

CASE REPORT

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Physiotherapy Management In Anal Cell Carcinoma Following Laparoscopic Surgery – A Case Report

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ABSTRACT

Background: Anorectal malignancies, wherein anal cell carcinoma comprises just 2-4% of cases, are uncommon and pose particular difficulties for treatment and recovery. Chemotherapy, radiation therapy, and surgery are a few multimodal treatments. Owing to its less invasive nature, reduced post-operative complications, reduced length of hospital stay, and faster recovery than open surgery, laparoscopic surgery, in particular has gained popularity. Physiotherapy is an essential component of this interdisciplinary approach as it offers interventions that promote physical well-being, expedite recovery, and enhance aerobic function along with muscle strength.

Physiotherapists employ several strategies to encourage early movement through guided exercises and respiratory training to circumvent complications following surgery, such as deep vein thrombosis, pulmonary embolism, and muscular atrophy. Physiotherapy interventions usually start within the first 24 hours following surgery.

Case Summary: This case report explains the post-operative rehabilitation of a patient who underwent laparoscopic surgery for anal cell carcinoma, wherein a structured exercise program was prescribed to the patient leading to successful recovery and return to function postoperatively.

Outcome Measures: The outcome measures were the Numerical pain rating scale, Hospital anxiety and depression scale, 6-minute walk test, and Borg dyspnea scale.

Conclusion: Effective physiotherapy management post-laparoscopic surgery for anal cell carcinoma involves a multifaceted approach addressing pain, mobility, pelvic floor function, respiratory health, and aerobic capacity. Tailoring physiotherapy interventions to individual patient needs and incorporating evidence-based practices are essential for optimal outcomes.

Keywords: Surgical Rehabilitation, Post-operative Physiotherapy, Anal Carcinoma, Colorectal cancer, Oncological Rehabilitation.

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INTRODUCTION

Cancer of the anal canal is relatively uncommon, and it makes up 4% of all anorectal malignancies and 1.5% of gastrointestinal malignancies. However, in recent decades, the incidence of anal cancer has increased globally. About 85% of anal canal cancers arise within the anal canal up to the anal verge. Squamous cell cancer of the anal margin is most common [1,2]. Human papillomavirus (HPV) infections like anal-genital warts; history of receptive anal intercourse or sexually transmitted disease, cervical, vulvar, or vaginal cancer; immunosuppression post solid organ transplantation or HIV infection; and smoking are associated with anal carcinomas. Primarily local and regional dissemination characterizes anal cancers. Early involvement of Anal musculature is because of the proximity of mucosa to the underlying sphincters. The constriction and stenosis of the anal sphincter are caused by circumferential growth of anal cancers [3]. About 10-15% of Anal cancer has the potential to spread to nodes at the superior rectal artery bifurcation or, at a higher level, to the peri-rectal nodes via the lymphatic arteries. Emerging tools for identifying pre-cancerous lesions include anal pap smear and high-resolution anoscopy. Marked progress has been made in understanding the pathophysiology of this disease, leading to the evolution of effective treatment modalities [1,4]. Chemotherapy, radiation therapy, and surgery are some of the multimodal treatments available for the cancer of the anal canal. Due to its less invasive nature, reduced post-operative complications after surgery, shorter hospital stays, and faster recovery than open surgery, laparoscopic surgery has gained popularity [5]. The control of pain, averting complications, restoring function, and improving quality of life are all essential aspects of post-operative care for patients with anal cell carcinoma. Physiotherapy is essential to this interdisciplinary approach as it offers interventions that promote physical well-being, expedite post-operative recovery, and enhance aerobic function and muscular strength [6,7]. This case report summarizes the post-operative rehabilitation of a patient with anal cell carcinoma.

CASE REPORT

Patient Information:

A 39-year-old male patient who was a known case of signet cell carcinoma of the anal canal presented to the hospital with an increased frequency of stools which was preceded by constipation associated with blood in stools two months back. Following an abdominoperineal resection (APR), he was referred for post-operative physiotherapy on post-operative day (POD) 1. On the day of the referral, the patient presented with complaints of pain in the inner thigh and lower abdomen. The patient was overweight, with a BMI of 29.05 kg/m². Personal history revealed that there was disturbed bowel function for more than one year. After trying several different home remedies and ayurvedic treatments to no avail, the patient visited the hospital, where a CECT revealed a mass-like formation in the anal canal. Following this finding, the patient underwent 30

radiations, five cycles per week. He was then discharged and advised to review after two weeks. A scan following the radiation therapy showed a further progression in the mass, thereby indicating surgery for resection. Following a laparoscopic APR with open umbilical hernia repair., the patient was referred for physiotherapy on POD 1.

Physical Examination:

The patient was conscious, cooperative, and oriented on the referral day. The breathing pattern was thoraco-abdominal, and no other signs of respiratory distress or accessory muscle usage were noted. A visible cough impulse was noted, and there was mild swelling in the bilateral foot. The details of the patient's vitals on POD 1 & 2 are given in Table 1.

Table 1: Vitals examination.

VITALS	POD-1	POD-2
HR	102bpm	89bpm
SPO2	98%	97%
BP	130/70mmHg	110/80mmHg
RR	24	20

Normal vesicular breath sounds were present on auscultation, and S1S2 was heard. The abdomen showed regular peristaltic movements. The tympanic note was heard on percussion per abdomen. On palpation, grade 2 pitting edema was noted on the bilateral foot. The details of the limb circumference measurements are mentioned in Table 2.

Table 2: Limb circumference on POD-1 (in inches).

Site	Right	Left
Upper thigh	-	-
Mid-thigh	46	45
Calf	32.5	32.5
Ankle	24	24
Foot	56	56

The patient's muscle strength was evaluated, and the grades are mentioned in Table 3.

Table 3: Manual muscle testing (POD-2).

Muscle group	Right	Left
Hip flexors	4/5	4/5
Hip abductors	4/5	4/5
Knee flexors	4/5	4/5
Knee extensors	4/5	4/5
Ankle dorsiflexors	4/5	4/5
Ankle plantar flexors	4/5	4/5
Shoulder flexors	4/5	4/5
Shoulder extensors	4/5	4/5
Elbow flexors	4/5	4/5
Elbow extensors	4/5	4/5
Wrist flexors	4/5	4/5
Wrist extensors	4/5	4/5

Diagnostic Investigations:

The following investigations were done on the patient for diagnosis:

- MRI pelvis with contrast showed circumferential enhancing wall thickening in the rectum extending up to the anal verge causing luminal narrowing with maintained mural stratification extending into perirectal fat.
- Histopathology showed stratified squamous epithelium with ulcerations covered with granulation tissue was suggestive of signet ring cell carcinoma of the anal canal.
- CECT abdomen and pelvis showed peri-rectal deposits, the largest measuring about 3.5 mm, also noted in the umbilical region measuring 1.5mm with herniation of omentum. There was free fluid in the peritoneal cavity.

Physiotherapy Intervention

Acute care was initiated to reduce pain and swelling, improve chest compliance, improve inspiratory capacity, and encourage bronchial hygiene while maintaining muscle integrity.

Following the goals, treatment was initiated with an in-bed range of motion exercises, active ankle and toe movements, and hand pumps. Incentive spirometry training was initiated in a long sitting position, emphasizing inspiratory to facilitate collateral ventilation. Positioning was done every 2nd hour in semi-fowlers, left lateral and right lateral, to prevent complications of immobilization, improve lower lobe expansion, and prevent decompensation. The treatment was interspersed with pursed lip breathing to prevent breathlessness and manage fatigue.

The interventions were advised each day, as mentioned in Table 1.

TABLE 1: Exercise intervention – Post-operative period.

Post-operative Day (POD)	Exercise intervention	Dosage
POD 1 & 2	Active movements for bilateral upper and lower limb	10 repetitions x 3 sets
	Diaphragmatic breathing	10 repetitions x 3 sets
	Bedside sitting	20 minutes
	Ankle pumps	10 repetitions x 3 sets
POD 3 & 4	Strength training using weight cuffs for muscles of the upper and lower limb	10 repetitions x 2 sets each
	Thoracic expansion exercises	6 repetitions x 2 sets
	Standing with minimal support	20 minutes with 5 minutes interval
POD 5 & 6	Ambulation with support	200 metres
	Exercises given on POD – 4	Same dosage
	Independent ambulation	30 minutes with a rest period

POD 7	Exercises given on POD – 4	Same dosage
	Stairclimbing with support	20 minutes gradually progressed
	Pelvic floor exercises	Contraction relaxation is done with a 3-second hold and 3 seconds of relaxation for 15 minutes.
	Core strengthening exercises (pelvic bridging and head-to-heel press)	Initiated with slow movements and 5 repetitions with 5 second hold

Home program:

Patient education and home exercises were advised before discharge, which included the following:

To continue all range of motion and strengthening exercises of bilateral upper and lower limbs

10 repetitions 2 sets 4 days a week.

Pelvic floor exercises – contraction relaxation 3 seconds hold and 3 seconds relax for 10- 15 minutes initially and the progressing to 30 minutes for 4 days per week.

Core strengthening exercises were taught and advised to be initiated with minimum intensity and repetitions (initiating from 5 repetitions then progressing to 10-15 for 30minutes 4 days per week).

Brisk walking to be done for 30 minutes 4 days a week.

Breathing exercises and relaxation positions were taught to the patient.

Patient was taught to check vitals mainly pulse rate and oxygen saturation using pulse oximeter pre and post exercise.

Outcome Measures:

A total of 5 outcome measures were taken on POD-1 and POD-7, and a significant improvement was observed following the physiotherapy sessions. The details of the same are mentioned in Table 4.

Table 4: Outcome measures.

S. NO.	OUTCOME	POD-1	POD-7
1	NPRS	5	2
2	HADS-Depression	10	6
3	HADS-Anxiety	10	5
4	6MWT	-	600m
5	Borg Dyspnea scale	2	0

Follow Up:

A weekly follow-up was maintained up to two months post-discharge at Physiotherapy OPD. During each visit, the patient was assessed for all the baseline evaluations during the hospital stay. The goals were redefined, and an upgraded exercise plan was devised each week to accommodate the improvement. After complete healing of the surgical wound, core stabilization exercises and functional training were introduced to enhance overall strength and flexibility.

DISCUSSION

Post-operative physiotherapy is crucial in patients with anal cell carcinoma to regain function, manage pain, and improve quality of life. This case report highlights the physiotherapy management strategies post-laparoscopic surgery for anal cell carcinoma, underpinned by scientific reasoning and recent research findings. The primary goals were to manage pain to facilitate movement and recovery, enhance mobility to prevent complications such as deep

vein thrombosis (DVT) and improve overall mobility, strengthen muscles to maintain good function and improve respiratory function, ensuring optimal lung function post-surgery [8-11].

Early mobilization is crucial to prevent post-operative complications such as DVT, pneumonia, and muscle atrophy. Patients are encouraged to start walking as soon as feasible. Progressive mobilization protocols should be tailored to individual patient needs and tolerance levels. Svensson-Raskhet.al., 2021 study showed that early ambulation significantly reduces hospital stay and improves recovery outcomes in patients undergoing laparoscopic surgeries [12,13]

Laparoscopic surgery, though minimally invasive, can still affect respiratory function due to anesthesia and reduced physical activity. Breathing exercises, incentive spirometry, and early mobilization are vital for optimal respiratory function. Amaravadi SK et al., 2022 have shown that preoperative and post-operative respiratory physiotherapy significantly improves lung function and reduces pulmonary complications in patients after abdominal surgeries [14].

CONCLUSION

Effective physiotherapy management post-laparoscopic surgery for anal cell carcinoma involves a multifaceted approach addressing pain, mobility, pelvic floor function, respiratory health, and aerobic capacity. Recent research supports the integration of various physiotherapy techniques to promote recovery, decrease complications, and improve the quality of life for these patients. Tailoring physiotherapy interventions to individual patient needs and incorporating evidence-based practices are essential for optimal outcomes.

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