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Case Study

Early Recovery in Stress Urinary Incontinence Following Radical Prostatectomy in a 73 Year Old through Pelvic Floor Rehabilitation - A Case Report

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I N F O

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A B S T R A C T

Stress urinary incontinence is a common consequence after prostate surgery.The data supporting proper pelvic floor therapy for the same is limited.

This case study is unique since it offers a thorough rehabilitation plan for urinary incontinence after prostate surgery in a 73-year-old male for six weeks. Treatment with physical therapy included electrotherapy, pelvic floor strengthening, pelvic floor coordination with core, whole-body vibration, and bladder retraining with behavioural guidance. Pad test showed a significant difference in the weight of the pad and scores on the Modified Oxford (MOG) Scale were adjusted from Grade III to Grade IV for pelvic floor strength. The reduction of scores from 70 to 41 points in The Kings Health Questionnaire and from 18 to 9 in International Consultation on Incontinence Questionnaire suggests improvement in quality of life specifically in physical limitations and severity measures. Pelvic floor rehabilitation, when administered with appropriate dosage and protocol, results in early resolution of stress incontinence post prostate surgery in elderly males where a surgical approach seems sophisticated. Literature needs more proof based on more rigorous research techniques.

Keywords: Stress Urinary Incontinence, Prostatectomy, Pelvic Floor Rehabilitation, Case Report

Introduction

Stress incontinence (SIC), a popular complication succeeding any prostate or bladder surgery, poses a considerable impression on various aspects of life including physical, social, personal, sexual as well as psychological. While recording the data of SIC after open radical prostatectomy, it is observed to account for 5–35% depending on the time frame and terminology used.

Post open radical prostatectomy, impaired functioning of structures within the urinary system is evolved. Conceptually, SIC post prostate surgery is generally presumed as a result of bladder dysfunction and/ or sphincter incompetency.[2] Removal of the prostatic urethra, variable disruption of the bladder neck, urethral sphincters scarring, trauma to the passive support, bladder de-innervations, and urethrovesical anastomosis are majorly accountable for the development of SIC post prostate surgery.[3]

Stress urinary incontinence can be managed conservatively as well as through invasive surgical procedures. Non-surgical options include pelvic floor rehabilitation, soaking sanitary pads, and urethral clamps, whereas artificial sphincters, slings and bulking agents are surgical management options for SIC. The choice of procedure is generally based on identifying intraoperative and postoperative complications for an individual also taking age into consideration.[4]

A comprehensive Pelvic Floor Rehabilitation (PFR) includes electrotherapy, exercise therapy, biofeedback, manual techniques (transrectal rehabilitation) and behavioural interventions. The technique is minimally invasive, economical, sustainable and least harmful. Literature has been providing information regarding its effectiveness in the reduction of myostatin, a marker of pelvic floor muscle function.[5] Pelvic Floor Rehabilitation, a lesser complex intervention relative to surgery improves physical activity, social relationships, emotional health and travel feasibility, thus reducing associated anxiety and depression.[6]

The reported case is one of its kind as we were able to achieve continence within 6 weeks of prostate surgery for an elderly male aged 73 years with severe incontinence. Increased age presents with increased complexity and weaker pelvic floor muscle strength. As the age progresses, chances of surgical options for management become less suitable, hence for older males, pelvic floor rehabilitation is the best management option available.

Thus, the case report describes extensive rehabilitation for a 73-year-old male with stress urinary incontinence after prostate surgery.

Case Description

An elderly male with a Body Mass Index of 26.86% was diagnosed with carcinoma prostate 4 months ago, underwent open radical prostatectomy 15 days prior. On catheter removal on day 15 post-operation, the patient was not able to hold urine and was referred to physiotherapy OPD. The patient seemed cooperative and highly motivated.

The ethics committee waived the need for permission, and the patient provided signed, informed consent for the case to be published.

Clinical Findings

The patient had reduced sensation of bladder fullness and incomplete micturition. He used 2 diapers/day which had an overflow of urine. The patient's fluid intake was 500 mL per day. A physiotherapy assessment was done after obtaining the patient's verbal and written consent for pelvic floor examination.

Loss of pubic hair and bandage around the penis was noted during perineal observation which also revealed no signs of infection with visible pelvic floor contraction and relaxation.

The patient had involuntary urine leakage during a change of posture from sitting to standing after the catheter removal. He also presented with urine leakage during coughing, farting and turning around. The patient was sexually inactive since he had a family history of carcinoma prostate and had undergone trans-urethral resection of prostate 9 years back.

Examinations

The patient was assessed in a crook lying position. All the aseptic precautions were taken before the assessment. Sensory examination revealed no altered sensations. According to The Modified Oxford Scale for Pelvic Floor Muscle (PFM), the strength was Grade-III, endurance was 5 secs, repetition of 4 reps and fast contractions was 5.

1-hour pad test was done on day 1 of treatment and was taken as one of the outcome measures.

Therapeutic Intervention

The patient attended physiotherapy sessions regularly (6 days/week for 6 weeks). Pelvic floor rehabilitation included electrical stimulation, pelvic floor muscle (PFM) strengthening, relaxation training, core training, and dynamic PFM activation training (Table 1 and Figure 1) The patient's treatment also included a whole body vibrator which was started after 4 weeks.

Follow-Up and Outcomes

All the outcome measures were taken at the beginning of the treatment, i.e. on day 1 and at the end of 6 weeks (Table 2).

Clinically significant changes were observed post 6 weeks of intervention. Post intervention, the change in the weight of the pad had come down to zero indicating no

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leaks. Manual muscle test demonstrated improvement in pelvic floor muscle strength as well. There was a positive change noticed in TKHQ, specifically in physical limitations (decrease from 13 to 5) and severity measures (decrease from 24 to 13). Reduction in the score of ICIQ-SF also suggested an improved quality of life.

Table 1.PT Intervention for 6 Weeks

Duration	Treatment	Parameters		
		Placement	Frequency	Duration/Repetitions
Week I	Electrical stimulation	Four electrodes, borders of the urogenital triangle	50 Hz	25 mins
	PFM activation	2 finger placed just below the scrotum	3/day	10 contr/3 sets
	Static adductors	-	3/day	10 sec hold/10 reps
	Transrectal PFM training	One finger inserted into the anal opening till 2 knuckles inside	3/day	10 sec hold/10 reps
	Advise on knack technique and PFM relaxation			
Week II–Week III	Week I treatment interventions			
	PFM training with a gym ball	Seated on a gym ball with B/L legs abducted	1/day	10 sec hold/10 reps
	Advise on knack technique and PFM relaxation Patient advised to attempt voiding 6/day and 2/night regardless of urge Advised breathing and squatting for complete evacuation			
Week IV–Week V	Week II–Week III treatment interventions			
	Whole body vibration	Standing with hands holding the straps	3/week	60 sec/5 reps
	Advise on knack technique and PFM relaxation Patient advised to attempt voiding 6/day and 2/night regardless of urge Advised breathing and squatting for complete evacuation			
Week VI	Week IV–Week V treatment interventions			

* PT- Physiotherapy
PFM- Pelvic Floor Muscles
B/L- Bilateral

Figure 1.Dynamic Training for PFM

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Table 2.Outcomes at Week VI

Outcome Measures	Components	Pre-Treatment Week I	Post-Treatment Week VI
Pad test (difference in the weight of the pad) (g)	-	94	0
PFM strength	-	Grade III	Grade IV
TKHQ	General health perception	4	2
	Incontinence impact	3	2
	Role limitations	8	4
	Physical limitations	13	5
	Social limitations	2	1
	Personal relationships	9	5
	Emotions	5	3
	Sleep/ energy	16	8
	Severity measures	24	13
	Total	70	41
IQIC		18	9

* TKHQ- The Kings Health Questionaaire

ICIQ- International Consultation on Incontinence Questionnaire

Discussion

Stress incontinence has a remarkable ability to interfere with personal life and patients' well-being, which even leads to social marginalisation. Despite ample evidence for the management of SI, this case becomes novel as the protocol itself is distinct and the time frame in which complete recovery is attained is sooner. Thus, to our knowledge, this is the foremost case of successful recovery of SUI within 6 weeks through conservative management in a 73-year-old elderly male.

It combines extensive pelvic floor rehabilitation with electrical stimulation and exercise therapy. The plan of treatment was set according to the existing regimen initially, to increase pelvic floor muscle strength and improve its coordination with abdominal muscles. Later, treatment was followed with recent evidence for PFM training and also behavioural interventions.[2]

Direct activation of muscles responsible for maintaining continence in males are the striated urethral sphincter, puborectalis/ pubovisceralis and bulbocavernosus. These muscles can be achieved by digital anal contraction as performed in the current case by the therapist.[7] The striated muscles remain slightly tense during the storage of urine, becoming more tense when activities that increase intra-abdominal pressure, including coughing or postural exercises, compromise continence.

Electrical Stimulation (ES) is another treatment option advised for the management of stress urinary incontinence as suggested by the National Institute of Care and Excellence (NICE). ES has been found to work the pelvic floor muscles as the electrical signals produced target nerve fibres and elicit a contraction of PFM. Consequently, it preserves muscle function and rehabilitates the muscle group. According to NICE, 3 times per week of electrical stimulation for 3 months has been found to be productive in improving the function of the pelvic floor.[8] The current case was also treated with electrical stimulation regularly for 6 times a week and results were found to be significant for early recovery.

Whole Body Vibration (WBV) is a newly suggested treatment modality. It has been proven effective in improving neuro-muscular system components by increasing muscle strength and endurance. Theories also suggest that WBV activates the muscle spindle and amplifies slow and fast twitch fibers contributing to improved functional outcomes. Literature advises WBV for 3 times per week with a frequency of 40 Hz for 4 weeks. The same dosage was followed for the current case and the results obtained are similar to those of a study conducted by De Oliveir et al.[9]

The continence mechanism is not solely dependent on PFM. It is also dependent on the coordination of muscles around the hip and abdominals with PFM. Strengthening of PFM along with hip muscles, particularly the gluteus, has shown promising results for the management of urinary incontinence.

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Thus, PFM exercises, electrical stimulation, gluteus and abdominals strengthening, whole body vibration and behavioural modifications constitute extensive pelvic floor rehabilitation which was successful in obtaining early recovery.[10]

Conclusion

The study concludes pelvic floor rehabilitation can be used as less expensive while fairly effective method of treatment for Urinary Incontinence following radical prostatectomy.

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