

# Role of Early Physiotherapy Intervention on Gastrectomy Surgery: A Case Report

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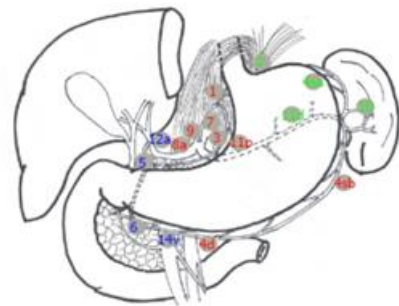
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**Abstract:** Gastric cancer is a global public health problem. It is the third leading cause of cancer - related mortality. Incidence of gastric cancer varies regions and this heterogeneity is attributed to multifactor, including infection, environmental and genetic traits. Understanding the etiology, epidemiology and risk factors of gastric cancer is important for the prevention and targeted cure of disease. The management and prevention of gastric cancer for surgical resection for treating gastric cancer. Laparoscopic gastrectomy lymphadenectomy D2 dissection with Billroth II gastrojejunostomy surgery for gastric cancer. The most common risk factors for the development of postoperative complications include duration of anesthesia, respiratory comorbidities, obesity, increased age and multiple surgeries. The present case study focuses on early physiotherapy intervention after major surgery includes various chest physiotherapy techniques like percussion, deep breathing & coughing techniques, incentive spirometry and early mobilization. Gastrectomy surgery impacts on physical recovery, so the pre - operative and post - operative rehabilitation programs may improve the health related quality of life of the patients.

**Keywords:** Gastric cancer, Gastrectomy, Quality of life. Chest physiotherapy, Respiratory physiotherapy, early ambulation.

## 1. Introduction

Gastric cancer is a prevalent disease and one of the leading causes of cancer - related deaths. It was reported as the 4<sup>th</sup> leading cause of cancer death worldwide in 2020. The incidence of gastric cancer is significant, with over 50% of new cases emerging in developing countries. The regions with the highest risk include East Asia (China and Japan), Eastern Europe and central and southern Asia, north and east Africa, North America, Australia, and New Zealand. According to the current global measures of gastric cancer data from 2020, an estimated 1.1 million cases of gastric cancer were diagnosed worldwide, with 720, 000 cases occurring in males and 370, 000 cases in females. In 2020, 770, 000 deaths were attributed to gastric cancer. India has a lower incidence of stomach cancer than other developing nations. Even though there are more patients receiving treatment for the disease worldwide, males are treated for gastric cancer at a ratio of 2: 1 more frequently than females. Gastric cancer refers to adenocarcinomas, which are stomach - based malignant neoplasms located in the stomach. The causes of gastric cancer are morbid obesity, gastric reflex disorder, insufficient sanitation, and inadequate food hygiene. The symptoms of stomach cancer are abdominal pain, heartburn, and indigestion; loss of appetite and feeling full after eating only a small amount of food; partial blockage of the digestive tract; and vomiting after meals.



The appearance of stomach cancer is carcinoma, where gastric cancer is located in the stomach, cardia, pylorus, antrum, and 25% of the body and fundus, with 40% less curvature and 12% greater curvature (3). Gastrectomy is a laparoscopy surgery used to treat gastric cancer. The diagnosis of gastric cancer is usually readily established by an endoscopy with biopsy (5). The laparoscopy procedure is commonly done under general anaesthesia. This procedure involves the surgical removal of part or the entire stomach. There are two types of gastrectomy: total gastrectomy (body fundus growth) and distal gastrectomy, when the clearance extends to the gastric duodenum and 5 cm from the growth. Subtotal gastrectomy: where the body fundus grows (80%) (4). The early physiotherapy intervention enhanced after surgery has to prevent post - operative complications and facilitate recovery from surgery and a return to normal activities of daily living and function. This case study also highlights that the evidence for postoperative physiotherapy is largely limited to studies on early mobilization and pre - rehabilitation.

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## 2. Case Report

A 70 - year - old male patient with a chief complaint of two months of stomach ache following meals and two days of vomiting. History includes episodes of regurgitation, nausea, and loss of appetite that were all resolved after taking medicine. He also takes a mixed diet and has a two - year history of alcohol consumption. No family history of bleeding, hypertension, diabetes, tuberculosis, prior surgery, or significant illness in the past.

The patient was clinically diagnosed with distal stomach carcinoma and scheduled for distal gastrectomy D2 dissection, billroth 2 gastrojejunostomy, and feeding jejunostomy under epidural anaesthesia. All baseline investigations of biopsy poorly cohesive carcinoma, upper endoscopy distal esophagitis, prepyloric growth, and CECT abdomen findings revealed malignant growth involving the distal antrum and pylori canal of the stomach and suspected metastatic lymph nodes. All the investigation was done on April 10, 2023. The patient underwent laparoscopy, upper midline incision, distal gastrectomy, D2 dissection, and billroth 2 gastrojejunostomy with feeding jejunostomy surgery on April 13, 2023. After the operative procedure, the patient was shifted to the surgical intensive care unit in stable vital condition. The patient was extubated on postoperative day 0. His early physiotherapy management was started on the first post - operative day.

### Physiotherapy Management

Role of physiotherapy in gastrointestinal cancer surgery Gastrectomy via an open surgical approach has been the treatment of choice for gastric cancer. Enhanced recovery after surgery protocols commonly include chest physiotherapy, respiratory physiotherapy, and early ambulation intervention to reduce post - operative complication rates, improve the functional activities of daily living, and shorten the length of hospital stay (2).

### The Pre - Operative Rehabilitation

The pre - operative rehabilitation was given to the patient prior to gastrectomy surgery in the form of breathing exercises and incentive spirometry in order to improve the efficiency of ventilation, decrease the work of breathing, improve gas exchange and oxygenation, and also prevent postoperative pulmonary complications.

### Post - operative Rehabilitation

The post - operative rehabilitation is comprised of chest physiotherapy, limb physiotherapy, and ambulation from early intensive care until the discharge period of an 8 - day hospital stay.

### POD: 1

#### Chest Physiotherapy—

- Diaphragmatic breathing exercises  
To prevent the accumulation of secretions, mobilize these secretions, improve the cough mechanism, and also improve respiratory muscle functions and diaphragmatic movements.
- Splinted coughing and huffing  
The main purpose of splinting is to minimize pain while moving and coughing. Coughing encourages the expectoration of mucus and secretions that accumulate in the airways. Splinting by holding a pillow firmly over the incision supports the surrounding tissues and reduces pain during coughing.
- Incentive spirometry  
It helps to prevent post - operative pulmonary complications and is also important for strengthening the inspiratory muscles of respiration, which reduces the hospital stay.

#### Limb Physiotherapy—

##### ROM exercise

Passive and active range of motion exercises for the upper and lower extremities in bed. Ankle pump exercise. Each joint motion was performed three times.

### POD: 2

Chest physiotherapy, diaphragmatic breathing exercise, splinted active coughing with support, costal expansion exercise, and incentive spirometry (250 cc/sec).

Active ROM exercise, stretching exercise to the calf, hamstring, and ankle pump exercises.

Mobilization: half sitting with support in bed

### POD: 3

Gentle chest physiotherapy, diaphragmatic breathing exercise, splinted coughing with support, costal expansion exercise, incentive spirometry at 250 cc/sec, shoulder bracing exercise, strengthening exercise for upper and lower extremities, and bed mobility edge of sitting

### POD: 4

Diaphragmatic breathing exercise, costal expansion exercise, and incentive spirometry (600 cc/sec).

Active ROM exercise, upper and lower limb strengthening exercises, standing balance training with support, and chair sitting encourage.

### POD: 5

Diaphragmatic breathing exercise, incentive spirometry (600 cc/sec), isometric neck, abdominal, and spinal strengthening exercise. Gait training around the bed with walker support.

### POD: 6

Diaphragmatic breathing exercises, incentive spirometry (700 cc/sec), spinal and abdominal strengthening exercises, and walking around the ward with minimal support.

### POD: 7

Breathing exercises, incentive spirometry (800 cc/sec), and independently walking with the psychological assistance of the patient to encourage functional activities and family

education, it was advised to motivate and encourage the patient to actively participate in workouts.

### 3. Discussion

Physiotherapy focused on finding and discussing studies related to the effects of early chest physiotherapy, respiratory physiotherapy, and early ambulation for post-operative patients with distal gastrectomy surgery. The aim of physiotherapy was to improve lung function and prevent pulmonary complications; to do early ambulation and functional movements to avoid the extent of hospital stay.

On the first POD, he was conscious and oriented, and his vitals were stable. Initially, the line of care was focused on chest physiotherapy, passive limb movement, and ankle toe movement. He experienced increased pain during incentive spirometry (300 cc/sec). The therapy session was initially 45 minutes per session, three times daily, and gradually reduced to one session per day. Then, gradually, training has been focused on limb movements and functional activities like eating, grooming, combing hair, etc. On the fifth POD day, he took approximately 10 footsteps. Without any pain, he was able to do spirometry at 800 cc/sec. During the first POD, the FIM score was dependent, and on the 7th POD, the FIM score improved with limited assistance.

The practical training improves respiratory function and lung expansion. Post-operative day 5 was to improve circulation, exercise tolerance, airway clearance, and education regarding early mobilization. The patient was independent in his ADL's by POD day 8. Thus, I got discharged from the hospital. The rehabilitation treatment to help patients reach a high functional level and reduce post-operative chest complication rates, post-operative morbidity, and the incidence of pneumonia was observed both pre- and post-rehabilitation. Ambulatory care to assist with a return to normal activities of daily living and functions. In the case study of post-operative gastrectomy surgery, the physiotherapy management focused on early rehabilitation in the form of chest and limb physiotherapy along with early mobilization. The further rehabilitation was explained by means of long-term goals to improve his endurance and quality of life.

### 4. Conclusion

The early physiotherapy intervention is effective in gastrectomy surgery to prevent post-operative complications, and the early ambulation intervention facilitates recovery from surgery and a return to normal activities of daily living and shortens the length of the hospital stay.

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