospective cohort of female patients with previous assisted vaginal delivery that conditioned pelvic floor dysfunction during the period of January 2016 to December 2018.
All patients were instructed on practicing behavioral therapy, plus a total of 12 sessions of electrostimulation alternated with biofeedback in the same session (one per week) focusing on strengthening of the PFM, lasting 20 minutes each, starting management three months postpartum. Wilcoxon test and Students T test was used to compare sessions 1-6, 6-12 and 1-12.

Results: 35 women met the inclusion criteria. AI was found to be the pelvic floor dysfunction that was most associated with assisted vaginal delivery, with prevalence of 54.3% (n=19), finding a statistically significant percentage of improvement and reduction of the VAS (p 0.002) at the end of the therapy. A statistically significant improvement was also obtained in the UI group in both categories (p <0.001).
Conclusions: Rehabilitation of the pelvic floor in women with previous assisted vaginal delivery and pelvic floor dysfunction, started at 3 months postpartum is a good treatment option, improving symptoms of AI, UI and DI.

Introduction

Both forceps-assisted and vacuum-assisted delivery increases the risk of injury to the tissues of the vagina, perineum and anus, including severe anal sphincter injuries, constituting an important risk factor for pelvic floor dysfunction (urinary incontinence [UI] and anal incontinence [AI])[1,2,3,6].
Incontinence may be solved without a medical intervention in a large group of patients, the least will require treatment and the majority will benefit from a rehabilitation program. It is proven that in this group of patients a pelvic floor rehabilitation program (behavioral therapy [BT], electrostimulation [ES] and biofeedback [BF]) two to three months postpartum improves long-term pelvic floor dysfunction[2,4,5]. Electrostimulation therapy can increase muscle strength, conduction rate of the pudendal nerve, size of motor units, encourage neuronal sprouting, and promote local blood flow; this enhance the squeeze pressure of the striated sphincters. In patients with pelvic floor muscle (PFM) recognition, biofeedback can be additional to this therapy even though its benefit is still uncertain[2].

Methods and Materials

- Simple retrospective cohort of female patients from a tertiary center of urogynecology, which included women with previous assisted vaginal delivery that conditioned pelvic floor dysfunction during the period of January 2016 to December 2018.
- Patients were divided into two groups according to its main dysfunction; UI and AI, indistinctly if they had or not a vaginal tear.
- All patients were instructed on practicing behavioral therapy, plus a total of 12 sessions of electrostimulation alternated with biofeedback in the same session (one per week) focusing on strengthening of the PFM, lasting 20 minutes each, starting management three months postpartum. DI was included in the AI group as they were given the same therapy because of their anal dysfunction predominance.
- **ES parameters:**
- **UI**; IFC-2p energy, pulse frequency of 50Hz, continuous cycle time, modulation off and alternate current. Electrode: intracavitary vaginal. (Figure 3)
- **AI and DI**; anal electrode was chosen to apply therapy with the same parameters as vaginal, but cycle time of 4/12. (Figure 2)
- Visual analogue scale (VAS) and improvement percentage reported by patient were evaluated during session 1, 6 and 12. Improvement was considered as the diminution of at least 50% of the symptoms.
- ES and BF was performed with Myotrac infiniti™ and BioGraph infiniti® v6.0 software. (Figure 1)
- Wilcoxon test and Students T test was used to compare sessions 1-6, 6-12 and 1-12.
- Statistical data analysis was performed with SPSS version 24.0 software. $p < 0.05$ was considered of statistical significance.

Results

- A total of 35 women who met the inclusion criteria were analyzed; mean age was 30±6.1 years.
- 31.6% (n=11) had an obstetric anal injury (OASIS), the rest of them didn´t had a tear or it was a grade 1 or 2.
- 54.3% (n=19) had AI (including DI) and received strengthening parameters with anal electrode; 12 without OASIS and 7 with OASIS. (Table 1)
- The pelvic floor dysfunction that was most associated with assisted vaginal delivery was AI with prevalence of 54.3% (n=19), finding a statistically significant percentage of improvement and reduction of the VAS (p 0.002) at the end of the therapy. A statistically significant improvement was also obtained in the UI group in both categories (p <0.001), with 75% improvement. Patients with IF presented a more rapid favorable response. (Table 2)

Table 1. - Demographics and clinical characteristics

Parameter	n=35
Age (years)	30 ±6.1*
Gestation	1.7±1.2*
Vaginal deliveries	1.09±1.1*
BMI (kg/m²)	27.4 ±4.9*
Perineal tear n(%)	
No tear or grade 1,2	24 (68.4)
With OASIS	11 (31.6)
3A	2 (5.7)
3B	3 (8.6)
3C	4 (11.4)
4	2 (5.7)
Urinary incontinence n(%)	16 (45.7)
Anal incontinence n(%)	12 (34.6)
Double I. n(%)	7 (20)
PFM recognition n(%)	29 (82.9)

BMI: body mass index, OASIS: obstetric anal sphincter injuries
PFM: pelvic floor muscle.
**Mean + Standard deviation (SD)*

Figure 1. Anal electrode

Table 2 .- Pelvic floor rehabilitation results

Parameter	Session 1 n=35	Session 6 n=35	Session 12 n=35	p value*	p value **	p value ***
Urinary incontinence n=16 45.7%						
VAS M(SD)	5.1±3.3	2.8±2.1	1.5±3	**0.001[a]**	**0.004[a]**	**<0.001[a]**
Improvement percentage reported by patient	0	50±38	75±24	**<0.001[a]**	**0.001[a]**	**<0.001[a]**
Anal and double incontinence n=19 54.3%						
VAS	4.2±2.7	2.5±1.8	0.5±1.1	**0.003[a]**	**0.002[a]**	**0.002[a]**
Improvement percentage reported by patient	0	81±19	90±10	**0.002[a]**	**0.002[a]**	**0.002[a]**

VAS: visual analogue scale
M(SD): Mean ± Standard deviation
a= Wilcoxon Test
** Comparison between session 1 and session 6*
*** Comparison between session 6 and session 12*
**** Comparison between session 1 and session 12*

Discussion

This study demonstrates that pelvic floor rehabilitation with behavioral therapy, pelvic floor exercises, electrostimulation and biofeedback three months after an assisted vaginal delivery improves the continence and quality of life of the patients, measured indirectly by the percentage of improvement and the decrease in VAS[2,4], as described by Arkel et al[2] in their systematic review. In addition, it is described that pelvic floor dysfunction after an operative vaginal delivery can occur without being associated with a severe perineal tear[3], however, in both cases, patients will benefit from this therapy[4,6].
Several authors have described the use of electrostimulation as a successful therapeutic option and that the addition of biofeedback can achieve better results, as mentioned by Schwandner et al in their clinical trial[5], coinciding with the results obtained in this study, in which both groups of patients had improvement.

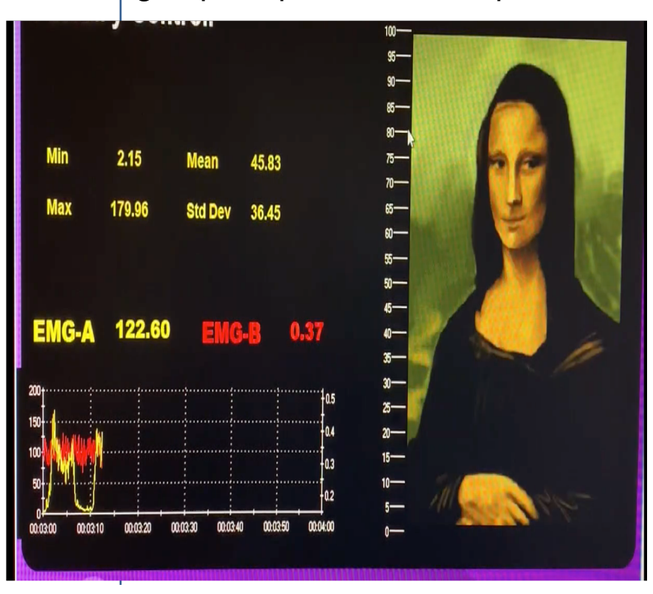

Figure 2. Biofeedback software

Figure 3. Vaginal electrode

Conclusions

- Rehabilitation of the pelvic floor with electrostimulation and biofeedback started at 3 months postpartum, in women with a history of assisted vaginal delivery and pelvic floor dysfunction is a good treatment option that improves symptoms of AI, UI and DI.

References

1. Callewaert G, et al. The impact of vaginal delivery on pelvic floor function – delivery as a time point for secondary prevention. Royal College of Obstetricians and Gynaecologists. BJOG 2015;678.
2. Arkel E, et al. Effects of physiotherapy treatment for patients with obstetric anal sphincter rupture: a systematic review. Europ J Physiother 2017;2:90.
3. Tähtinen R, et al. Long-term risks of stress and urgency urinary incontinence after different vaginal delivery modes. 2018; 1:1-8.
4. Deffieux X, et al. Postpartum pelvic floor muscle training and abdominal rehabilitation: Guidelines. 2015; 44:1141-1146.
5. Schwandner T, et al. Triple-Target treatment versus low frequency electrostimulation for anal incontinence. 2011; 39:653-660.
6. Mathe M, et al. Effectiveness of early pelviperineal rehabilitation after severe obstetrical injury on the reduction of anal incontinence. Europ J Obstet Gynecol Rep Biol 2016;1.