**Gastroparesis--A Better Solution?**

*Gastric Electrical Stimulation in Intractable Nausea and Vomiting: Assessment of Predictive Factors of Favorable Outcomes.*

Gourcerol G, Chaput U, et al:


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High-frequency gastric stimulation abates symptoms in gastroparesis.

**Background:** Gastroparesis remains a debilitating complication of diabetes. Patients have nausea, bloating, vomiting, and abdominal pain. Readmission for medical care is common, as is the need for enteral or parenteral nutrition. Gastric electrical stimulation (GES) has shown promise in some studies and not in others.

**Objective:** To determine factors that could predict a positive response to high-frequency GES.

**Design:** Prospective clinical study.

**Participants:** 33 patients were recruited over a 10-year period. Patients had to manifest typical symptoms for at least a year.

**Methods:** The Gastrointestinal Quality of Life Index (GIQLI) was used to assess patient responses. The tool is specific for gastrointestinal diseases. Nausea, vomiting, bloating, abdominal pain, regurgitation, and appetite were also scored on a scale of 0 to 4, with 0 being very severe and 4 being absent. A breath test for octanoic acid or scintigraphy was used to assess gastric emptying. Patients were evaluated before intervention and at 6 months after stimulation began.

**Interventions:** Gastric electrodes were placed by laparoscopy in 22 patients and via an open approach in 11 patients. High-frequency stimulation was used via an implanted stimulator that was programmable.

**Results:** Statistically significant improvements at 6 months were noted in overall quality score. Using this quality score, 24 patients (73%) improved, and 9 remained unchanged. Symptom scores also improved. The vomiting score improved from 1 to 3, and most of the other symptom scores improved by 1 point. The use of prokinetic drugs decreased from 100% at baseline to 36% at 6 months. Gastric emptying did not improve. Multivariate analysis of possible predictive factors revealed that a high preoperative GIQLI score and a poor appetite predicted a poor outcome from gastric stimulation.

**Conclusions:** More severe symptoms predicted the best response among patients with gastroparesis who had high-frequency gastric stimulation. Delayed gastric emptying before stimulation did not predict a positive response.

**Reviewer's Comments:** This report is clearly the positive side of this issue. A 73% response rate at 6 months is the authors' bragging point. However, this study and others showing improvement in symptoms involved uncontrolled case series, and follow-up was short. The actual mechanism of how GES works remains unknown as it does not entrain gastric slow waves, and symptom improvement occurred without changes in gastric emptying, as in this study. A recent meta-analysis suggested that further study was necessary before high-frequency GES could be routinely adopted. That meta-analysis showed that device removal or reimplantation was necessary in 8% of patients, and the most common cause was infection. The recommendations of these authors are wise. The procedure should be used after a careful patient assessment and should be driven by symptoms, not gastric emptying studies. (Reviewer-John A. Weigelt, MD.)

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Keywords: Gastroparesis, Gastric Electrical Stimulation

Print Tag: Refer to original journal article
Negative pressure dressings are being used on closed wounds and may reduce wound complications.

**Background:** Negative pressure dressings have been the topic of discussion from a number of articles in *Practical Reviews in General Surgery* recently. Negative pressure dressings are being used more frequently to manage a wide variety of open wounds. These dressings are convenient for the patient and physician alike, but whether they actually improve wound healing is still being debated. Their use has recently been expanded to closed wounds.

**Objective:** To review current data on negative pressure dressings used on closed surgical wounds.

**Design:** Literature review and case reports.

**Participants:** 4 patients with complex wounds were evaluated, and 3 published reports were reviewed.

**Methods:** The case histories of 4 patients were reviewed. A wound classification system was defined and used to classify the patient's wounds. The 3 articles were reviewed, and their results were summarized. The primary outcomes were wound healing and infection rates.

**Interventions:** Surgical procedure with a closed wound that had a negative pressure dressing applied. Negative pressure is applied at 75 to 125 mm Hg.

**Results:** The authors studied orthopedic injuries managed surgically. They randomized 141 wounds to a negative pressure dressing and 121 wounds to a control dressing. Wound dehiscence occurred in 12 negative pressure wounds and 21 control wounds. Infection occurred in 14 negative pressure wounds and 24 control wounds. These differences were statistically different. Sternal wounds were the focus in a retrospective report showing that negative pressure dressings could be applied, and no wound infections occurred. The third study also evaluated orthopedic wounds treated successfully with negative pressure dressings. The 4 patients presented had a sternal wound closure after treatment for a sternal wound infection, a nonhealing transmetatarsal amputation site, and 2 abdominal hysterectomies. All patients had negative pressure dressings, and no wound infection occurred. Their wound classification system is simple and uses patient comorbidities.

**Conclusions:** Negative pressure dressings can be safely used on closed wounds and may reduce wound complications.

**Reviewer’s Comments:** This report is reviewed because we are seeing more negative pressure dressings being used on closed wounds. The authors suggest that negative dressings should be used on closed wounds with high complication rates, edematous wounds, wounds leaking fluid, and wounds that have well-approximated edges. These recommendations are made with few supporting data. This wound classification system is simple, although it is unclear what it adds to existing risk assessment for wound complications. Wound pressures used vary from 75 to 125 mm Hg, and duration of use ranged from 3 to 5 days. No mention of cost-effectiveness is offered. I clearly am worried that using negative pressure dressings in this fashion is only increasing wound management costs without a defined benefit. Such a recommendation is difficult to make in our health care system. (Reviewer-John A. Weigelt, MD).

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**Keywords:** Negative Pressure Dressing, Surgical Wounds

**Print Tag:** Refer to original journal article
Aspirin use may reduce the recurrence of colorectal cancer.

**Background:** Aspirin use might reduce the risk of colorectal adenomas and cancer.  
**Objective:** To evaluate the effect of aspirin on cancer-specific and overall survival in patients who have colorectal cancer.  
**Design:** Prospective study of patients with stage I, II, or III colorectal cancer. Patients were selected from the Nurses’ Health Study or the Health Professionals Follow-up Study.  
**Participants:** 1279 patients were identified and included.  
**Methods:** The patients were prospectively followed since 1980 and 1986. Medical records were reviewed for all patients from the time of cancer diagnosis. The patients were sorted into 4 groups based on aspirin use before and after colorectal cancer diagnosis. The primary outcome was the effect of aspirin use on cancer-specific and overall survival.  
**Interventions:** Aspirin use was self reported. There were 459 tumors that were tested for cyclooxygenase 2 (COX-2) expression.  
**Results:** During the prediagnosis period, 719 patients were non-aspirin users, and 560 used aspirin. After diagnosis, 730 were non-users, and 549 used aspirin. The stage of disease was similar for all 4 groups of patients. The median follow-up was 12 years. There were 193 deaths (35%) and 81 cancer-related (15%) deaths among the 549 aspirin users after their diagnosis of colorectal cancer. Among the non-users, there were 287 deaths (39%) and 141 cancer-related deaths (19%). Aspirin users an associated multivariate hazard ratio (HR) of 0.71 for cancer-related deaths compared to non-users. The HR for mortality among aspirin users was 0.79. Of the 459 tumors, 314 tested positive for COX-2 expression. Among aspirin users, the HR for colorectal-specific mortality among COX-2 positive tumors was 0.39, while no risk reduction was seen when the tumor was COX-2 negative. The effect was not limited to any disease stage. Prediagnosis aspirin use was not associated with a risk reduction.  
**Conclusions:** Aspirin use after a diagnosis of colorectal cancer is associated with a lower risk of cancer-specific and overall mortality, especially if the tumor expresses COX-2.  
**Reviewer’s Comments:** The inhibition of COX 2 is suggested as the mechanism by which aspirin and other drugs might improve outcomes in patients with colorectal cancer. The greatest effect occurred in patients with tumors that over-expressed COX-2, lending credence to this hypothesis. Unfortunately, aspirin use was not randomized in this study, and thus a definitive statement is not possible. The conclusions are supported by experimental data in animals showing that NSAIDS can interrupt tumor growth and retard metastases. Improved survival with aspirin was seen across all stages of disease. Increasing the aspirin dose appeared to have a greater effect, although these data were estimated from patient reporting, so recall bias is possible. This benefit of COX-2 inhibition must be balanced against the complications seen with this class of drugs. (Reviewer-John A. Weigelt, MD).  

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Keywords: Colorectal Cancer, Treatment  

Print Tag: Refer to original journal article
Patients with traumatic diaphragmatic injuries who are of advanced age and have a higher ISS have an increased risk of death.

**Background:** Traumatic diaphragmatic injuries (TDI) are uncommon but are associated with mortality rates of up to 30% for penetrating and 15% to 45% for blunt traumas.

**Objective:** To evaluate patients with TDI to identify characteristics of increased mortality.

**Design:** Retrospective review.

**Methods:** A single-institution level I trauma center database was queried for ICD-9 diagnoses of diaphragmatic injury from January 1992 to May 2005.

**Results:** Of the >20,000 patients registered, 254 sustained TDI. The TDI was due to blunt trauma in 99 patients (39%) and penetrating trauma in 155 patients (61%). Thirty-three patients (13%) died before hospital admission. By univariate analysis, those who were older and female were more likely to sustain blunt injuries and had a greater injury severity score (ISS) than those with penetrating injuries. Two hundred patients (79%) lived to undergo surgery, and all injuries except one were repaired during the initial admission. Blunt TDI was more likely to occur on the left side, whereas penetrating injuries occurred equally on both sides. Bilateral TDI had a higher ISS than left or right TDI alone. Survival was the same for right versus left TDI and bilateral versus right TDI, but mortality was higher in bilateral versus left TDI (55% vs 17%; \( P = 0.0173 \)). Overall mortality before and during hospitalization was 32% and was higher in those with blunt TDI (\( P < 0.02 \)). By univariate analysis, female sex, bilateral TDI, older age, and higher ISS were associated with an increased risk of death. Advanced age and higher ISS both increased the risk of death in blunt TDI, whereas only higher ISS increased the risk of death in penetrating TDI.

**Discussion:** The data confirm TDI as an indicator of severe trauma as evidenced by a mean ISS of 36 in all patients. ISS was the strongest predictor of mortality. While those with blunt TDI had more severe associated injuries and thus higher ISS than those with penetrating TDI, the majority of those who died before hospital admission had penetrating injuries. Only one patient had a missed diaphragm injury compared to up to 15% of patients in the literature. The authors believe this is due to higher-resolution CT with coronal reconstructions. A high level of suspicion for TDI must be maintained in the severely injured; conversely, in severely injured patients found to have TDI, additional injuries must be carefully sought out, especially in those with advanced age.

**Conclusions:** Patients with TDI who have a higher ISS and advanced age are at the greatest risk of death.

**Reviewer's Comments:** The results of this study were largely intuitive. What was sobering, however, was that we are no better at diagnosing diaphragm injuries today than we were 10 years ago. It would be useful to know the diagnostic accuracy of CT with coronal reconstructions, laparoscopic/thoracoscopic approaches, or other novel diagnostics rather than using standard exploration to exclude injury. (Reviewer-Kathleen Christians, MD.)
Laparoscopic Distal Pancreatectomies--Better Than Open?

A Prospective Single Institution Comparison of Peri-Operative Outcomes for Laparoscopic and Open Distal Pancreatectomy.
Baker MS, Bentrem DJ, et al:
Surgery 2009; 146 (): 635-645

Laparoscopic distal pancreatectomy incurs comparable morbidity and shorter length of stay but inadequate lymphadenectomy compared to the open approach.

**Background:** Laparoscopic distal pancreatectomy (LP) is increasingly utilized for benign and premalignant neoplasms of the pancreas, but the technique has not been prospectively compared to open distal pancreatectomy (ODP).

**Objective:** To compare LP to ODP for neoplasms of the distal pancreas.

**Methods:** A prospectively accruing database at a single institution was queried for LP and ODP from January 2003 to May 2008.

**Results:** A total of 112 patients were identified. ODPs were performed in 85 patients, and LP was attempted in 28. One of the 28 patients was excluded after conversion to an open procedure for superior mesenteric vein injury. Those undergoing LP were more likely to be female and to have COPD and were less likely to have chronic pancreatitis. Operative times were similar (approximately 4 hours) as was tumor size. Estimated blood loss was one-third less for LP than for ODP (219 ± 31 mL vs 612.6 ± 81 mL; \( P < 0.01 \)). Four nodes were resected with LP compared to a mean of 10 with ODP (\( P = 0.04 \)). The ODP was more commonly done for adenocarcinoma and other solid malignancies. LPs exhibited a shorter length of stay (4 vs 8 days; \( P < 0.01 \)). Postoperative morbidity for both procedures was approximately 40%, including wound infections, intra-abdominal abscess, deep venous thrombosis, and pancreatic fistula. There were no differences for any complication between groups. There was 1 death from myocardial infarction in the ODP group and none in the LP group. The rate of fistula formation was the same between groups, but the LP group tended to have a higher absolute rate of pancreatic fistula formation (22% vs 14%; \( P = 0.38 \)). More grade A fistulas were noted in the LP cohort (7% vs 0%).

**Discussion:** The LP approach was not more resource intensive or hazardous. Postoperative morbidity was similar, as was the pattern of complications. The LP approach had a higher rate of pancreatic fistula, but clinically less significant grade A fistulas. LP length of stay was less than one-half that of ODP. The LP approach did yield fewer lymph nodes.

**Conclusions:** LP is a safe, effective means of managing premalignant neoplasms of the pancreatic body/tail. It provides comparable morbidity and a shorter length of stay, but fails to provide a comparable lymphadenectomy, which limits its use in adenocarcinomas.

**Reviewer's Comments:** This is a small series in which analysis is limited to a predetermined data set. The patient with a major intraoperative complication was removed from analysis. The LP approach is undoubtedly biased toward simpler cases as is common with the introduction of new techniques. Fistula rates are not comparable if the duct is handled differently in the 2 approaches. Similarly, the modalities are not interchangeable in the setting of malignancy if equivalent lymph node counts are not achievable. (Reviewer-Kathleen Christians, MD).

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Keywords: Distal Pancreatectomy, Laparoscopic Approach

Print Tag: Refer to original journal article
Selective preoperative biliary drainage is appropriate for patients with periampullary lesions of the pancreas.

**Background:** Preoperative biliary drainage (BD) is controversial in the management of patients prior to pancreaticoduodenectomy (PD).

**Objective:** To examine the effect of selective preoperative BD on perioperative resuscitation, morbidity, and mortality in PD patients.

**Design:** Retrospective review.

**Methods:** The records of patients undergoing PD for periampullary mass lesions from October 1, 2003, to May 31, 2008, at a single institution were reviewed based on the presence/absence of preoperative BD and the associated perioperative outcomes. Stented patients received 48 hours of broad-spectrum antibiotics, and those with bactobilia completed a 7-day course. Those without stents received a single dose of long-acting antibiotic on induction.

**Results:** 90 patients underwent PD, and 87% of cases proved malignant (63% adenocarcinomas). Six percent of patients had chronic pancreatitis. Two patients received preoperative gemcitabine, and 10 (11%) had vein resections. Sixty-three patients underwent preoperative BD (median duration, 39 days). Preoperative total bilirubin dropped from a mean of 13.8 to 3.0 mg/dL ($P < 0.001$) following BD. Positive biliary cultures were found in 88% (35 of 40) of those stented. The most prevalent organism was enterococcus (38%), but 12% of cases were polymicrobial, and 4% contained fungi. Morbidity and mortality rates were the same. The overall complication rate was 41%. The 30- and 90-day mortality rates were 4% and 8%, respectively. The leak/abscess/fistula rate was 9%, the reoperation rate (<90 days) was 8%, and the 30-day readmission rate was 9%. Median length of stay was 10 days. Preoperative bilirubin was approximately 2-fold higher in the nonstented group. A significantly greater number of stented patients had regional lymph node metastases (73% vs 32%) and more advanced staging (stage 2, 78% stented vs 35% unstented); however, R1 resections were similar. Increased estimated blood loss was noted with BD (625 vs 525 mL; $P = 0.03$). Reoperation was more common in the unstented group (15% vs 4%; $P = 0.02$), and reasons included bleeding (n=2), small-bowel obstruction (n=2), enterocutaneous fistula (n=2), and mesenteric infarct (n=1). **Discussion:** Intraoperative bile culture positivity (88%) did not translate into increased infectious complications. Intraoperative variables were the same except for 100 mL greater blood loss per stented case. The study did not suggest overall worse outcomes in stented patients.

**Conclusions:** Although preoperative BD may complicate intraoperative management and lessen complications of PD, only estimated blood loss and reoperation rates were significantly different. Selective preoperative BD is appropriate in the management of patients with periampullary lesions.

**Reviewer's Comments:** We commonly operate on stented patients and do not notice an increased level of difficulty or blood loss related to the stent. What affects the level of difficulty is the stage of the tumor, vascular involvement, and pancreatitis. A routine 7-day antibiotic course for a colonized biliary tree is hard to justify and does lead to opportunistic infections such as the 5 cases of *Clostridium difficile* seen in this series. (Reviewer-Kathleen Christians, MD).

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Keywords: Pancreaticoduodenectomy, Biliary Stents, Infection

Print Tag: Refer to original journal article
Background: There have been few randomized studies directly comparing the outcomes of gastric bypass and adjustable gastric banding.

Objective: To compare the outcomes, quality of life, and costs between laparoscopic gastric bypass and laparoscopic adjustable gastric banding.

Design: Randomized, controlled trial.

Methods: Over 5 years, 250 patients aged 18 to 60 years with a body mass index (BMI) of 35 to 60 kg/m² were randomized to gastric bypass or gastric banding. After exclusion, 111 patients underwent gastric bypass, and 86 underwent gastric banding. Outcomes included operative time, blood loss, hospital length of stay (LOS), morbidity, mortality, weight loss, quality of life, and cost. Loss of <20% excess weight or conversion to another weight loss operation defined treatment failure.

Results: Gastric bypass patients had a higher average BMI than did gastric band patients (47.5 vs 45.5 kg/m², respectively; \( P < 0.01 \)). Average age was higher in the gastric band group (45 vs 41 years, respectively; \( P < 0.01 \)). Mean operative time (136.9 ± 31.0 vs 68.2 ± 24.7; \( P < 0.01 \)) and mean intraoperative blood loss (80.9 ± 49.1 vs 21.9 ± 14.1; \( P < 0.01 \)) were higher in the gastric bypass patients than in the gastric banding patients. Hospital LOS was higher in the gastric bypass patients (3.1 ± 1.5 vs 1.5 ± 1.1; \( P < 0.01 \)). Early complications (<30 days) occurred in 21.6% of the gastric bypass group compared to 7% of the gastric band group (\( P < 0.01 \)). Late complications (>30 days) occurred in 38.7% of the gastric bypass patients compared to 11.6% of the gastric band patients (\( P < 0.01 \)). There were no life-threatening complications in either group. The 1-year mortality was 0.9% after gastric bypass and 0% after gastric banding. The percentage of excess weight loss was significantly higher for the gastric bypass patients at each year of follow-up; at 4 years, this rate was 68% ± 19% for gastric bypass and 45% ± 28% for gastric banding (\( P < 0.05 \)). For those with follow up, the rate of treatment failure was 16.7% for gastric band patients and 0% for gastric bypass patients. After gastric banding, more men than women failed treatment (33% vs 9%, respectively; \( P = 0.01 \)). Quality of life improved at 1 year postoperatively in both groups. Gastric bypass was more expensive than gastric banding ($12,310 vs $10,766, respectively; \( P < 0.01 \)).

Conclusions: Both gastric bypass and gastric banding are safe and effective. Gastric bypass resulted in better weight loss and was associated with a higher incidence of early and late complications. Treatment failure was associated with gastric banding but not with gastric bypass.

Reviewer's Comments: Given the rising popularity of these procedures, particularly the gastric band, studies such as this are desperately needed. Gastric band success or failure rests in the postoperative band adjustments; a 3- to 4-month interval for adjustments may not be adequately aggressive for maximal weight loss. Despite these criticisms, these findings further validate what most recognize: gastric bypass provides superior weight loss and a favorable risk-to-benefit ratio. (Reviewer-Todd A. Kellogg, MD).

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Keywords: Morbid Obesity, Weight Loss, Gastric Bypass, Gastric Banding

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Open Repair of Incisional Hernia Recurrences

Open Incisional Hernia Repair at an Academic Tertiary Care Medical Center.
Mohebali K, Young DM, et al:
Arch Surg 2009; 144 (September): 848-852

The recurrence rate after open repair of an incisional hernia recurrence is similar to that for initial repairs, suggesting that changes in techniques may be responsible.

Background: Incisional hernias are a common surgical problem for which many options for surgical repair exist. However, there is no clear consensus on which surgical techniques afford the fewest complications, including recurrence.

Objective: To describe the practice, surgical techniques, recurrence, and complication rates of a large consecutive series of patients who underwent open incisional ventral hernia repair at a single institution.

Design: Retrospective review of medical records.

Methods: From March 2003 through February 2008, 507 open ventral incisional hernia repairs were performed at a university tertiary care medical center. Incisional hernia etiology, type of procedure, age, gender, smoking history, body mass index (BMI), presence of diabetes mellitus or COPD, and any immunosuppressive therapy (including long-term corticosteroid use) were assessed by review of the medical records. Outcomes included hospitalizations and complications. Minor and major complications were included in the analysis, such as wound complications, bowel injury, postoperative fistula formation, and hospital-acquired pneumonia or urinary tract infection.

Results: A total of 507 hernia repairs were performed in 465 patients; 261 patients (51.5%) were women. The mean BMI was 30.7 ± 7.2 kg/m2, 17.8% were active smokers, 23.4% were diabetic, 4.2% had COPD, 36.7% were taking immunosuppressive medications, and 16.4% had previously undergone organ transplantation. In 23.5% of patients, repair was performed for a hernia recurrence. Mean follow-up was 40 months (range, 11.7 to 72.2 months). The overall postoperative complication rate was 38.1%. The overall hernia recurrence rate was 18.9%. Five patients (1%) died perioperatively. Patients who had undergone previous organ transplantation had a higher incidence of hernia recurrence than those who did not (16.3% vs 32.5%, respectively; P<0.001). Previous organ transplantation did not increase postoperative complications (36.9% vs 44.6%; P=0.19). Operation for hernia recurrence did not significantly increase the incidence of recurrence compared to those undergoing nonrecurrent hernia repair (21.0% vs 18.3%; respectively; P=0.52), although the complication rate was increased in this group (47.9% vs 35.1%; P=0.01).

Conclusions: The incisional hernia repair recurrence rate of 18.9% is comparable to that of other published series. The recurrence rate after open repair of an incisional hernia recurrence in this study is similar to that for initial repairs, suggesting that changes in technique may be responsible.

Reviewer's Comments: This study provides data on a large number of open incisional hernia repairs. However, what all this means is not clear. An important risk factor for recurrence—the size of the hernias—is unknown, and one gets the sense that apples are being compared to oranges. Moreover, it should not be assumed that all patients with symptomatic recurrences return to their primary institution for care. Finally, because there was no routine follow-up policy in place, the chance of missing asymptomatic recurrences is very high. (Reviewer-Todd A. Kellogg, MD).

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Keywords: Incisional Hernia, Open Repair, Mesh, Component Separation, Recurrence, Technique

Print Tag: Refer to original journal article
Correction factor is needed to achieve the greatest accuracy of glucose levels in critically ill patients.

**Background:** To investigate the accuracy of AccuChek glucose measurements in the critically ill population.

**Methods:** The study was performed in a 10-bed mixed medical/surgical ICU. The protocol for glucose control in existence in the ICU at the time the study was performed aimed for glucose levels of 81 to 135 mg/dL, with blood samples taken from arterial catheters every 4 hours. Paired samples were obtained, with one sample analyzed by the AccuChek Inform device, and one sample analyzed in the central laboratory. The sample analyzed by the AccuChek device was whole blood; the value obtained from the central laboratory was from serum. Association between the AccuChek and laboratory values was determined by the intraclass correlation coefficient. A correction factor was calculated by comparing the mean AccuChek value to the mean laboratory value. Modified error grid analysis and locally smoothed median absolute difference curves were also used to evaluate the results. Current industry standards maintain that 95% of measured values must be within 15 mg/dL for glucose values <75 mg/dL and within 20 mg/dL for glucose values ≥75 mg/dL.

**Results:** 239 paired glucose measurements were performed in 32 critically ill patients, with a median of 3 measurements per patient. The average patient age was 72 years, and the average APACHE II score was 18; 47% of patients were surgical, 50% had sepsis, 78% were ventilated, and 25% were receiving renal replacement therapy. When considering all 239 pairs to be independent, the mean difference between measurements was 11 mg/dL (CI, 9 to 13 mg/dL) with an intraclass correlation coefficient of 0.934. When considering the 32 pairs, the mean difference was 13 mg/dL (not significantly different). The intraclass correlation coefficient was 0.939. The mean difference was used to calculate a correction factor, allowing conversion of whole blood AccuChek results to serum results. This correction factor was 1.086. Glucose measurements by AccuChek were outside of the recommended ranges 9% of the time; after application of the correction factor, they were outside of the recommended ranges 6% of the time. Hematocrit level did not affect measurement accuracy. **Conclusions:** The accuracy of AccuChek in critically ill patients is acceptable but falls outside of industry standards 1% of the time.

**Reviewer's Comments:** One of the most interesting aspects of this article is that there is no consensus on how to measure accuracy. Although it appears that the AccuChek achieves this goal in large part, it is less than perfect. This is perhaps most important in the lower end of the range of values, particularly when extremely tight control is desired. Differing accuracies or the use of different methods of measurement may explain some of the different results that have been seen with wider application of intensive insulin therapy. (Reviewer-Karen J. Brasel, MD).

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Keywords: Glucose Measurement, Intensive Care, AccuChek

Print Tag: Refer to original journal article
Therapeutic Delay Reduces Survival of Rectal Cancer But Not of Colonic Cancer.


A therapeutic delay is not important for colon cancer but may decrease survival for rectal cancer.

**Objective:** To investigate the relationship of therapeutic delay on overall survival from colorectal cancer in Denmark.

**Design:** This was an observational study that enrolled all patients treated for colorectal cancer in a 3-county area in Denmark between January 2001 and July 2002.

**Methods:** Patients had to have a histologically confirmed adenocarcinoma of the colon or rectum; high-risk patients who underwent colonoscopic screening were excluded. Therapeutic delay was determined by a nurse-administered questionnaire that addressed the date of onset of specific symptoms, date of consultation with a physician, date of referral to a hospital for evaluation, dates of diagnostic procedures used to establish colorectal cancer, and date of initial treatment. Three types of delay were examined: total therapeutic delay, provider delay, and hospital delay. Hazard ratios for death were calculated separately for colon and rectal cancer. Ratios were adjusted for age (<66 years, 66 to 75 years, 76 to 80 years, and ≥81 years), tumor stage (stages I and II versus stages III and IV), and elective versus emergent operation for colon cancer. Delays were analyzed by delay <60 days and ≥60 days.

**Results:** 458 enrolled patients had colon cancer, and 252 had rectal cancer. Approximately 75% of patients with colon cancer and 83% of patients with rectal cancer had total therapeutic delays of ≥60 days. Median total therapeutic delay for colon cancer was 116 days, with a delay of 52 days attributable to the provider and 28 to the hospital. Survival after colon cancer was not influenced by a total delay of ≥60 days. The median total therapeutic delay for rectal cancer was 134 days, with 49 days attributable to the provider and 28 to the hospital. Survival after rectal cancer was negatively influenced by a total therapeutic delay of ≥60 days, with a hazard ratio for mortality of 1.69. Provider and hospital delay did not negatively affect survival. However, delay did not remain significantly associated with survival once stage was included in the multivariate analysis.

**Conclusions:** Total therapeutic delay of ≥60 days decreases survival from rectal cancer but not from colon cancer.

**Reviewer's Comments:** At first glance, the omission of stage from the initial multivariate analysis seems a bit simplistic or unrealistic. After all, stage is clearly an important prognostic factor. However, the argument is that delay results in patients presenting at a later stage; therefore, the 2 are linked. Clearly, the efficient treatment of patients with cancer has important psychological connotations. However, overstatement of the relationship of therapeutic delay may lead to unreasonable patient fears and unreasonable demands on the health care system. (Reviewer-Karen J. Brasel, MD).

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Keywords: Colorectal Cancer, Delay, Survival

Print Tag: Refer to original journal article
Objective: To report on the effectiveness of simulation in reducing the complications related to central line insertion.

Methods: This was a pre-/post-intervention study using historical controls, with the subjects being internal medicine and emergency medicine residents rotating on the medical ICU. During the pre-intervention phase, all residents were queried daily about catheter placements. They were asked about the number of attempts, arterial punctures, pneumothoraces, and procedural confidence. The educational simulation intervention included a 1-hour video and 3 hours of simulator practice with individualized feedback; this included the use of ultrasound. A written and skills-based pre-test and post-test were administered, and the residents were also questioned daily about catheter insertions. A minimum passing score for clinical skills mastery, determined by expert consensus, was defined; achieving this score was required for independent catheter placement. Comparisons between the pre- and post-tests for the simulator group were used, as were comparisons between the historical control group and the simulation group with respect to quality indicators and procedural confidence. The primary quality outcome measures combined internal jugular and subclavian catheter attempts; femoral catheters, as well as catheters not inserted by the resident group under study, were excluded from analysis.

Results: There were 27 residents in the historical control group and 76 residents in the simulator group. During the study period, 145 internal jugular and 19 subclavian catheters were placed (mean, 1.6 catheter insertions/resident). Simulation-trained residents reported fewer needle sticks, arterial punctures, and catheter adjustments, as well as a higher success rate. The mean number of needle sticks was 1.74 in the traditionally trained group and 1.25 in the intervention group. There was no difference in the pneumothorax rate between groups (2% in both groups). The intervention group improved significantly from pre-test to post-test in both written and clinical performance. Written test performance improved from 70.1 to 85.3, whereas clinical skills performance improved from 50.6 to 93.9 for internal jugular catheter placement and from 26.8 to 91.5 for subclavian catheter placement. There was no difference in confidence between the historical group and the intervention group, and no correlation between procedural confidence and any of the quality indicators.

Conclusions: A simulation-based program increases resident skill level and decreases complications in the placement of central venous catheters.

Reviewer’s Comments: One of the quality indicators was the number of needle sticks; the complication rate is significantly higher when the number of attempts is >3. However, the number was significantly <3 even in the historical group, perhaps explaining why the number of actual complications between the traditional and historical group was not significantly different than the number in the intervention group. (Reviewer-Karen J. Brasel, MD).

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Keywords: Simulation, Central Line, ICU, Patient Safety

Print Tag: Refer to original journal article
Surgery for chronic pancreatitis can improve quality of life and be performed with moderate mortality in appropriately selected patients.

**Background:** Pancreatic resection can ameliorate the sequelae of chronic pancreatitis (CP) in selected patients, but the perceived risk limits its use.

**Objective:** To compare in-hospital mortality of pancreatectomy for CP with mortality after pancreatectomy for benign and malignant tumors of the pancreas.

**Design:** Retrospective observational study.

**Methods:** The Nationwide Inpatient Sample (NIS) database was queried for CP and pancreatic neoplasm from 1998 to 2006. Individual hospital annual pancreatectomy totals were calculated and the hospitals were assigned to low (1-6), medium (7-26), or high volume (>27) categories. Tracked comorbidities included renal failure, congestive heart disease, diabetes, and liver failure.

**Results:** Of 11,048 resections, indications were as follows: 64.2% malignant, 17.1% benign, and 18.7% CP. Most resections were performed at large (77.2%) teaching (75.4%) hospitals. Patients with malignancy were older and more likely to undergo proximal pancreatectomy (PP) [78.8%] compared with benign (30%) and CP (46.7%). Patients with benign neoplasms were more likely to undergo distal pancreatectomies (DP). Increasing age revealed worsened survival (<60 years, 2.3% mortality vs >80 years, 10.2% mortality). Nonteaching hospital operations had increased risk of in-hospital death (7.0 vs 3.6; \( P < 0.0001 \)), and hospital size was inversely related to mortality (small, 6.3%; medium, 5.5%; large, 4.1%). Low-volume center operations had a 7.3% risk of in-hospital death (medium, 4.5%; high, 1.8%). CP had lower (2.2%) in-hospital mortality versus malignancy (5.9%). PP carried a higher mortality rate (5.6%) versus DP (2.1%). PP for cancer carried a higher risk of in-hospital mortality compared with PP for benign tumors or CP (6.4% vs 3.4% and 2.8%, respectively).

Patients undergoing DP for cancer had higher mortality rates (3.6%) compared to benign (0.9%) and CP (1.5%). In multivariate analysis, females had better survival than males (OR, 0.74), increasing age was associated with worse survival (OR, 0.99; \( P < 0.0001 \)), and patients operated on at low-volume hospitals were 3 times more likely to die than at high-volume centers. Patients with CP had lower mortality rates after resection than those with malignancy (OR, 0.55) and similar to benign (OR, 0.55). **Discussion:** Resection for CP yielded an overall mortality of 2.2% independent of the operation performed. A sizeable difference was noted between in-hospital mortality after PP for CP (2.8%) and those with malignancy (6.4%). Operations at low-volume centers incurred 4 times the mortality risk versus the same operations at high-volume centers.

**Conclusions:** Pancreatectomy for CP has lower in-hospital mortality than those performed for malignancy and similar rates as those for benign. Pancreatic resection for CP improves quality of life, carries a moderate mortality risk, and should be considered.

**Reviewer's Comments:** The study is based on an administrative database missing some key comorbidities and anatomical variables. Nevertheless, operations for CP can be simpler (firm pancreas, dilated duct, younger/healthier patients) if timed correctly. Excessive mortality rates in low-volume centers support regionalization of care. (Reviewer-Kathleen Christians, MD).

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Keywords: Pancreatitis, Pancreatic Cancer, Morbidity, Mortality

Print Tag: Refer to original journal article
Most lower GI bleeds will stop, but when they don't, colonoscopy is the diagnostic and therapeutic test of choice.

**Objective:** To elucidate the etiology, effectiveness of diagnostic and therapeutic modalities, and outcomes in patients with acute lower gastrointestinal bleeding (LGIB).

**Design:** Retrospective review.

**Participants/Methods:** Patients diagnosed with LGIB from January 1988 to December 2006 were reviewed. Patients underwent at least 1 colonoscopy with/without an upper endoscopy. Push enteroscopy was done if both upper and lower scopes failed to localize a source.

**Results:** LGIB occurred in 504 patients from 1988 to 1997 compared to 608 from 1998 to 2006. Age was similar, male to female ratio was 1.2 to 1.3:1, and major comorbidities were the same except for hypertension (34% vs 53%; P <0.01). Daily aspirin and Coumadin use increased (7.6% to 16.6% and 1.6% to 7.2%, respectively) and NSAID use fell. Upper GI endoscopy was done in 305 and 385 patients, nuclide imaging in 15 and 12, upper GI contrast studies in 11 and 15, and angiography in 8 and 14 patients, respectively. Diverticular bleeding was most common (29% and 37%; P <0.01). Hemorrhoids and neoplasia were the next 2 most common diagnoses in both periods. Colitis was more common currently (4.8% vs 10.7%; P <0.001). IBD was similar, and vascular ectasias declined (4.8% to 2.3%; P <0.05). Spontaneous cessation of LGIB was similar (75.4% vs 78.9%). Endoscopic successes increased (1.0% to 4.4%), resulting in less operations (22.6% to 16.6%; P <0.02). Emergency operations were needed in 3.4% and 4.8% of patients including 10 and 22 (P <0.01) total abdominal colectomies (TAC). Mortality was 9.4% in patients undergoing emergency operations and 3.3% of those undergoing elective surgery. A total of 57 LGIB readmissions occurred and most were diverticular (51.6% and 53.8%). Overall mortality was 7.2% including 5.8% and 8.3% for the 2 periods (most due to multisystem organ failure or malignancies unrelated to LGIB). **Discussion:** Barium enemas missed the diagnosis and compromised further diagnostics (18 of 66 normal). Only 41% of nuclear scans were positive and none specified the bleeding location. Half of 22 angiograms were positive and only 2 were therapeutic. Therapeutic endoscopy was quite successful. Patients needing >4 units of blood in the first 24 hours had at least 50% chance of refractory bleeding usually necessitating TAC. Readmissions for recurrent bleeding occurred in 57 patients.

**Conclusions:** Diverticulosis, hemorrhoids, and cancer are the most common causes of LGIB, and diverticular bleeds cause the highest recurrence. Colonoscopy is diagnostic, is being used more effectively, and results in less need for operative intervention.

**Reviewer’s Comments:** With an aging population and increased use of anticoagulation, the approximately 25% who fail to spontaneously resolve their LGIB will be more challenging to manage. Colonoscopy is the test of choice. Barium enemas and nuclear imaging are not helpful. Surgery for refractory bleeding is highly likely for those requiring >4 units of blood in <24 hours. (Reviewer-Kathleen Christians, MD).

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Keywords: Diverticular, Bleed, Colonoscopy, LGIB

Print Tag: Refer to original journal article
A stepwise approach to fistula management includes patience when embarking on surgical correction.

**Background:** Enteric fistulas remain a source of morbidity and mortality for patients after abdominal surgery. A number of principles exist attempting to define and manage this surgical complication.

**Objective:** To review management principles for enteric fistulas.

**Design:** Literature review.

**Methods:** Enterocutaneous fistulas represent an abnormal communication between the bowel and skin. They are associated with sepsis, fluid and electrolyte disturbances, and malnutrition. They are often defined in terms of output: <200 mL/day is low and >500 mL/day is high. The location is also used to define the fistula—deep drains into the peritoneal cavity and superficial drains on top of a granulating bed or skin. One third of enteric fistulas will close spontaneously with supportive care only. The most common reasons for failure include distal obstruction, short tracts, infection, or malignancy.

**Results:** 3 phases of management are described. The first is recognition and stabilization. The fistula is controlled, fluid and electrolyte balance restored, infection treated, and nutrition established. Vacuum-assisted devices have helped in the initial control. Phase 2 involves definition of the fistula and decision making. Imaging studies help define the fistula and any associated problems such as distal obstruction. Since closure can occur in up to 70% of fistulas, careful assessment of outputs and wound management are necessary in this stage. Phase 3 is the operative intervention when closure does not occur. This phase is usually not reached for 6 to 12 weeks of supportive care. Restoring continuity requires resection of the fistula and identifying normal bowel for the anastomoses. Care is necessary to avoid further bowel damage, which could lead to a new fistula. Newer surgical approaches include covering inflamed bowel with a biologic dressing and placing bioprosthetic plugs into fistula tracts.

**Conclusions:** These principles of fistula management should provide a reasonable chance of a successful outcome.

**Reviewer's Comments:** I am sure everyone can remember at least 1 patient with an enteric fistula that they would like to forget. I have a couple. It is amazing how often we seem to forget the principles outlined in this paper. I just love when the report at our morbidity and mortality conference is that the "fistula was closed with suture." I know we will get to talk about these principles next week when we hear that the fistula has opened again. The plug techniques can be helpful, although we have not had success using them for deep fistulas as recommended by the authors. We do find them extremely helpful with a superficial fistula that has a long tract and has failed to close despite supportive care. (Reviewer-John A. Weigelt, MD).
Bariatric Surgery Reduces Mortality in Obese Patients

Impact of Obesity and Bariatric Surgery on Survival.

Christou NV:


Relative risk of death could be directly related to the percentage of weight loss after surgery.

Background: Bariatric surgery is currently the only intervention that provides sustained weight loss in severely obese patients. Medical management may work intermittently, but recidivism is common despite compliant patients. Weight loss after bariatric surgery also resolves many obesity-associated diseases including diabetes, hypertension, and sleep apnea. The effect bariatric surgery has on survival is also becoming clearer.

Objective: To review the effect of bariatric surgery on survival.

Design: Literature review.

Methods: 5 centers have reported long-term survival results using control populations. In total, 15,000 patients who had bariatric surgery were included and compared to controls. The articles were reviewed for survival data between obese patients having bariatric surgery and those who did not. The primary outcome measure was mortality. Correlation between weight loss after surgery was correlated with risk of mortality.

Interventions: 2 studies performed Roux-en-Y gastric bypass, 1 used various procedures, and 2 used adjustable banding.

Results: 1 study calculated the relative risk reduction for morbidity and mortality after bariatric surgery. Risk reduction for patients having weight loss surgery compared to controls was noted for malignant disease, diabetes, respiratory conditions, and infectious disease. There was an increased risk for digestive disorders among patients having bariatric surgery. Another study showed a 40% reduction in mortality with a mean follow-up of 7 years. A 5-year follow-up in another study showed a 60% mortality reduction. When weight loss was plotted against risk reduction of death, the association appeared linear with a relative risk reduction of 0.61.

Conclusions: Bariatric surgery reduces risk of mortality.

Reviewer's Comments: Bariatric results were judged first by weight reduction, then reduced morbidity from obesity-associated diseases, and now mortality. The 5 studies reviewed all concur. Weight loss as a result of bariatric surgery is associated with an overall risk reduction for mortality. This reduction appears to be directly related to the amount of weight loss, although this relationship will need further elucidation. (Reviewer-John A. Weigelt, MD).

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Keywords: Bariatric Surgery, Survival

Print Tag: Refer to original journal article
Residents Have Mixed Feelings About Surgical Training


Yeo H, Viola K, et al:

JAMA 2009; 302 (September 23): 1301-1308

Satisfaction and stress vary by sex and training year as reflected in this survey of general surgery residents.

Background: General Surgery training programs continue to evolve under many external and internal pressures—work hours, changing resident profiles, increasing pursuit of fellowships, and an expected shortage of general surgeons for the future. The perceptions of the trainees concerning their training programs are either unknown or limited to individual programs.

Objective: To survey the attitudes of current general surgery residents.

Design: Cross-sectional study of all general surgery residents who took the American Board of Surgery In-Training Examination (ABSITE) in January 2008.

Participants: 4402 residents completed the survey, representing 82% of the categorical general surgery residents.

Methods: An electronic survey was given to all categorical general surgery residents after the ABSITE. The survey was developed after interviewing residents who had recently completed their training. An initial 73-question survey was reduced to 52 items. Specific questions attempted to identify reasons for pursuing surgery, for pursuing fellowships, and ethical dilemmas faced during training. Demographic data were also collected.

Interventions: The survey was designed as 5 Likert responses. Data were analyzed by postgraduate year, sex, race, marital status, and age.

Results: The majority of trainees (85%) were satisfied with their training, but 15% felt it was too long. Overall, 30% of trainees felt training placed stress on their family life. A similar number worried that they would not feel comfortable performing independently after training. Specialty training was perceived as necessary by 64%. In total, 19% of women and 14% of men considered leaving their residency during the prior year. Women also felt that the program was less supportive than did men. Lowest satisfaction levels among residents occurred during the PGY2 and PGY3 years. PGY2 residents also felt the least able to turn to faculty for help.

Conclusions: Satisfaction and stress are reflected in this survey of general surgery residents and these vary by sex and training year.

Reviewer's Comments: General surgery training programs are changing in front of our eyes. Women account for approximately 50% of trainees and the differences between men and women in this survey is clear. How this will change our training programs is unclear, but it seems unlikely that change will not occur when considering this changing trainee population. Trainee perceptions as they proceed through the program may not be new, but are better defined in this survey. How we will manage these perceptions remains to be seen. Finally, the pursuit of fellowship training confirms what many of us believe. The pursuit is really for a perceived better career and possible increased training before embarking on one's career. This is a fascinating, well-done study that I am sure will be discussed in many programs. (Reviewer-John A. Weigelt, MD).

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Keywords: General Surgery Training, Attitudes of Residents

Print Tag: Refer to original journal article
Mastectomy among high-risk women for cancer prevention appears to be relatively uncommon, but the use of contralateral mastectomy in women with breast cancer is increasing.

Objective: To describe the trends in use of prophylactic mastectomy over a 10-year period.

Methods: All women in New York State undergoing a mastectomy between 1995 and 2005 were identified using administrative discharge data. ICD-9 codes were used to identify type of surgery and indications for surgery. These data were linked using a unique identifier with the New York State Cancer Registry to identify laterality of mastectomy, in situ versus invasive cancer, and histology. This same unique identifier was used to identify subsequent admission for mastectomy. Prophylactic mastectomy was defined as a mastectomy that used the specific ICD-9 code for prophylactic mastectomy, which was first used October 1994, as well as women who had prophylactic mastectomy identified in the discharge database, bilateral mastectomy with lobular carcinoma in situ (LCIS), bilateral or unilateral mastectomy without a history of cancer, bilateral mastectomy with unilateral breast cancer, and prophylactic mastectomy described in a text field of the cancer registry. Women with a personal history of breast cancer who underwent prophylactic contralateral mastectomy were differentiated from women without a personal history of breast cancer who underwent bilateral prophylactic mastectomy. Women with LCIS alone were not considered to have a personal history of breast cancer. All mastectomies done in women with benign breast conditions were considered to be prophylactic.

Results: 63,556 women underwent therapeutic mastectomy during the study period, and 6275 women underwent prophylactic mastectomy. In total, 1196 of these 6275 women had no personal history of breast cancer, 307 patients had an indication of genetic risk, and 235 women had LCIS. Overall, 5079 women underwent a contralateral prophylactic mastectomy; 4235 had invasive cancer and 829 had ductal carcinoma in situ in the affected breast. The number of operations done in women without a personal history of breast cancer was relatively stable during the study period; 106 in 1995 with a slight increase to 128 in 2005. There was a significant increase in the number of operations done in women with a personal history of breast cancer, increasing from 295 in 1995 to 683 in 2005. The overall number of therapeutic mastectomies decreased over the same time period, from 6786 in 1995 to 4936 in 2005.

Conclusions: Mastectomy for cancer prevention is relatively uncommon, but contralateral mastectomy in women with a personal history of cancer is increasing.

Reviewer’s Comments: The authors combine the use of the state discharge database and the state cancer registry using a unique identifier in order to study the rate of prophylactic mastectomy over time. Despite the increased media attention, the rate of prophylactic mastectomy in women at high risk without a personal history of cancer has not changed over the last 10 years. This contrasts to women with breast cancer who are choosing contralateral prophylactic mastectomy at an increasing rate. (Reviewer-Karen J. Brasel, MD).
Early identification and treatment of conditions leading to multiple organ failure, avoiding unnecessary sedation and excessive blood glucose levels, promoting early mobilization, and weighing the risks and benefits of corticosteroids may reduce the incidence and severity of ICU-acquired weakness.

**Objective:** To describe risk factors for ICU-acquired weakness (also known as critical illness myopathy).

**Design:** Review article. **Discussion:** The definition of intensive care unit-acquired weakness is variable. It is primarily discussed in relation to extremity muscles rather than diaphragmatic muscle, and although there may be similar effects in both, much less is known about effects on the diaphragm. Electrophysiological testing shows a decrease in compound muscle action potential with spontaneous electrical activity. However, many studies use a Medical Research Council score determination, potentially more clinically relevant than the results of electrophysiological testing that may not directly correlate with weakness. Multiple organ failure is one of the most common risk factors for ICU-acquired weakness. Other risk factors include muscle immobilization, hyperglycemia, corticosteroids, and use of neuromuscular blockers. Muscle strength normally decreases by 1% per day of strict bed rest. This, combined with the known association between duration of immobility and ICU-acquired weakness, suggests that early mobilization or mobility therapy with physical and/or occupational therapy could prevent subsequent weakness. Mobility therapy programs increase the likelihood of patients returning to functional independence, increase the likelihood they will be able to perform activities of daily living, and increase the walking distance at hospital discharge. Programs also significantly decrease the number of days with documented delirium. Despite the benefits of these programs, they do not increase Medical Research Council scores and may therefore just improve patients’ ability to live with weakness rather than prevent the syndrome or disease from occurring. Intensive insulin therapy is known to decrease weakness as measured by electrophysiological testing, but effect on clinical muscle weakness is unknown. Less is known about the specific effects of corticosteroids and neuromuscular blockers independent of the effect of neuromuscular blockers on mobility.

**Conclusions:** The authors suggest that early identification and treatment of conditions leading to multiple organ failure, avoiding unnecessary sedation and excessive blood glucose levels, promoting early mobilization, and weighing the risks and benefits of corticosteroids may reduce the incidence and severity of ICU-acquired weakness.

**Reviewer’s Comments:** This disease is extremely heterogeneous, and is difficult to distinguish from the general deconditioning attributed to patients with long ICU stays. A more well-accepted definition, with a standard scoring system that is easily applied, would help in both the clinical and research arenas. Regardless, the benefits of early mobilization and mobility therapy are such that they should be universally adopted independent of known effect on ICU-acquired weakness. (Reviewer-Karen J. Brasel, MD).
The risk of requiring chronic dialysis is increased in patients experiencing acute renal injury requiring in-hospital short-term dialysis. However, all-cause mortality is not increased in these patients.

Background: The impact of short-term dialysis for the treatment of in-hospital acute renal injury on long-term outcome such as dialysis dependence and mortality is unknown.

Objective: To assess the risk of chronic dialysis and all-cause mortality in patients requiring short-term in-hospital dialysis for an episode of acute renal injury.

Design: Retrospective matched cohort study.

Methods: Administrative data were used to identify all adult patients in Ontario, Canada, who were diagnosed with acute renal injury and required in-hospital dialysis between July 1, 1996, and December 31, 2006. Only patients who survived without the need for dialysis for at least 30 days after discharge were included. The matched cohort control group consisted of patients who did not develop acute renal injury during index hospitalization that were similar in age (±5 years), gender, previous history of renal disease, need for mechanical ventilation, and a propensity score for developing acute renal injury (based on a comprehensive number of factors including comorbid disease, interventions, and visits to a physician or emergency department). The eventual need for chronic dialysis and all-cause mortality were the primary and secondary outcomes, respectively.

Results: 3769 adult patients were identified who had acute renal injury requiring in-hospital dialysis and who had at least 1 match identified. The matched control cohort consisted of 13,598 patients with neither acute renal injury nor dialysis. Median follow-up was 3 years (range, 1 to 5 years). The 2 cohorts were similar in age (mean age, 62 years), gender (40% women), and comorbid conditions (Charlson Comorbidity Index score). Compared to the non-acute renal injury matched cohort, more patients in the acute renal injury group had preexisting chronic renal disease ≤5 years (28.0% vs 27.0%) and underwent mechanical ventilation (47.0% vs 42.0%) and cardiac surgery (11.5% vs 10.0%). The incidence rate of chronic dialysis was 2.63 per 100 person-years among individuals with acute kidney injury requiring dialysis and 0.91 per 100 person-years among control participants (adjusted HR, 3.23; 95% CI, 2.70 to 3.86). All-cause mortality rates were 10.10 and 10.85 per 100 person-years, respectively (adjusted HR, 0.95; 95% CI, 0.89 to 1.02).

Conclusions: The risk of requiring chronic dialysis is increased in patients experiencing acute renal injury requiring in-hospital short-term dialysis. However, all-cause mortality is not increased in these patients.

Reviewer's Comments: The findings of this study and others suggest that post-discharge specialized care should focus on preventing chronic renal failure in these patients. A subgroup analysis evaluating the cause and degree of renal injury would help to further refine these findings. For context, a previous, similarly designed (although not identical) study demonstrated a 7-fold increased risk of chronic dialysis and a 2-fold increased mortality in these patients. (Reviewer-Todd A. Kellogg, MD).
Routine Histopathology of Hemorrhoid Does Not Alter Postop Management

Value of Routine Histopathologic Examination of Three Common Surgical Specimens: Appendix, Gallbladder, and Hemorrhoid.

Lohsiriwat V, Vongjirad A, Lohsiriwat D:


There is clinical value in the routine histopathologic examination of the gallbladder and appendix, but not of hemorrhoid specimens.

**Background:** The routine histopathologic evaluation of certain surgical specimens is of dubious clinical value. The contribution of histopathologic examination of the more common general surgical specimens to clinical care has not been determined.

**Objective:** To assess the need for a routine histopathologic examination of 3 common surgical specimens (appendix, gallbladder, and hemorrhoid) and its impact on diagnosis, prognosis, and further treatment.

**Design:** Retrospective review.

**Methods:** The histopathologic reports of patients undergoing appendectomy, cholecystectomy, or hemorrhoidectomy between 1998 and 2006 were reviewed. During this time, all surgical specimens were routinely sent for histopathologic evaluation by policy. Patients who had a clinical diagnosis of malignancy or a clinical suspicion of malignancy were excluded. Discrepancies between surgeon preoperative diagnosis and final pathologic diagnosis were determined and the impact of the unexpected pathologic diagnosis on postoperative clinical management was evaluated.

**Results:** 4545 appendectomy specimens were examined. Histopathology showed acute inflammation in 4120 (90.6%) and was normal in 381 (8.4%). Unexpected pathologic changes were noted in 44 specimens (0.97%), 15 of which were benign neoplasms. Non-neoplastic findings were: ova or parasites in 16 (0.35%), mucocele in 7 (0.15%), *Mycobacterium tuberculosis* in 3 (0.07%), and endometriosis in 1 (0.02%). Malignant neoplasms were present in 2 specimens: lymphoma in 1 (0.007%) and a primary appendiceal malignancy in 1 (0.007%).

Eight (18%) of 44 unexpected pathologic findings impacted the postoperative treatment strategy. Of 4317 cholecystectomy specimens, unexpected pathologic gallbladder findings were found in 88 (2.04%). Gallbladder cancer (GBC) was found in 24 specimens (0.56%), metastatic disease in 3 (0.07%), and adenoma in 16 (0.37%). The median age of the patients with GBC was 68 years (range, 57 to 84 years). Among these 24 GBC specimens, 8 (33%) had a clinical presentation of empyema of the gallbladder. Diagnosis of empyema and age >60 years were 2 significant risk factors for an incidental GBC (OR, 11.0; 95% CI, 4.2 to 29.2 and OR, 6.2; 95% CI, 2.1 to 8.2, respectively). Further management was necessary in 24 (27.3%) of 88 cases of incidental pathologic gallbladder findings. Of 914 hemorrhoidectomy specimens, there were 13 (1.4%) unexpected histologic abnormalities and none altered postoperative management.

**Conclusions:** There is clinical value in the routine histopathologic examination of the gallbladder and appendix. Unexpected gallbladder cancer was associated with gallbladder empyema and age >60 years. There appears to be no clinical value in routine histopathologic evaluation of hemorrhoid specimens.

**Reviewer's Comments:** One perspective not addressed in this study is the medicolegal perspective, perhaps because this study was generated outside the United States. In practice, we should all try to use common sense to help reduce cost. Perhaps hemorrhoids are a good place to start. (Reviewer-Todd A. Kellogg, MD).

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Keywords: Histopathologic Evaluation, Appendix, Gallbladder, Hemorrhoids, Malignancy, Management

Print Tag: Refer to original journal article
Although the preoperative use of MRI has changed surgical management, there is no evidence that it has succeeded in improving surgical management or patient outcomes.

**Background:** Preoperative MRI scanning for newly diagnosed, early stage (stage I and II) breast cancer is being used in North America and parts of Europe based on assumptions about MRI rather than clinical evidence.

**Design:** Meta-analysis/review of the literature. **Discussion:** Breast MRI detects 16% (interquartile range, 11% to 24%) more cancer foci than traditional staging methods. This has led clinicians to assume that better detection and delineation of tumor margins would improve surgical planning or precision and reduce recurrences by eliminating disease that would have otherwise been missed. Pooled estimates from 12 trials reporting a change in the surgical management of 1908 candidates for breast conservation surgery based on MRI detection of additional malignant lesions indicated 11.3% (95% CI, 6.8 to 18.3) had more extensive surgery than initially planned. Based on MRI findings, rates for change from a breast conservation strategy to mastectomy ranged from 2.4% to 22.2%, and change to wider excision was seen in an additional 3.2% to 13.9%. These estimates also showed that 8.1% (95% CI, 5.9 to 11.3) of those eligible for breast-conserving surgery underwent mastectomy because of MRI-only detection of additional disease and 5.5% (95% CI, 3.1 to 9.5) had more aggressive surgery than was necessary (wider excision or mastectomy) because of histologically confirmed false-positive findings on MRI, including 1.1% (95% CI, 0.3 to 3.6) who were converted to mastectomy. One meta-analysis suggested that there is 1.0 false positive for every 1.9 true positives detected by MRI. Only 3 studies have examined the impact of preoperative MRI versus no preoperative MRI on the incidence of reoperation, re-excision, and positive margins. There was no significant benefit of preoperative MRI ($P = 0.17$; $P = 0.2$; and $P = 0.77$, respectively). With regard to long-term outcomes, one retrospective study suggested a lower local recurrence rate with preoperative MRI (1.2% vs 6.8% at 40 months; $P < 0.01$), but another indicated no difference in local recurrence at 8 years (3% vs 4%; $P = 0.51$), local-only first site of recurrence (3% vs 4%; $P = 0.32$), or overall survival (86% vs 87%; $P = 0.51$). Similar arguments apply to use of MRI for contralateral breast assessment.

**Conclusions:** Although the preoperative use of MRI has changed surgical management, there is no evidence that it has succeeded in improving surgical management or patient outcomes.

**Reviewer’s Comments:** Conventional staging with clinical assessment and mammography misses additional foci of cancer in 20% to 60%. However, clinical trials have shown that breast conservation therapy nonetheless produces the same survival rates as mastectomy, and although the long-term risk of local recurrence is higher than with mastectomy, it is still quite low, typically 0.5% to 1.0% per year. Thus, diagnostic techniques that reduce a woman’s chances of being a candidate for breast conservation therapy should be based on solid evidence of improved clinical outcomes. (Reviewer-Todd A. Kellogg, MD).