A higher target glucose for critically ill patients appears to improve survival rates compared to maintaining tight glucose control.

Background: Better glucose control has been linked to better outcomes and reduced infections in some patient populations. Fear of hypoglycemic complications continues, and some physicians have been slow to adopt strict glucose control for critically ill patients.

Objective: To compare outcomes in critically ill patients when either tight or conventional glucose control is used.

Design: Prospective, multicenter multinational study.

Participants: 6104 patients were randomized, and 6022 were evaluable at 90 days; 3010 patients had intensive insulin therapy and 3012 had conventional insulin therapy.

Methods: Tight glucose control called for blood sugar levels to be controlled between 81 and 108 mg/dL. Conventional glucose control tried to achieve glucose levels of <180 mg/dL. All patients were expected to have at least a 3-day stay in the ICU. Patients were followed until ICU discharge, death, or until 90 days had passed. Primary end point was mortality at 90 days. Patients were also stratified by type of disease and interventions including medical, operative, trauma, sepsis, and Apache score. Hypoglycemia was defined as ≤40 mg/dL and was recorded for both groups. A web-based algorithm was used by all participating institutions to administer insulin.

Results: Mortality in intensive insulin patients was 27.5% compared to 24.9% for conventional insulin patients. This difference was statistically significant, with a number to harm of 38. These results were the same for all types of patients. Cardiovascular causes of death were more common among tight glucose control versus conventional glucose control patients. Hypoglycemia was more common among tight glucose control patients (7.0%) versus conventional glucose control patients (0.5%).

Conclusions: A higher target glucose for critically ill patients improved survival compared to patients with tight glucose control.

Reviewer's Comments: Tight glucose control has not been universally adopted, and this article will make it even less likely to be adopted. This well-done study certainly casts doubt on tight glucose control with 2 adverse outcomes: increased mortality and increased hypoglycemia. Glucose levels were around 110 mg/dL in tight control patients and 145 mg/dL in conventional control patients. We have spent a lot of time and energy trying to achieve our local goals of 90 to 130 mg/dL for the last 3 years. One now has to wonder if this time and energy were worth it. As we go forward, I am sure many of us will look at what we are doing and rethink how tight our glucose control should be for our critically ill patients. We also use a web-based algorithm to administer insulin, which has probably been the best result of improving glucose control in our hospital. It allows everyone to use the same approach to a very common problem and thus encourages decreased variation in our patient care, which is never bad. (Reviewer-John A. Weigelt, MD).

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Keywords: Glucose Control, Critically Ill Patients

Print Tag: Refer to original journal article
Hyperbaric oxygen treatments do not reduce the number of debridements for patients with a necrotizing infection.

**Background:** Necrotizing infections continue to be challenging. While numerous different ways to classify these infections exist, treatment usually consists of multiple debridements, antibiotics, and supportive care. Use of hyperbaric oxygen (HBO) remains an adjunctive treatment that some believe helps and others do not.

**Objective:** To determine the value of HBO when treating patients with necrotizing soft tissue infections.

**Design:** Retrospective study.

**Participants:** 78 patients with necrotizing soft tissue infections.

**Methods:** Patients were all treated surgically at 2 tertiary centers in the same geographic area. One center used HBO to treat 48 patients, and the other center did not while treating 30 patients. The 2 groups of patients were compared for demographics, number of debridements, duration of antibiotics, hospital length of stay, and outcome. The primary outcome was survival and number of debridements required. HBO was used as 3 treatments in the first 24 hours at 3 atmospheres for 90 minutes at 100% oxygen. Twice-daily treatments were continued until the infection was resolved. Both groups had surgical explorations and debridements.

**Results:** The only demographic difference in patients was a higher incidence of solid organ transplant patients in the non-HBO group. Of patients, 36% had multiple organisms isolated, with no difference in bacteria isolated, between groups. Duration of antibiotic use was no different. Median number of debridements was higher in HBO patients (3) compared to non-HBO patients (2). Mortality was 8% in HBO patients and 13% in non-HBO patients, which was not statistically different. Hospital stays were also no different.

**Conclusions:** Adjunctive HBO did not alter outcomes in patients with necrotizing soft tissue infections.

**Reviewer’s Comments:** Early recognition, early debridement, adjunctive antibiotics, redebridement, proper nutrition, and supportive care are the mainstays of treating necrotizing soft tissue infections. HBO is always mentioned, but few data support its use. This report also demonstrates no survival advantage and even no advantage in the number of debridements used. Alas, this is another retrospective study with all their problems. One difference is the proximity of 2 medical centers and the fairly strong assumption that surgical and medical treatments were similar. However, could the more frequent use of debridements with HBO indicate a willingness to forgo early aggressive debridement, hoping that HBO will limit the necrosis over time? It would be nice to have some estimate of the amount of tissue debrided in each center, but this is far beyond the capabilities of this retrospective study. We are left again with an incomplete assessment regarding HBO and the role it might play in patients with a necrotizing soft tissue infection. Are you a believer or not? (Reviewer-John A. Weigelt, MD).

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**Keywords:** Necrotizing Soft Tissue Infections

Print Tag: Refer to original journal article
Total lymph node count does not have a consistent relationship to survival after resection for colon cancer.

**Background:** The status of lymph nodes in a resected colon cancer specimen helps define prognosis as well as subsequent treatment. This finding has produced a quality indicator for colon cancer specimens. That indicator is to have at least 12 lymph nodes identified in the specimen.

**Objective:** To determine if total lymph node count is associated with better survival after adjusting for the ratio of positive to total nodes examined.

**Design:** Retrospective study using the SEER cancer registry.

**Participants:** A total of 24,477 patients with stage III colon cancer were found between 1988 and 2003. Stage III is node-positive localized invasive adenocarcinoma of the colon.

**Methods:** Demographic and descriptive data were taken from the SEER database. The lymph node ratio (LNR) was defined as number of positive nodes/number of total nodes examined. The LNR was used to stratify patients into 4 groups based on the ratio. Patients were also stratified into high lymph node group (≥12 nodes) or low lymph node group (<12 nodes). Survival was the primary end point related to LNR or total number of nodes. The 4 lymph node groups represented cut-off points at 7%, 25%, 50%, and 75% for LNRs.

**Results:** High absolute total lymph node counts were associated with an improved 5-year survival. When ≥12 nodes were examined, survival was 51% versus 45% for <12 nodes. Five-year survival was also higher for patients classified in the lower LNR groups, representing those patients with fewer positive nodes. When total node count was examined within each LNR group, survival was worse with higher total lymph node count for patients when the LNR was >25%. When adjusting for LNR, patients with higher absolute lymph node counts had a higher mortality rate.

**Conclusions:** Absolute lymph node count may not be as good a quality measure for colon cancer treatment as presented.

**Reviewer's Comments:** Quality measures for surgical care continue to evolve. We have seen changes in perioperative beta-blockade and perioperative antibiotic choice based on new data. This article may be the first step to seeing a change in using the number of lymph nodes examined in a resected colon specimen as a quality measure. The authors suggest that this change might be a good step. The real issue is adequate mesenteric resection and using the number of lymph nodes examined as a surrogate for adequate surgical excision is probably not appropriate. The lack of 12 nodes in a resected specimen can be secondary to patient anatomy, stage of disease, or even pathologic examination. The LNR appears to confound the relationship of survival and absolute lymph node number. Clearly, it is time to rethink this quality measure at the local and national level. (Reviewer-John A. Weigelt, MD).

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**Keywords:** Stage III Colon Cancer, Quality of Medical Care

**Print Tag:** Refer to original journal article
Is Routine Postoperative Chest X-Ray Necessary After Fluoroscopic-Guided Subclavian Central Venous Port Placement?

Brown JR, Slomski C, Saxe AW:

The incidence of postoperative pneumothorax is <2% after subclavian vein port placement.

**Objective:** To determine if routine post-procedural chest radiography is necessary after subclavian vein port placement.

**Design/Participants:** Retrospective study of patients with subclavian vein port placements over a 5-year period.

**Methods:** The incidences of pneumothorax and catheter malposition were measured, and it was determined whether these events were diagnosed during intraoperative fluoroscopy and/or postoperative chest radiography.

**Results:** The majority of these 205 patients had their ports placed as outpatients. Five patients had catheter malposition that was recognized intraoperatively under fluoroscopy, which was corrected intraoperatively. None of the post-procedural chest radiographs identified a malpositioned catheter. There was a 2% incidence of pneumothorax, and none of these were identified by fluoroscopy or post-procedural chest radiography. All patients presented with symptoms of pneumothorax >3 hours after the procedure, necessitating further imaging to identify the pneumothorax. In none of the pneumothorax patients was there documentation that air was aspirated during venipuncture, and only 1 patient had documentation of >1 needle pass.

**Conclusions:** Routine post-procedural chest radiography is unnecessary after subclavian vein port placement in asymptomatic patients.

**Reviewer's Comments:** The authors concluded that postoperative routine chest radiography is not necessary given the low incidence of pneumothorax and the fact that none of the pneumothoraces were identified on the first postoperative film. Given this finding, I would have to agree that, in an asymptomatic patient, a film is going to be of extremely low yield. The question is whether this would constitute medical malpractice in our current litigious climate. Is a 2% incidence low enough to justify not performing a postoperative film? The complication of a pneumothorax is potentially life threatening and, therefore, perhaps the incidence needs to be much lower than 2% before we can say that no postoperative radiography should be performed. The fact that none of the pneumothoraces were identified immediately postoperatively suggests that a delayed film should be performed if the incidence of a potentially fatal complication is high enough. Should we then keep patients under observation and obtain a delayed film? Before we decide to not obtain chest radiographs postoperatively, there needs to be a definition of what is meant by acceptable risk to allow physicians to practice efficiently without subjecting themselves to legal risk. (Reviewer-Raminder Nirula, MD).

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Keywords: Pneumothorax, Port, Subclavian Vein, Malposition, Chest Radiograph

Print Tag: Refer to original journal article
Esophageal Doppler-directed fluid therapy reduces postoperative morbidity after colorectal surgery.

**Objective:** To determine the optimal intraoperative fluid management strategy associated with improved outcomes after elective colorectal surgery.

**Design:** Meta-analysis of randomized controlled trials in the medical literature.

**Methods:** 2 types of studies were reviewed: those assessing standard fluid volumes to restrictive (<90% of standard volume) or supplemental (>110% of standard volume) fluid volume, and those assessing fluid administration directed by hemodynamic parameters versus esophageal Doppler-guided therapy.

**Results:** The authors' search revealed 6 trials investigating fluid volume and 3 trials investigating goal-directed therapy by esophageal Doppler. Postoperative morbidity was significantly reduced (by 59%) in patients receiving the restrictive fluid therapy. There was no effect on postoperative mortality rate or on anastomotic leak rate. In the 2 studies evaluating supplemental fluid administration compared to standard volume, there was no effect on morbidity. Doppler-guided therapy used a fluid challenge algorithm of repeated boluses of colloid until stroke volume failed to increase by >10%. Postoperative morbidity was significantly reduced by 57% in the Doppler-guided groups. No difference in mortality or anastomotic leak rate was observed.

**Conclusions:** Restrictive fluid administration and esophageal Doppler goal-directed fluid therapy reduce morbidity after colorectal resection.

**Reviewer’s Comments:** These data are compelling as we strive to improve quality of care in surgical patients while reducing resource utilization. More and more, we find that what goes on at the head of the bed during our surgery is just as important as what goes on in the surgical field. The most interesting point of this study is that morbidity was reduced with Doppler-guided therapy; however, the amount of fluid administered was not significantly different from that in patients who received fluid guided by hemodynamic parameters. This suggests that it might not just be the amount of fluid administered, but rather timing of its administration during the procedure that is important. The mechanism of reduced morbidity achieved by a restrictive fluid practice is therefore likely to be different from the mechanism of esophageal Doppler goal-directed therapy. In any event, these data need to be disseminated to surgeons and anesthesiologists alike to change practice. (Reviewer-Raminder Nirula, MD).

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Keywords: Fluid Management, Colorectal Surgery, Doppler, Restrictive, Supplemental, Outcome

Print Tag: Refer to original journal article
Mesh Effectively Reduces Incidence of Parastomal Hernia

Randomized, Controlled, Prospective Trial of the Use of a Mesh to Prevent Parastomal Hernia.
Serra-Aracil X, Bombardo-Junca J, et al:


The parastomal hernia incidence is significantly reduced through placement of a partially biodegradable mesh around the stoma site.

Objective: To determine if placement of a partially biodegradable mesh around an end colostomy reduces parastomal hernia occurrence during colostomy formation. Design/Participant: Randomized controlled trial comparing a control group (n=27; routine end colostomy) with a study group (n=27; lightweight mesh placed in the sublay position anterior to the peritoneum and posterior rectus sheath with a minimum 5-cm circumference around the colostomy).

Methods: Patients were assessed every 6 months after surgery clinically and with CT scans by a blinded independent observer and radiologist to assess for presence of parastomal hernia. Median follow-up of these 54 randomized patients was 29 months.

Results: Surgical time tended to be shorter in the mesh group, although this did not reach statistical significance. Postoperative mortality, overall morbidity, surgical site infection, parastomal infection, and colostomy necrosis were similar in the 2 groups. No patients suffered from mesh intolerance or required re-intervention because of the mesh. The incidence of clinically detectable parastomal hernia was 15% in the mesh group and 40% in the control group. CT detected parastomal hernias in 22% of the mesh group and in 44% of the control group. Two of 11 patients in the control group have required surgery for their parastomal hernia, while none of the meshed patients have required operative intervention for their hernias.

Conclusions: Placement of a partially biodegradable mesh was safe and effective at reducing parastomal hernia in end colostomy patients.

Reviewer's Comments: This was a well-designed randomized trial as the authors blinded those diagnosing the parastomal hernia from the original procedure. Their data appear to be free from the typical bias that can affect clinical trials and, thus, their data should be believed. The follow-up may need to be extended to ensure the durability of the technique. Additionally, it seems that a greater proportion of hernias are radiographically present but clinically occult compared to hernias in the control group. I wonder if these smaller hernias are therefore at greater risk for strangulation and may present in a more emergent circumstance as time goes on. Still, one cannot deny the fact that this study reduced clinically detectable parastomal hernias by more than half, which is impressive in and of itself. (Reviewer-Raminder Nirula, MD).

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Keywords: Parastomal Hernia, Mesh, Prevention, Colostomy

Print Tag: Refer to original journal article
All absorbable sutures, continuous and interrupted, for closure of primary elective midline abdominal incisions have similar hernia rates.

**Objective:** To compare 3 different sutures and techniques for closure of midline celiotomy.

**Participants:** Patients aged ≥18 years undergoing elective midline laparotomy of ≥15 cm and who had a life expectancy of >1 year were eligible unless they had received chemotherapy within 2 weeks or radiation therapy within 8 weeks.

**Methods:** A block randomization strategy minimized any site effect. Patients were randomized to interrupted closure with Vicryl or to continuous closure with PDS or MonoPlus, both polydioxanone sutures. MonoPlus has longitudinal stretch, while PDS does not. Both continuous sutures had a 4:1 ratio of suture to fascial incision length. Neither internal nor external retention sutures were allowed. All participating surgeons were trained in a standardized fascial closure by means of a video and use of an animal model. The primary outcome was incisional hernia at 1 year. Secondary outcomes were evisceration, wound infection, and postoperative pulmonary complications. Although surgeons were obviously not blinded at the time of incision closure, the personnel assessing the outcome at 1 year were blinded to treatment assignment. Other data collected included surgeon experience, mortality, antibiotic prophylaxis, and safety data. Sample size calculations were based on an expected hernia rate of 13% for the Vicryl group and 4% for the other 2 groups.

**Results:** 210 patients were randomized to the Vicryl and MonoPlus arms, with 205 randomized to PDS. There was follow-up at 6 and 12 months, with 152 patients in the Vicryl arm at 12 months, 158 in the MonoPlus arm, and 162 in the PDS arm. There was no difference in age, body mass index, smoking status, previous laparotomy, umbilical hernia, gender, or presence of rectus diastasis between groups. Approximately 30% of the entire group had a previous laparotomy. There were also no differences in the types of procedures done by group. At 1 year, the incisional hernia rate was 15.9% in the Vicryl group, 8.4% in the PDS group, and 12.5% in the MonoPlus group. Closure times were significantly shorter for the continuous groups. There were no differences in evisceration, wound infection, or postoperative pulmonary complications by group. The only factor that was associated with development of incisional hernia was body mass index.

**Conclusions:** There was no difference in incisional hernia among the 3 methods of midline fascial closure, although the hernia rate in all groups was higher than expected.

**Reviewer’s Comments:** The relatively high hernia rate in this study leaves open the question of the role of nonabsorbable suture, although previous trials have not demonstrated any difference. In extrapolating these data to other populations, it is important to remember that these were only elective surgical patients, without peritonitis or other wound healing issues. (Reviewer-Karen J. Brasel, MD, MPH).
Objective: To provide information about the epidemiology and outcome of femoral hernias.

Methods: >98% of all hernia operations performed in Sweden are documented in the hernia registry. In-hospital complications are recorded, as well as all recurrences. Patient demographics, type of hernia, elective versus emergent admission, method of repair, repair material, and type of anesthesia are all recorded. Emergency operation is defined as that performed within 24 hours of admission for an incarcerated hernia. For this analysis, data on all femoral and inguinal hernia repairs in the registry between January 1, 1992, and December 31, 2006, were abstracted. Risk factors for femoral hernia recurrence and 30-day mortality were analyzed using logistic regression. For data between 1992 and 2004, mortality was compared with mean 30-day mortality in the Swedish population adjusting for age and gender.

Results: 3980 femoral hernias were in the registry, although complete data were available for only 2524 elective and 1409 emergent repairs. Patients with femoral hernias were older (median age, 65 vs 60 years) and were more likely to be female. Femoral hernias comprised 1.1% of all groin hernia repairs in men but 22.8% in women. A much higher percentage of femoral hernias were repaired emergently (35.9% vs 4.9%). Bowel resection was performed in 22.7% of emergent femoral hernia repairs compared to only 5.4% of emergent inguinal hernia repairs. The incidence of bowel resection during elective repair was <1% for both femoral and inguinal hernias. The recurrence rate for femoral hernias was 6.6%, significantly greater than 4.2% for inguinal hernias. Open preperitoneal or laparoscopic mesh approaches to femoral hernia repairs were associated with significantly lower recurrence rates than was anterior suture repair. The standard mortality rate for emergency femoral hernia repair was 7-fold higher than in the general population. Factors associated with mortality were age greater than median, male gender, emergent operation, perioperative complication, and need for bowel resection.

Conclusions: Femoral hernias are more common in women, are more often operated on emergently, and are associated with a higher mortality rate. The authors suggest that femoral hernias should always be operated on when found and that mesh repair should be performed.

Reviewer's Comments: This very complete registry provides a wealth of information about femoral hernias. Although the female predominance is not new information, the high mortality rate in this series is surprising, and the superiority of mesh may also be surprising to some. Types of hernia repair included anterior suture repair, mesh plug, anterior mesh repair, and preperitoneal mesh repair (laparoscopic or open). Only the preperitoneal mesh repair was associated with a significantly lower rate of recurrence when standard suture repair was used as the reference. (Reviewer-Karen J. Brasel, MD, MPH).

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Keywords: Femoral Hernia Repair, Emergency

Print Tag: Refer to original journal article
Fulminant *Clostridium difficile* colitis is associated with a high mortality rate.

**Background:** The incidence, as well as mortality, of *Clostridium difficile* colitis in hospitalized patients has been increasing.

**Objective:** To review a single institution's experience with *C difficile* colitis to determine the association of surgical treatment with outcome from fulminant colitis.

**Participants/Methods:** All patients undergoing surgical management for *C difficile* colitis between January 1, 2000, and December 31, 2007, were identified from an administrative discharge database. Records were abstracted for demographic information, immunosuppressive state, recurrent infection, need for vasopressors, presence and type of stress ulcer prophylaxis, acute respiratory failure, acute renal failure, white blood cell count, preoperative medical treatment for *C difficile*, indication for operation, type of operation, final pathology, and in-hospital mortality. Logistic regression and receiver operator curves were used to analyze data.

**Results:** 6841 patients had a discharge diagnosis of *C difficile* colitis during the study period; 69 underwent surgical intervention for fulminant colitis. The incidence of surgical management was 0.3% in 2000, reaching a high of 1.4% in 2007. Mean age was 71 years, and 49% were male. Overall mortality rate was 42%. Univariate analysis identified age, vasopressor use, acute renal failure, and acute respiratory failure as being associated with mortality. The age above which death was most highly predicted was 65 years. Multivariate analysis identified age >65 years, respiratory failure, and renal failure as being independently associated with mortality. There was no difference in gender, white blood cell count, immunocompromised state, stress ulcer prophylaxis, or recurrent disease by survival status. A total of 20% of the entire cohort had recurrent disease; 65 of 69 patients had a trial of medical management prior to operation. There was no difference in type of treatment by survival status. Twenty-eight patients underwent operation for hemodynamic instability, 8 for peritonitis, and 32 for a combination of peritonitis and hemodynamic instability. The operation performed in all cases was total abdominal colectomy, with final pathology showing pseudomembranous colitis in all cases.

**Conclusions:** Colectomy before development of organ failure is associated with decreased mortality in patients with fulminant *C difficile* colitis, particularly in those aged >65 years.

**Reviewer's Comments:** This disease is increasing in incidence and severity. Its high associated mortality is well known, and when to pull the trigger for operation in the absence of peritonitis or hemodynamic instability remains a difficult clinical question. It is unfortunate that we do not learn much more from this review than what we already knew. It seems pretty clear that if we wait until hemodynamic instability and/or peritonitis develops, regardless of the underlying etiology, our outcomes will be relatively poor. The challenge is to identify those patients in whom surgical treatment will ultimately be necessary before they develop such fulminant, systemic disease. (Reviewer-Karen J. Brasel, MD, MPH).

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Keywords: Clostridium difficile; Colitis, Surgical Treatment

Print Tag: Refer to original journal article
Background: Polypoid lesions of the gallbladder (PLGs) are increasingly identified clinical entities and represent a heterogeneous group of elevated mucosal lesions that can be neoplastic and nonneoplastic. Most asymptomatic PLGs <1 cm in size can be followed non-operatively. Precise management of asymptomatic small (<1 cm in size) PLGs is unknown.

Objective: To evaluate the natural history of PLGs and the histologic characteristics of ultrasound-detected PLGs.

Participants/Methods: Patients from a large radiology database at a tertiary cancer center were retrospectively identified and reviewed over an 11-year period. Standard radiologic criteria were used to identify PLGs. Patients with obvious infiltrative masses or gallbladder cancers were not included in the study. Radiology reports were retrospectively reviewed to determine polyp size, number, and concomitant stones. Change in size in patients followed non-operatively was recorded. Histologic characteristics in those patients undergoing cholecystectomy were analyzed.

Results: 417 patients with ultrasound-detected PLGs were identified. Median age was 59 years, and 55% of these lesions were in women. The majority of patients (64%) had polypoid lesions that were identified during workup for unrelated diseases, and only 23% of patients had abdominal symptoms or were symptomatic. The overwhelming majority of PLGs (94%) were <1 cm in size, and 7% were >1 cm in size. Growth was not a common finding in patients who underwent interval ultrasound examinations and occurred in only 8 of 143 patients. Histologic examination of cholecystectomy specimens revealed that most patients had either pseudopolyps (58%) or no polyp (32%), and neoplastic polyps (adenomas) were found in 10% of patients. In situ cancer was found in 1 patient whose polyp measured 14 mm in size, and there were no invasive cancers in the group studied.

Conclusions: Small PLGs (<1 cm in size) can be safely observed, and those <6 mm in size rarely represent true neoplastic polyps. Although the risk of malignancy is very rare, cholecystectomy for lesions >1 cm in size appears to be warranted.

Reviewer's Comments: Size appears to be the only consistent feature throughout the literature that may help discriminate neoplastic from nonneoplastic PLGs. Observations correlating size of PLG and risk of neoplasia from several series have resulted in the current practice of performing a cholecystectomy for lesions >1 cm in size. This study design showed some relationship with gallbladder size, but study limitations and lack of follow-up hindered recommendations of management of larger polyps of the gallbladder. The prevalence of gallbladder cancer from national registries with PLG is exceedingly low (0.8%) and supports observing these lesions. (Reviewer-Sam G. Pappas, MD).

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Keywords: Polypoid Gallbladder Lesions

Print Tag: Refer to original journal article
Apparent benefits of proximal fecal diversion and stoma formation should be weighed against the risk of the stoma formation and closure, which includes a small risk of death from stomal closure.

**Background:** Low anterior resection (LAR) of the rectum for middle to low rectal cancers has become the technique of choice for most rectal cancers. Anastomotic leakage after LAR is associated with increased morbidity and mortality and possibly inferior oncologic outcomes, including survival. Elective proximal fecal diversion has been suggested for LAR of the rectum, but the evidence of benefit has been conflicting.

**Objective:** To evaluate the need for routine prophylactic stoma formation through a meta-analysis of the available clinical evidence.

**Methods:** Randomized controlled trials (RCTs) and non-randomized studies with an intervention group comparing surgery for low rectal cancer with and without a stoma were selected. A meta-analysis on both study types was performed. The RCTs were analyzed separately from the non-randomized studies. Primary outcomes measured were clinical leak rate, rate of reoperation, and mortality related to clinical postoperative leak. All patients underwent complete tumor resection, and safe stapled anastomosis was assessed by standard clinical means.

**Results:** Meta-analyses of 4 randomized and 21 non-randomized trials (including a total of 11429 patients) were performed. Analysis of RCTs showed a lower clinical anastomotic leak rate (RR, 0.39) and a lower reoperation rate in the proximal stoma group. There was a higher rate of reoperation in the non-stoma group in all 4 RCTs, but this was only statistically significant in 1 trial. There was no statistically significant difference in mortality between the 2 groups in 4 randomized studies despite the higher rate of leaks and reoperations. Meta-analysis of non-randomized studies showed a lower clinical anastomotic leak rate, lower reoperation rate, and a lower mortality rate in the prophylactic stoma group.

**Conclusions:** The present meta-analysis demonstrated a significant reduction in both leak rate and the need for reoperation after routine proximal diversion following LAR. This particular meta-analysis was restricted to lower rectal resections, making the conclusions regarding proximal diversion more clinically valid compared to studies that may have included resections above the peritoneal reflection that may not have required proximal diversion. Meta-analyses of non-randomized studies were performed to analyze the general trend in outcomes compared to RCTs and yielded similar results. Based on the available evidence from these analyses, a low anterior anastomosis should be protected with a defunctioning stoma.

**Reviewer's Comments:** The apparent benefits of proximal fecal diversion and stoma formation should be weighed against the risk of the stoma formation and closure, which includes a small risk of death from stomal closure. Morbidity and mortality rates from this protective procedure are not negligible and should be taken into consideration when selecting patients for LAR followed by proximal diversion. (Reviewer-Sam G. Pappas, MD).

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Keywords: Low-Anterior Resection, Rectal Cancer

Print Tag: Refer to original journal article
Surgical therapy is usually required for cure of hidradenitis suppurativa.

**Background:** Hidradenitis suppurativa is a perplexing chronic condition that surgeons are often asked to address. While the pathophysiology is assumed to be clear, new evidence questions some longstanding explanations of the process.

**Objective:** To review the cause and treatment of hidradenitis suppurativa.

**Design:** Literature review.

**Methods:** 119 articles are listed in the reference section. The articles were reviewed to define the pathogenesis, etiology, medical treatment, and surgical management of this disease.

**Results:** Pathogenesis has been assumed to be an apocrine gland dysfunction. This is because the disease is most prominent where apocrine glands are found: axillary and inguinal areas. However, occlusion of apocrine glands is found in only 25% of experimental subjects, and inflammation of the hair follicles is more commonly found on histological examination. Thus, the disease is currently thought of as an inflammatory disease arising in the hair follicle, which involves apocrine glands secondarily. The etiology remains unknown. It rarely occurs before puberty, and a relationship to androgen levels has been sought but not demonstrated conclusively. It does not appear to have a genetic cause. A relationship to deodorants is also suspected but not documented, although smoking is considered a risk factor and possibly plays a role as a causative factor. Medical therapy starts with antibiotics, most commonly clindamycin or tetracycline. Retinoids are helpful in mild disease, and infliximab has shown promise in more severe disease. Surgery remains curative for chronic relapsing hidradenitis. Incision and drainage are often needed with early disease, but excision with or without skin grafting is eventually required as the disease progresses. Wounds can be closed primarily with skin grafts or allowed to heal secondarily. Acceptable cosmetic results can be achieved with all wound management methods, although long healing times are problematic with large open wounds.

**Conclusions:** Hidradenitis suppurativa is a chronic disease. Early disease is managed medically, and cessation of smoking is considered a necessary step. Late disease requires surgical excision for cure.

**Reviewer’s Comments:** Hidradenitis suppurativa is an exasperating disease for the patient and the physician. We have favored early therapy with antibiotics to clear initial infection, followed by antiseptic washes intermittently of involved areas to reduce bacterial counts in hopes of reducing recurrences. For axillary disease, we recommend excision once recurrences become commonplace and try to achieve primary closure, especially by extending the dissection onto the chest wall using excess axillary skin that is commonly present. Inguinal disease often requires skin grafting, although secondary healing is effective if accepted by the patient. All in all, this is a difficult clinical problem that needs better medical solutions. (Reviewer-John A. Weigelt, MD).
Length of Stay--A Viable Quality Measure?

Adverse Outcomes in Surgery: Redefinition of Postoperative Complications.

Fry DE, Pine M, et al:


Postoperative length of stay correlates with increased cost better than does the complication rate.

Background: Measuring patient outcomes usually requires an assumption that if process measures are met, then outcomes are better. This indirect measure may or may not be valid. Length of stay is a known driver of cost and can be obtained from administrative databases. Length of stay can be viewed as an outcome measure and could be useful as a quality measure.

Objective: To determine if length of stay can be objectively measured with existing administrative databases and if it correlates with cost.

Design: Retrospective review of the Nationwide Inpatient Sample of the Healthcare Cost and Utilization Project (HCUP) from 100 study hospitals.

Participants: 8971 patients had elective colon resections, 15,571 had elective hip replacements, and 12,163 had elective coronary artery bypass grafting (CABG).

Methods: Patients were stratified into 4 groups: no complications or complications with no increased length of stay and no complications or complications with an increased length of stay. Risk adjustment was used to calculate a coefficient for the number of additional hospital days for each type of procedure. Hospital costs were available from the HCUP database. The primary end point was to compare postoperative length of stay (poLOS) with costs.

Results: Mortality was 0.9% for colon cases, 0.1% for hip replacements, and 1.9% for CABG. The minimum poLOS was 2 days for colon and hip surgery and 3 days for CABG. Complication rates were 41% for colon surgery, 29% for hip replacement, and 66% for CABG. However, poLOS was increased in 16% of colon cases with complications and 11% of hip and CABG cases with complications. For all 3 surgical procedures, cost was not driven by complication but by poLOS. Patients with no complications but an increased poLOS had an increased cost; when complications occurred, cost increased further. Complications alone did not increase costs for any of the procedures.

Conclusions: Risk-adjusted poLOS is a better measure of adverse outcomes than complications alone.

Reviewer's Comments: How will we measure surgical outcomes? Administrative data use offers ease of use, but it is mistrusted by many surgeons. Alternatively, very few hospitals and surgeons want to invest in data collection systems for quality. This investment usually requires people and electronic systems. Both will increase the cost of measurement. Administrative data are used in this report and allow a risk-adjusted poLOS to be calculated that tracks nicely with cost. If pay-for-performance activities continue to advance in our reimbursement system, a method such as this would be simple and straightforward for most institutions to measure and report. The bothersome question is this: what is the reason patients stay in the hospital when no complications occur? The solution to improving outcomes in these patients will likely be much different than what we use for patients with complications. (Reviewer-John A. Weigelt, MD).

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Keywords: Surgical Complications

Print Tag: Refer to original journal article
Ipsilateral central node metastases are common when papillary thyroid cancer is ≥1 cm.

**Background:** Thyroid cancer surgery continues to evolve. Papillary thyroid cancer is treated with a total thyroidectomy secondary to its multicentricity. Microscopic nodal disease is commonly found in clinically negative necks, and a central node dissection is recommended.

**Objective:** To define the incidence of ipsilateral and contralateral lymph node involvement in patients with papillary thyroid cancer and a clinically negative neck.

**Design:** Prospective non-randomized study.

**Participants:** 111 patients with unilateral papillary thyroid cancer.

**Methods:** A clinically negative neck was defined as having no nodal enlargement by physical exam and imaging. Factors correlated with pathological findings included age, sex, tumor size, perithyroidal invasion, lymphovascular invasion, and capsular invasion. The primary outcome was to identify factors that would predict either ipsilateral or contralateral lymph node involvement. Multivariate analysis was used to determine significant factors.

**Interventions:** All patients had a total thyroidectomy and central node dissection.

**Results:** Occult positive central nodes were found in 60 patients (54%). Bilateral nodes were found in 30 of 60 patients (50%), ipsilateral nodes were found in 26 (43%), and 4 (7%) had contralateral nodes only. In the multivariate analysis, only tumor size ≥1 cm was an independent predictor of ipsilateral positive nodes, and only a positive ipsilateral node was a predictor of a positive contralateral node.

**Conclusions:** A central node dissection may be useful in managing patients with papillary thyroid cancers ≥1 cm in size.

**Reviewer's Comments:** Papillary thyroid cancer treatment is undergoing another change. First, various cell types indicated a more aggressive surgical approach. Now presence of micrometastases found in neck nodes is driving the suggestion that a central node dissection should be done. This study is one of many positing this regimen. The central lymph node compartment is the most common location for positive nodes. Whether this type of dissection truly reduces recurrences and improves survival remains to be seen. Complications associated with this approach are difficult to quantify. This study had a 3% incidence of permanent hypocalcemia and transient vocal cord paralysis in 6 patients. Whether these are secondary to the total thyroidectomy or the central node dissection is unknown. Change is always challenging and sometimes good. This approach to patients with papillary thyroid cancer certainly is challenging, and time will tell whether it is good. (Reviewer-John A. Weigelt, MD).

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Keywords: Papillary Thyroid Cancer, Nodal Metastases

Print Tag: Refer to original journal article
In patients with metastatic colon cancer, cetuximab combined with FOLFIRI as first-line therapy increases the response rate and progression-free survival compared to FOLFIRI alone.

**Background:** Standard first-line therapy for metastatic colorectal cancer includes fluorouracil, leucovorin, irinotecan, and oxaliplatin alone or in combination with bevacizumab. Phase 1 and 2 studies have demonstrated benefit to the addition of cetuximab to irinotecan-based therapy or oxaliplatin-based therapy as first-line treatment.

**Objective:** To investigate the efficacy of cetuximab plus irinotecan, fluorouracil, and leucovorin (FOLFIRI) as first-line therapy for metastatic colorectal cancer.

**Participants/Methods:** Patients with unresectable epidermal growth factor receptor-positive colorectal cancer with adequate performance status were randomly assigned to receive cetuximab plus FOLFIRI or FOLFIRI alone as first-line therapy. The primary end point of the study was progression-free survival. Secondary end points included overall survival time, the rate of best overall response, and safety end points.

**Results:** The study groups were well balanced with respect to patient characteristics, disease, and treatments; 599 patients received cetuximab plus FOLFIRI and 599 patients received FOLFIRI alone. The hazard ratio for the primary end point (progression-free survival) favored cetuximab plus FOLFIRI compared to FOLFIRI alone, at 0.85. There was no statistically significant difference in overall survival between the 2 groups. There was a significant interaction between KRAS mutational status and tumor response but not for progression-free and overall survival. Grade 3 and 4 reactions were more frequent with cetuximab plus FOLFIRI than with the FOLFIRI alone.

**Reviewer’s Comments:** Conclusions/Reviewer’s Comments: The combination of FOLRIR plus cetuximab compared to FOLFIRI alone reduced the risk of disease-free progression by 15%. It also increased the rate of response to therapy in patients by 10%. There was no significant difference in survival between the 2 groups. The results of the trial confirm that FOLIRI and cetuximab (compared to FOLFIRI alone) reduces the risk of progression of colorectal metastases when used as first-line therapy for metastatic disease. As expected this benefit was seen only in wild-type KRAS tumors. (Reviewer-Sam G. Pappas, MD).

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Keywords: Metastatic Colorectal Cancer, Cetuximab

Print Tag: Refer to original journal article
Intensive preoperative counseling for smoking cessation combined with nicotine replacement promotes lower postoperative complications and increased long-term smoking cessation.

**Background:** Smokers are at greater risk for overall postoperative complications compared to non-smokers. Smoking cessation prior to surgery appears to be relevant in postoperative risk reduction as well as in long-term smoking cessation.

**Objective:** To examine the effect of smoking cessation on postoperative complications and long-term smoking cessation.

**Methods:** Relevant databases were searched, and randomized controlled trials (RCTs) pertaining to preoperative smoking cessation were reviewed. Interventions could include behavioral counseling with or without pharmacotherapy and postoperative counseling. Control interventions included usual standard of care with or without nicotine replacement therapy (NRT). Trial inclusion and data extraction were performed by 2 authors. A fixed effect method was used to estimate pooled effects, and risk ratios for the outcomes of interests were calculated.

**Results:** The studies included 1194 patients included from 11 RCTs. Smoking cessation interventions differed across studies and were divided into intensive, medium intensive, and less intensive. Follow-up for postoperative complications was 30 days from the day of surgery; for smoking cessation, follow-up was up to 1 year from the day of surgery. Overall, preoperative smoking cessation interventions significantly reduced the rate of postoperative complications after surgery. The effects of medium and less intensive smoking cessation regimens were not statistically significant in promoting long-term smoking cessation. In contrast, intensive smoking cessations regimens increase smoking cessation rates both preoperatively and up to 1 year after surgery.

**Reviewer's Comments:** Conclusions/Reviewer's Comments: The study was designed to assess how preoperative smoking cessation interventions affect the frequency of postoperative complications, and short- and long-term cessation of smoking. The results of the study indicate that smoking cessation preoperatively can reduce the occurrence of postoperative wound healing complications and other complications requiring interventions. Furthermore, intensive smoking interventions with individual counseling and NRT increase short- and long-term smoking cessation. Medium intensity or less intensive regimens with NRT are not associated with significant reductions in postoperative complications. There is increasing evidence to support the addition of NRT to counseling in the perioperative setting as it appears to significantly increase the rate of smoking cessation. (Reviewer-Sam G. Pappas, MD).

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Keywords: Preoperative Smoking Cessation

Print Tag: Refer to original journal article
Colon Cancer Screening in Elderly--Does Comorbidity Play a Role?

Impact of Age and Comorbidity on Colorectal Cancer Screening Among Older Veterans.

Walter LC, Lindquist K, et al:


Despite good life expectancy, elderly VA patients are not being appropriately screened for colorectal cancer.

Background: Colorectal cancer screening guidelines in older adults recommend screening those who have substantial life expectancy based on age and comorbid status. It remains unclear as to whether screening is targeted toward healthier older individuals with greater life expectancy and is avoided in individuals with preclusive comorbidities.

Objective: To assess whether screening for colorectal cancer is being targeted toward healthier individuals who may benefit from screening compared to individuals with comorbidity who would not be candidates for treatment based on comorbid state.

Methods: The study evaluated the results of appropriate colorectal cancer screening in a cohort of 27,068 patients. Patients were aged ≥70 years, were patients at 4 Veterans Affairs medical centers over a 2-year period, and were eligible for screening. Patients were stratified into 3 groups based on comorbidity as no, intermediate, or high comorbidity state, and mortality was calculated.

Results: Overall, 46% of patients were screened over the defined time period. Only 47% of patients with no comorbidities and a life expectancy of >5 years were appropriately screened. Although screening continued to decrease with increasing age, it still remained high in patients with the highest comorbidity who had elevated mortality at 5 years (55%). The number of outpatient visits was predictive of screening independent of comorbidity, and patients with higher comorbidity and more office visits were screened with the same or higher rates than healthier patients.

Conclusions: Advancing age was strongly and inversely associated with appropriate colorectal cancer screening, and comorbidity was a much weaker predictor. As a result, older patients who may benefit from screening are not being screened, whereas some patients with preclusive comorbidities are still being screened.

Reviewer’s Comments: Many reasons may help explain the lower rate of screening in the older healthier patient cohort. Healthier patients have less frequent office visits and are less likely to be offered a screening test as a result. Physician ability to predict life expectancy may also be a barrier to appropriate screening, as is patient refusal, but there are little data to support these arguments. Current guidelines encourage screening based primarily on age, and refinements need to be made with respect to comorbidity, adjusted life expectancy, and age as determinants of appropriate colorectal cancer screening. (Reviewer-Sam G. Pappas, MD).

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Keywords: Colon Cancer Screening, Elderly VA Patients

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The majority of isolated gunshot wounds to the liver can be managed nonoperatively.

**Objective:** To determine if nonoperative management of gunshot wounds to the liver is safe.

**Methods:** Patients with right upper quadrant/right thoracoabdominal gunshot wounds were eligible for enrollment if they did not have peritonitis, hemodynamic instability, or associated head or spinal cord injuries. Enrolled patients received a CT scan of the abdomen to identify or exclude liver injury and were then observed with serial abdominal exams and hemoglobin measurements. If a patient required more than 2 to 4 units of blood in a 24-hour period or developed peritonitis, they underwent laparotomy.

**Results:** Of 80 patients selected for nonoperative management, 63 had a liver injury, with about 25% of these having a combined liver and kidney injury. Liver injury American Association of Surgery for Trauma scores ranged from 0 to 5, with the majority being grades 2 to 4. Five patients required delayed laparotomy due to acute abdomen, fever, or transfusion requirements. Injuries in these patients included the colon, spleen/pancreas, kidney, hemoperitoneum, and bile peritonitis. Mean hospital length of stay was 6 days for those undergoing successful nonoperative management and 12.4 days for those with delayed laparotomy. No deaths occurred. There were 2 cases of biliary-cutaneous fistula and 1 case of liver abscess in the delayed laparotomy group. The majority of successfully managed nonoperative liver gunshot wounds developed no complications.

**Conclusions:** Nonoperative management of selected liver gunshot wounds is safe regardless of liver injury severity.

**Reviewer's Comments:** Observing right upper quadrant gunshot wounds requires a dedicated and experienced team to assess these patients with a well-defined protocol. Currently in the United States, most trauma centers have a decreasing exposure to penetrating trauma, and such experience may be lacking. As a result, the recognition of patients with developing peritonitis may be substantially delayed and lead to worse outcomes for the delayed laparotomy group than that observed in this study. With the known increased morbidity and mortality observed for delayed recognition of hollow viscous injury, one must be extremely cautious in taking a nonoperative approach in these patients. From a resource utilization standpoint, having a hospital length of stay of 6 days for a patient managed nonoperatively seems high and probably would not be significantly lengthened had these patients been managed operatively on the day of admission. The added intense observation period employed during the first 2 days of admission on a high-acuity observation unit further increases resource utilization that would not have been needed had these patients undergone initial laparotomy. While it saves a significant number of operations, it may not be the most cost-effective solution given the high frequency of significant complications in the delayed laparotomy group and their prolonged length of stay. (Reviewer-Raminder Nirula, MD).

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Keywords: Liver Gunshot Injuries, Nonoperative Management

Print Tag: Refer to original journal article
There is a poor correlation between outlier status and deep vein thrombosis or pulmonary embolism rates among trauma centers.

Objective: To determine if venous thromboembolism rates are an appropriate measure of quality of trauma patient care.

Methods: The National Trauma Data Bank was used to identify trauma center outliers in terms of deep vein thrombosis (DVT) and pulmonary embolism (PE) rates. Intraclass correlation coefficient was measured to determine if a given patient at one center would have similar outcomes to a similar patient treated at that same center. A high coefficient indicates that the outcomes observed are, therefore, likely to be the result of specific center practices.

Results: There was significant variability in DVT rates among the 30 centers analyzed, with less variability in PE rates. DVT and PE rates did not correlate among center outlier status, suggesting that prevention of DVT may not necessarily lead to the prevention of PE or that there are differences in surveillance of these 2 entities among centers. The intraclass correlation coefficient was 4 times higher for DVT than for PE, suggesting that outcomes within centers are more consistent for DVT than for PE.

Conclusions: No relationship was observed between DVT and PE outlier status. This may reflect the fact that surveillance and case ascertainment for DVT differs substantially from that of PE rather than it being a reflection of quality of care. The fact that the intraclass correlation coefficient for PE is very low compared to the coefficient for DVT suggests that practice variation has little impact on PE rate. Therefore, a center being an outlier in terms of DVT or PE may not necessarily reflect poor or superior quality since these rates are not necessarily a reflection of center practice.

Reviewer's Comments: This article states that being an outlier with respect to DVT and PE rate may not indicate that quality of care is poor because of a low intraclass correlation coefficient. The coefficient is higher for DVT than for PE, suggesting that patient factors contribute more than practice patterns for the development of PE. This is confirmed by several studies indicating that the pharmacological reduction of DVT has had little effect on reducing the incidence of PE. This means that PE cannot be used as an indicator of quality, but I'm not certain that DVT rates cannot be used. The authors state that DVT cannot be used because surveillance rates differ among centers. As a result, the current data submitted to the National Trauma Data Bank should not be used as an indicator of quality for DVT because it likely represents DVT ascertainment differences rather than quality of care differences. On this point, I agree with the authors. If DVT is to be used as a marker of quality, active surveillance must be a part of the participating centers before the data can be used as such. (Reviewer-Raminder Nirula, MD).

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Keywords: Venous Thromboembolism, Quality of Care

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Trauma Care for Minor Injuries--Consider Nonsurgical Hospitalists

Effects of a Nonsurgical Hospitalist Service on Trauma Patient Outcomes.
Salottolo K, Slone DS, et al:
Surgery 2009; 145 (April): 355-361

In this study, outcomes were equivalent for minimally injured patients cared for by surgeons versus nonsurgeons.

**Background:** Surgical involvement in the care of the trauma patient improves outcomes; this standard is a part of the American College of Surgeons Committee on Trauma verification criteria and includes involvement in the resuscitative, operative, and in-hospital phase. One of the problems identified in the care of the injured patient is lack of appropriate physicians available to provide care. One model that has been developed to address this is the admission of trauma patients with minor injuries and significant comorbidities to a nonsurgeon hospitalist service.

**Objective:** To report on the outcomes of such a practice model.

**Methods:** A nonsurgical hospitalist team was instituted in January 2004 to care for patients with low-energy mechanism, single-system injuries who were admitted due to comorbidities or placement issues. The trauma registry was queried for all admissions from January 1, 2003, to December 31, 2003, and from January 1, 2006, to December 31, 2006. The 2003 group was evaluated to determine how many patients could have been cared for by the hospitalist service; the 2006 group was queried to determine how well the pre-identified protocol for admission was followed. This protocol excluded all patients who met one of the following criteria: injuries to ≥2 systems; no comorbidities; an Injury Severity Score >15; trauma team activation; ≥3 rib fractures; intra-abdominal injury; age <30 years; hip fracture due to fall; and/or emergency department (ED) disposition to the operating room or ICU. In addition, outcomes from the pre-hospitalist 2003 group (cared for by trauma surgeons) were compared to the hospitalist 2006 group.

**Results:** 239 patients were identified by the algorithm in 2003 and 261 in 2006. The 2006 population was significantly older. In 2006, there were 127 patients seen by the nonsurgical service; 97 of these were identified by the algorithm. There were no differences in mortality, overall complications, discharge status, or time in the ED. Overall hospital length of stay was significantly longer in 2006.

**Conclusions:** Use of a nonsurgeon hospitalist service results in outcomes similar to those of trauma surgeons.

**Reviewer's Comments:** The hospitalist service that cared for the 127 patients identified in 2006 consisted of 7 physicians who worked shifts, with no clinic or outpatient responsibilities. For this relatively uninjured population, outcomes appear to be similar, although the increased length of stay would be worrisome to those concerned about resource expenditure. Whether this service conserves enough trauma surgeon personnel resources is likely to differ by overall trauma population and structure of each trauma service. (Reviewer-Karen J. Brasel, MD, MPH).

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Keywords: Trauma, Nonsurgeon Hospitalist

Print Tag: Refer to original journal article
Blunt Aortic Injury Decreases Survival After Traumatic Injury

Functional and Survival Outcomes in Traumatic Blunt Thoracic Aortic Injuries: An Analysis of the National Trauma Databank.

Arthurs ZM, Starnes BW, et al:


Blunt aortic injury significantly decreases both survival and functional outcome after traumatic injury.

Objective: To analyze the incidence and outcome of blunt aortic injury.

Methods: Version 6.2 of the National Trauma Data Bank (NTDB) was used, including records from 2000 to 2005 of all adult patients with blunt injury and a diagnosis of thoracic aortic injury. Data abstracted included demographic information, physiologic data, injury information, treatment, and outcome. Records of patients who were dead on arrival and those who died during triage were excluded. Patients were divided into 3 groups based on treatment: nonoperative management, operative repair, and endovascular stenting. To determine the independent impact of aortic injury on outcome, patients with aortic injury were matched to similar patients with thoracic, abdominal, and head injuries. The outcome analyzed was the Functional Independence Measure (FIM).

Results: 3114 patients with blunt aortic injury were identified in the 1.1 million records during the 6-year study period. Of these, 113 were dead on arrival, and 599 died during triage. Mean patient age was 41 years, and mean Injury Severity Score (ISS) was 40. Thirty-one percent of patients had associated head injuries, 29% had major abdominal injuries, and 15% had pelvic injuries. There was a significantly higher incidence of major head injury in patients undergoing nonoperative management; 1642 patients (68%) were managed nonoperatively, 665 (28%) underwent open repair, and 95 (4%) underwent endovascular repair. The overall mortality rate was 55%. The mortality rate was 65% with nonoperative management, 19% with open repair, and 18% with endovascular stenting. The majority of deaths occurred within the first 2 days, and the majority of repairs were performed within the first 72 hours. Factors associated with mortality included age, hypotension, head injury, abdominal injury, ISS >25, and nonoperative management. Compared to similar patients without aortic injury, patients with aortic injury were less likely to be independent in feeding, locomotion, and expression. Only 19% of patients with aortic injury were fully independent at the time of discharge compared to 39% of those without aortic injury.

Conclusions: Two thirds of patients are unable to undergo an attempt at aortic repair, and aortic injury significantly affects function at hospital discharge.

Reviewer’s Comments: It would be tempting to conclude that nonoperative management should be avoided at all costs, as the mortality is significantly higher with this approach. However, there is a difference between deliberate nonoperative management of minimal aortic injury and no attempt at treatment due to other nonsurvivable injuries. The data in the NTDB are unable to distinguish between the 2 groups. The FIM that is recorded in the NTDB is a modified FIM and is not present in all records. It is not clear how many of the records included in this analysis contained incomplete data; this information is necessary in order to determine the strength of any conclusions. (Reviewer-Karen J. Brasel, MD, MPH).

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Keywords: Blunt Aortic Injury

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