



“IMPACT OF PERI – OPERATIVE PHYSIOTHERAPY IN WHIPPLE'S PROCEDURE” – A CASE REPORT.

Physiotherapy

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ABSTRACT

Whipple's also called 'pancreaticoduodenectomy'. It is a highly sophisticated invasive procedure which involves head of pancreas (sometimes body of pancreas), duodenum, affected part of bile duct, gall bladder and associated lymph nodes are surgically removed and reconstructs GIT. Whipple's is mainly indicated for pancreatic tumors and also best option for long term control of all types of pancreatic cancers. Other indications may include pancreatic/ duodenal trauma, periampullary cancer, chronic pancreatitis, gastrointestinal stromal tumors etc. In some people, the purpose of this operation is to relieve pain symptoms and blockage of bile duct/ stomach. The complex procedure was initiated by Double Kocher's incision or Midline incision to expose internal organs. Later, the surgeon removes affected parts i.e pancreatic head, distal bile duct, duodenum, gallbladder with shared lymph nodes and reconstructs the GI tract by anastomosing body of pancreas, remaining part of bile duct and stomach to small intestine. But after surgery the patient may develop postoperative pneumonia, restricted airway pattern, DVT, Bed sores etc due to anaesthesia, long ventilator support, upper abdominal incision, prolong bed rest, drains. In this case 70 years old woman with known HTN, DM admitted with pyrexia, vomitings, abdominal pain, bloating and past history of jaundice. Later treating the symptoms, patient was further evaluated with pancreatic cancer. After stabilizing, the patient under goes Whipple's procedure and highly prone to post-operative complications. The intervention of pre & post-operative physiotherapy shows crucial role to promote respiratory pattern, avert secondary infection and enhance the quality of life by preventing prolong stay in hospital.

KEYWORDS

Whipple's, Pancreatic cancer, Post-operative complications, Physiotherapy.

INTRODUCTION:

Pancreatic cancer arises when abnormal cell division begins to multiply out of control to form mass/tumor. It is the 4th leading cause of cancer deaths at world wide. Incidence of pancreatic cancer may include 0.5-2.4% in men and 0.2-1.8% in women of every 100,000 people. This disease usually grows slowly for many years. It mainly affects the function of digestive enzymes and blockage of bile ducts which causes bloating, dark color urine, yellowish skin, indigestion and leads to jaundice at early stages. The primary treatment starts with Chemotherapy, radiation therapy, Immunotherapy and other oral medication. When the condition reached to malignancy stage, the oncologist suggests to suitable surgical procedure. Whipple's is the gold standard option for life saving & treat pancreatic cancer.

After surgery the patient may prone to post-operative complications like atelectasis, post-operative pneumonia, DVT, wound infections etc. The involvement of physiotherapy before and after surgery shows quick result by preventing from secondary infection, prolong hospitalization & decreases morbidity of patient.

CASE REPORT:

A 70 years old woman with known DM & HTN was admitted on the complaint of pyrexia, vomitings, abdominal pain, bloating, mild dyspnea with history of jaundice. First, the patient was oxygenated by O₂ mask and treated with antipyretics, pain medication, antibiotics, antihistamines, fluids through IV. After treating symptoms, further investigations reveals low HB%, low RBC count in CBP; LFT shows high levels of bilirubin, Alkaline phosphate. Tumor markers like CA 19-9 shows high level in blood. Ultra sound abdomen revealed dilation of pancreatic ducts and large mass at right hypochondrium region. Further evaluation comprises endoscopy and biopsy which shows well differentiated adenocarcinoma of pancreatic head (T₄N₁M₀). After 2-3 sets of Chemotherapy, the surgeon planned for Whipple's to prevent from further malignancy.

After stabilizing, the patient undergoes surgical proforma & pre-operative tests. Foley's is placed to empty bladder; Blood transfusion if required. After, the procedure starts by injecting sedatives or anaesthesia to patient and ventilated through ET tube. The surgeon performed Chevron's incision to expose pathological site and removed pancreatic head, distal bile duct, duodenum, gallbladder with associated lymph nodes which are affected. Then surgeon reconstructs the GIT by anastomosing pancreatic body, remaining bile duct and stomach to small intestine. Later a drain is placed near pancreas to collect intra abdominal fluid and incision is closed with suitable stitches. Ryle's tube is placed to drain bile. The patient is shifted to ICU; After getting conscious the ventilator is weaned successfully and kept on O₂ mask. The conservative management like pain medication

through epidurals, antibiotics, antipyretics, fluid management through IV's are prescribed.

PERI OPERATIVE PHYSIOTHERAPY:

The main motto of pre and post-operative physiotherapy is to enhance best result and quick recovery from surgery. This therapy includes group of exercise techniques which aids the patient to prevent from further complications. Mainly peri-operative physiotherapy carried out in 2 stages.

1. PRE - OPERATIVE PHYSIOTHERAPY²:

It is the alert phase where the therapist encourages by training the patient physically and psychologically to surgery. The treatment plan includes

a) Relaxed breathing:

The patient is asked to inhale with nasal cavity and exhale with oral cavity. Repeat the process for 3 – 4 times.

b) Thoracic expansion exercises⁴:

The patient is asked to inspire maximum air and therapist places the hand over the chest wall where expansion is required. A quick stretch is given to inspiratory muscles at beginning of inspiration and inhale maximum volume of air where simultaneously pressure is released. This inspired air improves ventilation to peripheral areas by mobilizing mucus, prevents atelectasis.

c) Coughing:

It is the forced expiratory technique against a closed glottis. The patient is asked to take deep breath then tighten the abdominal muscles and encourage to cough which clears the mucus from airway.

d) Limb exercises:

The therapist performed active assisted movements on upper and lower limbs of patient to prevent from muscle wasting and promote circulation.

e) Counselling:

The aim of therapist is to educate the patient about procedure of surgery and post-operative complications and how to eradicate by his/her self through physiotherapy. Therapist must also assure and built the patient psychologically for further process.

2. POST – OPERATIVE PHYSIOTHERAPY:

After the surgery, post op physiotherapy, the second phase plays crucial role to avert post pulmonary infections and assist in hygienic recovery of patient. The treatment starts from POD – 1 in two forms namely, Chest physiotherapy & General physiotherapy.

a) CHEST PHYSIOTHERAPY:

It is the traditional method which aids to remove the mucus from respiratory tract. The chief goal is to achieve oxygenation, strengthen respiratory muscles, improve pulmonary status. Following treatment comprises

i) Nebulizers:

It is the medical device which turns liquid medication into aerosol therapy which can easily aids to inhale through mask. In this case nebulizer is prescribed in thrice a day before chest physiotherapy which helps to move secretions from periphery to central airway. Duolin, Furacort, mucomix are the respules given through nebulizer.

ii) Active cycle of breathing:

ACBT is an advanced technique which consists of 3 steps

Breathing control – In this period, the patient is asked to inhale with nose and exhale slowly with oral cavity. Repeat for 2 – 4 times.

Deep breathing – In this level, the patient is asked to take deep inspiration and hold it for 2-3 seconds and exhale slowly through oral cavity. Repeat the process for 2-5 times.

Huffing – It is one of the forced expiratory technique with glottis open. The patient is asked to breath in by tightening the abdominal muscles and huff through oral cavity. At this point the sputum is removed from periphery to central level. Thus, airway is cleared.

iii) Respirometry:

It is the mechanically inspiratory muscle training through threshold device called Respirometer. This device consists of Base, 3 balls with chamber, Tube, Mouth piece with inbuilt filter & Tube holder. The patient is asked to place mouth piece in oral cavity and seal it with lips. A slow and deep breaths are taken and hold for 3 seconds until the balls reach to increase the lung volume in graded manner. This is repeated for 10 – 15 times hourly.

iv) Pursued lip breathing:

This breathing exercise which assists to promote oxygenation, improves physical endurance and remains longer opening of airway. The patient is asked to make deep inhalation through nose and exhale with mouth by pursed lips making hissing sound. The patient experience trapped air is forced out. Repeat for 2-4 times hourly for good results.

b) GENERAL PHYSIOTHERAPY:

Due to prolong bed rest and immobilization the patient may prone to Pressure sores, edema in lower limbs, Deep vein thrombosis and muscle wasting. This routine form of physiotherapy acts prophylaxis for secondary infections, boost muscle strengthening for early mobilization.

i) Passive movements:

The movement performed by the therapist with his/her external force when muscular activity is voluntarily reduced. This technique relieves joint pain and increase ROM.

ii) Quadriceps & Calf strengthening:

These exercises mainly focuses to increase muscle activity at lower limb which assist to gain strength for mobility. For static quadriceps, the patient is asked to lie in supine lying. A rolled towel is placed below the knee and asked to press towards the ground and hold for 5 seconds. For calf, the patient must lie in supine position. A rolled towel is placed under just posterior to ankle joint and asked press and hold for 5 seconds. These are repeated for 2-4 cycles hourly.

iii) Turnings:

Patient is turned hourly to prevent from bed sore.

iv) SLR & ankle toe movements:

Straight leg raising and ankle toe movements hourly may prevent from DVT and edema.

v) Ambulation:

The goal of early mobilization is to built co-ordination and postural equilibrium. It is the low intensity exercise which can helps to steady healing of gastrointestinal tract, improve pulmonary function and avert prolong hospitalization. The ambulation starts from POD – 1 twice a day.

DISCUSSION:

Most upper abdominal surgeries are probably leads to many post pulmonary complications and low physical activity. Whipple's is one of the complex surgical procedure which needs large incision to remove affected organs and recreation of GI tract. This structural changes tends to functional disability. In this case, due to T₄N₁M₀ graded tumor in pancreas the patient was went through whipple's surgery. The intervention of peri operative physiotherapy shows best consequences by preventing atelectasis, long ventilator support, secondary infections and promoting oxygenation, physical endurance etc. The treatment plan starts from before 2 days of surgery as pre-operative physiotherapy which includes group of techniques and breathing exercises to prepare for surgery. Later, post-operative physiotherapy is initiated from POD -1 and continues up to POD – 4 which includes mucus removal techniques, inspiratory muscle training, limb exercises & early ambulation. Hence, the patient recovered soon and discharged at POD – 7 with haemodynamically stable.

CONCLUSION:

The involvement of pre and post-operative physiotherapy in whipple's achieves more effectiveness to prevent post-surgical complications and improve pulmonary status, physical endurance, better wound healing and quality of life.

Conflicts Of Interest:

There is no conflicts of interest.

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