Surgery of the Esophagus

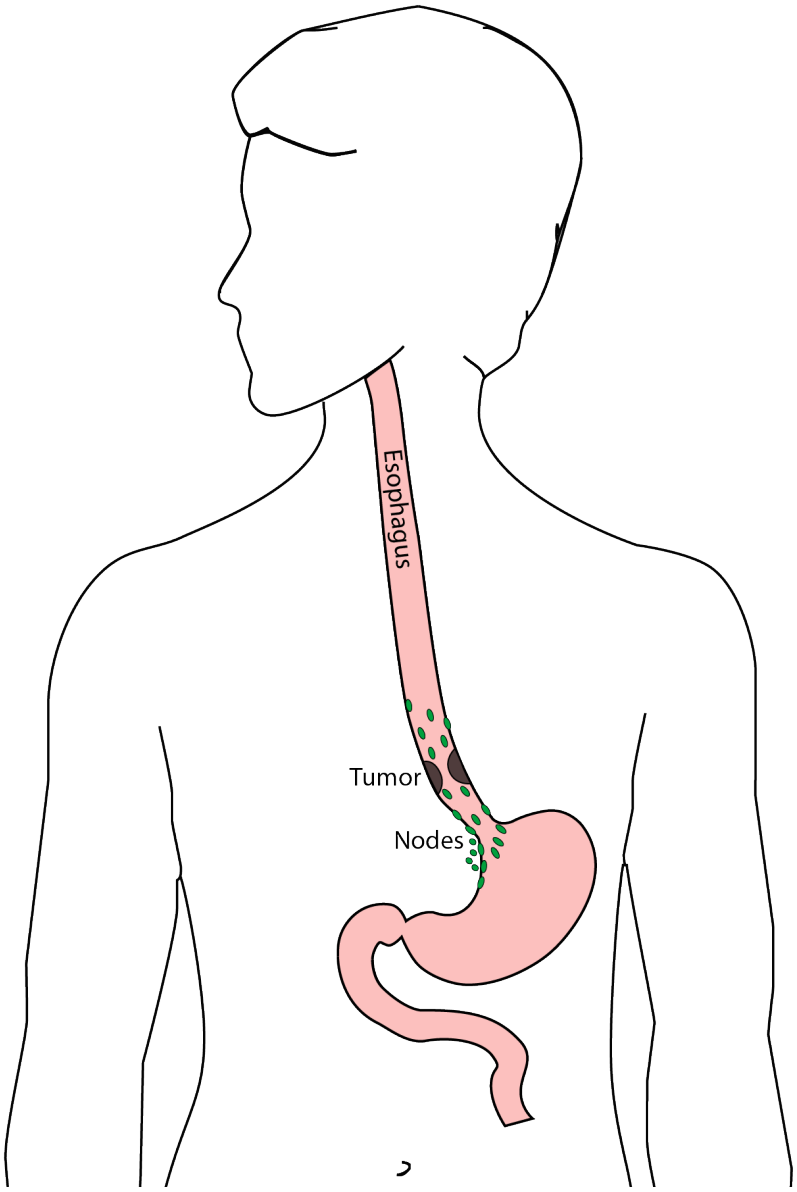
Surgery for Esophageal Cancer

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.

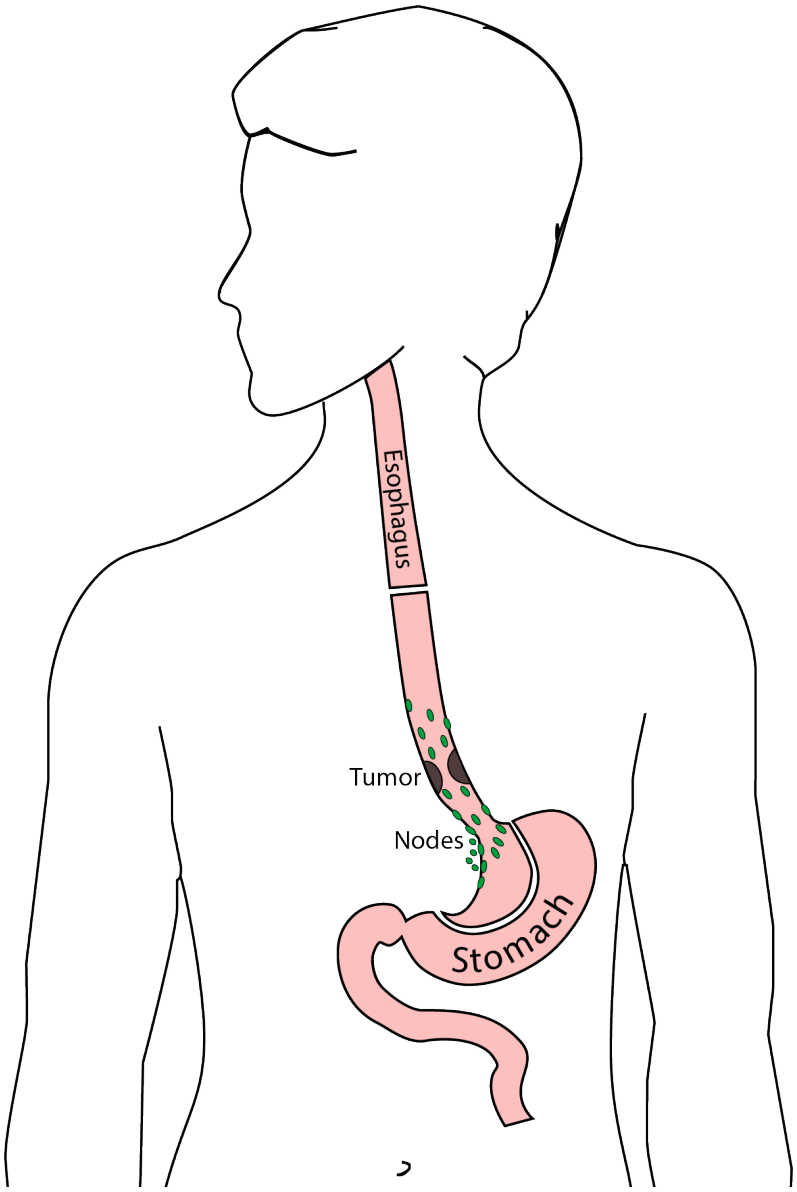
Goals of Surgery

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



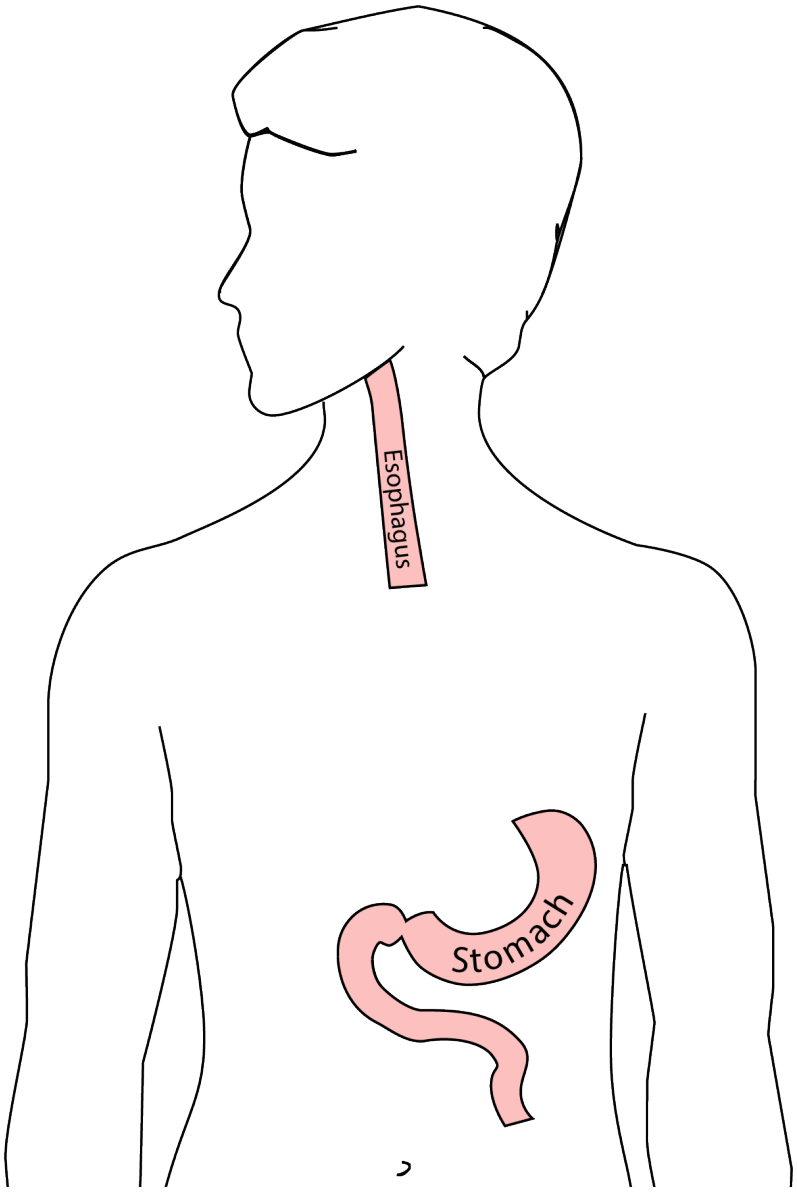
Resection

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



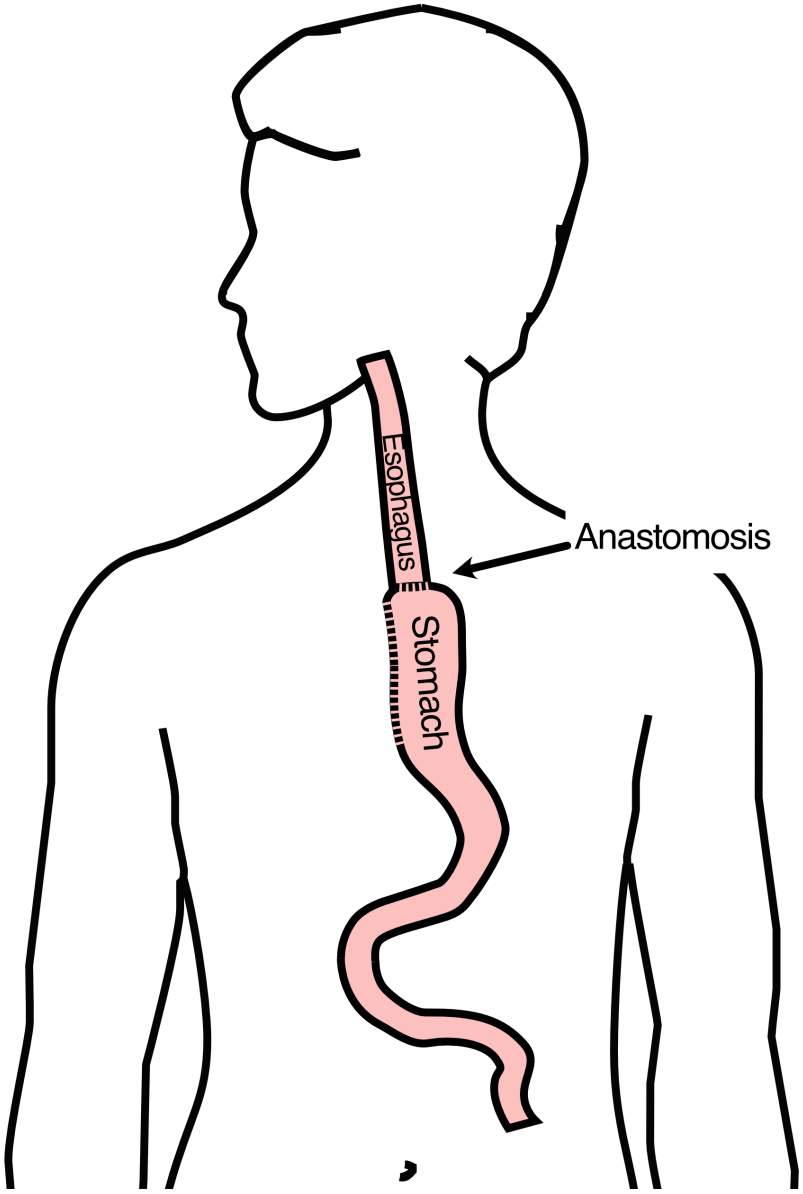
Reconstruction

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



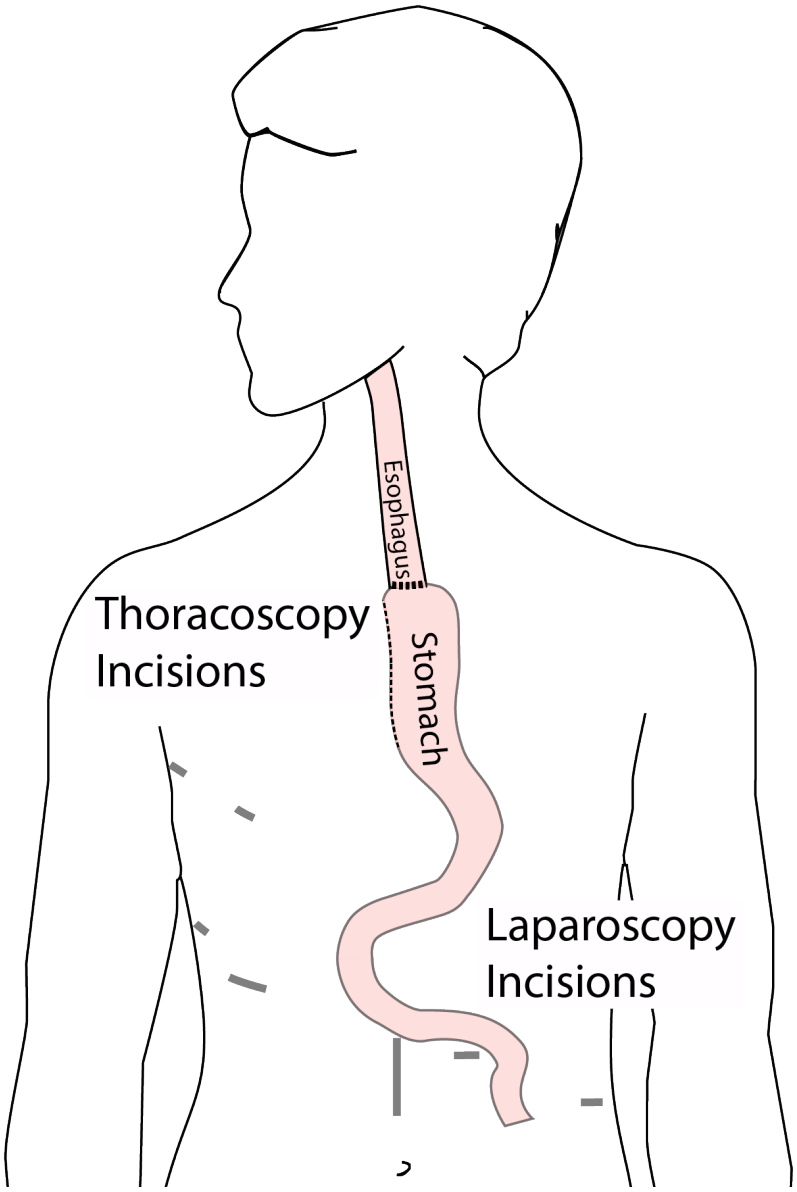
Ivor Lewis esophagectomy

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



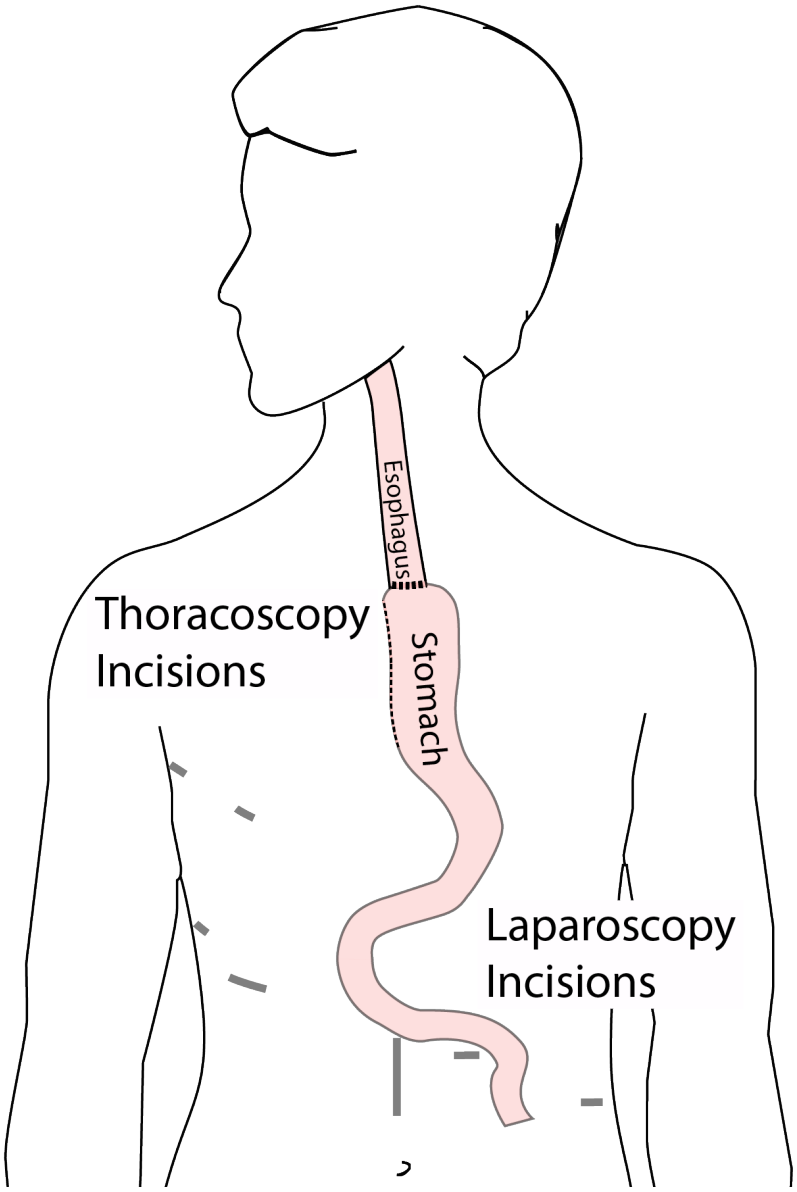
Minimally-invasive Ivor Lewis

- Small incisions in the abdomen and chest
- Surgical telescope and instruments inserged
- The smaller incisions mean faster recovery and less discomfort



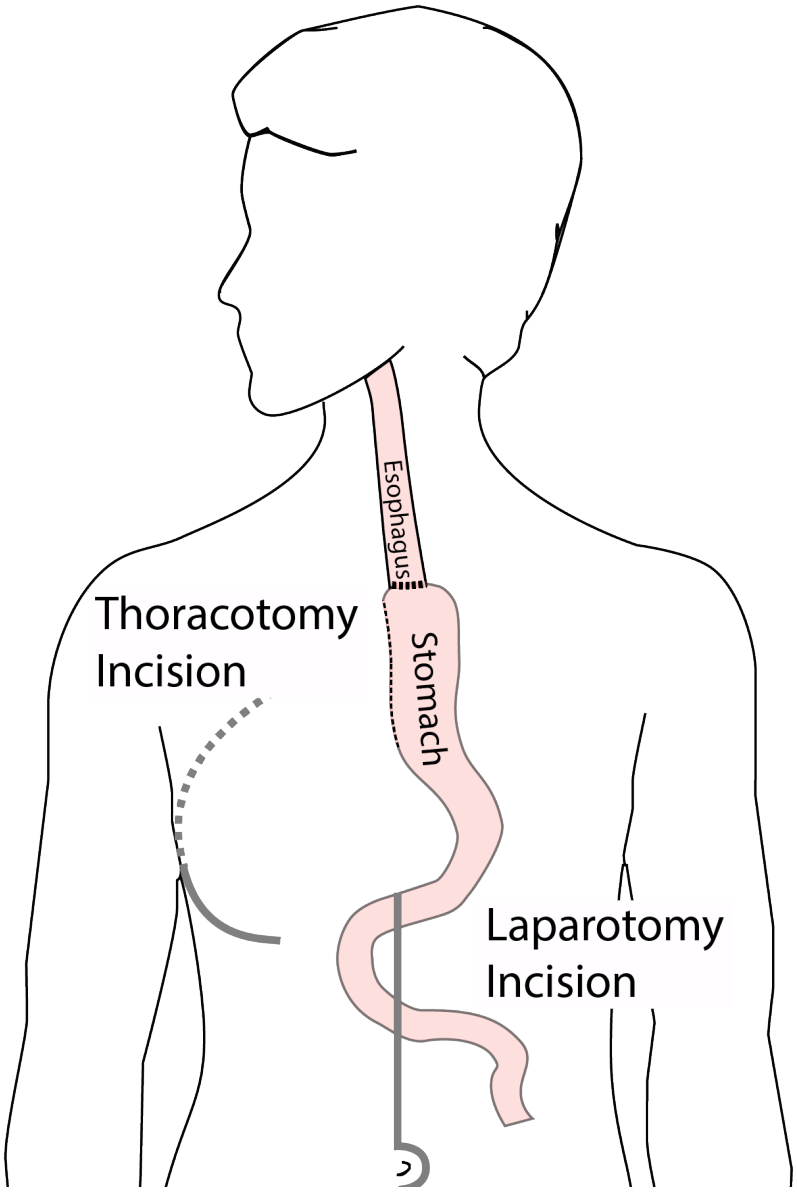
Minimally-invasive Ivor Lewis

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



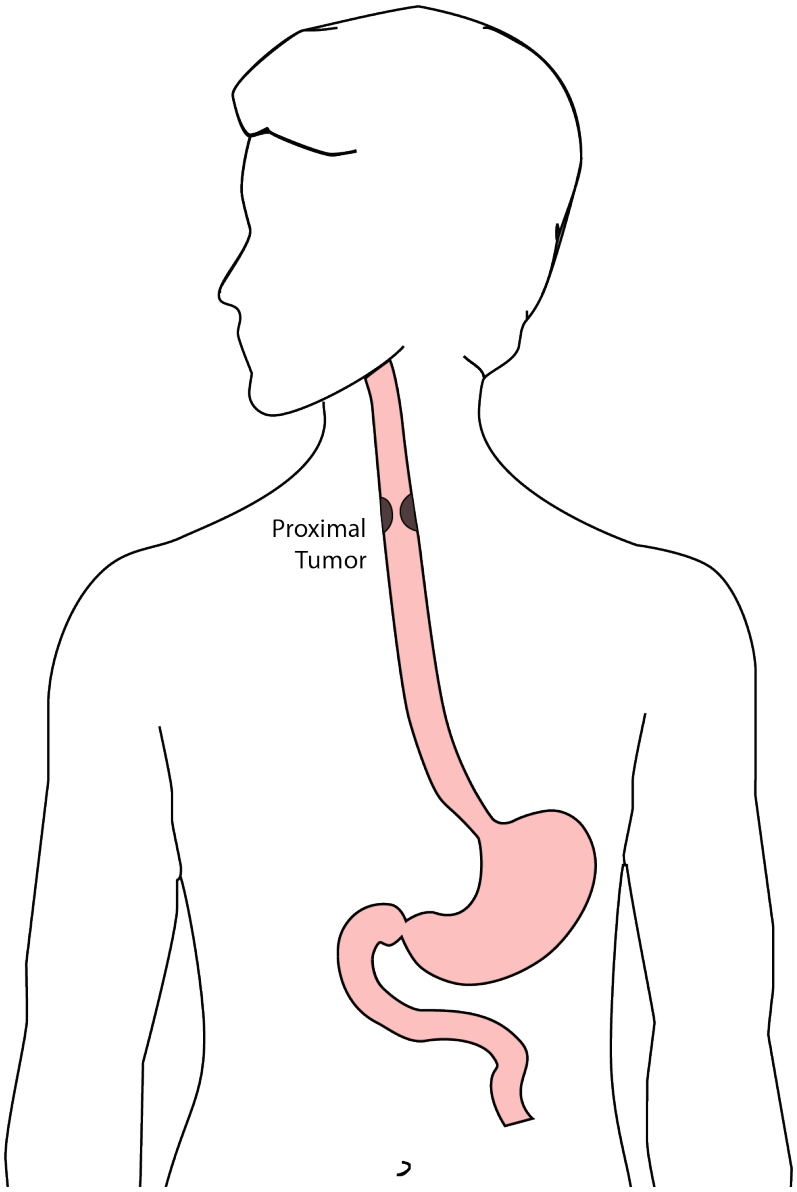
Open Ivor Lewis

In some cases, an open approach is still necessary.



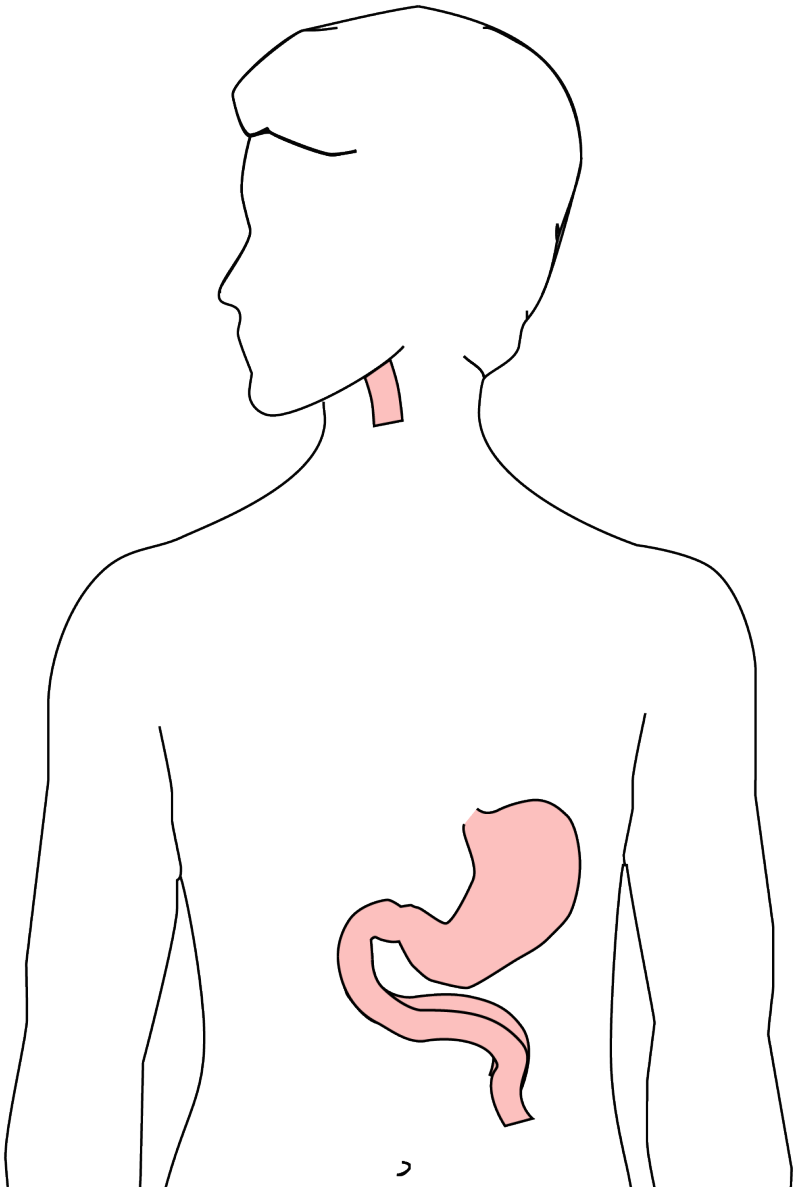
Total Esophagectomy

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



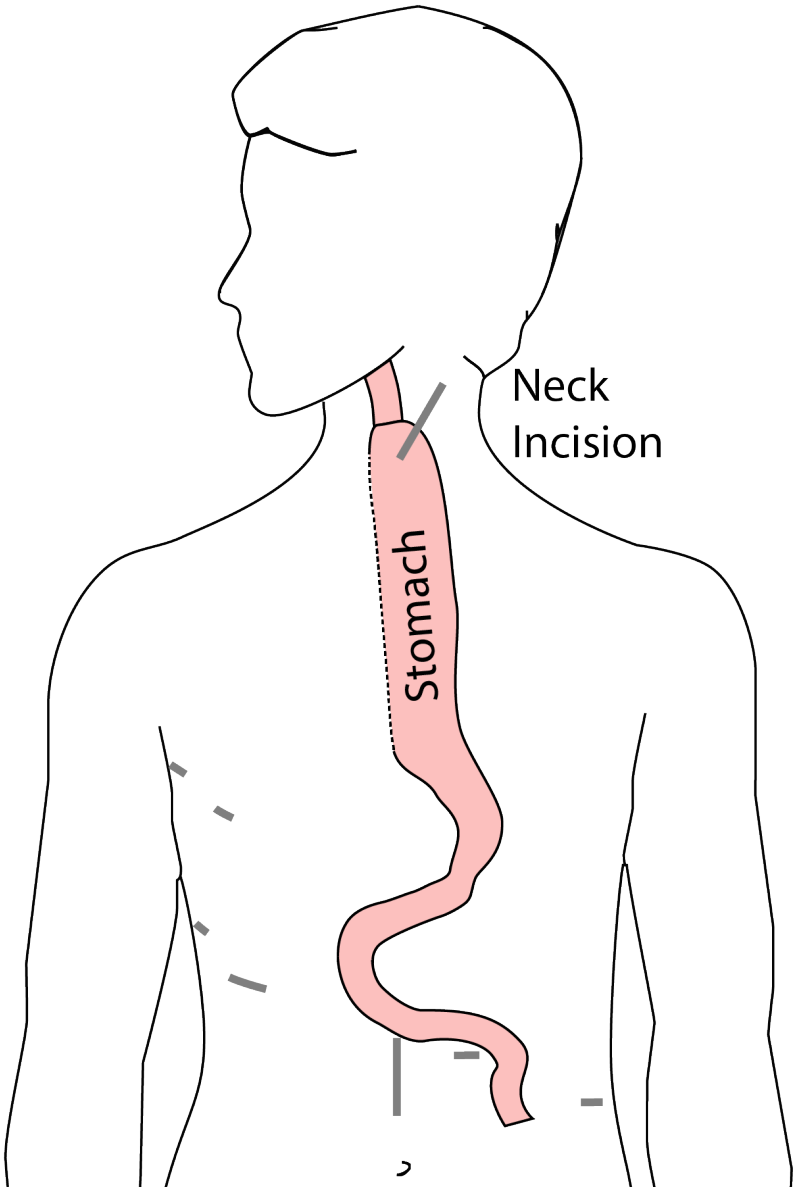
Total Esophagectomy

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

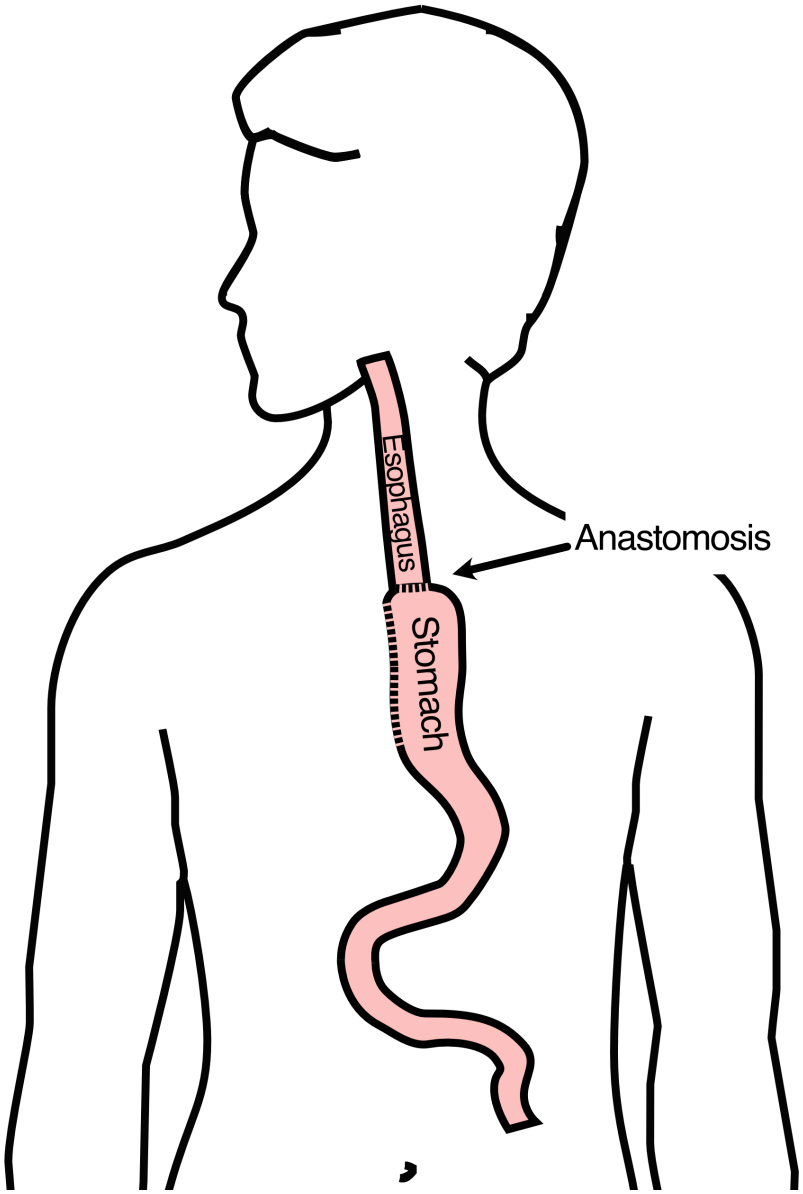
An esophagectomy is a substantial operation, and in some cases there can be postoperative complications. We're going to talk about two of these complications and what you can do to reduce your risk of complications:

- 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.

https://deidt7p41jzcy.cloudfront.net/Eso_IvorLewis_Leak.png

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. At the end of this video we have a link to a video about how to choose a hospital and a surgeon, which talks further about the risks of a leak.

Pneumonia

Pneumonia is another complication which can occurs 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

Deep breathing and coughing

After surgery, it's important to breathe deeply to help your lungs recover after surgery. Deep breathing make the cough more effective and helps clear secretions. After surgery, deep breathing and coughing can be uncomfortable, so controlling your discomfort will be an important part of your recovery.

Walking

Walking after surgery is also an important way to help your lungs recover as well. When we walk, it's easier for our lungs to function, and again, it makes the cough more frequently.

Preventing Pneumonia

How can we prevent pneumonia? Believe it or not, we can tell who is more likely to develop pneumonia after surgery simply by measuring their grip strength.

We think this is because someone with a strong grip has good muscle function of the muscles between the ribs so that they have a nice strong cough and can prevent pneumonia.

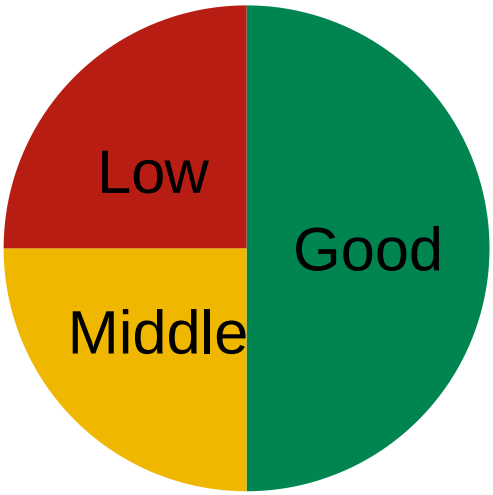
Strength

In our clinic, we actually measure out patient's strength with a hand-held strength gauge called a dynamometer. Based upon these measurements, we can identify patients who may be at risk of pneumonia.

Patient Strength and Esophagectomy Outcomes

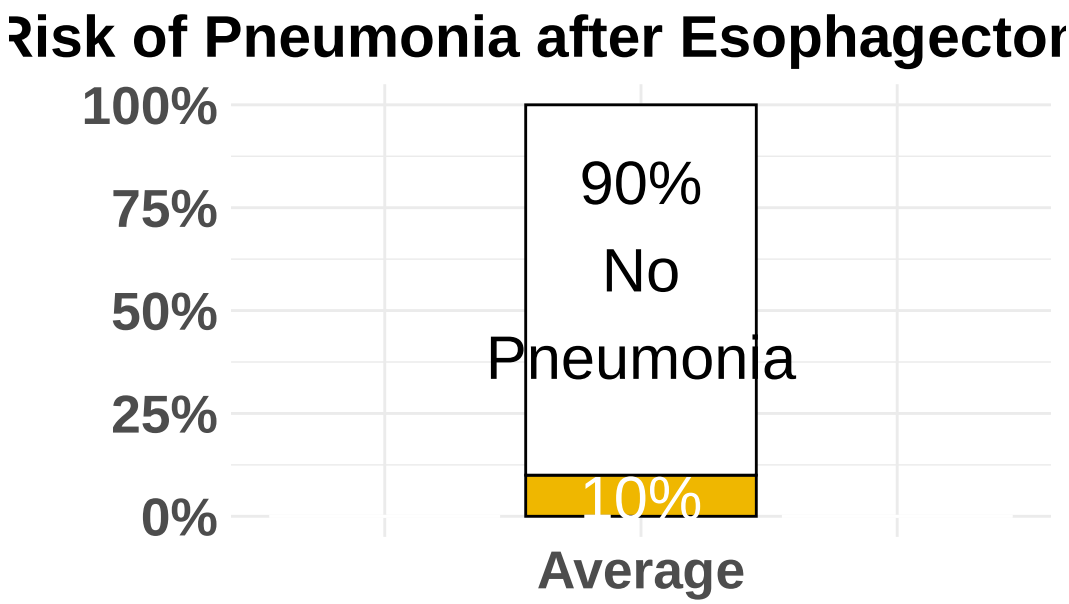
About half of our patients have good strength, shown in green. A quarter are have low strength, shown in red Another quarter are in the middle, shown in yellow

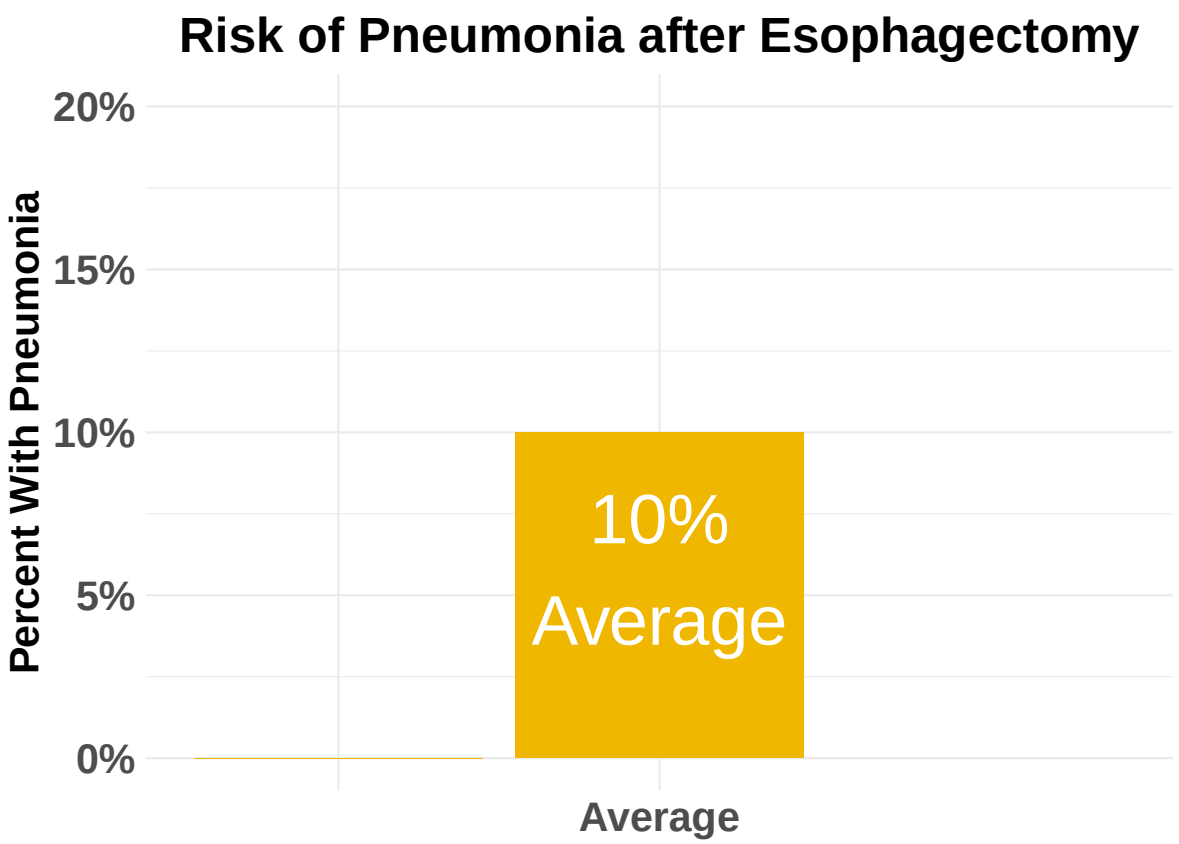
---



Pneumonia

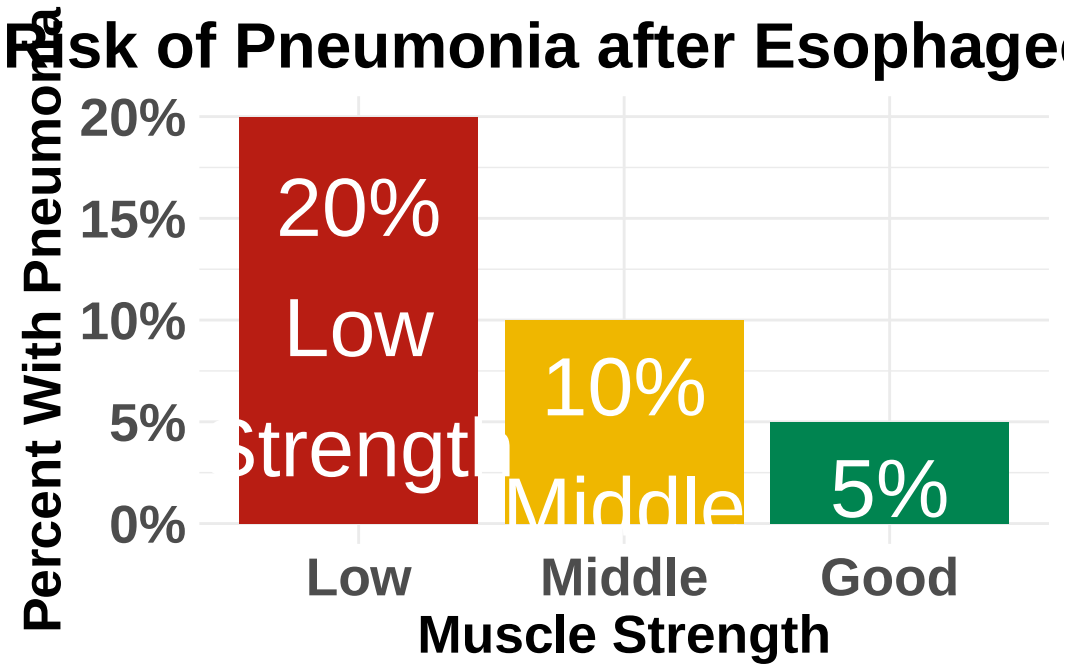
Overall, the risk of pneumonia is about 10% in our patients who undergo esophagectomy. 90% of patients never experience pneumonia, but 10% will have pneumonia after surgery.


Risk of Pneumonia after Esophagector
100%
75%
50%
25%
0%
90%
No
Pneumonia
10%
Average



However the risk of pneumonia is not the same for everyone. Even though the average risk is 10%, the risk is much higher for our patients with low muscle strength and much lower for patients with good muscle strength.

For the half of our patients with good muscle strength, the risk of pneumonia is about 5%. On the other hand, the risk of pneumonia is 20% in the quarter of our patients who have low muscle strength.



Muscle Strength and Risk after Esophagectomy

The results of our research suggest a simple answer: The risk of pneumonia is related to a patient's muscle strength.


We Can Do It!

Now this doesn't mean that you need to look like this to prevent pneumonia after your esophagectomy]

The good news is that you can increase your muscle strength before surgery in two very simple ways:

- Good nutrition with adequate intake of protein
- Exercise

Good News

with proper nutrition and exercise, you can increase your muscle strength, and we have good reason to believe this will reduce your risk of complications after esophagectomy.

Minimally-invasive Esophagectomy

https://deidt7p41jzcy.cloudfront.net/mie_abd.png

https://deidt7p41jzcy.cloudfront.net/mie_chest.png

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 surgyer
  - 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 → check to 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()