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Treatment of Anal Incontinence.

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ABSTRACT

Application of biofeedback method for correction of anal incontinence in patients who had their straight intestine excised allows achieving positive treatment results. Earlier regeneration of motility of external sphincter, pelvic floor muscles and rehabilitation of reflectory, accumulative and sensory function of rectus is observed. Patients stop using sanitary napkins, note augmentation of their general condition while subjectively assessing treatment results.

Keywords: biofeedback, anal incontinence, rectum resection, anorectal manometry.

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INTRODUCTION

Biofeedback method is a complex of remedial actions, when the patient by means of special equipment is provided with comprehensive information about functioning of some organ of his/her body [1, 2]. Based on visualized information the patient, under guidance of the doctor, may regulate presented function and see changes in process in real time, basing on which correction of pathological abnormalities may be performed [3]. In the course of a treatment in patient's cerebral cortex a new counterconditioning connection is formed, aimed at compensation of functional disease [4, 5]. Incontinence of gas and stool is a serious disease that makes patient suffer from intense emotional distress, which may lead to social self-isolation, vocational maladjustment and disability [6, 7]. According to data received in epidemiological studies, concurrency rates for this disease equal 2 to 40% of population [8, 9, 10].

TECHNIQUE

For efficiency estimation of biofeedback therapy in patients with anal incontinence 93 patients have been chosen, which had gone through abdominoanal resection of straight intestine with pull-through of sigmoid intestine into anal canal. Analysis of diagnostic findings in patients who underwent this operation was made in two groups. The first group consisted of 48 patients who underwent a course of biofeedback treatment after they had had an operation. These people were included into control group. Through the program we have used manometric method of biofeedback therapy with the help of water-perfusion catheters with radial position of registration canals of Swedish company "Senektics", which was performed on poly-functional diagnostic and treatment complex "Polygraf ID".

THE MAIN PART

Effectiveness of application of the technique was assessed at analyzing activity of subjective and objective clinical signs. That included frequency and character of stool, condition and duration of defecation, usage of sanitary napkins, feeling of differentiating gas and stool from the feeling of defecation urge, as well as patients' general status and their subjective assessment of treatment results. Besides, comparative assessment of objective indices of intestinal continence function with the usage of electrophysiological, manometric and biomechanical methods of study of obturative apparatus in various terms after the operation.

While performing comparative assessment of changes in stool frequency, its decrease is observed in patients from the main group, especially in the period of 9-12 months, which is possibly connected with development of compensative adaptive mechanisms in pull-through intestine. While analyzing qualitative characteristics one should note predominance of single-step defecation in patients who went through biofeedback therapy course in comparison with patients from control group.

Formation of a feeling of differentiation of gases and stool and occurrence of urge to defecation feeling is very important, which is noted in later of post-operation period and with their earlier occurrence in main group, which is reflected in Tables 1 and 2.

Table 1: Comparative characteristics of occurrence of differentiation feeling with regard to gases and stool (number of patients)

Differentiation of gases and stool	Follow-up post-operation period									
	3 months		6 months		9 months		12 months		18 months	
Groups	I	II	I	II	I	II	I	II	I	II
Present	2	3	8	6	26	10	38	11	43	26
Absent	46	42	40	39	22	35	10	28	5	19
Total	48	45	48	45	48	45	48	45	48	45

I – main group II – control group

Table 2: Comparative characteristics of occurrence of defecation urge (number of patients)

Defecation urge	Follow-up post-operation period									
	3 months		6 months		9 months		12 months		18 months	
Groups	I	II	I	II	I	II	I	II	I	II
Present	2	3	7	5	24	12	39	13	46	31
Absent	46	42	41	40	24	33	9	12	3	14
Total	48	45	48	45	48	45	48	45	48	45

I – main group II – control group

One should note the earliest termination of using sanitary napkins and general well-being mend of patients and their subjective assessment of therapy’s results in the main group (Table 3)

Table 3: Comparative characteristics of gas and stool continence (number of patients)

Condition of continence function	Follow-up post-operation period									
	3 months		6 months		9 months		12 months		18 months	
Groups	I	II	I	II	I	II	I	II	I	II
Gas incontinence	0	0	13	13	11	13	5	11	2	4
Incontinence of gas and liquid stool	16	17	12	11	7	11	3	7	1	3
Incontinence of all types of gases and stool	32	28	9	12	2	7	0	4	0	2
Normal continence	0	0	14	9	28	14	40	23	45	34
Total	48	45	48	45	48	45	48	45	48	45

I – main group II – control group

Table 4: Comparative characteristics of contractive activity of external sphincter at anorectal manometry (M mm)

Follow-up post-operation period	3 months		6 months		9 months		12 months		18 months	
Groups	I	II								
Pressure at the level of external sphincter at rest (in MmHg)	31,8 ± 4,0	31,9 ± 3,8	34,0 ± 3,7	32,2 ± 3,6	34,4 ± 3,5	33,8 ± 3,2	35,0 ± 3,0	34,8 ± 3,8	35,8 ± 2,9	35,6 ± 3,9
Mean amplitude of voluntary contraction (in MmHg)	61,8 ± 8,4	61,6 ± 8,2	69,4 ± 6,3	63,1 ± 7,3	73,4 ± 6,8	69,4 ± 6,3	75,7 ± 7,5	74,2 ± 6,1	76,2 ± 8,1	75,9 ± 6,9
Average duration of voluntary contraction (in seconds)	12,5 ± 4,8	12,4 ± 4,6	13,9 ± 4,5	13,6 ± 4,4	14,4 ± 4,6	14,1 ± 4,0	14,7 ± 4,7	14,5 ± 4,3	14,9 ± 4,6	14,7 ± 4,4

I – main group II – control group

In 3 months after the operation electrical activity of external sphincter decreased twice in both groups, while values that characterize contractive parameters of external sphincter were only 20% below normal values (Table 4). At the same time, yet in 6 months after the operation electrical activity corresponded to lower limit of normal values.

The most long-lasting abnormalities, especially in control group, were observed at the level of internal

sphincter, In 3 months after the operation pressure in anal canal at the level of internal sphincter decreased on 56,6% and equaled about $23,7 \pm 4,3$ MmHg (Table 5).

Table 5: Comparative activity of internal sphincter at anorectal manometry (M ± m in MmHg)

Follow-up post-operation period	3 months		6 months		9 months		12 months		18 months	
	I	II								
Pressure at the level of internal sphincter at rest	23,7 ± 4,3	23,9 ± 4,4	29,7 ± 5,0	26,5 ± 4,5	44,8 ± 5,4	33,4 ± 4,8	51,1 ± 6,0	37,2 ± 4,1	52,6 ± 6,2	40,7 ± 4,6

I – main group II – control group

Even in long terms after the operation 46 patients had its value reached lower limit of normal, and other patients' anal pressure showed substantially lower than the normal limit during the whole follow-up period.

Assessment of internal sphincter's tonic activity. Ultra slow waves in patients after the operation were not detected. Slow waves were absent in all the patients in 3 months after the operation, although later incremental recovery of internal sphincter's tonic activity was observed: in 6 months waves were detected in 8 patients, whose anal pressure value was equal to 38 MmHg, in 9 months – in 19 patients and in 1,5 year it was observed in 24 patients. Even in 1,5 year after the operation 6 patients from control group with low pressure indices showed no tonic activity of internal sphincter.

Considering the question of recovery of reflectory function in this category of patients, it should be noted that one of the key characteristics of internal sphincter's reflectory activity is condition of recto-anal inhibitory reflex. In our study we have identified reflexive relaxation of internal sphincter in response to inflation of pulled-through intestine on later terms after the operation indicates on formation of new colo-anal reflex (Table 6).

Table 6: Incidence and dynamics of recovery of internal sphincter's colo-anal inhibitory reflex (number of patients)

Follow-up post-operation period	3 months		6 months		9 months		12 months		18 months	
	I	II	I	II	I	II	I	II	I	II
Reflex is evidenced	0	0	0	0	19	8	33	17	42	21
Reflex is not evidenced	48	45	48	45	29	37	15	28	6	24
Total	48	45	48	45	48	45	48	45	48	45

I – main group II – control group

CONCLUSION

It is noteworthy that functional activity of external sphincter was quickly recovered in both groups, at this, satisfactory power and duration of voluntary contractions were reached yet at the first lessons.

It should be emphasized that colo-anal reflex of internal sphincter appears only in patients who had already recovered their tonic activity. Otherwise there is no possibility to identify sphincter's reflexive relaxation in response to inflation.

While analyzing changes of accumulative function of pulled-through intestine, it was observed that it substantially decreased and that there was no significant difference in both groups during the first 2-4 months after the operation. Starting from the 6th month and up to 218 months of following-up substantial difference in accumulative function's indices was observed in both main and control groups. The main group was marked by more quick development of compensative adaptive ability of pulled-down intestine, which reflects intestinal continence component.

SUMMARY

Application of biofeedback method for anal incontinence correction helps recover contractility of external sphincter and pelvic floor muscles and favours rehabilitation of reflex, accumulative and sensory function of pulled-down intestine.

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