Intraabdominal Abscesses: Image-Guided Diagnosis and Therapy

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Intraabdominal abscesses may complicate many illnesses including diverticulitis, pancreatitis, and appendicitis, or they may occur during the postoperative period. As new methods of imaging are developed that provide additional information on patients with these abscesses, earlier and more accurate diagnoses can be made, allowing for prompt intervention. With the advent of these new imaging methods, techniques for treatment of abscesses by percutaneous drainage have been developed. In light of these advances, we review the current strategies for the management of intraabdominal abscesses.

Techniques for the diagnosis and treatment of intraabdominal abscesses have advanced remarkably as a consequence of the improved capability and availability of diagnostic imaging. CT and ultrasonography provide focused, objective information to expedite diagnosis and define treatment plans. Dramatic changes in the technology of these radiological techniques have expanded their applications, and image-guided therapy now provides additional approaches to drainage of intraabdominal abscesses.

The mortality associated with undrained abscesses is high. Several investigators have observed that the mortality rates associated with untreated abscesses approaches 100% [1–3]. However, as surgical drainage techniques have advanced, the mortality rates associated with this condition have fallen. These improved outcomes can be attributed to several factors including a better understanding of the pathophysiology of clinical syndromes such as acute peritonitis, sepsis, and multisystem organ failure; appreciation of the importance of early intervention and adequate drainage of the abscess cavity; and the advent of the diagnostic imaging techniques ultrasonography and CT.

It can be difficult to make the clinical diagnosis of abdominal abscess. An abscess may be suspected on the basis of a subjective history from the patient and/or on the basis of objective findings, which include fever, leukocytosis, rebound tenderness, or a palpable mass. Despite these physical clues, the diagnosis and underlying etiology of the condition can remain elusive. Physicians can now expeditiously and accurately diagnose intraabdominal abscesses in most patients with use of ultrasonography and the more sensitive technique of CT. Earlier diagnosis can be achieved, leading to immediate intervention, treatment, and an improved chance for survival. During imaging, guided needle aspiration can be performed to obtain fluid samples. Gram staining and culturing of the fluid can then be performed to document the presence of infection and direct antibiotic therapy. Because of the high concentrations of bacteria within the abscess cavity, the use of both drainage and broad-spectrum antimicrobials is essential for the patient’s recovery [4].

The traditional mainstay of treatment for intraabdominal abscesses has been operative exploration, mechanical debridement, and drainage of the infected cavity. Over the past 15 years, image-guided procedures have been developed that complement modern surgical drainage techniques. These procedures have proved comparable to surgical techniques in terms of adequate drainage of the cavity and mortality rates [5–13]. Herein we describe the clinical management options that incorporate surgical techniques and image-guided procedures for the treatment of pancreatic abscesses, diverticular abscesses, appendiceal abscesses, and postoperative abscesses.

Diagnostic Imaging

Plain films of the abdomen, radioisotope scanning, and intraluminal contrast studies have all played a role in the diagnosis of intraabdominal abscesses. Clinical studies have demonstrated that these techniques have a diagnostic value that ranges from 15% to 50% when they are used for this purpose [14]. However, over the past 15 years, advances in cross-sectional imaging by means of CT and ultrasonography have resulted in greater diagnostic sensitivity and specificity. With the availability of these techniques, use of the older procedures for diagnosing intraabdominal abscesses is generally not considered beneficial.

Ultrasonography is highly sensitive for detecting fluid within the abdomen and pelvis. The advantages of this diagnostic test include mobility (the equipment can be transported to the bedside of critically ill patients), lack of ionizing radiation, and
greater cost-effectiveness than other methods of diagnosis. The sensitivity of ultrasonography for localizing fluid collections is related to its use in specific regions within the abdomen. If the patient has not previously undergone surgery, the left and right upper quadrants and the pelvis can be accurately visualized. Once a fluid collection is discovered, the differences between one that is infected and one that is sterile can be subtle. The shape of the cavity walls, the presence of debris, internal echogenicity, and the presence of gas within fluid collections all may suggest infection; however, an absolute diagnosis cannot be made. Technical limitations may also be present: the utility of ultrasonography can be limited by the presence of bone or surgical wounds or by the size of the patient, which may prevent imaging of all areas in the abdomen and pelvis. During the postoperative period, when fluid collections and gaseous bowel distention (ileus) are common, the interpretability and diagnostic capabilities of ultrasonography may be significantly reduced [5, 15, 16].

CT is currently considered the study of choice for the diagnosis of an intraabdominal abscess [15, 17–20]. CT is more accurate than ultrasonography, provides high anatomic resolution, and is less operator dependent than is ultrasonography. CT allows visualization of retroperitoneal structures and intraluminal fluid collections, which may not be visualized when other imaging techniques are used. The presence of a fluid collection is suspected when areas of low attenuation (0–50 Hounsfield units) are detected in an extraluminal space or within a parenchymal organ. The shape of the cavity walls and the presence of debris, loculations, and gas are all suspicious of infection on both ultrasonograms and computed tomograms. Contrast enhancement may be used to define a cavity wall, but accurate differentiation between sterile fluid collections and infected fluid collections is not possible.

Diagnostic fluid aspiration under CT guidance confirms that fluid is infected and allows for prompt, definitive management by means of surgical or percutaneous drainage. While superficial, large cavities and intraparenchymal cavities can be easily located with ultrasonography, CT-guided procedures have the advantage of penetrating small, deeper fluid collections. The high anatomic resolution of CT is useful in determining a safe pathway for accurate fluid aspiration and possible percutaneous drainage.

The route selected in performing needle aspiration is important, as passage of the needle through a loop of bowel may lead to infection of a sterile fluid collection, resulting in a false-positive diagnosis. Performance of fine-needle aspiration provides important information for the treatment of intraabdominal abscesses. The results of gram staining and culture of the aspirate guide selection of appropriate antibiotic agents, and additional information regarding the character, viscosity, and cellularity of the aspirate guides consideration of percutaneous drainage procedures.

A well-defined unilocular cavity, a safe drainage route, absence of excessive cellular debris, low viscosity of the fluid, and immediate surgical access if failure or a complication occurs are several criteria for successful percutaneous drainage. Percutaneous drainage can be performed by means of several methods. The two basic drainage techniques used are the Seldinger tandem catheter system and the trocar catheter (single puncture) technique. The Seldinger tandem catheter technique deploys a drainage catheter over a guide wire and is preferred when abscesses are small, deep, parenchymal, or in proximity to loops of bowel. The trocar catheter technique is generally used for larger, more accessible lesions (figure 1). With both systems, syringe suction is initially used to aspirate material, followed by placement of a drainage bag or bulb suction device [16].

**Percutaneous vs. Operative Drainage**

During the past 15 years, many studies have been conducted to compare the results of percutaneous drainage with the results of surgical drainage in patients with intraabdominal abscesses. Most of these studies were neither randomized nor prospective and included patients with abscess cavities of different etiologies (i.e., diverticular, appendiceal, and postoperative.) The findings suggest that percutaneous drainage of an abscess can be performed as safely as can surgical drainage, with a similar outcome.

The most important consideration in choosing a drainage technique, independent of the technique itself, is the severity of illness of the patient with an intraabdominal abscess. Recent literature in which percutaneous and surgical drainage techniques were compared indicates that an objective severity-of-illness scoring system is prognostic in terms of morbidity and mortality [9, 10]. A widely used system for the evaluation of severity of illness is APACHE (Acute Physiology and Chronic Health Evaluation) II, developed by Knaus et al. [21]. In 1991,
Hemming et al. [9] described 83 patients with intraabdominal abscesses treated by surgical drainage or percutaneous drainage. The groups were matched for age, abscess location, and etiology of the abscess cavity. No significant difference was found in terms of morbidity or mortality between the two groups; however, APACHE II scores were found to be significantly associated with prognosis.

In 1991, Levison and Zeigler [12] reviewed the cases of 91 patients with postoperative abscesses who underwent either percutaneous or surgical drainage. The two groups of patients were similar with respect to age, sex, abscess location, and severity of illness as determined by APACHE II. The initial method of drainage was selected by the attending physician. The overall mortality rate was 29% (26 of 91 patients). When the results of percutaneous drainage and operative drainage were compared, no difference in outcome was demonstrated for patients with an APACHE II score of $<14$ or $>25$. The outcomes for patients with APACHE II scores between 14 and 24 were significantly better when they were treated by operative drainage. In this study, $\chi^2$ analysis demonstrated independence between outcome and drainage technique. Severity of illness was a significant factor in patient survival.

Additional studies have demonstrated that percutaneous drainage can be as effective as traditional surgical management of intraabdominal abscesses (table 1). In terms of patient survival, early detection and treatment of infection to prevent clinical deterioration and sepsis appear to be crucial for more severely ill patients.

### Drainage of Specific Abscess Cavities

The differences in the underlying causes and sources of abscesses are important for planning an approach for intervention and treatment. Regardless of the technique used for diagnosis, the treating physician must carefully analyze all objective data before draining the infected cavity. Contraindications for percutaneous drainage must be carefully assessed, and therapy should be immediately instituted to prevent delay and deterioration in the patient’s clinical condition. The remainder of this article will focus on specific types of abscess cavities and their treatments.

#### Pancreatic fluid collections

Alcoholism and gallstones account for the majority of cases of acute pancreatitis seen in the United States. The diagnosis of acute pancreatitis is traditionally a matter of clinical judgment based on analysis of the patient’s history, physical examination findings, and enzyme levels. Contrast-enhanced CT has become the imaging study of choice as a supplement to traditional diagnostic techniques for evaluation of pancreatic morphology and detection of local complications of pancreatitis [24–27]. Contrast-enhanced CT allows quantitation of size, location, and extent of involvement of the pancreas and surrounding retroperitoneal tissues. This information can be instrumental in guiding therapeutic decisions in advanced cases and in guiding percutaneous fine-needle aspiration if infection is suspected.

The treatment of acute pancreatitis and its complications remains controversial. One reason for this is that the terminology used to describe similar clinical conditions is confusing and often conflicting. Several classification systems exist for staging of acute pancreatitis. For the purposes of this discussion, we have followed the clinically based classification system for acute pancreatitis, as proposed at the International Symposium on Acute Pancreatitis in 1992 [28]. Acute pancreatitis can be divided into four main categories based on clinical findings, laboratory results, ultrasonography findings, and CT findings. These categories are acute pancreatitis (mild and severe), pancreatic necrosis, pancreatic abscess, and pseudocyst due to acute pancreatitis.

Mild acute pancreatitis is not associated with any systemic complications and is characterized by prompt resolution of symptoms and objective findings. CT or ultrasonography is usually performed within 1 week of the patient’s initial presentation and can be helpful in determining the severity, complica-
Pancreatitis can frequently be associated with early acute fluid collections. These fluid collections occur in approximately one-third of patients with acute pancreatitis, up to half of which resolve spontaneously [24, 25]. The clinical significance of a fluid collection can be related to its size, as measured by CT. Fluid collections &gt;7 cm in diameter are more likely to require intervention, especially if they are due to alcoholic pancreatitis [24, 29, 30].

Approximately 50% of acute fluid collections resolve, and drainage procedures are not indicated until they mature into pseudocysts, unless they become infected. If the patient develops a fever that is unresponsive to conservative medical management, CT-guided fine-needle aspiration can aid in diagnosis and direction of antibiotic therapy. Severe acute pancreatitis can be associated with organ failure and, subsequently, local complications such as necrosis, abscess, or pseudocyst.

Pancreatic necrosis involves injury to acinar cells, islet cells, and the pancreatic ductal system and results in extensive fat necrosis and focal areas of nonviable pancreatic parenchyma [28]. Dynamic CT, showing contrast density that does not exceed 50 Hounsfield units in pancreatic parenchyma larger than 3 cm or in &gt;30% of the pancreas, can be used to make this diagnosis [31]. When pancreatic injury occurs, concomitant infection may be present. Secondary bacterial infections of the necrosis can occur in 40%-60% of patients; these infections are most frequently due to gram-negative organisms including *Escherichia coli*, *Klebsiella* species, *Pseudomonas* species, and *Enterococcus* species. Bacterial translocation and migration through microperforations of the transverse colon are suspected sources of infection. In ~20% of cases, *Staphylococcus* species or *Streptococcus* species are the offending agents, and in 5%-10% of cases, *Candida* is the cause [32].

It is most important to distinguish between sterile and infected necrotizing pancreatitis. Fluid obtained by CT-guided fine-needle aspiration should be examined to determine the presence of bacteria. In 1985, vanSonnenberg et al. [33] were able to successfully diagnose complicated inflammatory pancreatic disease in 43 of 45 patients by means of CT-guided fine-needle aspiration. They were able to obtain fluid, including “extremely thick material,” with use of 22-gauge needles, 20-gauge needles, and 18-gauge needles. No material was aspirated from two of their patients despite the use of the larger needles.

The treatment of necrotizing pancreatitis remains controversial. In the absence of bacterial contamination and pancreatic necrosis, image-guided therapy should not be attempted because it may predispose to infection, resulting in the need for surgical debridement [34]. When bacterial contamination is present, the character of the pancreatic inflammation and fluid collection should be carefully evaluated. Homogeneous or heterogeneous soft-tissue peripancreatic collections, thick necrotic pancreatic tissue, and hemorrhagic areas of high attenuation are not amenable to percutaneous drainage, and they should be considered contraindications to this mode of treatment [35]. Patients with these conditions may require surgical “necrosectomy” and debridement or angiographic embolization of a bleeding vessel [36]. Completely liquefied areas of pancreatic necrosis may be amenable to CT-guided drainage in carefully selected instances. The decision to apply this technique is based on CT findings, results of needle aspiration, and the clinical condition of the patient. Poor drainage from the catheter or deterioration in the patient’s condition should lead to prompt reevaluation and, possibly, surgical intervention.

The presence of pus (in association with a culture positive for bacteria or fungi) in a pancreatic or peripancreatic fluid collection that contains little or no necrotic material differentiates a pancreatic abscess from acute pancreatitis or necrotizing pancreatitis [28]. It is important to differentiate between abscess and pancreatitis because the risk of death is almost double when pancreatic necrosis is present [33, 37]. Pancreatic abscesses may be amenable to percutaneous drainage. To date, the traditional approach to the treatment of patients with necrotizing pancreatitis has been surgical; however, in selected instances percutaneous drainage may be performed. Following initial diagnostic imaging with CT, treatment has been predicated on the clinical stability of the patient and the confirmed presence of pus in an aspirate.

Several clinical studies have demonstrated successful percutaneous drainage of pancreatic abscesses: success rates in the definitive management of this condition have ranged from 32% to 79% [38–42]. Furthermore, vanSonnenberg and colleagues [39] have suggested that percutaneous drainage of complicated abscess cavities may be used as a temporizing measure in critically ill patients before definitive surgical intervention. As more studies and long-term analysis of these patients become available, a better understanding of the role of image-guided percutaneous drainage will be obtained.

Percutaneous drainage guided by ultrasonography, CT, and endoscopic techniques challenge traditional surgical approaches to the treatment of pancreatic pseudocysts due to pancreatitis in terms of efficacy. The success of surgical management with internal drainage is well documented. A mortality rate of 2% and a recurrence rate of 5% has been demonstrated with internal drainage of mature, uncomplicated pseudocysts [43]. Image-guided therapy is now an adjunct to current therapeutic techniques in the management of pancreatic pseudocysts. Fluid collections with low attenuation and no evidence of thick cellular debris can be considered candidates for a percutaneous procedure. The location of the fluid collection is important, and selection of patients can influence the choice of drainage procedure.

Percutaneous drainage can be considered for patients who are poor candidates for surgery but have symptoms related to their pseudocysts [44]. Since most of these fluid collections resolve, percutaneous drainage should be reserved for larger pseudocysts; those that are larger than 4–6 cm usually require intervention [24, 29, 30]. Prior to planning definitive therapy,
it may be useful to perform endoscopic retrograde cholangiopancreatography to determine ductal anatomy; this procedure allows for accurate prediction of drainage success. Ductal obstruction may indicate a failure of treatment predisposing to pancreatic fistula [33].

Studies are also in progress to assess the effectiveness of concomitant administration of octreotide acetate in decreasing the incidence of recurrence of pseudocysts and the incidence of pancreatic fistulas when percutaneous drainage is performed [45]. Newer therapeutic techniques, including percutaneous gastrostomy and percutaneous gastroenterostomy, for which CT is used, are currently being investigated. The disadvantages of percutaneous drainage include the development of an external pancreatic fistula that is present for a prolonged period and a drain-track infection rate of almost 50% [46].

**Diverticular disease.** The prevalence of diverticular disease reportedly ranges from 5% to 50% in populations that adopt a Western diet [47]. The diagnosis of acute diverticulitis can be made easily for patients with diverticula of the colon. The use of ultrasonography and CT has made accurate anatomic definition of acute diverticulitis possible. Moreover, current accepted management of acute diverticulitis depends on accurate diagnosis, staging, and extent of colonic involvement. Over the past 10 years, advances in the use of image-guided drainage have complemented traditional surgical approaches in the definitive management of this condition.

The treatment of diverticulitis depends on the severity of the disease. The traditional focus has been on conservative medical management with low-residue diets, bowel rest, and antibiotic therapy. When operative intervention becomes necessary, resection can occur in one-, two-, or three-stage procedures. One-stage procedures consist of resection of the diseased segment of colon followed by primary anastomosis. Two-stage procedures consist of initial resection of the diseased segment, with formation of a temporary end colostomy and a second-stage take-down colostomy at a later date. Three-stage procedures initially consist of drainage of the diseased region of bowel and placement of a temporary proximal diverting colostomy, followed by resection of the diseased segment, primary anastomosis, and subsequent closure of the colostomy. Each of these procedures is tailored to the intensity of the disease process [48].

The severity of acute diverticulitis varies in relation to the extent of involvement of the colonic wall and the extent of inflammation. CT and ultrasonography are useful techniques for staging this disease. The extent of involvement must be determined before the best treatment options can be instituted. Stage 1 lesions consist of microabscesses of the colonic wall and peridiverticular inflammation. Stage 2 lesions are small, well-defined macroabscesses contained within the mesentery or epiploic appendages of the colon. Patients with well-defined macroabscesses (larger pericolic abscesses and pelvic abscesses) related to diverticular perforation have stage 3 disease, and patients with generalized peritonitis that results from a perforated diverticular abscess or from fecal peritonitis have stage 4 disease.

![Figure 2](image-url) **Figure 2.** CT images showing the management of a diverticular pelvic abscess by percutaneous drainage. This patient was later treated with a one-stage operation, eliminating the need for a colostomy. **A:** pelvic diverticular abscess with air-fluid levels; **B:** confirmation of infection and drainage route by placement of a percutaneous needle; **C:** deployment of the catheter into the abscess cavity.
Traditional surgical approaches to stage 3 disease have focused on colostomy for fecal diversion, with resection of the diseased colon and colostomy takedown at a later date. Image-guided therapy has advanced the management of diverticular disease. Multistage operative procedures and colostomy may not be necessary for patients who undergo image-guided percutaneous drainage of their abscesses (figure 2), a circumstance that results in decreased morbidity. The use of CT-guided imaging and ultrasonography in most cases allows differentiation between small, well-contained macroabscesses and large pericolic or pelvic collections; thus, appropriate patients are selected to undergo initial percutaneous catheter drainage.

Stabile et al. [49] reviewed the cases of 19 patients followed up for a mean of 17.4 months in order to define the role of percutaneous catheter drainage in the initial management of diverticular abscess. All of these patients had diverticular disease of the colon, and at least one had had a prior attack of diverticulitis. Initial needle aspiration and gram staining were performed to confirm that the patients had infected fluid collections. In addition, sinograms were obtained initially through the catheter and later at various intervals to determine whether a colonic fistula was present and to assess abscess size. Fourteen patients (74%) were successfully treated with preoperative percutaneous catheter drainage and subsequent one-stage sigmoid colectomy. Three patients had fecal fistulas and were treated by means of colostomy. Two of the patients refused surgery, one of whom died of "uncontrolled sepsis and respiratory failure" on day 16 after undergoing the drainage procedure.

This study demonstrates that preoperative catheter drainage techniques can safely eliminate the need for multistage surgery in some patients, allowing for the performance of an interim elective one-stage procedure. Similar results have been obtained in additional clinical studies, with success rates of 71%–88% for preoperative percutaneous drainage and subsequent primary anastomosis [50–53].

**Appendiceal abscesses.** Appendicitis remains one of the most commonly encountered causes of acute illness requiring surgery. The diagnosis remains based primarily on clinical suspicion elicited by the patient's history, the physical examination findings, and the results of laboratory studies. In a majority of cases, the decision to operate is made at the bedside, and there is no need for further work-up. Thus, undue delays in diagnosis are prevented, and treatment is instituted promptly before the patient's condition deteriorates. Rates of negative findings on laparotomy have been recorded to be 10%–15% for men and as high as 45% for women of childbearing age [54].

Over the past decade advances in management of appendicitis have focused on prompt perioperative evaluation to avoid unnecessary laparotomies. Imaging studies such as ultrasonography and CT have played a role in preoperative evaluation. These techniques afford the physician additional treatment options if perforation is discovered. In addition, the evolution of laparoscopic surgery has enabled direct visualization and immediate directed intervention if pathology is discovered. With these advances in diagnosis and treatment, the morbidity, mortality, and rates of unnecessary laparotomy that are associated with appendiceal disease should gradually decline in the future.

The evaluation of acute abdominal pain can occasionally be difficult, requiring further imaging studies. Ultrasonography is helpful for evaluating the abdomen when appendicitis is the suspected cause of pain, and management can be altered based on the findings. When a large periappendicular phlegmon is discovered, patients may benefit from administration of antibiotic therapy, followed by appendectomy. Patients with periappendicular abscesses can be treated by percutaneous drainage of the pus, followed by appendectomy 4–6 weeks later. The utility of ultrasonography can be limited by obesity, the presence of distended loops of bowel, the retrocecal anatomy, and the experience of the operator.

CT is also used occasionally in the evaluation of patients with suspected appendicitis. This technique is associated with high positive predictive values (~95%) for the diagnosis of late appendicitis [55]. The inflated appendix has a characteristic
“target sign” appearance when seen in transverse CT views. The major disadvantage of these imaging techniques is the delay in diagnosis if the test is negative, which can possibly result in perforation of an acutely infected appendix and clinical deterioration in the patient’s condition. Diagnosis of early acute appendicitis is still a clinical determination.

Laparoscopy has become a useful surgical technique in the diagnosis and management of appendiceal disease. Laparoscopy can be useful in the diagnosis of abdominal pain in patients with a normal-appearing appendix. In addition, incidental appendectomy can be performed with use of a laparoscope, resulting in reduced postoperative morbidity. Patients with acute appendicitis can be treated reasonably promptly with laparoscopic appendectomy. Some indications for conversion to an open technique include the presence of severe inflammation or perforation at the base of the appendix and adherence of the bowel to an appendiceal abscess [56].

**Postoperative abscesses.** Despite advances in surgical care and perioperative antibiotic regimens, postoperative abdominal abscesses continue to be a problem. With the advent of CT and ultrasonography, the sensitivity and specificity in diagnosing intra-peritoneal infection have increased dramatically. Unfortunately, little progress has been made in lowering the mortality rates among patients with postoperative abscesses. A study of 47 patients over a 5-year period demonstrated that the overall mortality associated with postoperative intraabdominal sepsis was 30% (14 of 47 patients) [57]. This finding is consistent with those of other clinical studies, which demonstrated mortality rates as high as 43% [58].

The timing of imaging studies in the postoperative period is important. Fluid collections resulting from intraoperative irrigation, edema, and old blood and inflammatory changes due to surgical manipulation in the immediate postoperative period can make diagnosis difficult. While ultrasonography equipment is transportable to the patient’s bedside, the diagnostic capabilities of ultrasonography are limited when the patient is large or when postoperative ileus is present. CT is generally considered the diagnostic study of choice during the postoperative period [15, 18–20]. However, its sensitivity may be somewhat decreased during this period, which should alert the physician to the possibility of a false-negative result. The eighth postoperative day is generally the recommended time to perform CT imaging [59]. This delay allows for reabsorption of nonsuppurative fluid collections and resolution of tissue swelling.

To avoid delay in diagnosis when a postoperative abscess is suspected, it is important to verify the presence of infection by means of percutaneous needle aspiration. When an infected fluid collection is present, repeated laparotomy can be performed or percutaneous drainage can be attempted. Percutaneous drainage obviates the need for a general anesthetic and may be definitive treatment in some cases (figure 3). In addition, some authors have suggested that percutaneous drainage can be used as a temporizing procedure in critically ill patients [39]. However, limitations to percutaneous drainage exist: if anastomotic dehiscence is suspected, operative drainage and repair by exteriorization of the leak are preferred. The presence of multiple loculations, excessive cellular debris, high fluid viscosity, or an inadequate drainage route also may prevent successful percutaneous drainage.

Preoperative removal of the drainage catheter may predispose to recurrence of the abscess. The catheter should remain in place until clinical evidence of infection has resolved, drainage from
the catheter ceases, CT imaging indicates absence of fluid, or a sinogram demonstrates collapse of the abscess cavity. [15, 60]

Summary

The diagnosis and treatment of intraabdominal abscesses have improved with the advent of imaging techniques such as ultrasonography and CT. These advances have made minimally invasive drainage techniques available; such techniques complement traditional surgical drainage for patients with abdominal abscess cavities.

In most cases, drainage can be performed successfully when a safe route for drainage is available, the fluid collection is well-localized and unilocular, and evaluation is coordinated between the surgeon and radiologist. However, the recent decrease in mortality associated with intraabdominal abscesses is probably related to a variety of factors including advances in critical care, the availability of broad-spectrum antibiotics, better nutrition, and earlier diagnosis. Investigators have demonstrated that percutaneous drainage can be as effective as surgical methods for the management of abscesses, and it appears that the important determinant of patient survival is severity of illness. Scoring systems such as APACHE II are proving to be important for determining patient outcome regardless of the drainage technique employed.

References


