

The American Association for the Surgery of Trauma emergency surgery guidelines for acute pancreatitis: Are we missing significant opportunities for reflection?

Dr. Crandall and colleagues have published a wonderfully interesting document calling for additional study within multiple areas of emergency general surgery.¹ While we certainly agree with the majority of this gap analysis, the discussion of evidence supporting the management of acute pancreatitis lacks a number of recent critical findings/concepts. Similarly, preceding guidelines from the American Association for the Surgery of Trauma (AAST) also omit relevant and nuanced clinical care concepts surrounding severe acute pancreatitis.² This field has been remarkably dynamic and achieved tremendous evolution in our understanding of pathophysiology and optimal treatments since the referenced guidelines from 2002 and 2007.

Although there have been two iterations of the international collaborative known as the Atlanta criterion, numerous defunct terms resurface in the AAST guideline.^{1,2} These include, but are not limited to, pancreatic “phlegmon” and “abscess.” Maintaining a common lexicon (both in terminology and meaning) is essential moving forward to ensure comparable and extrapolatable research. Furthermore, patients with hemorrhage in the setting of acute pancreatitis are nearly always more critically ill than those with walled off pancreatic necrosis (WOPN) (either infected or sterile). Dividing grades based on infected (grade IV) versus noninfected (grade III) is also confusing. The reality is that many patients with infected necrosis have surprisingly few symptoms, while others are truly critically ill. We observe this on a daily basis on busy pancreatitis services, as well as in recent literature that outlines no overall differences in patient outcomes in infected versus noninfected cohorts. More specifically, three publications (2015–2019) confirm no difference in the mortality of patients with necrotizing pancreatitis in infected versus noninfected groups.³ This observation even extends to patient mortality in those with necrotizing pancreatitis and persistent organ failure (28% vs. 34%).⁴ The frequency of these observations confirms that

critical care has evolved to the point that the traditional paradigm of mandatory and aggressive intervention in patients with infected necrosis must be questioned.

Within the proposed AAST grading system, commentary supports delayed necrosectomy until at least 14 days have passed. We would *strongly* caution any surgeon to avoid surgical intervention prior to 28 days based on a multitude of classic, as well as recent studies (outlining spikes in patient inflammatory responses, massive blood loss, and extremely high mortalities). It is clear that early necrosectomy is misguided and leads to patient harm. Exceptions to pre-28-day surgery are limited to patients who have ischemic colons, necrotic gallbladders, and very uncommonly, the presence of the abdominal compartment syndrome. If abdominal compartment syndrome requires a decompressive laparotomy prior to the genesis of a mature WOPN collection, then the pancreas/lesser sac/paracolic gutters/mesenteric leash necrosus should remain undisturbed during the emergency procedure. This latter scenario is newly coined as grade V pancreatitis within the AAST lexicon, which seems quite artificial when considering preceding literature.

The use of antimicrobials for patients with necrotizing pancreatitis is also nuanced. Twelve randomized controlled trials have been completed to date, and conceptually divided antibiotic treatment into three categories: prophylactic, empiric, and therapeutic. It is clear that there is no role for prophylactic antibiotics. The reality that most large studies show an approximately 40% rate of infected necrosis (in many patients who were not on any preceding antibiotics) also shakes the traditional argument that all infected necrosis requires urgent treatment (antibiotic and/or interventional). Empiric antimicrobial therapy is also likely of minimal benefit. Furthermore, few pancreatitis surgeons would advocate for needle-based sampling to identify infection. Given that the trajectory of these patients does not seem to be solely related to the presence of infection, their clinical course remains the primary driver of therapy, or lack thereof. The risk of infecting a sterile collection with a needle is substantial and must be carefully considered.

True pseudocysts (which are much less common, as well as different in definition than WOPN) require intervention only when they are clinically symptomatic. Enlarging volumes (i.e., identified via imaging), in the absence of symptoms, do not necessarily mandate intervention. Additionally, any procedure targeted at a pseudocyst must be placed into the context of a detailed understanding of the underlying main pancreatic ductal anatomy (i.e., MRCP),

as well as the intensity of patient alcohol and tobacco use.

We agree with the authors that the specific timing of a potential cholecystectomy remains debated. The important marker is not 6 weeks, however, but after all of the necrosis has completely declared itself (alive vs. dead pancreatic tissue). In a large multicenter publication of patients undergoing a one-stage transgastric necrosectomy, only half with a biliary etiology underwent a synchronous cholecystectomy. In other words, the inflammation and technical risk of removing the gallbladder was too significant despite high comfort levels with pancreatic surgery. These patients often wait many months before a repeat attempt (laparoscopic) with very few having recurrent insults as a result of an in situ gallbladder. Additionally, whether quoting endoscopic ultrasound-based studies or more traditional longitudinal publications, patients labeled with “idiopathic pancreatitis” (i.e., normal calcium, triglycerides, biliary ultrasound, and no alcohol) require a subsequent laparoscopic cholecystectomy. This pathway has recently been shown to be highly protective in preventing recurrent acute pancreatitis. Similarly, there has also been a tremendous amount of literature (including a randomized trial) supporting the efficacy of endoscopic biliary sphincterotomy as a “definitive” therapy for patients unfit for surgery.

Finally, we do worry about the message that “outcomes of acute pancreatitis have not improved significantly during the last decade.” We would argue that a multitude of both prospective and retrospective studies (single-center, multicenter, large registry-based) have confirmed high volume pancreatitis centers’ experiences that we have made tremendous improvements in mortality to low single-digit rates. These advances are related both to improved understanding of a complex disease, as well as to enhancements in critical care.

Despite validation,⁵ critical evaluation and adjustment of the AAST guideline is essential to bring it into alignment with the past 20 years of pancreatic science. This would assist in maintaining the momentum of recent improvements in our understanding of pathophysiology and optimized standard of care for this heterogeneous patient population.

AUTHORSHIP

All of the authors (C.G.B., N.J.Z., A.L.) contributed to the genesis, writing, editing and content of the manuscript. All three authors have confirmed their agreement with the final submitted version.

DISCLOSURE

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Authors' Response to the Letter to the Editor

To the Editor:

We read with interest the discussion of our two recent summary documents that included components related to the diagnosis, severity assessment, and management of acute pancreatitis.^{1,2} The goal of these two articles was not necessarily to be an exhaustive review of the latest developments and literature surrounding each of the disease processes examined but instead to review existing guidelines for each disease and discuss any deficiencies as potential targets for future research. The goal therefore was to establish current areas of controversy. Guidelines by their nature may be outdated in certain areas by the time they are published. We identified areas where guidelines were incomplete because of either a lack of research or advances in research that were not included because of temporal factors related to time of publication. Developments in the field of pancreatitis that occurred after guideline

authors completed their literature review would by design not be included. However, there are likely few landmark studies even over the gap of several years that would eliminate areas of controversy with finality. It should also be noted that most of the recommendations set forth in the guideline review, including time to intervention for pancreatic necrosis, are congruent with the commentary by the authors of this critique.²

Much of the authors' discussion focuses on the American Association for the Surgery of Trauma (AAST) grading system of acute pancreatitis. While we agree that the AAST grading system may use terms that are not included in the Atlanta classification, these terms are used commonly by surgeons and are well understood. In the case of phlegmon, this could fall under acute pancreatitis or acute necrotic collection in the Atlanta criteria. Walled-off necrosis, abscess, and other fluid collections may not be distinguishable by computed tomography imaging, and abscess may be the most easily applied term. When documents such as the updated Atlanta classification are developed, they are not assessed for their ability to be applied across a large group of patients by often less-experienced raters and nonsurgical physicians or nonphysicians. This will be a necessary step because these grading systems are developed and was part of the consideration for using more common terminology.

The AAST grades were developed to be isolated to anatomic definitions and congruent with anatomic definitions of other emergency general surgery conditions. This may limit the AAST grading scale but ideally makes it more easily applied. As the authors point out, the AAST grading system should be optimized and the validation study is the first step.³ Despite not including physiologic variables the AAST system performed and scoring systems that did include physiologic data by area under the receiver operating curve (AROC) analysis, this is an interesting finding that suggests that pancreatitis severity may be assessed by either anatomic criteria or physiologic criteria and potentially improved by including both. With respect to the improved mortality, we believe that, in the absence of a grading system that is both predictive and reliably applicable, it is hard to draw any strong conclusions regarding both the rate of presentation, which may be increasing, and the mortality, which must be controlled for by the severity of disease.⁴

In summary, the AAST grading system for emergency general surgery diseases including acute pancreatitis is an anatomic

grading system that, like the Atlanta classification, remains a work in progress that will only be improved by progressive validation and modification. Furthermore, we believe that several areas including cholecystectomy for idiopathic pancreatitis and sphincterotomy for patients unfit for surgery are not generalizable because we do not believe that single-center randomized trials or multicenter retrospective studies, or even a single multicenter randomized controlled trial to be adequate to support the highest level of recommendation. The challenge of completing trials of interventional methods and the rapid advancement of technology makes definitive answers to many of these controversies unforeseeable. We therefore encourage continued research in areas of controversy and refinement of available guidelines as additional evidence arises.

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