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EDITORIAL

Indications for Surgery in Necrotizing Pancreatitis - A Millennial Review

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Almost from the time of the initial clinical description of acute pancreatitis by Fitz in 1889 [1], the role of surgery in this condition has been controversial. Fitz, an anatomist and pathologist from Boston, concluded from his post-mortem studies that survival from acute pancreatitis was intrinsically determined by the extent of the necrotizing process, and that surgical intervention could only complicate matters. Senn, a Chicago surgeon, took exception to Fitz's position, and advocated drainage and removal of dead tissues [2]. Interestingly, despite Senn's proposal, there is little evidence that he successfully performed such a procedure. Today, more than five generations later, we continue to debate the indications for surgery in necrotizing pancreatitis.

Over the past 160 years, surgical fashion has alternated between aggressive intervention and intensive non-operative support. In the first quarter of the twentieth century, surgical intervention for acute pancreatitis was widely advocated, having been championed by respected surgeons such as Lord Moynihan. During these decades, since the diagnosis of acute pancreatitis was primarily clinical, only the most severe cases were recognized and subjected to exploration. Unfortunately, few patients survived, and for the next quarter century, surgical intervention was considered contra-indicated. Underlying this shift in therapeutic approach was the development of the assay for serum amylase. For the first time, it became apparent that acute pancreatitis did not always result in an apocalyptic course. Indeed, it soon became known that the vast majority of patients with acute pancreatitis could be successfully managed without surgical intervention.

Nevertheless, 20-30% of patients with acute pancreatitis continued to die during this period, despite supportive therapy. Beginning in the 1960's, a group of continental surgeons led by Hollender began to examine the premise that it was the development of pancreatic necrosis which characterized the most severe clinical forms of acute pancreatitis [3]. Furthermore, they contended that surgical removal of the necrotic tissues represented the only hope for survival in such cases. Total pancreatectomy, often combined with various forms of gastrectomy, resulted in morality rates which ranged from 50-80%, but were "justified" by the "certainty" of a uniformly fatal result should surgery not be done. It was not until later in their experience that these surgeons also came to realize that non-necrotizing forms of acute pancreatitis can also present as "severe".

By the mid 1980's, it became possible to identify necrotizing pancreatitis by non-operative means, such as dynamic CT scanning and C-reactive protein. For the first time, the population of patients with acute pancreatitis could be reliably separated into

edematous and necrotizing forms. Based upon these technologic advances, a new surgical approach was developed principally by Beger and his associates, which consisted of debridement of necrotic tissues, rather than extensive resection [4]. Implicit in the recommendation for debridement of necrotizing pancreatitis was acceptance of the previous assumption that surgical removal of necrotic pancreatic and peri-pancreatic tissues was beneficial for afflicted patients. Although the putative benefits of debridement of necrotic tissues was "intuitive" for many surgeons, and rapidly became surgical dogma, unoperated control patients, matched for clinical severity and extent of necrosis, were notably absent from these reports.

Beginning in 1989, we embarked upon a prospective longitudinal study of acute pancreatitis, treating all patients with edematous pancreatitis and sterile necrotizing pancreatitis with intensive non-operative therapy. Only patients with fine needle aspirations positive for bacteria were operated upon [5]. In this study, all 11 patients with persistently sterile necrosis survived without operative intervention, including six with organ failure. From this study we concluded that existence of pancreatic necrosis per se was not an indication for surgery. During a follow-up study, an additional 29 patients with 50% or more of the gland involved with sterile necrosis were entered. Twenty-six of 29 were successfully managed by non-operative means, despite the presence of organ failure [6]. Combining the results of these two prospective studies of unoperated controls, we had demonstrated that neither the presence nor extent of pancreatic necrosis constituted an absolute indication for surgical intervention. Subsequently, a number of prospective studies from other centers also supported the value of non-operative therapy in sterile pancreatic necrosis [7, 8]. While these efforts have established beyond doubt that non-operative management of sterile pancreatic necrosis can be successful in 90-95% of those cases remaining persistently sterile, there remains the possibility that smaller subgroups of patients with sterile necrosis can be benefited by surgical debridement. In particular, patients who develop "re-feeding" pancreatitis, characterized by abdominal pain and hyperamylasemia six to eight weeks following recovery from a bout of severe sterile necrotizing pancreatitis, can be restored by debridement of the necrotic tissues. The pathophysiologic mechanism appears to be one of obstruction of the pancreatic duct secondary to the necrotic process. Other small sub-groups of patients with sterile necrosis, who might be improved by debridement, are being sought. On balance, however, it now seems quite clear that surgical debridement in sterile pancreatic necrosis will be the exception, rather than the rule.

In sharp contrast to the evolving indications for surgery in sterile pancreatic necrosis, there is a widespread agreement that the development of infected pancreatic necrosis represents a clear indication for surgical debridement and drainage. Although several alternatives to surgical intervention in infected necrosis have been reported (persistent antibiotic administration, transcutaneous CT guided drainage, endoscopic trans-enteric drainage), patient numbers have been small, and initial good results have been difficult to duplicate in other institutions.

Even though the availability of natural history information has contributed significantly to forming the current approach to necrotizing pancreatitis, all the answers to remaining clinical problems are not as yet in hand. For many of these issues, definitive resolution will require creation of multi-center trials.

Key words Necrotizing Pancreatitis; Debridement; Surgical Indications

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References

1. Fitz RH. Acute pancreatitis: A consideration of pancreatic hemorrhage, hemorrhagic, suppurative, and gangrenous pancreatitis, and of disseminated fat necrosis. Boston Med Surg J 1889; 120:181-187.

2. Senn N. Surgery of the pancreas as based upon experiments and clinical researches. Trans Am Surg Assn 1886; 4:99-1223.

3. Hollender LF, Gillet H, Sava G. La pancreatectomie d'urgence dans les pancreatities aigues: apropros de 13 observations. Ann Chir 1970; 24:647-660. [70243995]

4. Beger HG, Krautzberger W, Bittner R, Block S, Büchler M. Results of surgical treatment of necrotizing pancreatitis. World J Surg 1985; 9:972-979. [86098904]

5. Bradley EL III, Allen K. A prospective longitudinal study of observation versus surgical intervention in the management of necrotizing pancreatitis. Am J Surg 1991; 161:19-25. [91103391]

6. Bradley EL III. Indications for debridement of necrotizing pancreatitis. Pancreas 1996; 13:219-223. [97039287]

7. Uomo G, Visconti M, Manes G, Calise F, Laccetti M, Rabitti PG. Nonsurgical treatment of acute necrotizing pancreatitis. Pancreas 1996; 12:142-148. [96342923]

8. Büchler MW, Gloor B, Müller CA, Friess H, Seiler CA, Uhl W. Acute necrotizing pancreatitis: treatment strategy. Ann Surg (in press).