MINIMALLY INVASIVE SURGERY

Physicians at Ohio State first in U.S. to use stomach reduction technique

Procedure enables specialists to revise size of stomach pouch without making external or internal incisions

Specialists in the Department of Surgery at Ohio State University Medical Center in August were the first in the United States to use a new minimally invasive stomach revision technique designed for patients who have had gastric bypass surgery and lost weight but are now regaining it.

Using an endolumenal fastener-and-delivery device called the StomaphyX, the procedure enables the surgeon to reduce the size of the stomach pouch to help the patient lose weight again, but without making external or internal incisions. The result is a faster recovery and lower complication rate than is found in either open or laparoscopic revisional surgery, both of which require incisions.

“We were the first center in the United States to perform a case,” says Dr. Dean J. Mikami, assistant professor of surgery in the Division of General and Gastrointestinal Surgery and the U.S. trainer for the StomaphyX device. “We have used the procedure with 22 patients at Ohio State, and they showed an 18- to 20-pound weight loss, without a single major complication. Open and laparoscopic revisional surgery have a major complication rate 8 to 10 times higher.”

Some patients had minor complications, such as sore throat and epigastric pain.

In the procedure, the surgeon uses a flexible endoscope to insert the StomaphyX device through the mouth into the stomach. Stomach tissue is suctioned into a port at the end of the device, and then a fastener is inserted into the tissue to create a pleat in the stomach. Creating a series of pleats pulls the side wall of the stomach inward to reduce the stomach pouch.

Mikami worked with engineers at Endogastric Solutions, of Seattle, Wash., for two years to develop a prototype of the StomaphyX into an endolumenal revisional bariatric procedure device. Following initial studies conducted this year in Belgium, which demonstrated its safety, he wrote the protocol for the device. The Food and Drug Administration has cleared the StomaphyX for endolumenal revisional bariatric surgery.

(See Stomach on page 2)
Division achieves highest patient satisfaction rating in Health System

Unit provides comprehensive general vascular surgery service, numerous subspecialty clinics

The Division of General Vascular Surgery achieved the highest level of patient satisfaction in the entire Ohio State University Health System during fiscal year 2007.

Of vascular surgery patients, 92.3 percent gave a satisfaction rating of 9 or 10 on a scale of 10.

Within the Health System as a whole, the average percentage of patients giving a rating of 9 or 10 was 81.4 percent.

General

Stomach
From page 1

He is submitting to the Institutional Review Board a proposal for a clinical study of weight loss following the procedure.

Mikami emphasizes the need for revisional surgery. “On average, 10 to 20 percent of patients will regain some weight 5 to 10 years after gastric bypass,” he says. “This means that each year, 10,000 to 20,000 patients in the United States will need a revision procedure.”

Patients who have gained roughly 10 percent more than their lowest weight after gastric bypass are eligible for the procedure.

Mikami and Dr. W. Scott Melvin, professor of surgery, chief of the Division of General and Gastrointestinal Surgery, director of the Center for Minimally Invasive Surgery, and scientific advisor for Endogastric Solutions, are currently the only surgeons at Ohio State performing the procedure.

Mikami says the device has the potential to be used for other endolumenal surgical procedures. “We’re looking at using the device to reduce reflux in patients after gastric bypass procedures,” he says. “What we have found is very significant. The StomaphyX procedure actually reduces something called ‘late dumping syndrome,’ in which patients have postprandial diarrhea. Three of our patients had total resolution of their diarrhea, because the procedure slows down gastric emptying.”

Asked if endolumenal procedures will one day replace laparoscopic procedures, Mikami says, “Minimally invasive surgery is moving toward natural orifice surgeries, in which we don’t have to make incisions. I think endolumenal procedures are going to be another tool in our arsenal. They won’t completely replace laparoscopic surgery, but they will definitely aid it and make it even less invasive.”

Of vascular surgery patients, 92.3 percent gave a satisfaction rating of 9 or 10 on a scale of 10.
Two investigators in the Division of Pediatric Surgery at Ohio State University Medical Center this year received a total of four new R01 investigator-initiated grants from the National Institutes of Health to support studies of growth factors in tissue injury and repair.

Dr. Gail E. Besner, professor of surgery at Ohio State and a member of the Center for Perinatal Research at Nationwide Children’s Hospital, is principal investigator for two new grants supporting studies of heparin-binding epidermal growth factor-like growth factor (HB-EGF):

- HB-EGF therapy for necrotizing enterocolitis.
- HB-EGF and intestinal ischemia/reperfusion.

David R. Brigstock, Ph.D., associate professor of surgery at Ohio State and director of the Pediatric Surgery Research Laboratories at Nationwide Children’s Hospital, heads two new grants supporting studies of connective tissue growth factor (CTGF):

- Mechanisms of CTGF-induced liver disease.
- CTGF in pancreatic stellate cell-mediated fibrogenesis.

The researchers have received $1.1 million over five years for each of the four laboratory studies, which they say could have important implications for the treatment of pediatric and adult diseases alike.

**The Besner Laboratory**

Besner, who first identified HB-EGF in 1990, has had continuous funding from the NIH for the past 13 years to study the growth factor.

She initially discovered that HB-EGF can protect the intestines from injury more than a decade ago. For the past five years, her laboratory has concentrated on the ability of HB-EGF to protect the intestines against neonatal necrotizing enterocolitis (NEC), a disease that results in intestinal necrosis in newborn babies, usually those born prematurely. The eventual goal of her research is to use HB-EGF to prevent and treat NEC, a disease for which there is currently no known cure.

Besner says that in past decades, premature babies died of lung disease because their lungs were so immature that the infants couldn’t survive. But more recently, advances in critical care have resulted in successful management of the pulmonary problems in these patients.

“So now the babies survive for a few weeks until they develop necrotizing enterocolitis,” she says. “It is predicted that NEC will soon become the leading cause of death in the premature patient population.”

In the NIH project examining HB-EGF therapy for NEC, researchers are using animal models that mimic NEC in the laboratory, in order to investigate the role of HB-EGF in the disease process.

Researchers are also examining samples of human intestine that have been resected in the operating room, in order to further study the ability of HB-EGF to protect the intestine from injury.

The other NIH project is a study of intestinal ischemia-reperfusion injury, in which the intestines experience first a restriction and then a restoration of blood supply, both of which cause tissue inflammation and damage.

The laboratory uses two different models of intestinal ischemia-reperfusion injury to study the effectiveness of HB-EGF, and to determine the mechanisms by which the growth factor exerts its intestinal cytoprotective effects.

The first model employs occlusion of the superior mesenteric artery, the main blood supply to the small intestine, followed by reperfusion, and the second model is one of hemorrhagic shock and resuscitation.

“In both of these models, HB-EGF has the ability to protect the intestines from injury,” Besner says. “The results of the hemorrhagic shock and resuscitation model could have very widespread implications for both child and adult diseases, because many patients are at risk of developing injury to the intestines after they have been subjected to stresses, such as major trauma, burns, shock, or sepsis. All such patients are at risk of developing poor blood flow to the intestines. Our work shows that HB-EGF promotes angiogenesis, acts as a vasodilator, and increases blood flow to the intestines. So HB-EGF has very diverse and potentially widespread implications for the critical care of several different patient populations.”

Most importantly, as a result of collaboration with industry, human-grade HB-EGF that can be administered to patients is currently being produced. A first round of meetings with the Food and Drug Administration has recently taken place.

(See Grants on page 4)
place, in order to obtain approval of the drug for use in human beings.

Currently, the researchers are performing preclinical testing of the drug in animals, and pending FDA approval, they hope to begin clinical trials of HB-EGF by the third quarter of 2008, she says.

“In-depth study of the effects of HB-EGF in small and large animals will be conducted before we entertain the idea of giving the growth factor to a human being. Overall, it is a very exciting time for my laboratory.”

The Brigstock Laboratory

For the last decade, Brigstock has been a leading investigator in the CTGF field. In his NIH-funded studies over the past five years, his laboratory examined the role of CTGF in liver fibrosis. In particular, he examined how CTGF interacts with hepatic stellate cells, which become “activated” after liver injury and play a major role in wound repair. However, if their activated state is not curtailed, the cells go on to produce an excessive quantity of collagen, which is a hallmark of fibrosis.

“Collagen is an important scaffold during wound healing, but if deposited excessively, it can result in production of scar tissue,” Brigstock says. “We found that CTGF is pro-fibrotic because it stimulates collagen production in hepatic stellate cells and promotes survival of the activated cells.

“These effects suggest that CTGF expression in the liver during tissue injury and repair may increase suscepti-

bility to developing hepatic fibrosis.”

In the new study examining the mechanisms of CTGF-induced liver disease, he says his laboratory is focusing on fundamentals.

“First, we want to understand how cell surface CTGF receptors are linked to collagen production and cell survival,” he says. “This means studying CTGF intracellular signaling pathways in detail.”

Another aim of the study is to examine the structure of the CTGF protein and to determine which parts of the molecule interact with receptors on the surface of the hepatic stellate cell.

“With this knowledge, we could potentially develop strategies to prevent CTGF from accessing its signaling receptors.”

The study will also examine the effects of alcohol on hepatic stellate cells. “When consumed in excess, alcohol is a direct stimulus for production of CTGF and collagen in hepatic stellate cells, so we need to understand the mechanisms involved.”

Brigstock says that since stellate cells play a key role in the fibrotic response, they are an attractive target for therapeutic approaches to liver fibrosis.

“There is great optimism that fibrosis is a treatable pathology, and a better understanding of hepatic stellate cell function will likely be central in the development of effective therapies.”

His second grant project will evaluate CTGF in pancreatic fibrosis, which is a common feature of chronic pancreatitis, and is often caused by excessive alcohol consumption. “Scar formation in the pancreas is likely due to the activities of pancreatic stellate cells, but this cell type was discovered only a few years ago, so its precise pathophysiological role has yet to be fully determined,” Brigstock says. “Our new grant to study CTGF in the pancreas came about because of our expertise with the hepatic system; we can now isolate pancreatic stellate cells from rodents and have started to investigate how they react to CTGF and participate in fibrogenic pathways.

“A major aim of this study is to understand how alcohol metabolites are able to regulate CTGF production. In addition, CTGF exploits different receptors in pancreatic stellate cells as compared to hepatic stellate cells, so we need to understand the molecular basis for this flexibility.”

Other goals of the grant are to evaluate the role of CTGF in in vivo models of chronic pancreatitis. He points out that although millions of people worldwide are affected by fibrosis, no FDA-approved anti-fibrotic drugs are currently available. “Fibrosis is a huge medical challenge. However, researchers are very optimistic that fibrosis is reversible, and we hope to show that CTGF is a key therapeutic target. Our work on CTGF will have relevance to other organs and organ systems, including postsurgical scarring. It’s likely that our work will have significant translational applicability to many medical conditions, and not just the two organ systems that we are studying.”

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“It’s likely that our work will have significant translational applicability....”
Sen named associate dean for translational, applied research

Handan K. Sen, Ph.D., professor of surgery and vice chairman for research in the Department of Surgery, has been named associate dean for translational and applied research in the College of Medicine.

In the position, a new administrative post in the College, Sen will facilitate ongoing research collaborations between basic and clinical investigators and chair the Technology and Commercialization Partnerships Council (TCP). He will also serve as liaison between the TCP and the University’s Office of Technology Licensing and Commercialization.

“The Ohio State University Medical Center is uniquely positioned to emerge as a major national leader in translational and applied research,” says Sen, who is also deputy director of the Davis Heart and Lung Research Institute and executive director of Ohio State’s Comprehensive Wound Center.

“The growing strength of our clinical programs, our large patient volume, the extraordinary scope for interaction between basic and clinical scientists, and the firm commitment of the Medical Center to seek corporate partnership represent major assets that will elevate us to the next level of success.”

Sen joins three other associate deans in leading the research mission in the College: Dr. Joanna Groden, Dr. Michael Para, and Dr. Rebecca Jackson.

Sen is principal investigator on three active National Institutes of Health RO1 grants and a clinical trial, among other studies. A fellow of the American College of Sports Medicine and the American College of Nutrition, he has delivered more than 100 invited lectures worldwide. Sen is editor of two major national journals and serves on the editorial boards of seven others. He has co-edited nine books and written more than 150 published journal articles and 33 book chapters.

Sen brings to the position a wealth of experience in the conduct of translational research. His own research program in wound healing extends from basic bench science to outcomes research in the community. He has mentored numerous basic scientists and physician scientists and has broad experience in commercialization activities, from patents to licenses and contracts.

Sen earned his B.S. and M.S. in physiology from Calcutta University, in Calcutta, India, and his Ph.D. in physiology from the University of Kuopio, in Kuopio, Finland.

He served five years as a research scientist at the University of California, Berkeley, before joining Ohio State’s Department of Surgery in 2000.


**ABSTRACTS**


**BOOKS**

**PRESENTATIONS**

Agnese DM. Breast cancer. Wyandot Memorial Hospital, Medical Staff Meeting, Upper Sandusky, Ohio, June 26, 2007.


Pay for performance: what is the fuss all about? Phoenix Integrated Surgical Residency Program, the H. Harlan Stone Lecture, Good Samaritan Hospital, Phoenix, Ariz., June 7, 2007.

Dr. Gail E. Besner, professor of surgery in the Division of Pediatric Surgery, received the Business First Health-care Heroes Award for 2007.

Dr. Donna A. Caniano, the H. William Clatworthy Jr. professor of surgery and chief of the Division of Pediatric Surgery, received a Nationwide Children’s Hospital Career Contribution Award for 2007. The recognition is awarded to physicians who have demonstrated a lifetime commitment to the highest quality of health-care and service and helped Children’s Hospital build a reputation as a local, regional, and national leader in pediatrics. Columbus Children’s Hospital was renamed Nationwide Children’s Hospital in September.

Rebecca Coffey, a patient care resource manager in the Division of Critical Care, Trauma, and Burn, has been appointed to the prevention committee of the American Burn Association.

Dr. Meghan R. Forster, a resident in the Department of Surgery’s Master of Medical Science Program, received an award from the general surgery interns for her presentation May 25 at the 12th
Annual Department of Surgery Research Conference. Her presentation was titled “Ganciclovir Prevents Murine CMV Reactivation during Sepsis in a Dose-dependent Manner.”

Dr. Ziad N. Kutayli, a resident in general surgery, on June 6 received the Arnold P. Gold Foundation Humanism and Excellence in Teaching Award, at the Student Clinicians Ceremony at Ohio State University Medical Center. The College of Medicine class of 2008 selected Kutayli to receive the award because of his demonstrated commitment to teaching and compassionate treatment of patients and their families, students, and colleagues.

Dr. Sidney F. Miller, professor of surgery in the Division of Critical Care, Trauma, and Burn and director of the Burn Center at Ohio State University Medical Center, has been elected to the government affairs committee of the American Burn Association (ABA). Miller also serves as secretary of the ABA.

Dr. Patrick Ross Jr., associate professor of clinical surgery in the Division of Cardiothoracic Surgery, on July 1 began an appointment as chief of staff-elect at the Arthur G. James Cancer Hospital and Richard J. Solove Research Institute. In the position, Ross, who was elected by the James medical staff, chairs the bylaws committee and is a voting member of the medical staff administrative committee.

Dr. Chittoor B. Sai-Sudhakar, previously clinical assistant professor of surgery in the Division of Cardiothoracic Surgery, began an appointment July 1 as assistant professor of surgery.

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**IN BRIEF**

**MMSP CORNER**

**Master of Medical Science Program**

**Students, New Projects for 2007–2008**

- **Dr. Mary E. Dillhoff**: A Unique miRNA Profile Can Be Identified to Predict the Progression from Barrett’s Esophagus to Cancer. Research Advisor: Dr. Mark Bloomston, assistant professor of surgery in the Division of Surgical Oncology.

- **Dr. Kristan Guenterberg**: Circulating Tumor Cells in Melanoma Patients. Research Advisor: Dr. William E. Carson, III, associate professor of surgery in the Division of Surgical Oncology.

- **Dr. Irina Pleister**: Spinal Cord Ischemia after TAAA Repair: Mechanism of Injury. Research Advisor: Dr. Hamdy Elsayed-Awad, assistant professor of anesthesiology.

**Calendar of Events for 2007–2008**

- New MMSP Student Training Objectives and Planning .................. June 12, 2007
- James King Research Award Competition ................................ July 24, 2007
- Fall Quarter MMSP Student Update ............................. September 2007
- Preparation of PGY-1’s and PGY-2’s for MMSP ......................... October 2007
- Winter Quarter MMSP Student Update ............................. January 2008
- Spring Quarter MMSP Student Update .............................. March 2008
- Master’s Degree Presentations ........................................ May–June 2008
- End-of-the-Year MMSP Student Report ............................... June 2008

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**IN THE NEWS**

**Dr. Doreen M. Agnese**, assistant professor of surgery in the Division of Surgical Oncology, was interviewed June 26 by WBNS-TV/10 and WCMH-TV/4 about proposed tanning bed legislation requiring those under 18 to have a medical prescription for tanning bed visits and not just parental consent.

**Dr. Michael J. Miller**, professor of surgery and chief of the Division of Plastic Surgery, was the subject of a story in the August 16 issue of Upper Arlington ThisWeek and in the August issue of Central Ohio Health.

**Anne VanBuskirk, Ph.D.**, assistant professor of surgery in the Division of Surgical Oncology, was quoted Sept. 5, by the Paramus Post, of Paramus, N.J., in a story about a topical treatment for squamous cell carcinoma made of black raspberries.

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**Changes of Address**
Please address correspondence about changes of address to the editor.
INSIDE:

1 Physicians at Ohio State first in U.S. to use stomach reduction technique

2 Division achieves highest patient satisfaction rating in Health System

3 Investigators receive four new NIH grants for growth factor studies

5 Sen named associate dean for translational, applied research

Mark Your Calendar

Advances in Minimally Invasive Surgery: Update on Technology and Surgery

Marriott Resort, Golf Club, and Spa
Marco Island, Florida

Presented by
The Ohio State University Center for Minimally Invasive Surgery
and the Case Western Reserve University Department of Surgery

For more information, and to register, see
www.cmis.ohio-state.edu