

ESOPHAGECTOMIES

The following information has been retrieved from the Esophagectomy Toolkit that was developed by the nurses in CrCU – Esophagectomy Working Group.

Surgical Management

To understand how to manage a patient with an esophagectomy, it is important to understand the complex surgical process that a patient has to go through. What transpires with an esophagectomy is the surgical removal of part or the entire esophagus, the uppermost part of the stomach, and all of the surrounding lymph nodes. The stomach is then pulled up through the chest wall to make a new esophagus (Stanford School of Medicine, 2015). The thoracic surgeons at Lakeridge Health – Dr. Marcus, Dr. Trainor, and Dr. Dickie, perform the Ivor Lewis Surgical Procedure. This procedure is where the esophageal tumor is removed through an abdominal incision and a right thoracotomy. The esophagogastric anastomosis (reconnection between the stomach and remaining esophagus) is located in the upper chest (Stanford School of Medicine, 2015).

Anatomy and Physiology

The vagus nerve travels along the esophagus and serves the stomach. The function of the vagus nerve is to trigger the pylorus muscle to tighten, which will hold food in the stomach when eaten. This allows the stomach to break down fats and sugars. After approximately two hours, the vagus nerve stimulates the pylorus muscle to relax so that the broken down food can be released into the small intestine (Tewfik & Meyers, 2013).

Due to an esophagectomy, this nerve is removed, and the pylorus muscle is cut to allow for easier passage of food from the stomach into the small bowel. Because of all of these changes, the body will no longer be able to digest fats and sugars in the same manner in which it had before (Society of Thoracic Surgeons, 2014).

Another change that happens when a patient undergoes an esophagectomy revolves around the blood supply to the stomach. As a result of the upper part of the stomach being removed, several arteries that normally supply blood are ligated or dissected during the procedure. One artery, right gastroepiploic artery, is left after the procedure (Reed, 2009).

CrCU Post Esophagectomy Patient Assessment/Care

All complications are to be reported to the Intensivist AND Surgeon for follow up orders.

Complication	Signs and Symptoms	Preventative Strategies	Assessment	Management
<p>Pulmonary Complications – can occur in **16 to 67% of patients and cause two-thirds of postoperative esophagectomy mortality</p> <p>Pneumonia, ARDS, COPD, bronchospasm, atelectasis</p>	<p>Fever, tachypnea, diminished breath sounds, hypoxemia which can lead to confusion, CXR results showing infiltrates, dyspnea/ shortness of breath</p>	<p>Deep Breathing and Coughing q 2-4 h Incentive spirometry as ordered Turning q2h /mobility as ordered Elevate Head of Bed 45 Degrees Chest physiotherapy Mouth Care q4h & prn - Diligent mouth care improves patient's comfort and decrease potential for infection (ie. Sage Kit use – no swallowing)</p>	<p>Vital signs and O2 sat q1h/temp q4h ABGs as ordered CXR as ordered Respiratory Assessment q4h/prn</p>	<p>Reintubate only if required Antibiotic therapy NOT to use continuous or bilevel positive airway pressure as it could cause an anastomotic leak or dehiscence</p>
<p>Anastomosis Leak – Can occur in **5 to 18% and can increase mortality up to 12%</p> <p>Develops due to tension at anastomosis sites, reduced vascularity, long surgical time, chemotherapy, or oral intake before healing</p>	<p>Fever, inflammation at site, abdominal pain or from shoulder area, drainage from wound or around site, subcutaneous emphysema, tachycardia or tachypnea, hypoxemia, change in chest tube drainage color - Bile color</p>	<p>NPO – NO Ice Chips, to prevent anastomosis leak or fistula formation</p> <p>Keep head of the bed at 45° at all times, avoid Trendelenburg To promote healing of the anastomosis and prevent aspiration</p> <p>Manage Pain – epidural and/or PCA, if on an epidural – the anesthesiologist overrides any orders for</p>	<p>Chest Tube as per protocol - Monitor changes in amount, color and consistency, output of 100mls/hr are Common, drainage from pleura starts sanguineous color but should transition to serosanguineous. Palpate site - Chest tube sites may develop subcutaneous emphysema due to an air leak from pleural injury,</p>	<p>Barium Swallow to assess for leak Potential for CT with contrast Drainage of leak by wound opening or percutaneous drainage Antibiotic therapy</p> <p>Anastomosis leak is more pronounced when nutrition is started. Stop tube feeds and notify doctor</p>

		benzodiazepines, antiemetic, or analgesic medications Hydration – to ensure delivery of oxygen and nutrients to promote healing No nasotracheal suctioning if intubated to prevent the risk of passing a catheter through the new anastomosis	New onset of subcutaneous emphysema may indicate leak from the esophageal anastomosis Epidural as per protocol Vital signs and O2 sat q1h Intake/Output q1h – call MD if urine output less than 30mL/ 2 consecutive hours NOTE* if pt is to be intubated and has an epidural – the epidural is to be stopped and anesthesiologist notified	
Chyle Leak – can result due to an injury to the lymphatic system and affect **8% of the patients, with a mortality rate as high as 50%	White milky drainage from the chest tube	Surgical Technique	Monitor chest tube output q8h and during J-Tube feed initiation	Stop tube feeds Measure triglyceride levels of drainage TPN Fluid Resuscitation If output 400-600 mL q8h continuously for 2-3 days, surgical intervention required
Gastric Necrosis – diagnosed in *2 – 3 % of pts. As a result of poor blood flow – high mortality rate	Fever, oliguria, acidosis, tachycardia, hypotension, A Fib	Surgical Technique Hypotension – decreased blood supply to the artery supplying the stomach compromises graft perfusion - treat with fluid boluses	Signs of Acidosis Signs of Shock Foul chest and NG tube drainage Vital signs q1h	Endoscopy CT with contrast Antibiotic therapy Surgical Intervention No use of vasopressors unless ordered by surgeon
Cardiovascular Complications 1 – Atrial Fibrillation/SVT/MI **occurs in 2pprox.. 20% of the patient population and predisposes pts to pulmonary complications, anastomotic leaks, increased mortality rates, and may indicate Gastric Ischemia 2- DVT and/or pulmonary emboli	Chest pain, shortness of breath, irregular heart rate, EKG changes Difficulty breathing, limb swelling/inflammation/pain, tachypnea, arrhythmias	Hemodynamic stability Electrolyte balance Pain Management Mobility and leg exercises as ordered Antiembolism stockings and/or sequential compression device Anticoagulants	Lab values as ordered Electrolyte values and replacement as ordered Cardiovascular Assessment q4h/prn Pain assessment q4h/prn EKG as ordered Cardiovascular Assessment q4h/prn Lab values – Hb, Aptt, INR	Cardiology consult Cardiac medications (digoxin, diltiazem, b- blockers) Cardioversion VQ scan Doppler Anticoagulant medication/infusion
Nasogastric tube -placed during surgery to decompress stomach and allow better healing of sutures	NG accidentally removed/blocked	DO NOT move, manipulate, or attempt to replace if the tube comes out as there is potential for the NG tube to go through the anastomosis NO medication or feeds Do not flush/irrigate NG tube unless ordered by surgeon	Should hear suction sound through the lumen if suction is applied and ensures that the suction does not cause the tube to become lodged against the wall of the stomach	NG insertion – by MD only
**NOTE J-Tube - placed during surgery and is left clamped until used, flush the tube every shift if ordered by surgeon, J tube feeding may be started after bowel sounds, and only ordered by surgeon				