dence of finger contamination (7%) compared to those who wore only one pair of gloves (51%). According to Dr. Quebbeman, comfort of the double gloves was satisfactory to 88% of the participants, and tactile sense was satisfactory to 88%. He indicated that most problems could be improved by changing glove sizes.

The researchers observed six cuts, 30 needle sticks, and 54 splashes of excessive amounts of blood. They also found that clothing was contaminated by blood in 67 out of 100 personnel, of which 53 (70 percent) were either surgeons or first assistant surgeons. The areas most commonly contaminated by blood were fingers (18 percent), feet (seven percent), lower legs (six percent), forearms (five percent) and face (five percent). The incidence of blood contamination per 100 personnel by type of service was: orthopaedic (91), gynecologic (64), vascular (43), trauma (41), thoracic (38), and general surgery (21).

Overall, data was drawn from 234 separate procedures performed by six specialty services, involving 1,763 personnel. Visible blood contamination of at least one member of the surgical team was observed in 118 procedures (50%).

Since the initial observation studies, Drs. Telford and Quebbeman have evaluated a number of surgical gowns (fabric reinforced, plastic reinforced, and reusable). They have studied their effectiveness as protective barriers to reduce the risk of body contamination. In addition, they have continued their studies on glove effectiveness and the risk of injury. Most recently, they have been evaluating the effectiveness and comfort of a new gown provided to them by the Kimberly-Clark Corporation. This gown has plastic reinforcement of the entire front panel and forearms. Results from this study indicate that this gown is an improvement over any of the gowns studied to date.

In the future, Drs. Telford and Quebbeman hope to continue to study blood exposure and injury in the operating room, and to work to develop better garments to wear during high blood exposure procedures.

The studies are being conducted at the Milwaukee County Medical Complex, Froedtert Memorial Lutheran Hospital, and the Zablocki VA Medical Center. They have been sponsored in part with funding from Kimberly-Clark's Professional Health Care Division.

Laser Tested in Treatment of Prostate

An experimental laser treatment that may greatly improve surgery for men with enlarged prostate is being used by MCW surgeons at Froedtert Hospital and the Zablocki VA Medical Center.

The laser surgery reduces operative time from one hour to ten minutes, shortens hospital stay (possibly to an outpatient procedure), and decreases blood loss.

According to Herbert Lepor, M.D., Professor, Department of Urology, the laser technique also is expected to dramatically reduce the incidence of impotence and incontinence, which occur in about 5% and 1% respectively of the traditional transurethral resection surgery patients. The new procedure is also expected to reduce postoperative infection and virtually eliminate the need for blood transfusions.

A fiber carrying the laser beam is inserted into the penis. A special gold metal tip deflects the beam to a 90-degree angle so it strikes the sides of the prostate. The beam is switched on for about a minute at one spot, then is rotated 90 degrees to another. This is repeated two more times until 360 degrees of the prostate have been impacted by the laser. The laser's heat, which destroys some tissue, ultimately shrinks the prostate.

The Milwaukee area is one of only three areas in the country where the laser is being used in a nationwide study.

MCW Surgeons are First in Nation to Use Laparoscopic Highly Selective Vagotomy to Treat Ulcer Disease

For the first time in the United States, Medical College of Wisconsin (MCW) surgeons at the Milwaukee Medical Center successfully used a laparoscope to perform an extremely precise operation to treat ulcers. A team led by Constantine Frantzides, M.D., Ph.D., Assistant Professor of Surgery, performed the three-hour operation in February.

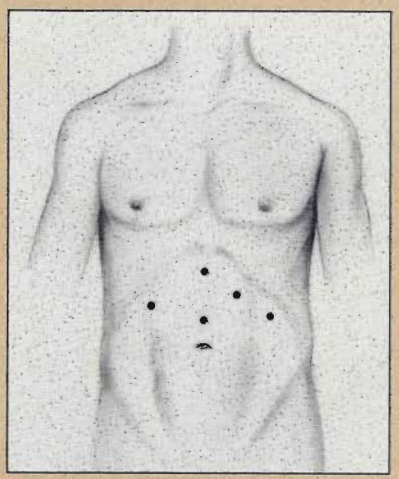
The traditional surgical technique, known as highly selective vagotomy, has been used to treat ulcers for years. However, it requires a large abdominal incision, an eight-to-twelve day hospital stay, and a four-to-six week recuperation period.

The primary stumbling block to performing a laparoscopic highly selective vagotomy has been difficulty in ligating branches of the posterior vagus and clearing the distal esophagus. According to Dr. Frantzides, these problems can now be overcome by use of a new surgical technique utilizing a right angle dissector and babcock clamps.

"After becoming comfortable with the technique in the laboratory, we felt it was time to take our experience to the clinical setting," he said. "We can now offer an identical operation, except that it is performed through five small punctures in the abdomen, rather than a huge incision. The principal advantages are that patients experience only minimal pain, stay only a few days in the hospital, and should be able to return to normal activities within one week."

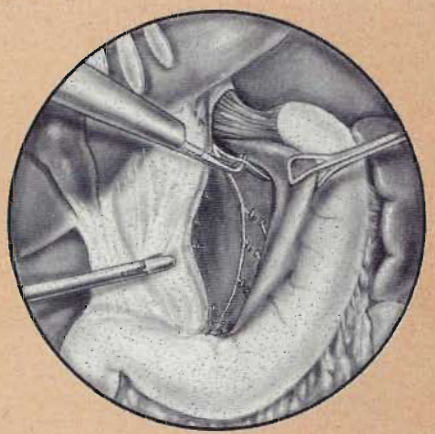
The first patient had suffered from duodenal ulcer disease for five years and, despite medication, had failed to control symptoms. The day after the three-hour operation, she was taking a liquid diet. The following day she took a full diet and was discharged from the hospital. After traditional surgery, she would have been hospitalized for eight to twelve days,

Laparoscopic Highly Selective Vagotomy



Location of small punctures used to perform laparoscopic highly selective vagotomy.

Laparoscopic view of division of anterior proximal gastric vagal fibers.



Laparoscopic view of division of posterior proximal gastric vagal fibers. Left sided babcock retracting the lesser curvature to the left and a grasper retracting the anterior leaflet of the lesser omentum to the right, exposing the branches of the posterior vagus nerve.

according to Dr. Frantzides.

Ulcers, which affect one out of ten Americans at some point in their life, are caused by excess acid produced by the stomach. Two nerves, called the vagus nerves, located along the front and back of the stomach, stimulate the stomach to produce acid. Cutting these nerves decrease acid production. Unfortunately, cutting them can also produce side effects. During highly selective vagotomy, only the tiny branches of these nerves, going to the part of the stomach where acid is produced, are cut. In this way, acid production is decreased and unpleasant side effects are avoided.

"Ulcer operations are not performed as frequently today as they were in the past because there are now very effective medications," Dr. Frantzides said. "However, without ongoing medical therapy, 80 percent of all ulcers will recur within one year and many people require lifelong therapy. Those who have ongoing symptoms, or complications such as recurrent bleeding and side effects from medicine — or those who simply refuse to take medicine every day — are candidates for the operation," he said.

The first case report has been submitted for publication. Authors include Constantine T. Frantzides, M.D., Ph.D. (Assistant Professor); Kirk A. Ludwig, M.D. (PG IV, General Surgery); Edward J. Quebbeman, M.D., Ph.D. (Associate Professor, Surgery); and James Burhop, M.D. (PG V, General Surgery).

Laparoscopic Closure of Gastric Stab Wounds with Stapling Procedure Used First by MCW Surgeon

In a report by Constantine Frantzides, M.D., Ph.D., Assistant Professor, General Surgery, laparoscopy was used to identify two gastric stab wound sites in a 38-year-old male, and a stapling device was utilized for closure of the wounds. This technique, used for the first time in the world, takes further the evolution of management of penetrating abdominal trauma, which, in the past, required mandatory laparotomy.

A high incidence of nontherapeutic laparotomies and their associated morbidity in patients with stab wounds who are stable and without significant physical findings has led to a call for new approaches in management. While the majority of abdominal gunshot wounds are best treated by laparotomy, stab wounds are amenable to selective management.

Laparoscopy has been used selectively in the diagnosis of blunt and penetrating injuries to the abdomen for years. Recent advances in instrumentation have taken laparoscopy beyond its limited role in diagnosis.

The stapling device utilized for closure was actually designed for use in laparoscopic hernia repair. Prior to its use in treatment of the stab wounds, the device had been used in the laboratory by Dr. Frantzides to close pyloroplasty wounds with good result.

It is Dr. Frantzide's belief that improved optics, better instrumentation, and more familiarity with laparoscopic techniques will expand the role of laparoscopy in trauma.

Constantine T. Frantzides, M.D., Ph.D., Assistant Professor, General Surgery, and Robert E. Condon, M.D., Ausman Professor & Chairman, Division of Surgery.

ELECTRICAL ACTIVITY OF HUMAN COLON.

Electrical control (ECA) and response (ERA) activities in human colon were recorded in 24 patients postoperatively until recovery of "normal" bowel function (flatus and stool passage and ability to eat). Phase unlocked ECA is omnipresent. Transient phase locking appears on postop day 3 and is a regular event after postop day 5, though never persisting for more than a few minutes. R colon dominant (power spectrum) ECA frequency is 11 cpm early but gradually shifts to 2-3 cpm; in L colon, 11-12 cpm ECA dominates throughout.

Random, short-duration ERA bursts are present on postop day 1. Clustered short-duration phasic ERA bursts first appear on postop day 2. Longer duration bursts and clustered ERA appear on day 3-4. Return to "normal" bowel activity is associated with appearance of regular migrating long-duration ERA, although short-duration clusters and random bursts always predominate in both L and R colon.

Modal human colon electrical activity is phase unlocked ECA with dominant frequencies of 11-12 cpm in left colon and 2-3 cpm in right colon. Phase locking and migration of ERA occurs intermittently. Both short and long duration ERA occurs in single bursts and in clusters; both migrate. Recovery from postoperative ileus involves increasingly complex electrical activity over 3-5 postop days, culminating in "normal" bowel electrical activity and its clinical correlates.

Researchers included Robert E. Condon, M.D., Ausman Professor & Chairman, Division of Surgery, Verne E. Cowles, Ph.D., Assistant Professor, General Surgery, and Constantine T. Frantzides, M.D., Assistant Professor, General Surgery.

News from the Digestive System Research Center

Sushil K. Sarna, Ph.D., Director of the Digestive System Research Center, will chair the GI Motility Session at FASEB in April, will serve as Visiting Scientist to the NIH Training Center in Digestive Diseases at Mayo Clinic in April (speaking on "Regulation of Gastric Emptying Solids"), and will participate in Meet-the-Investigator teaching sessions during Digestive Disease Week, American Gastroenterological Association in May (discussing "The Role of Motility in Diarrhea").

News from Cardiothoracic Surgery

James L. Cox, M.D., the Evarts A. Graham Professor of Surgery, Chief, Division of Cardiothoracic Surgery, Washington University School of Medicine, and Cardiothoracic Surgeon-in-Charge at Barnes Hospital in St. Louis, recently spoke on "Clinical Results of Surgery for Atrial Fibrillation" at Cardiothoracic Cardiology Conference, and at surgical grand rounds on "Contemporary Surgical Research: The Experimental Solution of Clinical Problems."

Dr. Cox is a member of the NIH Study Section on Surgery and Biomedical Engineering. He serves on the editorial board of eight specialty journals, and has authored more than 200 papers and book chapters. His current research concerns the surgical treatment of cardiac arrhythmias.

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G. Hossein Almassi, M.D. spoke at the February meeting of the Association of Operating Room Nurses (AORN), Southeastern Wisconsin Chapter, at St. Luke's Hospital, on "Treatment of Malignant Ventricular Arrhythmias."

Doran Ryan, D.D.S., M.S. Receives Award for Duty During Desert Storm

Doran Ryan, D.D.S., M.S., Associate Professor & Chairman, Department of Oral and Maxillofacial Surgery, recently received the award for Outstanding Medical Individual Mobilization Augmentee of the Year, 1991, Dental Corp, for his duty during Operation Desert Storm.

In Memoriam

The Division of Surgery was saddened by the death of Lynn Laube, Secretary in the Department of Emergency Medicine, December 11, 1991. Lynn's family wishes to thank everyone who made a donation to the American Cancer Society in Lynn's memory.