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REHABILITATION OF PELVIC FLOOR DYSFUNCTION AND CHALLENGES FACED IN A PROSTATE CANCER SURVIVOR:- A PHYSIOTHERAPEUTIC CASE REPORT

Physiotherapy

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ABSTRACT

Prostate cancer survivors frequently develop pelvic floor dysfunction (PFD) following radical prostatectomy, leading to stress urinary incontinence, sexual dysfunction, and reduced quality of life. Physiotherapy interventions targeting the pelvic floor muscles have shown promising outcomes in improving continence and functional recovery. This case study presents a 50-year-old male prostate cancer survivor who reported stress urinary incontinence and pelvic floor weakness one months after undergoing radical prostatectomy. Physiotherapeutic assessment revealed pelvic floor muscle strength of Grade 1 on the Modified Oxford Scale, impaired bladder control, and moderate functional limitations, with a Barthel Index score of 20/100. An individualized rehabilitation program was designed, including pelvic floor muscle training (PFMT), bladder training techniques, core stabilization exercises, and functional re-education over eight weeks. The intervention also emphasized patient education and behavioral strategies to promote adherence and lifestyle modifications. At the end of the program, the patient demonstrated marked improvement in pelvic floor muscle strength (Grade 4), an 80% reduction in urinary leakage episodes, and enhanced functional independence with a Barthel Index score of 80/100. This case highlights the pivotal role of physiotherapy in addressing PFD and overcoming the challenges faced by prostate cancer survivors in restoring continence and improving their overall quality of life.

KEYWORDS

Prostate cancer, Chemotherapy, Pelvic floor strength, MMT, ROM

INTRODUCTION:

The World Health Organization (WHO) states that cancer can be classified according to the type of cells involved and the organ or tissue from which it originated. Lung, breast, and colorectal cancers are among the most prevalent forms of carcinomas, which develop from the epithelial cells lining organs. Connective or supporting tissues including bone, cartilage, fat, muscle, or blood vessels are the source of sarcomas [1].

The cancer known as adenocarcinoma starts in glandular epithelial cells, which are in charge of secreting mucus, digestive juices, and other fluids. These malignancies can arise in the lungs, colon, pancreas, prostate, and breast, among other organs that contain glandular tissue [2]. The prostate glandular epithelial cells, which are dependent on androgens like testosterone for growth, are the site of prostate adenocarcinoma, a type of cancer. Usually starting as a localized tumor inside the prostate, it can spread to neighbouring tissues and eventually spread to bones like the spine and pelvis [3].

1.5 million new cases occur annually (2022 data), ranking prostate cancer as the 2nd most common cancer in men globally [4]. A dramatic increase in case numbers is expected by 2040, with insufficient mitigation options beyond early detection and screening strategies, particularly in low- and middle-income countries [5].

Symptoms of early prostate cancer are frequently absent. When it occurs, symptoms include urgency, poor urine flow, difficulty urinating, and occasionally blood in the urine or semen. Because advanced cancer spreads and weakens the pelvic floor muscles, it can cause leg edema, pelvic pain, and bone pain [6]. Fatigue is a common side effect of prostate cancer, which impairs patient's physical and emotional well-being and reduces their quality of life. Additionally, treatments may weaken the pelvic muscles, which can result in sexual dysfunction and urine incontinence. Physiotherapy for strengthening these muscles can alleviate discomfort and enhance general health [7,8].

CASE REPORT:-

A 50 years old man was apparently all right 7 months ago, when the patient reported progressive difficulty in passing urine (May 2024). The patient stated that initially he noticed weak stream and increased frequency in urination over time as the symptoms worsened and he began experiencing incomplete bladder emptying, lower abdominal discomfort and difficulty in maintaining posture. Patient also reported episodes of urinary incontinence and a burning sensation during urination. Due to this the patient went to visit a local doctor in Latur. The doctor prescribed him with some medications he took those medications for 15 days but didn't felt much relief later one of his relative suggested him about Tata hospital in Mumbai he went to Tata hospital and was diagnosed with Stage IV B adenocarcinoma, with TNM grading of T3b N1 M1b, of the prostate and was advised to undergo Radical Prostatectomy and 10 cycles of chemotherapy. T3b – Tumor has invaded the seminal vesicles (extension beyond the prostate capsule), N1 – Regional Lymph Node Involvement, M1b – Distant Metastasis to the bone. The surgery was performed on 2nd November 2024. Within 7 months the patient completed all the remaining cycles of chemotherapy. The patient discontinued the treatment in Tata hospital Mumbai due to financial condition post operation patient started having no sensation during urination and severe weakness of lower limb and pelvic floor muscles therefore on 30th November the patient visited Rashtrasant Janardhan Swami Foundation and Cancer Research Centre Kopargaon for post-operative prostate cancer care and the patient was advised to undergo 20 cycles of radiation after routine assessment which he completed by the end of Jan 2025. The patient was unable to walk independently at the time of admission and also reported difficulty in initiating urination, Inability in controlling the bladder and hence is dependent on a urinary catheter due to persistent incontinence, pelvic discomfort, reduced pelvic floor strength, fatigue and unable to stand/walk independently. Then on 3rd December 2024 the patient was assessed for rom, mmt for lower limb, pelvic floor muscle strength, fatigue, quality of life, functional independence and hospital anxiety depression scale and the physiotherapy treatment was started for the patients. The patient reported of moderate fatigue, severe functional dependency, anxiety, depression and poor quality of life due to the ongoing radiation and chemotherapy. The patient showed reduced Range of Motion pre-treatment for hip, knee and ankle joint and showed significant improvement post-treatment as shown in the Table 1. Table 2 shows detailed pre and post-treatment Manual Muscle Testing of the lower limb. The pelvic floor muscle strength pre and post-treatment is given in detailed as shown in Table 3 & Table 4.

Table 1: Shows The Detailed Pre-treatment & Post-treatment Range Of Motion Of Lower Limb

Joints	Pre-Treatment				Post-Treatment			
	Left		Right		Left		Right	
	Active	Passive	Active	Passive	Active	Passive	Active	Passive
Hip								
Flexion	0-18^0	0-75^0	0-22^0	0-80^0	0-95^0	0-112^0	0-100^0	0-115^0
Extension	0-5^0	0-15^0	0-8^0	0-18^0	0-20^0	0-25^0	0-22^0	0-27^0
Abduction	0-15^0	0-30^0	0-20^0	0-35^0	0-35^0	0-45^0	0-40^0	0-45^0

Adduction	0-10^0	0-15^0	0-12^0	0-20^0	0-25^0	0-30^0	0-25^0	0-30^0
Knee								
Flexion	0-27^0	0-80^0	0-29^0	0-85^0	0-105^0	0-115^0	0-110^0	0-125^0
Extension	27-0^0	80-0^0	29-0^0	85-0^0	105-0^0	115-0^0	110-0^0	125-0^0
Ankle								
Plantar Flexion	0-30^0	0-40^0	0-35^0	0-40^0	0-45^0	0-50^0	0-45^0	0-50^0
Dorsi Flexion	0-14^0	0-20^0	0-15^0	0-18^0	0-18^0	0-20^0	0-18^0	0-20^0

Table 2: Shows The Detailed Pre-treatment & Post-treatment Manual Muscle Testing Of Lower Limb

Joints	Pre-Treatment		Post-Treatment	
	Left	Right	Left	Right
Hip				
Flexors	1	1	4	4
Extensors	1	1	3	3
Abductors	1	1	4	4
Adductors	1	1	3	4
Knee				
Flexors	1	1	3	3
Extensors	1	1	4	3
Ankle				
Plantar Flexors	2	2	4	4
Dorsi Flexors	2	2	4	4

Table 3:- Pelvic Floor Muscle Strength Findings Pre-treatment

Parameters	Findings
Assessment Tool	Modified Oxford Grading Scale (0-5)
Observed Grade	(Grade 1) Flicker to weak contraction
Voluntary Muscle Contraction	Weak contractions; unable to sustain
Coordination with other Muscles	Ineffective co-contraction with abdominal or gluteal muscles
Incontinence Status	Present (Stress and overflow incontinence)
Functional Impact	Poor bladder control, increased dependency on catheter, reduced confidence
Interpretation	Flicker to weak contraction indicates significant pelvic floor weakness post-radical prostatectomy

Table 4: Shows The Detailed Outcomes At 1st, 4th And 8th Week

Outcomes	1st Week	4st Week	8th Week
Barthel Index	20/100 (Total Dependency)	55/100 (Severe Dependency)	80/100 (Moderate Dependency)
Brief Fatigue Inventory	7.2/10 (Severe Fatigue)	5.4/10 (Moderate Fatigue)	2.9/10 (Mild Fatigue)
Quality of life (FACT-G)	36/108 (Poor Quality of life)	50/108 (Moderate Quality of life)	85/108 (Good Quality of life)
Pelvic Floor Muscle Strength	Grade 1- (Flicker to weak contractions)	Grade 3- (Moderate contractions with slight lift)	Grade 4- (Good Contraction with lift and squeeze; can be held for a few seconds)
Hospital Anxiety Depression Scale (Anxiety Subscale)	10/21 (Borderline Abnormal)	8/21 (Borderline Abnormal)	5/21 (Normal)
Hospital Anxiety Depression Scale (Anxiety Subscale)	14/21 (Abnormal)	9/21 (Borderline Abnormal)	7/21 (Normal)

Pelvic Floor Muscle Strength, Barthel Index, BFI, FACT-G and HADS scores were measured at weeks 1st, 4th and 8 and the values are shown in Table 4.

PHYSIOTHERAPEUTIC INTERVENTION

Physiotherapeutic Intervention was given for 6 days/ weeks for 8 consecutive weeks.

INTERVENTION	RATIONALE	DOSAGE
1 & 2 Weeks		
Bed mobility training	Prevents, bedsore, promotes early independence, and prepares for transfer.	As tolerated, daily
Diaphragmatic breathing exercise	Improves oxygenation, reduces fatigue, and supports Core- pelvic control	5 reps x 3 sets
Ankle toe movements	Enhances circulation, prevents DVT, and maintains joint mobility	10 reps/ hourly
Heel slides	Promotes knee and hip rom, and prevent stiffness in early rehab	10 reps x 3 sets
Isometrics of hamstrings, quadriceps and calf	Maintains muscle activation without joint strain, ideal for early weak phase	Hold 5 sec x 10 reps x 2 sets
Active initiation of movements of hips, knee and ankle followed by passive full range of motion	Builds voluntary control gradually with support; bridges passive to active phase	10 reps x 2 sets
Stretching of lower limb muscles	Maintains flexibility, reduces spasticity or tightness, and prevents contractures.	30 sec hold x 3 reps
PNF (lower limb: D1 & D2)	Facilitates coordinated, functional movements using proprioceptive input.	10 reps x 2 sets
Pelvic floor muscle training [Basic kegels exercises]	Improves continence and improve core stability.	10 reps x 3 sets
3 & 4 Weeks		
Active- assisted ROM (hip, knee, ankle)	Gradual voluntary control, bridges passive to active	10 reps x 3 sets
PNF with resistance	Enhances neuromuscular coordination and strength through functional movement patterns	10 reps x 2 sets
EMG Biofeedback (lower limb movements)	Improves awareness and control of weak pelvic floor and lower limb muscles.	10 min sessions
Pelvic floor muscle training (Quick flicks Kegels, Pelvic tilt, Pelvic bridging, Hold and relax)	Builds both endurance and fast-acting control of pelvic floor for continence. Integrates pelvic control into functional movement, reinforcing real-life use. Activates deep core and pelvic floor muscles for trunk-lower limb stability	15 reps x 3 sets
Functional Training (Sit to stand, stepping, pertubations in sitting)	Re-trains lower limb strength and coordination for daily activities.	10 reps x 2 sets
Balance and proprioception training	Improves reactive balance, postural control, and fall prevention.	10 reps x 2 sets
Assisted gait training Walker > Crutch walking >Parallel bar walking	Restores joint position sense and neuromuscular control for safe mobility.	As tolerated
5 & 6 Weeks		

Progressive Resistance training (Manual resistance, Thera-bands weight cuff, Isokinetic training, Eccentric training)	Gradually builds muscle strength and mass, combating cancer-related muscle atrophy and improving lower limb function. Provides controlled resistance throughout the range of motion, enhancing strength safely in weak muscles. Targets muscle lengthening under tension, which is more effective in improving strength and preventing falls.	10 reps x 2 sets
Blood flow restriction therapy	Enables strength gains with low loads, ideal for frail or post-surgical patients who cannot tolerate high resistance.	10 min session (twice a week)
Balance training (Weight shifting Eye open/ eye closed)	Improves postural control, reduces fall risk due to neuromuscular impairments from cancer treatments. Enhances proprioception and vestibular adaptation, improving dynamic stability and coordination.	10 reps x 2 sets
Frenkel's exercises	Improve coordination in lower limbs through controlled, repetitive movements especially in ataxic conditions.	10 reps x 2 sets
Pelvic floor muscle training (Pelvic muscle co-contractions with movements, Functional kegals, knack technique, Hold and relax, contract relax)	Increases awareness and voluntary control of pelvic muscles, important for stability and continence. Strengthens pelvic floor to prevent incontinence during activities that increase intra-abdominal pressure.	15 reps x 3 sets
Aqua therapy with functional integration	Reduces joint stress while allowing resistance-based movement, ideal for weak or painful lower limbs.	10- 15 min session (twice a week)
Gait training (independent, step/ crisscross walking)	Improves ambulation, confidence, and activity levels	As tolerated
Aerobic Conditioning [stationary cycle]	Enhances cardiovascular health, reduces cancer-related fatigue, and supports overall physical recovery.	10-15 min session (twice a week)
7 & 8 Weeks		
Moderate Intensity exercise (circuit training)	Improves cardiovascular endurance, reduces fatigue, and supports muscle recovery without overexertion.	10 minutes , 2 circuits
Pelvic floor muscle training with balance exercise (Functional & Endurance kegels)	Enhances core stability, continence, and balance to reduce fall risk.	10 reps x 3 sets
Agility exercises	Improves coordination, quickness and neuromuscular response for dynamic movement and safety.	10 x 2 sets
Plyometric Training (low-impact, cautious progression)	Enhances muscle power, joint control, and rapid force production critical for safe and effective lower limb function (used cautiously in rehab).	As tolerated, 5 reps x 2 sets

Fig 1: At the end of 3rd Week

Fig 2: At the end of 6th Week

RESULTS

The Barthel Index (BI) pre-treatment was 20 out of 100, indicating severe dependency in performing activities of daily living (ADLs). Fatigue was evaluated using the Brief Fatigue Inventory (BFI) and the patient reported moderate fatigue level, with an average score of 7.2/10 pre-treatment particularly affecting walking ability and general activity. Quality of life was assessed using the Functional Assessment of Cancer Therapy-General (FACT-G), indicating patient's quality of life is substantially compromised, with the score of 36/108 and depression was assessed using Hospital Anxiety and Depression Scale (HADS) and the score was 10 out of 21 for (Anxiety Subscale) and 14 out of 21 for (Depression Subscale) and pelvic floor muscle strength as Grade 1 pre-treatment. Post-treatment there was improvement in pelvic floor muscle strength from Grade 1 to Grade 4 also improvement in barthel index 80/100 indicating patient was moderately dependent, with reduced level of fatigue with an average score of 2.9/10 and also reduced level of anxiety and depression which eventually resulted improvement in health and overall quality of life.

DISCUSSION

Pelvic floor dysfunction is a common complication in prostate cancer survivors post-radical prostatectomy, often leading to urinary incontinence and reduced quality of life [9,10]. In this case, physiotherapy focused on pelvic floor muscle training (PFMT) and bladder retraining, which are considered first-line interventions for post-prostatectomy incontinence. Early PFMT has been shown to accelerate recovery of continence and improve outcomes [11,12]. Challenges included poor proprioception of pelvic floor muscles, delayed therapeutic response, and psychological barriers such as fear of leakage. These are consistent with previous studies highlighting adherence issues in pelvic rehabilitation [13]. Biofeedback and graded exercise helped overcome these challenges and improve muscle strength and continence, aligning with evidence supporting tailored physiotherapy protocols [14]. This case emphasizes the importance of early intervention, patient education, and a multidisciplinary approach to optimize functional recovery and enhance quality of life in prostate cancer survivors.

CONCLUSION

The Pelvic floor rehabilitation program produced a significant clinical improvement in the performance of functional activities, fatigue and

emotional state. It may be concluded that an eight-week of pelvic floor rehabilitation program is clinically effective in improving functional independence, improve lower limb strength, pelvic floor muscle strength, reduce fatigue, reduce anxiety, depression and increase the overall health and quality of life in patients with prostate cancer. The pelvic floor rehabilitation program may be recommended for prostate cancer patients/ patients with reduced pelvic floor muscle strength in similar settings.

Abbreviations

ROM – Range of Motion
BFI – Brief Fatigue Inventory
HADS – Hospital Anxiety and Depression Scale
NPRS – Numeric Pain Rating Scale
PROM – Passive Range of Motion
AROM – Active Range of Motion
MMT – Manual Muscle Testing
PFMS – Pelvic Floor Muscle Strength

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Conflict Of Interest

The authors declare that they have no conflict of interest.

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Informed Consent

Informed consent was obtained from the patient.

Ethical Clearance

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