

NEWSLETTER

# CARDIOVASCULAR CENTER



EXCEPTIONAL CARE. WITHOUT EXCEPTION.

WINTER 2011 | ISSUE 1

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*Center surgeons collaborate with gastroenterologists, pulmonologists, oncologists and pathologists to diagnose and develop comprehensive treatment plans.*

## Center for Minimally Invasive Esophageal Therapies sets the standard for care in New England

Specializing in the diagnosis and treatment of esophageal disorders and diseases, the Center for Minimally Invasive Esophageal Therapies at Boston Medical Center is the most comprehensive program of its kind in New England. The Center’s comprehensive suite of innovative therapies, state-of-the-art technology, and advanced surgical expertise distinguish BMC as a leader in the minimally invasive treatment of esophageal diseases.

The Center treats the spectrum of esophageal conditions, including gastroesophageal reflux disease (GERD), Barrett’s esophagus, motility disorders and esophageal cancer. An expert multidisciplinary team tailors its care plan to the individual and is committed to determining the most effective course of treatment.

The Center’s clinical team includes fellowship-trained and board-certified physicians and surgeons who have authored clinical texts, contributed to ground-breaking research, and pioneered advanced therapies for patients. Center surgeons collaborate with gastroenterologists, pulmonologists, oncologists and pathologists to diagnose and develop comprehensive treatment plans.

To expedite the treatment process, primary care physicians are able to refer patients to the Center with one phone call. Because communication with referring physicians is an essential element of the care plan, Center physicians promptly shares test results, treatment plans, and reports from patient visits with the referring physician.

Once an individual becomes a patient of the Center, he or she will undergo a thorough diagnostic process prior to the development of the treatment plan. In addition to more standard evaluation tools such as radiological imaging, endoscopy, and manometry, Center physicians may utilize pH testing, as well as a number of advanced diagnostic procedures (see “Advanced diagnostic techniques offer insight into esophageal diseases, treatments” on page 4).

After an accurate diagnosis is determined, the Center’s multidisciplinary care team will develop a treatment plan that utilizes the most innovative technology and advanced

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To refer a patient, call 800.682.2862 or email [cardiovascularcenter@bmc.org](mailto:cardiovascularcenter@bmc.org).



# Cutting-edge treatments utilize a less invasive

Of the many reasons patients seek treatment at the Center for Minimally Invasive Esophageal Therapies, **gastroesophageal reflux disease (GERD)** is among the most common. Patients with GERD visit the Center because their current medical therapy isn't working, or they aren't satisfied with the results. In some cases, atypical symptoms, such as asthma, prompt a visit to Center physicians.

Patients with GERD may be candidates for two minimally invasive treatment options. The first, **trans-oral incisionless fundoplication (TIF)**, is available to patients without a hiatal hernia or a small hiatal hernia. TIF is a totally endoscopic, 90-minute procedure that seeks to recreate the valve mechanism at the lower esophagus. Using the EsophyX® device, a surgeon creates a partial fundoplication, thereby restoring the angle between the esophagus and stomach (Figure 1). BMC is the only hospital in Massachusetts — and the first in New England — to offer this procedure.

Center surgeons may also use a second procedure, **laparoscopic fundoplication**, to treat patients with GERD who have moderate hiatal hernias. Unlike earlier approaches, which were performed through a left thoracotomy or a laparotomy (Figure 2), Center surgeons perform this operation through several small laparoscopic incisions in the abdomen. After repairing any associated hiatal hernia, the surgeon wraps the stomach around the lower esophageal sphincter (Figure 3). This minimally invasive approach reduces patient discomfort, shortens the hospital stay, and offers a faster recovery period. Patients typically report higher levels of satisfaction with the results.



Figure 1. Endoscopic and suturing devices are placed through the mouth into the esophagus to create a partial endoscopic fundoplication.



Figure 2. Typical laparoscopic port placement

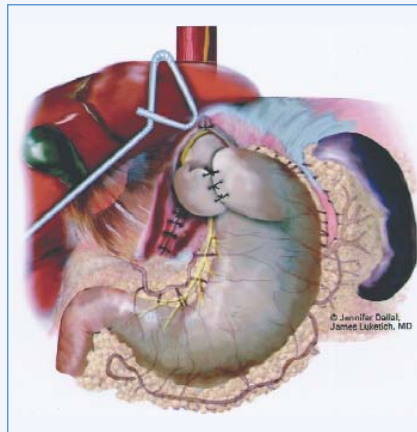


Figure 3. Fundoplication; fundus of stomach is wrapped around lower esophagus in a 360-degree fashion.

A minimally invasive laparoscopic approach may also be taken with **giant hiatal hernias**, which are defined as involving 30 percent or more of the stomach or other organs, such as the small bowel. This technique typically involves a one-to-two-day hospital stay.

These operations are more complex and may require reinforcement of the diaphragm repair (buttressing), as well as a Collis gastroplasty, which uses part of the stomach to lengthen the esophagus, thereby avoiding tension and minimizing the chance of a late failure of the hiatal hernia repair. Unlike patients with reflux and no hiatal hernias, patients with giant hiatal hernias are often elderly with co-morbid diseases, and obtain great relief from minimally invasive repair.

For patients coping with **achalasia**, Center physicians offer **minimally invasive robotic repair** to treat the lower esophageal sphincter. With achalasia, peristalsis is non-existent in the body of the esophagus, and the lower esophageal sphincter does not relax. Conventional treatment involves dividing the non-relaxing lower esophageal sphincter, as well as a partial fundoplication.

BMC is the first hospital in Massachusetts to perform these repairs using the minimally invasive robotic daVinci™ system. Similar to a laparoscopic procedure, the surgeon gains access via the abdominal wall through several small incisions. The robotic system provides a superior three-dimensional view, and the robotic arms allow surgeons to perform very

# Approach to addressing esophageal disease

fine wrist-like movements inside the abdomen or chest without the need for large incisions. As with other minimally invasive operations, patients recover and return to normal activity more quickly.

Another gastroesophageal condition, **Zenker's diverticulum** is an outpouching of the esophagus that occurs in the cervical region, usually because the cricopharyngeus muscle fails to relax. Traditional treatment has involved accessing the area through an incision in the neck.

For many patients coping with Zenker's diverticulum, Center surgeons are now utilizing a totally **endoscopic transoral and incisionless repair** procedure (Figure 4). Using a special rigid esophagoscope, the physician is able to divide the non-relaxing cricopharyngeus muscle by passing a small stapling device through the mouth. This approach avoids making any incision in patients, many of whom are elderly with multiple co-morbid conditions.



Figure 4. Division of the diverticulum with the surgical stapler

A common condition known as metaplasia of the esophagus — otherwise known as **Barrett's esophagus** — occurs as a complication of gastroesophageal reflux and is a premalignant lesion. It can progress through metaplasia to dysplasia and eventually to cancer. Surgeons usually treat metaplasia with surveillance endoscopy in combination with reflux

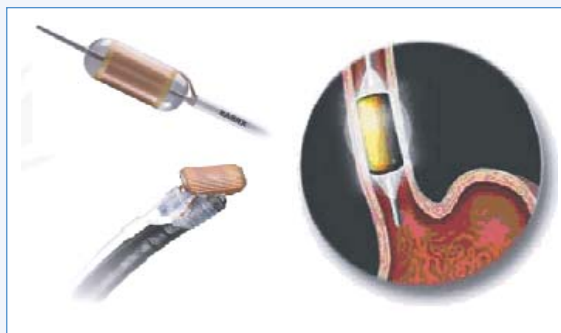


Figure 5. There are two types of probes in the Barrx system: 1) a balloon catheter to treat large areas of Barrett's, and 2) a finger-like probe used for small areas and touch-up treatments.

control; for high-grade dysplasia, esophagectomy is most common course of action.

BMC is now offering several new approaches to the treatment of Barrett's esophagus, including **radiofrequency ablation (RFA)** using the Barrx system. With RFA, a surgeon uses electricity to create a heat injury to the superficial abnormal esophageal mucosa (Figure 5). This approach has been demonstrated as safe and effective at delivering this thermal treatment to only the esophageal mucosa. Unlike older ablation treatments, there is virtually no incidence of side effects, such as strictures. Center surgeons have been using RFA to treat Barrett's, from metaplasia to dysplasia, and have an ongoing study to track the effectiveness and long-term success of this approach.

**Cryoablation/cryotherapy** is another minimally invasive treatment that uses a liquid nitrogen spray to treat abnormal areas of the esophagus under endoscopic visualization. The frozen targeted mucosa eventually sloughs off and is replaced by new healthy mucosa. This therapy can be used for high-grade dysplasia and also to treat some esophageal cancers in patients who are not candidates for esophagectomy.

Ablation treatment — such as RFA or cryotherapy — has recently been used for very early, superficial, and localized cancers (such as intramucosal) after

complete endoscopic mucosal resection of the cancer. In some cases, ablation may avoid the need for an esophagectomy.

Patients facing **esophageal cancer** may undergo **minimally invasive esophagectomy** at BMC, which is one of the first hospitals in New England to offer the procedure. BMC was one of the lead sites for a recently completed multicenter national study of this technique sponsored by the National Cancer Institute.

Minimally invasive esophagectomy is a complex procedure that uses several small incisions in the chest, abdomen, and sometimes the neck to remove the esophagus and replace it with a modified conduit using the stomach. The procedure is offered to patients with early-stage tumors, as well as to those with locally advanced tumors who have received preoperative radiation and chemotherapy.

In a recent national trial, overall mortality was 2 percent. This is lower than the mortality rate traditionally reported after open esophagectomy, which has been as high as 10 percent. Another finding was a low pneumonia rate of 4.9 percent, which is also lower than in other studies.

For esophageal cancer patients for whom resection is not an option, treatment

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# Advanced diagnostic techniques offer insight into esophageal diseases, treatments

Prior to initiating treatment, Center physicians utilize a range of advanced diagnostic techniques to gain a complete picture of the patient's esophageal condition. One method, **pH testing**, is performed utilizing the catheter-free Bravo system. This procedure provides data on acid regurgitation events over a 48-hour period, rather than the more usual 24-hour measurement.

Center physicians are experts in performing a number of advanced diagnostic procedures, including **endoscopic ultrasonography (EUS)**. EUS facilitates examination of the esophageal wall and the surrounding tissues, allowing physicians to determine the depth of invasion of a tumor and to assess for associated lymphadenopathy and invasion of surrounding structures. A fine needle aspiration can be performed to evaluate suspicious lymph nodes within the mediastinum. EUS provides diagnostic and staging information without the need for a more-invasive procedure.

**Endobronchial ultrasonography, or EBUS**, is used to stage the mediastinum through a transbronchial approach rather than by esophagoscopy. EBUS and EUS are complimentary procedures that allow assessment of different regions of the mediastinum. As with EUS, fine needle aspiration can also be performed to obtain tissue for cytological evaluation.

A third procedure, **endomucosal resection (EMR)**, is a minimally invasive way to resect superficial lesions that are visible on endoscopy. A physician injects saline into the submucosa, expanding it and elevating the mucosal lesion away from the muscularis propria. The physician can remove the lesion using a hot wire snare device. EMR can be particularly useful to physicians seeking to differentiate high-grade dysplasia from intramucosal and submucosal esophageal cancers. In some cases, EMR will be sufficient therapy for a patient, thus avoiding the need for an esophagectomy. ■

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## ***Cutting-edge treatments utilize a less invasive approach to addressing esophageal disease ...Continued from page 3.***

usually includes chemotherapy and radiation therapy. Center physicians can offer these individuals palliative options, including **esophageal stents** or cryoablation.

Many patients with esophageal cancer will have persistent difficulty swallowing (dysphagia) or have bleeding from their tumors. The esophageal stent is an option for patients with dysphagia. For patients with friable tumors that have mostly an endoluminal component in the esophagus (causing dysphagia or bleeding), another alternative is cryoablation. These techniques can significantly improve quality of life and allow patients to regain the ability to eat.

*To refer a patient for evaluation or to consult with one of the physicians at the Center for Minimally Invasive Esophageal Therapies, call **617.638.5600** or visit [www.bostonthoracicsurgery.com](http://www.bostonthoracicsurgery.com). ■*

**Center for Minimally Invasive Esophageal Therapies sets the standard for care in New England**  
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treatment options available to treat benign and malignant esophageal disorders (see “Cutting-edge treatments utilize a less invasive approach to addressing esophageal disease.” on page 2).

“In taking a comprehensive, minimally invasive approach to the treatment of esophageal disorders and diseases, our goal is to offer our patients the most effective care with the fewest number of side effects,” said **Hiran Fernando, MD**, director of the Center for Minimally Invasive Esophageal Therapies. ■

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