

Surgery of the Esophagus

Surgery for Esophageal Cancer

Surgery for esophageal cancer is generally performed in several situations:

- Superficial Tumors (T1) that can't be completely removed by endoscopy
- Localized Tumors (T2N0)
- Locally Advanced Tumors (T3 or N+) after preoperative therapy.

Goals of Surgery

- Remove tumor from esophagus
- Remove surrounding lymph nodes
- Create a new esophagus



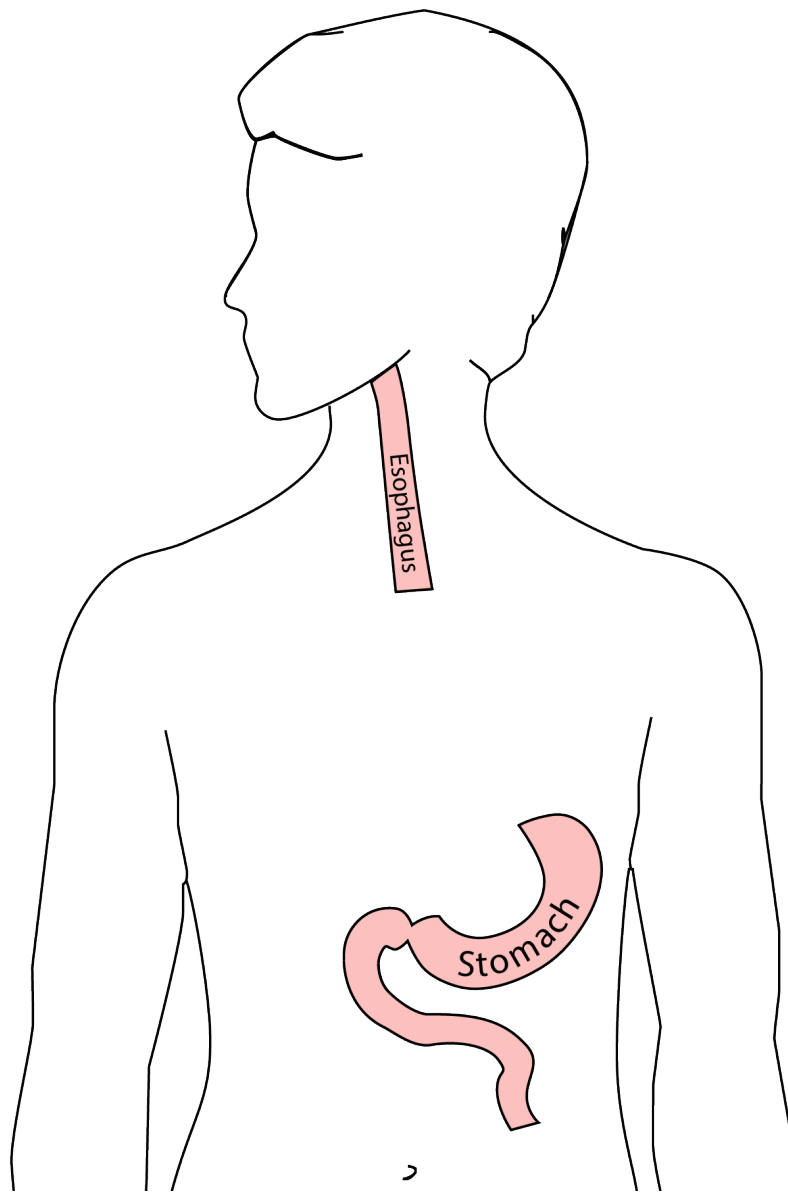
Resection

The *Ivor Lewis* esophagectomy, shown here, removes the lower 2/3 of the esophagus, the tumor, and the surrounding lymph nodes.



Reconstruction

A new esophagus is created from the stomach in the abdomen by fashioning it into a tube.



Ivor Lewis esophagectomy

The new esophagus is now brought up into the chest. A new connection is made between the esophagus and the stomach, called an *anastomosis*.



Minimally-invasive Ivor Lewis

- Small incisions abdomen and chest
- Surgical telescope and instruments
- Smaller incisions → faster recovery and less discomfort



Minimally-invasive Ivor Lewis

We have found this is the best option for most of our patients. In some cases, an open approach is still necessary.



Open Ivor Lewis

In some cases, an open approach is still necessary.



Total Esophagectomy

For patients with tumors in the upper esophagus, we need to remove more of the esophagus



Total Esophagectomy

For those patients, we need to remove the whole esophagus



Minimally-invasive McKeown Esophagectomy

In this case, a connection between the esophagus and the stomach is made in the neck.



Risks of Surgery

An esophagectomy is a substantial operation, and in some cases there can be postoperative complications. We're going to talk about two of these complications and what you can do to reduce your risk of complications:

- Anastomotic leak

- Pneumonia

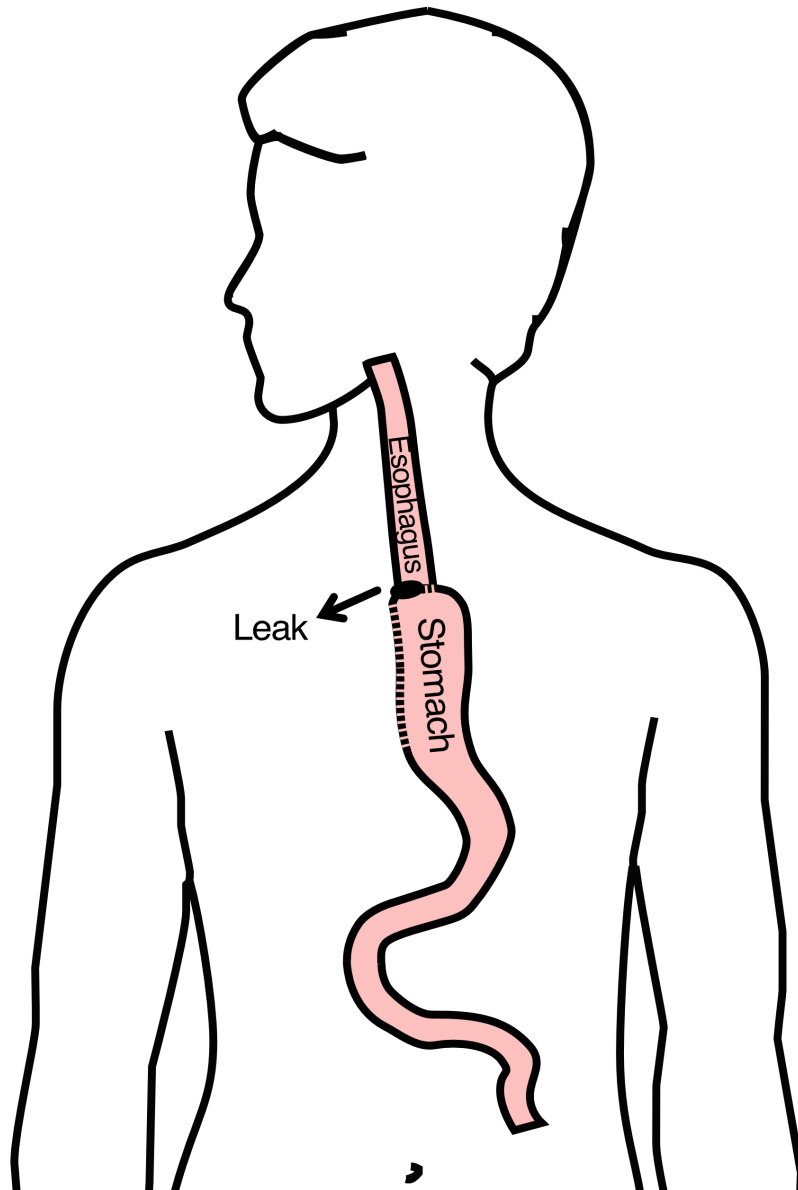
Anastomotic Leak

The anastomosis is surgical connection between the esophagus and the stomach.



Anastomotic Leak

If anastomosis does not heal properly, this can cause a leakage of fluid from the esophagus, called an anastomotic leak. If this happens, an infection can occur in the mediastinum, which is the space near the heart between the lungs.



Anastomotic Leak

In some cases, the leak will heal on its own, but other cases may require additional procedures or even surgery.

The risk of leak depends upon the operation performed but also depends upon the experience of the surgeon.

Pneumonia

Pneumonia can occur in about 10-15% of patients after esophagectomy.

Pneumonia requires treatment with antibiotics and frequently requires a longer hospitalization.

Preventing Pneumonia

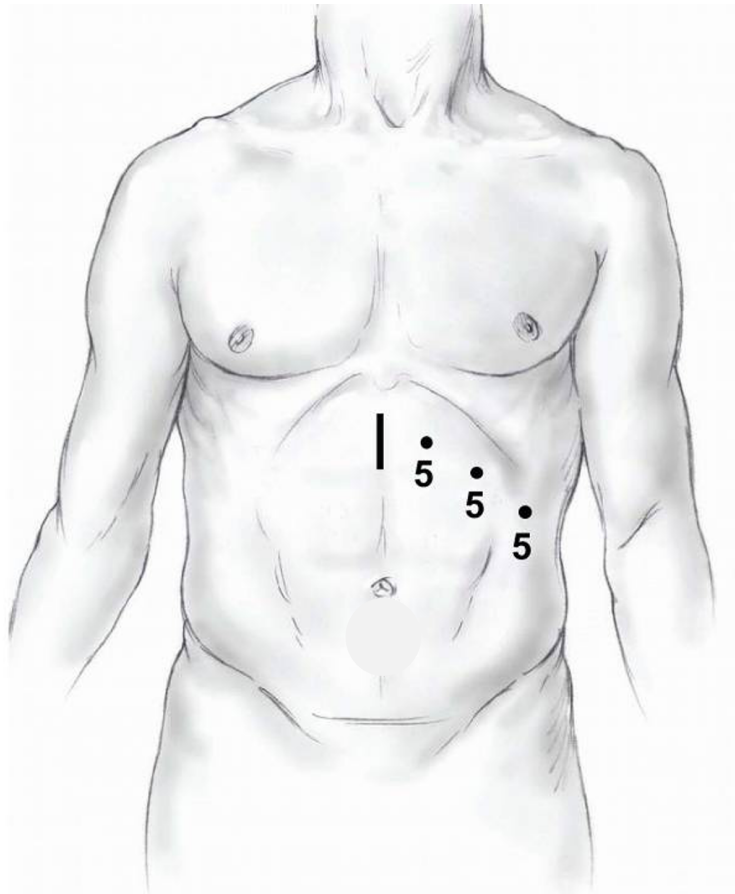
In normal circumstances, secretions from the mouth and throat aren't able to enter the lungs because we clear our throat and if secretions do get into our airway, we tend to cough and keep those secretions out of our lungs. This happens constantly without our thinking about it.

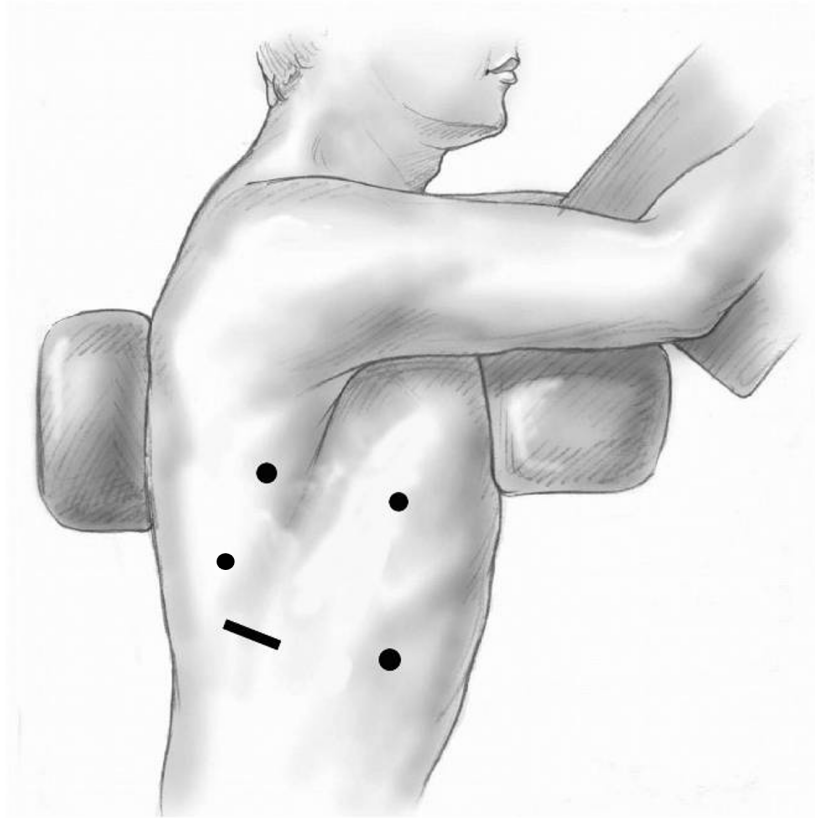
After esophagectomy, however, there is a tendency for secretions to enter the airway, and if you can't clear them, there is a risk that pneumonia will set in.

There are two important ways that pneumonia can be prevented:

- Deep breathing
- Walking

Minimally-invasive Esophagectomy





Risks of Surgery

Risks related to anesthesia

- Heart attack (5%)
- Irregular heart rhythm (15%)
- Pneumonia (10%)
- Blood clots in legs (<5%)
- Pulmonary embolism (2%)

Risks of Surgery

Risks related to Surgery

- Anastomotic leak (5%)
- Stricture at anastomosis (15%)

- Death within 90 days of surgery
 - Low risk patients = 2%
 - Intermediate risk = 10%
 - High risk = 30%

Risks of Surgery

Table 1: Risks of Death within 90 Days of Surgery

| | Age <75 | Age >75 |
|---------------------|---------|---------|
| Normal Muscle (75%) | 2% | 10% |
| Low Muscle (25%) | 10% | 30% |

Day Prior to Surgery

- Clear liquids for 24 hours prior to surgery
- Check with Pre-op nurse regarding medicines day prior to surgery
- No tube feedings the night before surgery

Day of Surgery

- Arrive at 5am – nothing to eat or drink after midnight.
- OK to take medicines with a sip of water (or coffee) but no cream.
- Surgery may be cancelled if you take even a sip of cream or milk the morning of surgery.
- Waiting room on 5th floor
- Post-operative care in STICU (11th floor)

Anesthesia

Epidural catheter for pain control

- Remains in place for 2-5 days
- Dose can be adjusted as needed
- Can make it more difficult to empty the bladder
- May require foley (bladder) catheter to stay in place until epidural

Intensive Care Unit (1-2 days)

Multiple lines and tubes:

- NG tube in nose (stays in 2-7 days)
- Catheter in bladder (2-5 days)
- Chest tube right chest (2-4 days)
- Abdominal drains (2 or 3)

ICU

- Catheter in bladder removed → make certain the bladder empties properly
- Chest tube removed (day 2-4) → follow-up chest x-ray
- Fluid emptied from drains every few hours
- Start tube feedings by feeding
- Feeding jejunostomy (stays in 8 weeks)

Feeding Jejunostomy

- Feeding tube placed in small intestine
- Pump feedings require 16 hours (overnight)
- Run from 6pm to 10am



Activity

- Up in chair most of the day
- Walking in hallway with help from nurse/Physical Therapist
- Goals:
 - Improve lung function
 - Prevent muscle loss

Discharge

Goal: Ready to leave hospital day #6/7 after surgery

- Tube feeds at night (6pm to 10am)
- Protein shakes by mouth (70% of patients)
 - 4oz every 2 hours
 - Water by mouth 2 oz at a time Water through feeding tube (8oz 4x/day)