Communication from resident to attending physician regarding critical events at night failed to occur in 33% of events monitored.

**Background:** Communication breakdowns are identified as one reason for malpractice claims. Hand-offs between physicians is one area identified where communication breakdowns occur although our knowledge about how and when they occur is limited.

**Objective:** To determine how frequently communication breakdowns occur on surgical services.

**Design:** Prospective observational study.

**Participants:** 4 surgical services at 4 different hospitals with 20 to 100 observations for each.

**Methods:** One investigator monitored all hospitals and observed 3 specific criteria: (1) communication of critical patient events; (2) frequency of patient visits by an attending; and (3) attending resident discussion of patient management. Each area had predefined criteria that were sought and tabulated. For communication of critical patient events, residents were interviewed on unannounced nights and the morning after to determine what type of communication occurred for a given event. At ≥20 events per institution were captured. Attending presence at patient's bedside was measured by attending notes or patient interview. Of patients, 20 were randomly captured on unannounced weekends from each institution. Senior trainees on each service were contacted randomly to determine the amount of communication between trainees and attending. At each institution, 100 patient encounters were sampled.

**Results:** 33% of critical events were managed with no attending contact. Residents stated that in 76% management did not need the attending’s input and in 61% felt attending contact was not necessary. When an attending was contacted, management changed in 33% of patients. Of patients, 20% had not been seen by an attending in ≥2 calendar days. Of patients, 84% had been discussed by resident and attending on the audit day. However, 26 services discussed all patients while 8 discussed 34% of patients.

**Conclusions:** Critical event communication between resident and attending does not occur in one third of patients. Routine attending presence is absent in 20% of patients and not all patients are discussed routinely by resident and attending.

**Reviewer's Comments:** A sobering inside look at a surgical service with surgical trainees. Areas monitored were identified from malpractice claims. The relationship of poor communication to poor medical care or patient safety is not proven, although the authors suggest that is their next step in this analysis. Despite this lack of an outcome measure, I think we would all agree that some of the findings are disturbing. These findings do relate directly to the competencies we are responsible for imparting to our trainees. I suggest that we have bits of professionalism, communication, and systems based practice in these findings. I am sure a number of surgical services will review this report and ask some disturbing questions. (Reviewer-John A. Weigelt, MD).

© 2010, Oakstone Medical Publishing

Keywords: Patient Safety, Malpractice, Communication, Surgery

Print Tag: Refer to original journal article
Central Node Dissection for Papillary Thyroid Cancer Causes Controversy

The Long Term Outcome of Papillary Thyroid Carcinoma Patients Without Primary Central Lymph Node Dissection: Expected Improvement of Routine Dissection.

Senyurek YG, Tunca F, et al:

Surgery 2009; 146 (December): 1188-1195

Papillary thyroid cancer recurrence rates after total thyroidectomy remain low.

**Background:** Papillary thyroid cancer treatment is in the midst of controversy. Recent recommendations suggest that central node dissection be performed prophylactically. The benefit of this additional surgical extirpation remains unknown.

**Objective:** To determine the central compartment recurrence rate and mortality among patients treated for papillary thyroid cancer who did not undergo central neck dissection.

**Design:** Retrospective review.

**Participants:** 343 patients who had a total, near total, or subtotal thyroidectomy for papillary thyroid cancer.

**Methods:** Chart review identified demographics, tumor size, histology, and site of locoregional recurrence. Patients were divided into 2 groups based on recurrence within the central node area. Primary outcomes were rate of central node recurrence, factors associated with central node recurrence, and disease related mortality. Secondary outcome was overall recurrence rate. Patients with large tumors, extrathyroidal invasion, or an aggressive tumor type were given radioactive iodine treatment postoperatively. Patients received suppressive thyroxine doses. Recurrence was detected by increasing thyroglobulin levels.

**Results:** Of patients, 22 (6%) had locoregional recurrence: 16 lateral, 4 lateral and central, and 2 central. Central node recurrence was 2%. All these patients had resections of their recurrence. Of patients, 5 died from their disease and all had central node recurrence. Factors associated with central node recurrence were older age (≥60 years), tumor size ≥3 cm, extrathyroidal spread, and aggressive tumor subtypes such as tall cell variants, sclerosing variants, or poorly differentiated cells.

**Conclusions:** Prophylactic central node dissection for papillary thyroid cancer may be of benefit for a small number of patients with identifiable risk factors.

**Reviewer's Comments:** Prophylactic central node dissection for papillary cancer has gotten a lot of attention since the American Thyroid Association 2006 guidelines advocated its use. Debate has continued given the lack of level 1 evidence to support either side. In support of prophylactic dissection is the prevention of secondary procedures in an operated neck and the statement that surgical expertise should keep nerve complications and hypoparathyroidism low. The opposite side suggests no benefit for the majority of patients and the risk of complications for all patients having the procedure. We have followed the guidelines although we are certainly not unanimous in believing it should be done on all patients. This report suggests some selection process can be used to identify patients at risk for central node recurrence. They do not say it should be done, but if done, it should be used in patients with these risk factors. Maybe this is a middle ground that needs further exploration. (Reviewer- John A. Weigelt, MD).

© 2010, Oakstone Medical Publishing

Keywords: Papillary Thyroid Cancer, Outcome, Recurrence Rate, Central Node Dissection

Print Tag: Refer to original journal article
Using a fresh cadaver for anatomic exposures improves surgical trainee confidence as measured by self assessment.

Background: Operative management of many injuries is being replaced by nonoperative approaches. As this happens, training programs struggle to achieve acceptable numbers of cases performed for their trainees. A chief resident finishes their training with a median of 8 trauma laparotomies. Achieving appropriate skill levels for our trainees is a concern.

Objective: To describe a structured skills curriculum for trauma surgery.

Design: Prospective observational study.

Participants: 6 trauma fellows and 12 chief residents.

Methods: A fresh cadaver was used and 48 anatomic structures were identified. A self evaluation was done before the course asking how many procedures in various anatomic areas had been done in the preceding 12 months and what the self-perceived operating score was for the exposure in various types of procedures. The operating score was a Likert scale from 1 to 5 with 5 being very confident; this evaluation was repeated immediately after the course and between 2 to 17 months after the course. Primary outcome was to assess for differences in the operating scores.

Interventions: The course lasted 8 hours and involved 2 trainees and 2 faculty members. Emphasis appears to be on exposure of the 48 anatomic structures.

Results: Most participants had exposed the structures <5 times previously. The group was most familiar with spleen and femoral artery exposures. Post-course operating scores improved significantly over pre-course scores with the largest improvement in blood vessel exposure. The greatest improvement was among those participants who had the least amount of previous operative experience. Follow-up operating scores remained high.

Conclusions: A structured operative skills curriculum improves a surgeons' self confidence in operative skills.

Reviewer's Comments: Is this a picture of the future or a return to our past? Dissecting in the cadaver lab or maybe the morgue used to be a major component of surgical training. These authors describe a return to using cadavers for anatomic dissection. A very good idea, but does their evaluation tool truly match their intervention? Knowing anatomy might have been a better way to describe their "operating score". Did the trainee really learn or gain comfort with an operative exposure or just an anatomic exposure? I suggest the latter and not the former. A cadaver exposure is useful for the anatomy, but the exposure, especially when the structures are bleeding, is quite a bit different. We use an animal model and create injuries that our trainees must fix, which is a concept similar to the Definitive Surgical Trauma Course. We believe this is much more appropriate to teach operative skills than a cadaver which we do use for anatomic exposure. It is clear we will need to learn how to teach our trainees surgical exposure in new and different ways. (Reviewer-John A. Weigelt, MD).

© 2010, Oakstone Medical Publishing

Keywords: Operative Training, Curriculum, Trauma Surgery

Print Tag: Refer to original journal article
Prone positioning does not improve survival in patients with acute respiratory distress syndrome.

**Background:** Acute respiratory distress syndrome (ARDS) continues to be associated with high mortality rates. Prone positioning is used although no studies clearly document a survival advantage for prone positioning in ARDS.

**Objective:** To determine if prone positioning will improve outcomes in patients with ARDS.

**Design:** Prospective randomized multi-institutional clinical trial in Italy and Spain.

**Participants:** 174 patients managed in a supine position and 168 patients managed prone for 20 hours every day.

**Methods:** Patients had a \( \text{PaO}_2/\text{FiO}_2 \) ratio ≤200 with a positive end-expiratory pressure (PEEP) of 5 to 10 cm H\(_2\)O. Methods of mechanical ventilation were similar between groups. Primary outcome variable was outcome at 28 days. Secondary outcome measures included duration of ventilation. Patients were also stratified to moderate and severe hypoxemia groups based on their \( \text{PaO}_2/\text{FiO}_2 \) ratio. Moderate hypoxemia had a ratio of 100 to 200 while severe hypoxemia patients had a ratio of <100. Complications were also followed and included airway obstruction, increased sedation, vomiting, hypotension and loss of venous access. Only mechanical ventilation methods were controlled. Other interventions were left to the discretion of treating physician. Prone positioning was established with a rotation bed in 20 centers and manually in 5 centers.

**Results:** Overall mortality at 28 days was 32% for prone and 33% for supine patients. Prone positioning was achieved in 51% of prone patient's patient days. Mean number of prone sessions was 8 and the 20-hour daily total was achieved in 78% of patients. Mortality of 28 days among moderate hypoxemia patients was 25% for prone and 23% for supine patients while mortality for severe hypoxemia patients was 38% for prone and 46% for supine patients. Duration of ventilation and ICU length of stay was also not different. Complications were statistically higher among severe hypoxemia patients who were placed in a prone position. Airway obstruction occurred in 23% of moderate hypoxemia and 17% of severe hypoxemia patients.

**Conclusions:** Prone positioning did not improve outcomes in patients with ARDS regardless of the severity of hypoxemia.

**Reviewer's Comments:** Prone positioning can improve oxygenation in ARDS patients. It allows treatment of one major aspect of ARDS, but it does not impact survival. These results are pretty clear: do not expect miracles from prone positioning. The study also points out that prone positioning should not be undertaken lightly. Even with rotational beds, mishaps occur as the patient is turned. These complications are more common the more severe the hypoxemia is. It is a labor intensive manipulation that needs a cooperative critical care team to pull off. We use prone positioning infrequently and do not expect it to be a panacea for everything that ails the ARDS patient. It can resolve hypoxemia and allow us to fight another day in some patients. (Reviewer-John A. Weigelt, MD).

© 2010, Oakstone Medical Publishing

Keywords: Acute Respiratory Distress Syndrome, Prone Positioning, Outcomes

Print Tag: Refer to original journal article
Nonoperative management of high-grade small bowel obstruction is associated with earlier and higher recurrence of obstruction compared to operative intervention.

**Objective:** To determine the natural history of high-grade small bowel obstruction diagnosed on CT scan.

**Design:** Retrospective review.

**Methods:** A 5-year review of patients with the diagnosis of a high-grade small bowel obstruction diagnosed on CT at a single center was analyzed. Patients were stratified into nonoperative management, nonoperative management followed by surgery, or immediate operative intervention. Primary end point was recurrence of small bowel obstruction requiring admission. Length of stay, complications, and mortality were secondary end points.

**Results:** Analyzed were more than 1500 patients, of which 145 had high-grade obstruction on CT. About 30% of these patients underwent immediate operation. The remaining was initially managed nonoperatively with one third of those going on to require an operation. Therefore, about 50% of patients required surgery for their high-grade obstruction. Older age was associated with a reduced likelihood of operative intervention. Previous surgery, number of postoperative obstructive episodes (within 30 days of index abdominal surgery), and presence of inflammatory bowel disease, abdominal cancer, or radiation exposure were not different between groups. Fever, tachycardia, leukocytosis, acidosis, and CT scan findings of ischemia were also not predictive of the need for surgery. Rate of bowel resection was no different between the group undergoing immediate surgery and the group undergoing delayed surgery. Length of stay was longer for the operative group. Nonoperative management was associated with a 2.5-fold higher rate of readmission for obstruction recurrence compared to operative intervention. Also, the time to recurrence was shorter in the nonoperative group.

**Conclusions:** Patients with high-grade bowel obstruction on CT can be managed safely nonoperatively; however, it is associated with a higher rate of recurrence.

**Reviewer's Comments:** This retrospective review, unfortunately, is subject to hospital selection bias since there is no way to ascertain if patients sought subsequent medical therapy at another institution if they suffered recurrence of their bowel obstruction. If a patient underwent surgery for their bowel obstruction and then they recurred they might very well go to another institution for fear of reoperation or because they felt that the surgeon at the original institution didn't take care of the problem. Meanwhile patients who were managed nonoperatively successfully who recurred would more likely go back to the place that got them through their episode without surgery. This bias would substantially affect any measurement of recurrence at a single center. Therefore, primary end point recurrence rates with operative compared to nonoperative management are difficult to accept. The only statement that this study has proven is that patients with high-grade obstruction on CT scan may be treated nonoperatively since the need for bowel resection is no different if they are observed and then undergo surgery compared to undergoing immediate operation. (Reviewer-Raminder Nirula, MD).

© 2010, Oakstone Medical Publishing

Keywords: Small Bowel Obstruction, High Grade, Nonoperative, Outcome

Print Tag: Refer to original journal article
Combined arterial injury, open fracture, and significant intraoperative blood loss may indicate the need for fasciotomy.

**Objective:** To identify risk factors for upper extremity compartment syndrome after brachial artery injury.

**Design:** Retrospective review.

**Methods:** A single-center review over 16 years was performed and patients were stratified on the absence or presence of compartment syndrome. Compartment syndrome was defined as an extremity with tense compartments identified intraoperatively, loss of pulses secondary to swelling, or elevated compartment pressure measurements. Univariate and multivariate analysis was performed to identify predictors of compartment syndrome.

**Results:** Approximately one fifth of 139 patients with brachial artery injury were diagnosed with compartment syndrome. Independent predictors of compartment syndrome were combined arterial injury, open fracture, and increased intraoperative blood loss. Ischemia time was not a predictor of compartment syndrome. Patients with compartment syndrome had a higher incidence of sensory and motor deficits as well as wound infection rate compared to patients without compartment syndrome despite restoration of adequate arterial flow. No differences in operative or arterial repair techniques were associated with the development of compartment syndrome.

**Conclusions:** Patients with combined arterial injury, open fracture, and significant intraoperative blood loss have a higher risk of compartment syndrome. Prophylactic fasciotomy should be considered in these patients.

**Reviewer's Comments:** This paper describes risk factors for compartment syndrome in upper extremity trauma. It is interesting to note that ischemia time did not bear out as a risk factor. The relatively small number of patients with compartment syndrome makes it difficult to know if operative techniques, use of argyle shunts, or graft type play any role in compartment syndrome development or prevention. While this paper addresses local phenomenon related to the upper extremity injury and repair, compartment syndrome may be related to the degree of systemic inflammatory response and overall injury severity and physiology. There was no assessment of acidosis, admission physiologic status, or overall injury severity which may be important factors in the development of compartment syndrome. This paper identifies some important factors that should prompt the surgeon to perform prophylactic fasciotomy but it failed to assess systemic factors that might be equally important in determining the need for fasciotomy. (Reviewer-Raminder Nirula, MD).

© 2010, Oakstone Medical Publishing

Keywords: Brachial, Artery, Vascular, Injury, Fasciotomy, Compartment Syndrome

Print Tag: Refer to original journal article
Routine or Selective CT Scan Choice May Influence Care Decisions for Blunt Trauma


Deunk J, Brink M, et al:

J Trauma 2009; 67 (November): 1080-1086

Routine CT scanning on trauma patients leads to elevation in care level compared to a selective CT scanning approach.

**Objective:** To measure the influence that multi-row detector CT scans performed routinely on trauma patients has on clinical management between and within surgeons.

**Methods:** Patients in a high-energy mechanism of blunt trauma were routinely scanned regardless of physical findings and initial plain film results unless in significant shock. Prior to obtaining the routine CT scan, the trauma team was to record whether or not physical findings indicated that a CT scan needed to be performed for the spine, chest, abdomen, and/or pelvis. Assessment of intraobserver and interobserver agreement was done through presentation of 50 of these cases to senior trauma faculty along with the results of the selective CT scan. The treatment plan was then obtained from each of the trauma faculty for each patient. Routine CT scan results were then presented and faculty was asked if these results would change their treatment plan. This process was repeated 3 months later where the patients were again presented to the trauma faculty in random order. Kappa coefficients were calculated to quantify agreement within and between the 3 trauma faculty members.

**Results:** Injuries found by routine CT scanning that would have been missed by selective CT scanning ranged from a lateral mass C-spine fracture to solid organ injury. Most treatment changes were an upgrade in the level of care, consultancy of other specialties, spine immobilization, and chest tube placement. In no cases were surgical interventions added as a result of additional information gained from routine scans. Agreement between surgeons was moderate. Agreement within surgeons was moderate to excellent.

**Conclusions:** Routine CT frequently resulted in a change in treatment plans with significant agreement both within and between.

**Reviewer’s Comments:** While this study identified a number of injuries that would not have been identified immediately after trauma admission, we should not assume that these injuries would have been missed altogether. Injuries are not infrequently missed after initial evaluation but are subsequently identified. The issue is whether the delay in finding these other injuries results in worse outcome. Furthermore, this study shows that there were more consults and an escalation in the level of care but it is unclear if there were any significant changes in patient management. Is it more cost-effective to perform selective CT scan and identify subsequent injuries as they manifest or should we routinely scan everyone based upon mechanism? Furthermore, the presence of agreement between surgeons at this single center study is not surprising since people at the same institution tend to practice in a similar way. It would have been more meaningful had the authors performed this study using faculty from different trauma centers. (Reviewer-Raminder Nirula, MD).

© 2010, Oakstone Medical Publishing

Keywords: Routine, Selective, Multi-Row Detector CT Scan, Injury

Print Tag: Refer to original journal article
Cancer risk from CT scans is real and careful consideration is needed when ordering them.

Background: The relationship between CT scans and subsequent cancer has been recognized in the pediatric patient, but is only recently being recognized in adults.

**Objective:** To project the annual excess cancer risk from CT scans in the United States.

**Methods:** The number of CT scans performed in 2007 was ascertained using a combination of databases, including the Medicare database. The National Commercial Insurance Database was used to determine which CT scans were performed in patients that already carried a diagnosis of cancer; these were excluded from further analysis. The time lag between radiation exposure and subsequent cancer is estimated ≥5 years; therefore, those scans performed in patients with a life expectancy of <5 years were also excluded. Cancer risk was determined from the Biological Effects of Ionizing Radiation committee estimates.

**Results:** An estimated 72 million CT scans were performed in 2007; after excluding patients with a current diagnosis of cancer and those performed in the last 5 years of life, 57 million were included. Of scans, 60% were performed in women, 30% in people aged 35 to 54 years, and 7% in patients aged <18 years. Women had a higher cancer risk at all ages due to the increased risk of breast cancer and the higher likelihood of lung cancer due to the radiation coefficient for females. Overall, an estimated 29,000 future cancers could be related to the CT scans performed in 2007 (95% CI; 15,000 to 45,000 cancers). Of cancers, 14,000 were related to abdominal CTs; 4,100 to chest CTs; 4,000 to head CTs; and 2,700 to chest CT angiography. Of cancers, 67% were in women, 35% in people aged 35 to 54 years, and 15% in people <18 years of age. The most common cancer type related to CT radiation exposure was lung cancer (6200 cases), followed by 3500 cases of colon cancer, and 2800 cases of leukemia.

**Conclusions:** The authors provide detailed estimates of subsequent cancer risk related to use of computed tomography. They suggest that this might inform efforts to reduce the use of specific types of scans in specific populations.

**Reviewer’s Comments:** CT scan has clearly advanced surgical practice. However, these data provide an important note of caution, and remind us to weigh the necessity of the scan we are about to order. Disadvantages are real, and may not manifest for years after we see the patient. (Reviewer-Karen J. Brasel, MD).

© 2010, Oakstone Medical Publishing

Keywords: CT Scan, Cancer, Projected Risks

Print Tag: Refer to original journal article
Videotaping to Improve Trauma Performance

Video Registration of Trauma Team Performance in the Emergency Department: The Results of a 2-Year Analysis in a Level 1 Trauma Center.

Lubbert PHW, Kaasschieter EG, et al:

J Trauma 2009; 67 (December): 1412-1420

Videotaping of trauma resuscitations is a valuable performance improvement tool, one that can specifically focus on team training and team leadership.

Objective: To report on the use of video as a performance improvement tool for trauma resuscitations.

Methods: An attempt was made to videotape all trauma resuscitations during a 2-year period at a trauma center in the Netherlands. The resuscitation team consisted of residents from surgery, anesthesiology, and neurology, emergency medicine physicians, nurses, and technicians. The video was begun as soon as the patient arrived in the resuscitation bay and was reviewed by the attending surgeon of record the following day using a standardized evaluation sheet. If the attending surgeon was unavailable, a study investigator reviewed the videotape. The sheet evaluated timeliness and appropriateness of interventions using a 0 to 5 error scale. Errors of no significance were graded as 0, while errors resulting in serious permanent injury or death were graded 5. The sheet was divided into the areas of organization and communication, medical treatment, radiology, and overall judgment.

Results: There were 1256 potentially eligible patients. Video recording was attempted in 417; reasons for not attempting video recording included lack of need for full trauma team activation and faulty equipment. In 30 patients, the recording was not adequate, leaving 387 evaluable videotapes. In 347 resuscitations, the entire team was assembled prior to patient arrival. In 30 cases the lack of a complete team was graded as a type 1 error, in 2 cases a type 2 error, and in 8 cases a type 0 error. Personal protective equipment was worn in a minority of cases: protective gown in 82 and eyewear/mask in 88. These were graded type 0 errors. In 331 cases the team leader was evident; in 33 cases without an evident team leader the error was graded as type 0 and in 23 cases the error was graded as type 1. Errors in team organization were significantly related to other errors. With respect to medical treatment, the only type 3 errors occurred in establishing IV access. There were 25 type 2 errors scattered across a variety of medical treatments. There were 94 type 0 judgment errors, 4 type 1 judgment errors, and 1 type 2 judgment error. Team performance was rated “good” in 71% of resuscitations.

Conclusions: Videotaping of trauma resuscitations is a valuable performance improvement tool, one that can specifically focus on team training and team leadership.

Reviewer’s Comments: Given the importance of team function and need to evaluate all methods that may enhance optimal team performance, the legal issues surrounding videotaping of trauma resuscitations, as well as other potential team functions, should be carefully scrutinized and hopefully interpreted in such a way to allow this practice. (Reviewer-Karen J. Brasel, MD).

© 2010, Oakstone Medical Publishing

Keywords: Video, Team, Performance Improvement, Feedback

Print Tag: Refer to original journal article
Preop Biliary Drainage -- Good or Bad?

Endoscopic and Percutaneous Preoperative Biliary Drainage in Patients With Suspected Hilar Cholangiocarcinoma.

Kloek JJ, van der Gaag NA, et al:

J Gastrointest Surg 2010; 14 (January): 119-125

In patients with hilar cholangiocarcinoma, percutaneous preoperative biliary decompression is associated with significantly less infectious complications than endoscopic drainage.

Background: The optimal mode of preoperative biliary drainage (PBD) in patients requiring major hepatectomy for hilar cholangiocarcinoma remains unknown.

Objective: To review institutional experience with PBD either percutaneously or endoscopically and compare morbidities associated with each procedure type.

Participants/Methods: 115 patients underwent exploratory laparotomy under suspicion of hilar cholangiocarcinoma from January 2001 to July 2008. Patients were divided into 2 groups based on mode of primary preoperative biliary drainage. Tumors were staged according to the Bismuth-Corlette classification system. Preoperative decompression, either percutaneous or endobiliary, was performed using standard techniques. Outcomes and re-interventions were recorded. Success of stent placement was assessed and groups were compared.

Results: Patient demographics and preoperative characteristics were well matched between groups. There were no differences in surgical outcomes between groups. Procedure-related complications prior to surgery were similar. However, cholangitis complications were significantly higher in the endobiliary group at 48% compared to the percutaneous group at 9%. Number of stent changes required prior to definitive surgery was higher in the endobiliary group. The results of this study favor the outcome of percutaneous over endobiliary drainage in patients with potentially resectable hilar cholangiocarcinoma. This is the first retrospective study specifically addressing the optimal method of preoperative drainage in patients with operable Klatskin's tumors. While still largely practiced, endoscopic retrograde cholangiopancreatography for diagnostic purposes in the setting of obstructed jaundice may not be the optimal first test to perform. Axial imaging may be better suited for this purpose and the plan for PBD and future hepatectomy. There was a higher incidence of infectious complications in the endoscopic group as compared to the percutaneous group and, as a consequence, a higher incidence of re-interventions in the endoscopic group.

Conclusions: Percutaneous drainage also offers the option of selective PBD whereas endobiliary drainage typically results in either unilateral or bilateral nonselective drainage. While few, there are some studies that have supported the use of selective percutaneous drainage prior to major hepatectomy which may be associated with lower risk of complications and undrained biliary segments resulting in cholangitis. Percutaneous drainage may also aid in the actual surgical resection and potentially function as an internal transanastomotic drain to facilitate postoperative healing.

Reviewer’s Comments: The results of this study demonstrated that preoperative percutaneous biliary drainage outperformed endoscopic stent placement in patients with resectable hilar cholangiocarcinoma. Percutaneous biliary decompression was associated with significantly less complications and significantly less procedures prior to definitive surgery to achieve adequate preoperative decompression. While this single-institutional series favored the percutaneous over the endoscopic approach, further well-designed prospective studies are needed to determine the optimal management plan for patients with hilar cholangiocarcinoma.

(Reviewer-Sam G. Pappas, MD).

© 2010, Oakstone Medical Publishing

Keywords: Biliary Drainage, Resection, Hilar Cholangiocarcinoma

Print Tag: Refer to original journal article
Improving Outcomes in Pancreatic Necrosectomy

Parikh PY, Pitt HA, et al:

Patients undergoing pancreatic necrosectomy for pancreatic necrosis at American College of Surgeons National Quality Improvement Program hospitals had better than expected outcomes as compared to historical controls.

Background: The most severe form of acute pancreatitis, necrotizing pancreatitis, has been historically associated with high morbidity and mortality. The American College of Surgeons National Quality Improvement Program (ACS-NSQIP) has recently expanded their database to include pancreatic necrosectomy as a disease-specific CPT code and data entry point.

Objective: To analyze database-recorded outcomes of pancreatic debridement and necrosectomy over a 1-year time period.

Methods: The ACS-NSQIP file was queried to find all patients who had undergone pancreatic necrosectomy from January 1, 2007, to December 31, 2007. Patients undergoing procedures for uncomplicated pancreatitis and cyst enterostomies were excluded from analysis. Patient demographic and comorbidities were included in the analysis and compared to identify risk factors for worse outcomes. Both univariate and multivariate analyses were performed for factors associated with higher mortality. Stepwise logistic regression was performed to determine strong predictors of mortality.

Results: Data were entered on 161 patients meeting inclusion criteria of the study. Mean age was 54 years and the majority of patients were Caucasian (75%) and male (71%). Of patients, 11% had abused alcohol and mean body mass index (BMI) was 30.3 kg/m2. Of patients, 29% were diabetics. A large percentage of patients were transferred from outside hospitals (42%). While the overall morbidity rate remained high in this patient cohort (62%), the 30-day mortality was 6.8%. Advanced age and blood urea nitrogen levels were independent predictors of mortality. In 2007, data were gathered at 173 hospitals for >200,000 procedures performed the same year for the introduction of our CPT code of interest. Data and number of patients in this series collected compares very favorably to contemporary single institutional series of pancreatic necrosis and necrosectomy. Hospital mortality was 6.8%, which was only one third of predicted mortality by the ACS-NSQIP logistic regression, risk-adjustment formula.

Conclusions: This analysis would suggest that patients undergoing pancreatic necrosectomy for pancreatic necrosis at ACS-NSQIP hospitals had better than expected outcomes as compared to historical controls. Postoperative hemorrhage and need for reoperation were significantly more common in the non-survivors.

Reviewer's Comments: This analysis provides early data that outcome from rare high-risk procedures like pancreatic necrosectomy can be improved at NSQIP hospitals and provides some of the baseline data that warrant further review. The ACS-NSQIP database is a powerful repository for assessment of current outcomes from uncommon procedures at participating hospitals. This is a tool for potential quality improvement with potential future disease specific variable which need further validation. (Reviewer-Sam G. Pappas, MD).

© 2010, Oakstone Medical Publishing

Keywords: Morbidity, Pancreatic Necrosectomy, North America

Print Tag: Refer to original journal article
Crystalloids Win This Round Over Colloids

Fluid Management for Laparoscopic Colectomy: A Prospective, Randomized Assessment of Goal-Directed Administration of Balanced Salt Solution or Hetastarch Coupled With an Enhanced Recovery Program.

Senagore AJ, Emery T, et al:
Dis Colon Rectum 2009; 52 (December): 1935-1940

Goal-directed fluid administration for laparoscopic colon patients offered no advantage.

**Background:** Debate continues regarding crystalloid of colloid for fluid resuscitation in surgical patients. Usually the discussion revolves around resuscitation from hypotension, but these authors extend the discussion to type of fluid used in elective colon resections.

**Objective:** To determine the effect of various fluid types and protocols for fluid management in patients having a laparoscopic colectomy.

**Design:** Prospective randomized double blind study.

**Participants:** 64 patients divided into 3 groups based on type of fluid management.

**Methods:** Groups included standard lactated ringers (n=22), goal-directed lactated ringers (n=21), and goal-directed lactated ringers/hetastarch (n=21). A non-invasive cardiac monitoring device was used. In goal-directed patients, fluid was given as a bolus until stroke volume increased by 10% from baseline readings done immediately after randomization. More fluid was given if stroke volume fell by 10% on subsequent readings. Primary outcome was length of stay. Secondary outcomes included fluid volumes and complications. Boluses were 300 ml lactated ringers (LR) or 200 ml lactated ringers/hetastarch (LR/HS). Standard LR patients received bolus fluid as indicated by clinical parameters.

**Results:** Operative times were similar in all groups. The standard LR group received the lowest amount of total fluid and the goal-directed LR/HS the greatest. Length of stay was 65 hours for the LR patients, 72 hours for goal-directed LR, and 76 hours for goal-directed LR/HS. Complications were highest for goal-directed LR/HS patients at 4 compared to 2 for the other groups.

**Conclusions:** Goal-directed fluid administration for laparoscopic colon patients offered no advantage.

**Reviewer's Comments:** The purpose of this study was to define if goal-directed fluid administration either with or without a colloid was better than crystalloidal fluid administration based on clinical assessment. The answer was no. In fact, goal-directed fluid administration increased the amount of fluid given to patients. This outcome occurred as a result of using a device to measure cardiac function which was used to guide fluid administration. Another example of more technology not necessarily improving anything. The authors try to make a case for their technology by suggesting that goal-directed LR therapy might help reduce intraoperative fluid volumes. This recommendation is made despite the finding that intraoperative volumes in the goal-directed LR group were not statistically lower than other groups. What this study does say is that colloid use in these patients did not reduce fluid volumes and was actually associated with an increased complication rate.

(Reviewer-John A. Weigelt, MD).

© 2010, Oakstone Medical Publishing

Keywords: Perioperative Fluid Management, Colorectal Surgery, Outcomes, Colloid, Crystalloid

Print Tag: Refer to original journal article
Background: Endoleaks continue to occur after endovascular repair of abdominal aortic aneurysms (EVAR). Surveillance of endovascular grafts is done most commonly with CT imaging. Surveillance with color flow Doppler ultrasound (CDU) has produced variable results.

Objective: To compare the ability of CT and CDU to detect endoleaks after EVAR.

Design: Retrospective review.

Participants: 472 paired studies of patients having an EVAR and subsequent surveillance for endoleaks.

Methods: A paired study was one that had 2 studies done within 3 months of each other. Endoleaks were identified and classified as Type I, II, III, or IV. Primary outcome was to report sensitivity, specificity, negative predictive, and positive predictive values. CDU were performed in sagittal and transverse views and read by vascular surgeons. CT scanning used a 16-slice scanner and images read by radiologists. Studies were scheduled at 1, 3, 6, and 12 months after EVAR.

Results: Mean interval between CDU and CT exams was 18 days although 33% of exams were within 4 days of each other. Endoleaks were found in 137 patients. There were 8 Type I, 123 Type II, 4 Type III, and 2 indeterminate leaks: one each for CDU and CT only. Of patients, 91 had an endoleak discovered at 1 month. CDU detected 110 endoleaks while CT detected 75 endoleaks. Of patients, 18 required an intervention. CDU had a sensitivity of 90% for detecting patients requiring intervention compared to a CT sensitivity of 58% for the same patients. CDU was also better at detecting Type II leaks than CT scanning although CDU sensitivity for Type II endoleaks was less than Type I or III endoleaks.

Conclusions: CDU can be used to detect patients requiring intervention for endoleaks after EVAR.

Reviewer's Comments: The authors try to make their case that CDU is better than CT scanning for the detection of endoleaks after EVAR. Their data is convincing, but CDU's limitations are acknowledged in their discussion. Ultrasound is still operator dependent and these results may not be duplicated at all institutions. Body habitus can produce poor results. Ultrasound technology is not as commonly present as CT scanning. I would also offer that a 16-slice scanner is old technology and may not represent current CT results. We still use CT scanning although alternatives are being sought secondary to concern for radiation exposure. EVAR appears to be here to stay, so this debate will continue. (Reviewer-John A. Weigelt, MD).

© 2010, Oakstone Medical Publishing

Keywords: Endoleak Detection, Endovascular Repair, Abdominal Aortic Aneurysms

Print Tag: Refer to original journal article
Surgery -- A Valuable, Scarce Resource

The Impending Shortage and the Estimated Cost of Training the Future Surgical Workforce.
Williams TE Jr, Satiani B, et al:

Ann Surg 2009; 250 (October): 590-597

If no changes occur in our production of surgeons, there will be an estimated 9% shortage of general surgeons by 2030.

Background: Surgical workforce estimates are certainly in the news these days. Old estimates said we would have a surplus and now estimates are suggesting a shortage. What to do and who to believe is definitely problematic.

Objective: To estimate surgical workforce needs in the year 2030 and estimate cost of training an increased number of surgeons.

Design: Modeling based on assumptions and existing data.

Methods: Estimates were made for obstetrics and gynecology, orthopedic surgery, otolaryngology, thoracic surgery, neurosurgery, urology and general surgery. Only estimates for general surgery will be reviewed. Assumptions included keeping physician population ratios the same, no change in postgraduate positions, stable cost of training each physician, 30 years of practice, training years would not change, and our care model would not change. The goal was to define an estimate of the number of general surgeons needed by 2030 and what it would cost to train these individuals.

Results: 100 general surgeons (GS) are being trained every year. The GS/population ratio is 7.5/100,000. The estimated shortage by 2030 was calculated as 2525 surgeons or a 9% shortage. The cost of training extra surgeons to meet the need in 2030 would be $1.01 billion.

Conclusions: If no changes occur in our production of surgeons, there will be an estimated 9% shortage of general surgeons by 2030.

Reviewer's Comments: This is one of many recent articles to discuss the potential for shortages in surgical specialty care in the United States. Most of these articles support the concept that a shortage is looming over us. How to cope with the shortage is the unanswered question. Medical schools have increased enrollment, but residency slots are fixed by the Balanced Budget Act of 1997. Without an increase in the number of training slots, new graduates will displace international medical graduates from our training positions. These authors present us with some cold facts based on a number of assumptions. To properly assess their conclusions, one must look closely at their assumptions and decide if they are valid or not. I do not have a crystal ball, but a number of their assumptions could swing their conclusions either way. The number of years in training, cost estimates with no inflation rate, the number of training years could change, and most importantly, our care model could change. The latter is being discussed at the national level currently. The long and the short of this type of report is that it represents a best guess and we will just have to wait and see what truly happens.

(Reviewer-John A. Weigelt, MD).

© 2010, Oakstone Medical Publishing

Keywords: Physician Workforce, Surgeons, Estimates

Print Tag: Refer to original journal article
The Harsh Reality of Cancer Risk From CT Scanning


Smith-Bindman R, Lipson J, et al:
Arch Intern Med 2009; 169 (December): 2078-2086

The lifetime attributable risk of cancer associated with CT coronary angiogram and abdominal CT is significantly higher than that for a head CT.

Objective: To quantify amount of radiation exposure and lifetime attributable risk of various CT scan studies at several institutions.

Methods: The effective dose delivered by the scan type was compared to the effective dose of a frontal and lateral chest x-ray and a screening mammogram. Lifetime attributable risk of cancer and number of patients that would need to undergo a CT scan until 1 case of radiation-induced cancer occurred was determined.

Results: CT studies of the head, chest, abdomen and pelvis were the most frequent type of studies performed. A head CT was 2 to 14 mSv which is equivalent to 30 to 200 chest x-rays or 5 to 33 mammograms. A coronary CT angiogram was equivalent to 309 chest x-rays or 51 mammograms, and an abdomen/pelvis CT was comparable to 220 chest x-rays or 37 mammograms. Variation of effective dose of radiation within each study type was large with as much as a 13-fold variation occurring within and across institutions. In women aged 20 years, 250 multiphase abdomen/pelvis CTs would need to be performed before 1 radiation-induced cancer would occur. For a coronary artery chest CT this number is 150 and for a head CT it is 4360. Furthermore, this study identified that the variability and quantity of radiation used in CT scans is far greater than the generally quoted value of 8 to 10 mSv.

Conclusions: Variation in CT scan radiation dose is wide and there is a significant risk of lifetime risk for cancer associated with CT scanning.

Reviewer's Comments: I applaud the authors for quantifying the potential harm related to CT scanning as it allows us to provide our patients with some meaningful numbers that can help them decide if they want a CT scan or not. Particularly in trauma, we are scanning patients more and more because of concern for liability for a missed injury. We scan people who have no complaints other than not being able to recall their car crash in detail or because we are scanning some other part of their body so why not just "pan scan" them. The interesting question will be if one of these patients develops a radiation-induced cancer will we then be held liable. We need to remember the oath we took was to do no harm. Patients need to know their risk of cancer and this risk needs to be balanced with the likelihood that the scan will provide important information that will affect the patient's management. (Reviewer-Raminder Nirula, MD).

© 2010, Oakstone Medical Publishing

Keywords: Radiation, CT, Cancer, Risk, Effective Dose

Print Tag: Refer to original journal article
Brachial vein transposition arteriovenous fistula provides an alternative access in patients with obliterated superficial veins.

**Objective:** To measure outcomes and need for interventions after formation of a brachial vein transposition arteriovenous fistula (BVT-AVF) for dialysis access in patients with obliterated traditionally used venous outflow.

**Design/Methods:** Data from a prospectively collected database of vascular access patients was reviewed over a 3-year period focusing upon patients with basilic vein transposition AVF. The first stage of the procedure involved either radial or brachial artery anastamosed to the brachial vein. After 4 to 6 weeks of maturation, the dilated brachial vein was then mobilized and placed in a subcutaneous space for access. If the brachial vein was ≥6mm in size at the first stage procedure, then transposition was done at the first operation such that the complete fistula and transposition was done in 1 stage.

**Results:** Most of the 58 patients reviewed required a 2-staged procedure. At 24 months, primary patency was 46% while primary-assisted patency was 76%. Secondary patency, defined as patency maintained until fistula function was interrupted with thrombosis or abandonment of the fistula access or until completion of the study period, was 93%. Only 4 patients required surgical revision.

**Conclusions:** Brachial vein transposition provided durable access for patients with difficult access secondary to obliterated veins traditionally used for fistula formation. These results are at par or superior to patency rates reported in the literature for this type of fistula.

**Reviewer’s Comments:** This review provides an important option for patients with difficult dialysis access. It emphasizes the importance of well-trained vascular access surgeons participating in decisions related to dialysis access in order to provide cost-effective, durable solutions for dialysis access to these fragile patients. Patency rates should be considered quite good given the fact that normal venous anatomy has been compromised. Despite the fact that many of these patients required additional interventions to maintain fistula patency, the high patency rate at 24 months was achieved with only a few patients actually requiring a surgical intervention to maintain graft patency. Dialysis-access surgeons should become familiar with this technique before condemning patients to a tunneled catheter in light of the known increase complications with these access catheters. (Reviewer-Raminder Nirula, MD).

© 2010, Oakstone Medical Publishing

Keywords: Arteriovenous, Fistula, Dialysis, Access, Brachial, Vein

Print Tag: Refer to original journal article
Endovascular treatment is preferred to open repair for nontraumatic thoracic aortic pathology.

**Background:** There has been much reported on the use of thoracic endografts in the treatment of thoracic aortic injury secondary to trauma. Less is known about the indications and outcomes in nontraumatic pathology.

**Objective:** To report on the use of thoracic endografts in the setting of ruptured thoracic aortic aneurysm.

**Methods:** Records of patients with ruptured thoracic aortas undergoing both open and endovascular repair between 1993 and February 2009 were reviewed. Demographic information, comorbidities, aortic pathology, complications, and survival were abstracted. Multivariate analysis investigated the relationship of repair type to a composite outcome of mortality and complications.

**Results:** 34 patients underwent open repair and 35 patients underwent endovascular repair of ruptured thoracic aortic pathology. Average age was significantly younger in the open group when compared to the endovascular group, 60 versus 71 years, respectively ($P=0.005$). Mean aortic diameter was significantly larger in the open group, 6.8 cm versus 5.6 cm in the endovascular group ($P=0.04$). Coronary artery disease, congestive heart failure, diabetes, hypertension, peripheral vascular disease, and tobacco abuse were similarly distributed between groups. The endovascular group had a higher number of patients with COPD. In addition, a significantly higher percentage of patients in the endovascular group were at high risk due to comorbidities, 89% versus 6% in the open group. There was no statistical difference between groups in underlying pathology; 53% of patients in the open group and 31% of patients in the endovascular group had acute dissection. Of patients, 40% in the endovascular group and 24% in the open group had the aortic arch treated ($P=0.04$). Successful endovascular treatment occurred in 94% of patients. Of patients, 9 died in the open group and 4 patients died in the endovascular group. Independent predictors of a composite outcome of early mortality, stroke, permanent spinal cord ischemia, or need for dialysis or tracheostomy included the presentation of hemodynamic instability ($P<0.001$) and treatment with conventional open repair ($P=0.02$).

**Conclusions:** Treatment with an endovascular approach is preferred for patients with nontraumatic thoracic aortic pathology.

**Reviewer's Comments:** Despite the fact that the endovascular group was older and at greater risk due to comorbidities, they had better outcomes. It is not clear whether all patients in the open group would have been candidates for endovascular repair due to the significant difference in aortic size, and the need to treat the aortic arch. However, these data support the use of an endovascular approach for the thoracic aorta in the non-elective setting regardless of underlying pathology. (Reviewer-Karen J. Brasel, MD).

© 2010, Oakstone Medical Publishing

Keywords: Traumatic Injury, Thoracic Endovascular Aortic Repair

Print Tag: Refer to original journal article
Using a selective approach, the left subclavian artery can be covered safely during thoracic endovascular aortic repair.

**Background:** In the course of treating thoracic aortic pathology with endovascular stents, the left subclavian artery may need to be covered. The clinical significance of this maneuver has not been fully clarified, and management approaches range from pre-stent bypass to observation for symptoms.

**Objective:** To report on the results of covering the left subclavian artery when performing a thoracic endovascular aortic repair.

**Methods:** Records of patients who underwent thoracic aortic stenting from March 1997 to October 2008 were reviewed. Included in this review were those in which the left subclavian artery was covered. Indications for primary left subclavian artery bypass prior to thoracic stenting included patent left internal mammary artery (LIMA) graft, a functioning dialysis fistula in the left arm, need for long segment aortic coverage, prior or concomitant infrarenal aortic replacement, a hypoplastic right vertebral artery (RVA) and renal insufficiency.

**Results:** The left subclavian artery was covered in 88 of 220 patients undergoing thoracic stenting. Average age was 64 years, and 63% were male. Of patients, 34 were treated emergently. Of patients, 13 had traumatic aortic injuries, 27 had degenerative aneurysms, and 29 had nontraumatic dissections. Technical success was achieved in 85 patients. Primary left subclavian artery bypass was performed in 22 patients a median of 6 days prior to elective stenting. Of patients, 17 died in-hospital, and an additional 15 within 30 days. One patient developed paraplegia, and there were 3 strokes. Of patients, 2 had subclavian steal syndrome and 3 patients had arm claudication. Additionally, 9 patients underwent secondary bypass of the left subclavian artery. Of these, 4 were for endoleaks, 1 for paraplegia, 2 for subclavian steal, and 2 for arm claudication. There was no relationship between coverage of the left subclavian artery with or without bypass and development of post-intervention neurologic symptoms.

**Conclusions:** A selective approach to pre-intervention bypass of the left subclavian artery in the setting of planned thoracic endografting is safe and appropriate.

**Reviewer's Comments:** There is no comparative group, as the authors had guidelines for when a pre-stent bypass was performed. It is clear that routine bypass after emergent thoracic stenting when the left subclavian artery is covered is not necessary; a minority of these patients will develop symptoms, which can be addressed by bypass if and when they occur. (Reviewer-Karen J. Brasel, MD).
Methods Are Controversial in Preventing Pancreatic Fistulas

Measures to Prevent Pancreatic Fistula After Pancreatoduodenectomy: A Comprehensive Review.

Lai ECH, Lau SHY, Lau WY:

Arch Surg 2009; 144 (November): 1074-1080

Pancreateicojejunostomy and its variations in position, isolation, and anastomotic type with or without duct-to-mucosal suturing were reviewed and no technique should be considered superior.

Background: Pancreatic fistula remains the most feared and potentially most costly complication after pancreaticoduodenectomy.

Objective: To review current evidence to support or refute various pharmacologic and technical modifications proposed to help decrease risk of postoperative fistula.

Methods: A comprehensive MEDLINE search was performed over an 18-year period to identify pertinent articles. Case reports were excluded from this analysis. Meta-analyses and randomized controlled trials (RCTs) were considered first and then nonrandomized comparative studies and case series were also included. There were 11 RCTs and 2 meta-analyses that have examined the use of somatostatin and its analogues.

Results: Despite wide heterogeneity in design and reporting, the prophylactic use of perioperative somatostatin and its analogues to prevent pancreas-related complications remains controversial and undetermined. There is a need for standardization in outcome measurements and techniques to determine the exact role of this analogue in postoperative Whipple patients. Various techniques of managing the pancreatic remnant have been described including ligation of the pancreatic duct to various means of pancreateicoenterostomy with either jejunum or stomach. There is insufficient evidence to date to replace pancreateicoenterostomy with duct ligation. Based on the current evidence, pancreateicogastrostomy and pancreateicojejunostomy should be considered equivalent in terms of perioperative outcomes.

Conclusions: Pancreateicojejunostomy and its various variations in position, isolation, and anastomotic type with or without duct-to-mucosal suturing were reviewed and no technique should be considered superior and the standard. While no technique was superior to any other, the anastomosis should generally be tension-free, have an adequate blood supply, and allow unobstructed egress of pancreatic secretions from the pancreas.

Reviewer's Comments: Study results would suggest that the precise role of pharmacologic and technical modifications to decrease the postoperative pancreatic fistula rate have been controversial. RCTs are needed to determine optimum techniques to help decrease the postoperative leak rate after Whipple. (Reviewer-Sam G. Pappas, MD).

© 2010, Oakstone Medical Publishing

Keywords: Pancreatic Fistulas, Whipple Procedure, Pancreatoduodenectomy

Print Tag: Refer to original journal article
A 30-day mortality measure may underestimate the true risk of death after colectomy.

**Background:** Operative mortality is a concrete outcome measure which provides insight into risks of individual surgical procedures and can be easily quantified at various time-points. Classically, 30-day mortality for major abdominal surgery has been used but may underestimate the true risk of mortality postoperatively. There is growing recognition that the risk of death from a surgical procedure may extend beyond 30 days.

**Objective:** To determine whether 30-day mortality underreports actual risk of death from patients undergoing colorectal operations.

**Methods:** Patients who underwent a colorectal resection at the authors’ hospital over a 6-year time period were. CPT codes were used to capture all patients undergoing primary colectomies, either partial or total. Deaths and causes of death were identified through overlapping systems to ensure accuracy and were recorded as within 30 days, within 90 days, or in-hospital. Observed-to-expected ratio of death was measured for each patient and the entire cohort.

**Results:** 186 were identified: 148 who underwent elective colectomies and 38 who underwent emergent procedures. All but 8 patients were men and median age was 67 years. Most procedures were done for colorectal neoplasms (60.8%) and most were open (75.8%) as compared to the remaining colectomies which were performed laparoscopically. Overall 30-day mortality was low at 4.3%: 1.4% in the elective procedures, but 15.8% in the in the emergent cases. Notably, the mortality at 90 days increased markedly.

**Conclusions:** 90-day mortality went up to 9.1% and with 90-day mortality being 4.1% for elective and 28.9% for emergent procedures.

**Reviewer’s Comments:** The 30-day mortality rate in this series of patients undergoing colon resections underestimated the true risk of death. While this may not represent actual procedure-related mortality in all patients undergoing colon resection, the 90-day mortality rate may serve as a better estimate of risk of death in this patient population. This study demonstrates that measuring outcomes beyond an arbitrary 30-day period to better assess actual expected outcomes like death rate may be worthwhile. (Reviewer-Sam G. Pappas, MD).

© 2010, Oakstone Medical Publishing

Keywords: Procedure-Related, Mortality, Colectomy

Print Tag: Refer to original journal article
Higher risk of malignant transformation in Crohn's perianal fistulas, particularly in females, warrants aggressive investigation to rule out an underlying cancer.

**Background:** Malignant degeneration of perianal fistulas from Crohn's disease (CD) has been infrequently reported.

**Objective:** To review published literature from 1950 to 2008 for reports of perianal CD resulting in cancer.

**Methods:** A systematic review of English case series and reports was conducted identifying 167 articles. Fistulas with associated malignancies were limited to rectal, anal, and perianal; all other cancer-associated fistulas were excluded. From 34 different studies, 61 cases were analyzed with respect to patient demographics, presenting symptoms, clinical and pathologic outcomes. Standard statistical analyses were performed.

**Results:** Of patients, 37 (61%) were females. Females were significantly younger than males at the time of cancer diagnosis. Males with cancer had a longer duration of CD as compared to females, but females had a shorter interval from fistula diagnosis to cancer (8.3 years as compared to 16 years.) Most fistulas were rectal in origin and the majority of the cancers were adenocarcinomas followed by squamous cell carcinomas. This review identified differences between males and females with respect to rates of malignant transformation. Women had a shorter duration of both CD and fistula prior to apparent malignant transformation.

**Conclusions:** It appears that there is a strong association between CD, particularly with colonic involvement, and colorectal cancer. Several theories as to the cause of the apparent higher incidence of cancer have been postulated and are centered largely on the constant mucosal regeneration as a potentially causative mechanism. Furthermore, the intense pain associated with perianal CD may lead to inadequate examinations and diagnostic delay in recognizing an underlying malignancy.

**Reviewer's Comments:** Although somewhat rare, higher levels of suspicion in non-healing fistulas in patients with perianal Crohn's disease should be maintained. Newer or different symptoms warrant meticulous investigation. The apparently more aggressive behavior of these tumors in female patients is noteworthy and should heighten the clinical suspicion that the fistula may be harboring an underlying cancer. (Reviewer-Sam G. Pappas, MD).

© 2010, Oakstone Medical Publishing

**Keywords:** Cancer Risk, Perianal Crohn's Disease

**Print Tag:** Refer to original journal article