What is Gastric Electrical Stimulation (Enterra™ Therapy)?

Gastric electrical stimulation (GES) uses an electrical device, Enterra™ Therapy, called a gastric pacemaker, to provide mild electrical stimulation to the lower stomach nerves. Transmitted through a neurostimulator, these mild electrical pulses encourage the stomach to contract and help to relieve nausea and vomiting. Using minimally invasive surgical techniques, the gastric pacemaker is placed subcutaneously below the rib cage in the abdomen. Two intramuscular lead wires with electrodes are implanted into the stomach muscle wall to deliver mild electrical pulses for symptom control. This therapy is reversible and can be turned off at any time by the motility specialist.

The Enterra™ Therapy system was designated as a Humanitarian Use Device by the FDA in the fall of 1999. The incidence of gastroparesis has significantly increased over the past decade.

Why does a patient need GES?

Patients diagnosed with gastroparesis, a disorder in which food moves through the stomach more slowly than normal, who have not responded, to or are intolerant of, medical therapies are candidates for GES. Many of these patients have difficulty eating, and experience severe, chronic vomiting and nausea. Some patients may even require tube feeding to ensure adequate nutrition. There are a number of causes for gastroparesis, including diabetes mellitus, post-fundoplication, neurologic disease, and metabolic diseases. But up to one-third of the cases have an unknown origin. GES is used only when medication is not effective in controlling symptoms that can be serious, including malnutrition and severe dehydration. In clinical studies, GES reduced vomiting frequency by up to 81 percent from baseline at 12 months follow-up. GES has a limited effect on abdominal pain that can occur in patients with gastroparesis.

There are multiple causes for delayed gastric emptying. Recent studies showed that many of these patients have degeneration of the interstitial cells of Cajal (ICC). These cells control the rhythm and the electrical control conduction of gastric contraction. Altered ICC is associated with rapid electrical complexes, called tachygastria, measured by the electrogastrogram on the anterior wall of the abdomen.
Vomiting Frequency

More than 50 percent of delayed gastric emptying patients have spasm of the pylorus. An elevated pyloric pressure can be measured with manometry and treated by intramuscular botulinum toxin (Botox).

**Pre-surgical assessment—temporary stimulator**

Prior to more permanent gastric stimulator implantation, the use of a temporary neurostimulator can assess whether a patient will have a good response to the permanent stimulator. A temporary electrode is inserted into the stomach endoscopically. The electrode wire is then passed through the nose and attached to the same GES device used for the permanent neurostimulator but worn externally. After five days, the electrode is easily removed. The patients often notice a partial improvement in symptoms within this time period.

**What can a patient expect?**

The hospital stay is usually from one to five days. Most patients experience a gradual reduction in symptoms during the first six to 12 months, but this varies from patient to patient.

Depending on the amount of stimulation each patient requires, the batteries last from five to 10 years, at which point the neurostimulator is replaced. Patients rarely notice the mild stimulation to the stomach. Although the symptom reduction is gradual, more than 80 percent of patients have reported a significant decrease in vomiting frequency.

**Patient referral to the Neurogastroenterology Motility Program**

Patients need a referral from their primary care provider or physician specialist prior to scheduling their evaluation and surgery. Medical records, pertinent laboratory reports and imaging reports need to be forwarded to the Neurogastroenterology and Motility Program to determine referral indication appropriateness. Patients need to be seen in consultation prior to scheduling the Enterra Therapy procedure.

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Information and Patient Referrals

Please contact the Neurogastroenterology and Motility Program for additional information.

Phone: 415-600-1138
For patient referrals, call:
888-637-2762

Our Neurogastroenterology and Motility Program physicians and staff are part of Sutter Pacific Medical Foundation, a not-for-profit organization that provides primary, specialty and complex medical care, combining the latest in medical technology with a compassionate touch.

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