
بسم الله الرحمن الرحيم

THERAPEUTIC EFFICACY OF BIOFEEDBACK THERAPY IN THE TREATMENT OF ANTERIOR RESECTION SYNDROME

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Anterior resection syndrome

Up to 80% of patients with rectal cancer undergo sphincter-preserving surgery. It is widely accepted that up to 90% of such patients will subsequently have a change in bowel habit, ranging from increased bowel frequency to faecal incontinence.

This wide spectrum of symptoms after resection and reconstruction of the rectum has been termed anterior resection syndrome

Anterior resection syndrome

Risk factors

Include

- low level of anastomosis,
- having radiotherapy to the pelvis,
- having a straight anastomosis rather than a pouch.

Anterior resection syndrome

It may be possible to reduce the incidence of anterior resection syndrome by

- meticulous nerve preservation,
- minimizing the use of diathermy
- Creation of a neorectum reservoir.

Clearly the level of anastomosis and need for radiotherapy are unlikely to be negotiable from a cancer clearance perspective.

Anterior resection syndrome

TREATMENT

- **Medical therapy:** The mainstay of treatment, including use of loperamide and stool bulking agents.
- **Biofeedback therapy.**
- **Sacral nerve stimulation.**
- **Surgical,** including surgical sphincter repair, sphincter substitution may be tried before the radical approach of stoma

Biofeedback therapy (BFB)

Is a term that can be used to describe many different types of training regimens for the pelvic floor.

Biofeedback therapy (BFB)

Biofeedback is performed using visual, auditory, or verbal feedback techniques with an anorectal manometry or EMG probe inserted into the anorectum to display pressure changes.

Biofeedback therapy (BFB)

More recent studies have found a difference between pelvic muscle exercises alone and exercises with biofeedback (the addition of a rectal balloon, electrical stimulation, or EMG), in favor of adding BFB

Patients

The study was designed as a retrospective review of the data from 10 patients presented with anterior resection syndrome after rectal cancer surgery in **Benha University Hospital** between June 2016 and March 2018.

Patients

Anterior resection syndrome was diagnosed by doctors after clinical examination in patients who reported frequent defecation, urgency, incomplete evacuation, stool fragmentation, or fecal incontinence.

Patients

Patients were included in the study if they had:

- No diverting stoma at the time of biofeedback therapy;
- Showed no evidence of local recurrence or distant metastasis in follow-up colonoscopy, computerized tomography, or magnetic resonance imaging;
- Had no anal sphincter injury detected by preoperative transrectal ultrasonography analysis;
- Had no other comorbidities that might alter sensory and motor responses, such as collagen vascular and connective tissue disorders, or neurologic disorders.

Before biofeedback training

Patients evaluated on wexner fecal incontinence score

Table 2 The Wexner score[4]

	Frequency				
Type of incontinence	*Never*	*Rarely*	*Sometimes*	*Usually*	*Always*
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Wears pad	0	1	2	3	4
Lifestyle alteration	0	1	2	3	4

Never, 0; rarely, <1/month; sometimes, <1/week, ⩾1/month; usually, <1/day, ⩾1/week; always, ⩾1/day.
0, perfect; 20, complete incontinence.

Before biofeedback training

The physiological parameters were evaluated by anorectal manometry by **High Resolution Anorectal Manometry MMS** using 24- channel water-perfused catheter with latex balloon. The acquired data pertaining to anal sphincter pressures (resting and squeeze pressures) and rectal sensation.

Biofeedback Therapy

Biofeedback therapy was performed once weekly for 8- 10 weeks.

Biofeedback Therapy

Patients on left lateral position, a water-filled manometric anal catheter attached to a color monitor was used to assess the amplitude and duration of voluntary anal sphincter contraction.

Biofeedback Therapy

The monitor was used to show the patient how the sphincter was functioning and to teach the patient to differentiate between anal sphincter contraction from buttock and abdominal muscle effort.

Biofeedback Therapy

We used 2 protocols for biofeedback therapy: sensory training, and strength training.

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In sensory training, a trained therapist performed repeated inflations and deflations of a balloon in stepwise increments of 5 mL of air or saline. The patients were required to recognize the volume that induced the urge to defecate and the maximal tolerable volume they were able to hold.

Biofeedback Therapy

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Strength training was conducted by asking the patient to concentrate on contracting the external anal sphincter without a balloon.

Biofeedback Therapy

We used 2 protocols for biofeedback therapy: sensory training, and strength training.

Each of these components was performed several times during each session.

Biofeedback Therapy

Anal Sphincter Exercises

Make sure you do not:

- tighten your buttocks
- breathe & hold
- tighten abdominal muscles

If you do any of these things you are NOT exercising correctly.

The patients were also given a program of sphincter exercises to practice at home.

Outcome measures

- **Wexner, fecal incontinence score** (0 perfect continence; 20 severe incontinence),
- **Number of bowel movements per day** &
- **Anorectal manometry** to assess maximal resting pressure, maximal squeeze pressure, rectal capacity
- **A subjective satisfaction score** (visual analog scale from 0 to 100, where 1 extremely dissatisfied and 100 extremely satisfied)
- Evaluated in all patients before and after biofeedback therapy.

Results

- 10 patients included in the study, 2 of them had well controlled hypertension, otherwise, no comorbid conditions.
- The mean height of the anastomosis above the anal verge was 3.5 cm.
- 4 patients had a diverting stoma; the median time of stoma closure was 6 months.
- All patients underwent radiation therapy, 7 patients had preoperative radiotherapy and 3 patients had postoperative radiotherapy.
- All patients received chemotherapy, 2 patients were treated only preoperatively, 4 patients were treated only postoperatively, and 4 patients were treated both preoperatively and postoperatively.

Results

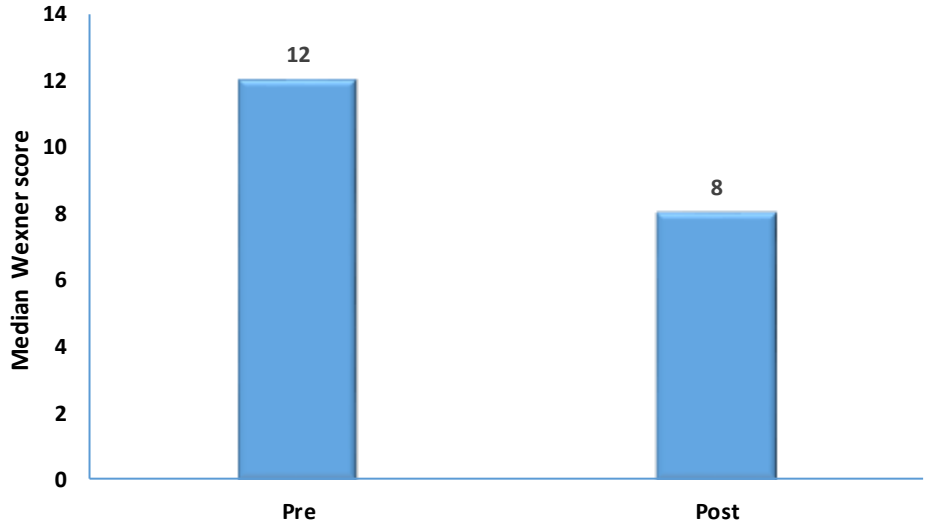
General characteristics		
Age (years)	Mean ±SD	48 ±12
Sex	Males n (%)	6 (60.0)
	Females n (%)	4 (40.0)
Height of anastomosis (cm)	Mean ±SD	3.4 ±0.9
Anastomosis method	Hand sewen n (%)	2 (20.0)
	Stapler n (%)	8 (80.0)
Time from surgery to biofeedback (months)	Mean ±SD	14 ±3
Stoma	Yes n (%)	4 (40.0)
Radiotherapy	Pre n (%)	7 (70.0)
	Post n (%)	3 (30.0)
Chemotherapy	Pre n (%)	2 (20.0)
	Post n (%)	4 (40.0)
	Pre & Post n (%)	4 (40.0)

RESULTS

- Significant improvements were observed after biofeedback therapy in fecal incontinence score, number of bowel movements per day and improved maximum resting pressure, maximum squeeze pressure, and rectal capacity.
- The overall mean patient satisfaction score after biofeedback was 60%.

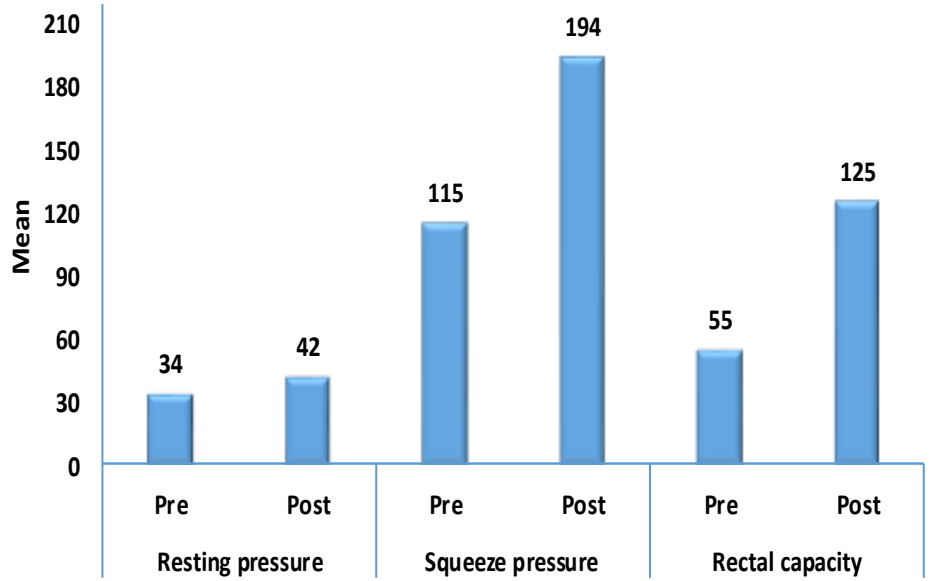
Results

		Median	Range	P value
Wexner score	Pre	12	(8 - 16)	0.005
	Post	8	(4 - 10)	



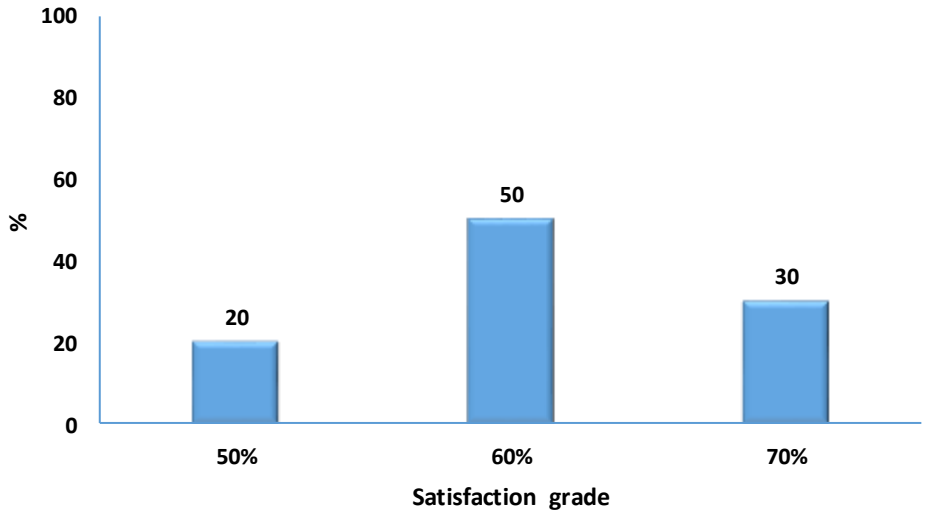
Results

		Mean ±SD	P value
Resting pressure	Pre	34 ±6	0.011
	Post	42 ±4	
Squeeze pressure	Pre	115 ±14	0.005
	Post	194 ±21	
Rectal capacity	Pre	55 ±22	0.005
	Post	125 ±31	



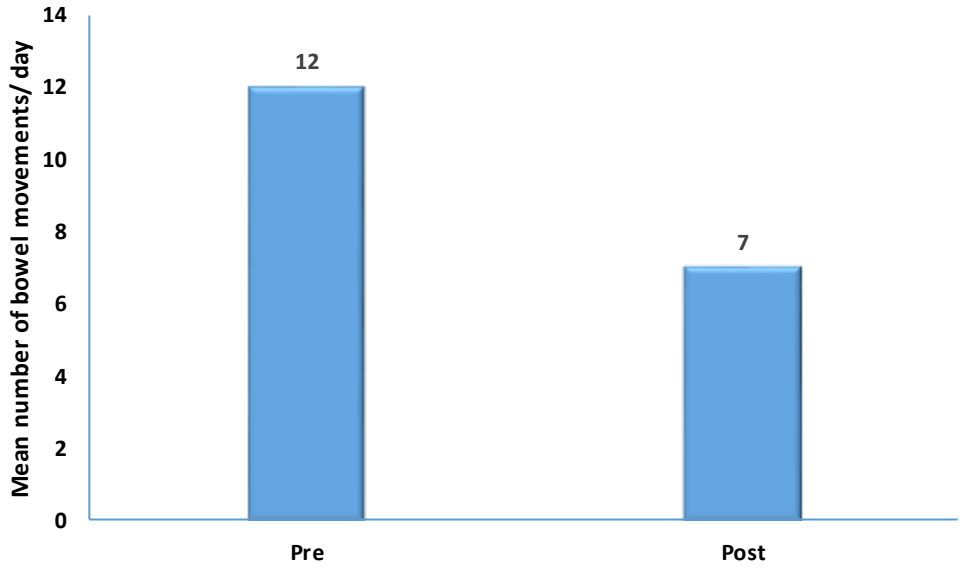
Results

		N	%
Satisfaction	50%	2	20
	60%	5	50
	70%	3	30



Results

		Mean ±SD	P value
Number of bowel movements / day	Pre	12 ±3	0.005
	Post	7 ±2	



CONCLUSION

Although biofeedback therapy is not considered the idealistic modality of treatment for anterior resection syndrome yet, it has a great impact on reducing symptoms leading to relative improvement of the quality of life of these patients.


Thank you