



## Transoral Incisionless Fundoplication

### Reflux:

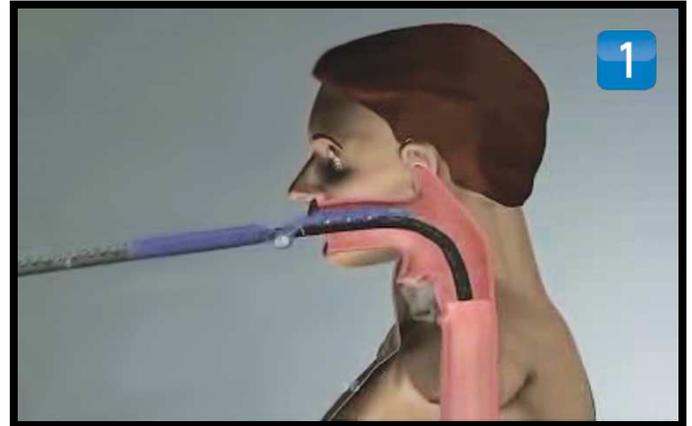
Reflux is known by several names: Indigestion, GERD, Heartburn. There are several symptoms of reflux, such as burning in the esophagus or throat, hoarse voice, chest pains, sour mouth, belching, asthma, chronic cough and difficulty or pain with swallowing. There are two components of reflux, chemical and mechanical. Acid medications help control the amount and strength of the acid in the stomach, but do not keep the fluid in the stomach from getting into the esophagus, throat and trachea.

### Treatment:

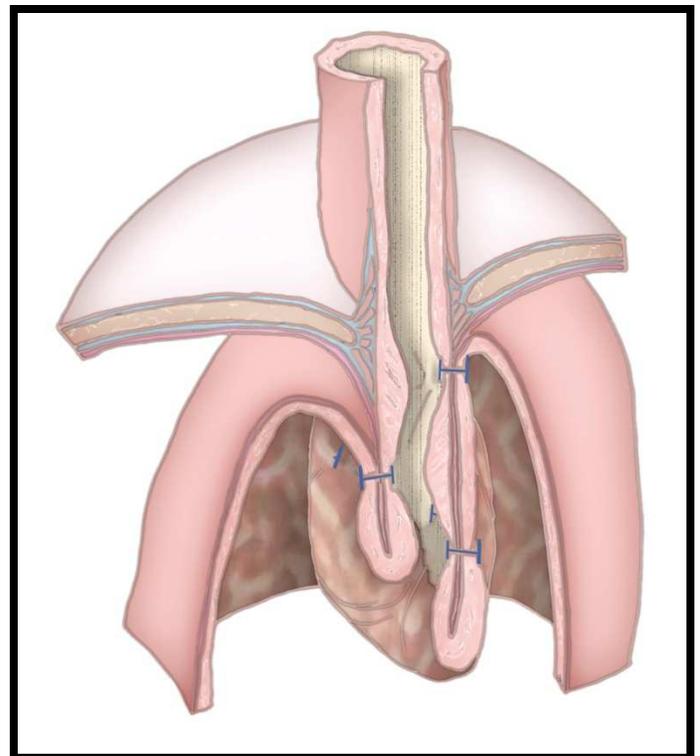
Treatment of reflux begins with conservative measures. These include avoiding foods that make reflux worse including coffee, alcohol, and acidic foods. You should also avoid medications that worsen the acid in the stomach, like over the counter pain medications. It helps to avoid eating within four hours of going to bed, and to put the head of the bed on blocks. If this doesn't help with the reflux, then medications are used. Antacids may be used initially, then over the counter acid medications. Your doctor may start you on a prescription medication to reduce the acid in your stomach. Many people do not get good relief from these measures, though, and need surgery to improve the valve at the end of the esophagus that keeps the acid from getting up into the esophagus. Originally, large incisions were used to operate on the valve. Then small incision surgery improved the outcomes for reflux control. Now transoral incisionless fundoplication is available, called TIF for short.

## Transoral Incisionless Fundoplication/ TIF

The TIF procedure uses a device that passes through the mouth and into the stomach without using any incisions. The device fits over the endoscope used to view the stomach.



The valve is then recreated with the device, and small sutures are placed through the tissue to hold the valve in place until the body heals itself.



## About your surgery

If your workup has revealed a hiatal hernia, it may require a surgery with incisions to repair it. A hiatal hernia is a widening of the normal opening in the diaphragm that the esophagus passes through. If it gets wide enough then the negative pressure in the chest that normally pulls in the air when you breathe will over time pull the top of the stomach into the chest through the enlarged opening. This type of change will allow fluids in the lower portions of the stomach to get pulled up into the esophagus, which is reflux. If the hiatal hernia is small, then the TIF procedure itself will correct the problem as the valve is reconstructed.

It is important to explain that the TIF procedure is what's referred to as a fundoplication. This means that the top of the stomach, called the fundus, is used to recreate the valve function at the end of the esophagus. This is done by suturing or plicating the tissue over the end of the esophagus. There have been many types of fundoplications in the history of surgery. They are known by the names of the surgeons who designed them. The Belsey – Mark IV, the Hill, the Dor, the Toupet, and most commonly performed these days, the Nissen fundoplication. The Transoral fundoplication, or TIF procedure is another technique for creating the valve at the end of the esophagus, but it does not require the use of incisions unless there is a large hiatal hernia to repair.

The procedure is performed under general anesthesia in the operating room. The hospital stay is overnight. You may have some discomfort in the chest or upper abdomen after the procedure, but that is easily controlled with pain medications and rarely lasts more than two or three days. Patients may also have episodes of nausea or diarrhea in the days after the procedure. Relief from the reflux is generally immediate after the procedure. If you had a small incision surgery to repair a hiatal hernia, there may be pain referred to the shoulder.

You will be on a liquid diet for the first two weeks, then transition with soft foods to solids over the next four weeks. This allows the valve to heal into place. Carbonated beverages may damage the valve and you need to stay off of these permanently for the best results. Two year studies show that 70% of patients remain off their reflux medications with good control of reflux.

The risks of the procedure include bleeding, which in rare cases may require a transfusion. Infection can set in requiring antibiotics, sometimes other operations or even revision of the

transoral fundoplication to a Nissen type fundoplication. The stitches can pull through the esophagus during episodes of cough or dry heaves. This may cause the esophagus to leak and require surgery.

You may also have reflux episodes after the procedure, up to two episodes a week. This range of reflux is considered normal, and is part of the body's way of clearing the esophagus of bacterial and fungal elements. Although you may find that you can eat a much wider variety of foods after the procedure, there will still be foods that cause an increased production of stomach fluid and acid. In this situation, reflux may occur. Most patients are well aware of which foods cause them to have more reflux, and if your dining plans include these foods, using a preventive dose of acid reducing medication like ranitidine is advised. In the vast majority of cases, patients have very good control of their reflux.

Although this is a newer procedure, there are studies of up to 6 yrs history showing a relatively good durability to the TIF valve. We know that other forms of fundoplication can fail and require a revision, so we don't expect all TIFs to last, however the TIF procedure has been used in a limited number of cases to perform revision surgery over some other these kinds of fundoplications. It's more common to have failure of the hiatal hernia repair. Although multiple techniques have been studied, no one technique of hiatal hernia repair has been found to be superior to another. Why patients develop recurrent reflux or a recurrent hiatal hernia after repair is still being studied; however there are some common elements. Over filling the storage capacity of the stomach can wear out the fundoplication. Carbonated beverages, like sodas, are felt to wear out the fundoplication. In the future, studies will help further define the causes and the rate of fundoplication failures. Hiatal hernia recurrence is common after heavy lifting or persistent vomiting. If a TIF fundoplication does fail, the options are to repeat the TIF procedure or to convert it a different fundoplication such as a Nissen.