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**Pathophysiology of Chronic Pancreatitis** 1309  
Stephen W. Behrman and Eric S. Fowler

Although the most common causes of chronic pancreatitis have not changed, it has become clear that a host of modifying biochemical, inflammatory, neural, and genetic deviations allows the disease to progress. Alterations in biochemical composition allow calcific stone formation, whereas various toxins, cytokines, and neuro-peptides contribute to the progression of fibrosis and pain production. The basic cellular structure contributing to fibrosis of the pancreas has been elucidated and factors responsible for its activation delineated. Of most importance is the recent recognition of a set of genetic mutations that results in several aberrations of normal pancreatic physiology, which, in conjunction with other inciting insults or by themselves, allow the disease to begin and progress.

**The Inflammatory Cascade in Acute Pancreatitis: Relevance to Clinical Disease** 1325  
Mohammed Elfar, Lillian W. Gaber, Omaila Sabek,  
Craig P. Fischer, and A. Osama Gaber

Acute pancreatitis is an inflammatory condition that is initiated by the intra pancreatic activation of proteases. Pancreatic enzyme activation triggers a local and systemic inflammatory response that is associated with recruitment of inflammatory cells into the pancreas and a widespread up-regulation of inflammatory markers in distant tissues.

**Radiologic Assessment of Acute and Chronic Pancreatitis** 1341  
David H. Kim and Perry J. Pickhardt

The capabilities of various imaging modalities, including CT, MRI, and ultrasound, have markedly increased over recent years. This has translated into improved detection and improved characterization of various pathologic processes. This article discusses the current role of imaging in the evaluation of acute and chronic pancreatitis. CT remains a major focal point in issues related to acute pancreatitis, whereas MRI (and magnetic resonance cholangiopancreatography) plays a larger role in chronic pancreatitis.

**Benign Pancreatic Tumors** 1359  
Sushanth Reddy and Christopher L. Wolfgang

The goal of this article is to describe the different types of benign pancreatic neoplasms, methods to distinguish between them, and treatment options. Pancreatic adenocarcinoma is associated with specific neoplastic lesions that are similar in radiographic appearance to some benign lesions. The correct differentiation of these malignant and premalignant lesions from their benign counterpart is paramount to their proper management.

**Endoscopic Management of Acute and Chronic Pancreatitis** 1379  
Siriboon Attasaranya, Ayman M. Abdel Aziz,  
and Glen A. Lehman

Endoscopic therapy has been increasingly recognized as the effective therapy in selected patients with acute pancreatitis and chronic pancreatitis (CP). Utility of endotherapy in various conditions occurring in acute pancreatitis and CP is discussed. Its efficacy, limitations, and alternatives are addressed. For the best management of these complex entities, a multidisciplinary approach involving expertise in all pancreatic specialties is essential to achieve the goal.

**Nutrition Support in Pancreatitis** 1403  
Caitlin S. Curtis and Kenneth A. Kudsk

Nutrition support is especially important in patients who have pancreatitis, as these patients have high metabolic needs and are usually unable to ingest sufficient calories from an oral diet because of pain or intestinal dysfunction. Clinicians must assess severity of the disease carefully, as initiation and timing of nutrition support are crucial. Depending on the severity, early nutrition support may be unnecessary, while late support ultimately may lead to worse outcomes. Route of nutrition support also plays an important role in treatment. The clinician has many alternatives from which to choose, including enteral nutrition given nasogastrically or nasojejurally, or parenteral nutrition given through a central line. This article explores the role of nutrition support in the outcome of pancreatitis and provides guidelines to aid the clinician in caring for patients who have acute and chronic pancreatitis.

**Diagnosis and Management of Sphincter of Oddi Dysfunction and Pancreas Divisum** 1417  
James A. Madura II and James A. Madura

Sphincter of Oddi dysfunction and pancreas divisum are very distinct anatomic abnormalities, yet are diagnosed in similar clinical situations. While both entities are uncommon, they are most often discovered during the evaluation of postcholecystectomy syndrome, recurrent idiopathic pancreatitis, and biliary or pancreatic pain when first line studies are normal. Treatment consists of surgical sphincteroplasty or endoscopic sphincterotomy for both diagnoses, which result in reliable relief of symptoms for most sphincter of Oddi dysfunction patients but less predictable response in pancreas divisum.

**Necrotizing Pancreatitis: Diagnosis and Management** 1431  
John C. Haney and Theodore N. Pappas

Necrotizing pancreatitis is a severe disease characterized by gland necrosis and a destructive systemic inflammatory response. Early management involves aggressive resuscitative and supportive measures. Outcomes are primarily determined by the presence of late secondary bacterial infection of the necrotic gland. Early empiric antibiotics and late surgical necrosectomy in the appropriate setting are the keys to managing these sick patients. With appropriate management, mortality can be minimized and long-term quality of life may be restored.

**Operative and Nonoperative Management of Pancreatic Pseudocysts** 1447  
Simon Bergman and W. Scott Melvin

The management of pancreatic pseudocysts has changed greatly over the last decade. As laparoscopic and endoscopic techniques continue to evolve, their use in the treatment of pseudocysts has gained acceptance, whereas the role of percutaneous drainage has become more limited. The literature on laparoscopic, endoscopic, and percutaneous management of pancreatic pseudocyst is reviewed here and, based on these data, a treatment algorithm is suggested.

**Resectional Therapy for Chronic Pancreatitis** 1461  
Ronald F. Martin and Michael D. Marion

The main indication for operation in the management of chronic pancreatitis is medically intractable pain. Other indications include biliary or pancreatic ductal obstruction (with or without pseudocyst formation), mass effect impinging on other organs or adversely affecting their function, or diagnostic insecurity regarding the possibility of periampullary or pancreatic neoplasms. This article describes the current state of affairs for resectional therapy for chronic inflammatory conditions of the pancreas.

**The Role of Total Pancreatectomy and Islet Autotransplantation for Chronic Pancreatitis**

1477

Juan J. Blondet, Annelisa M. Carlson, Takashi Kobayashi, Tun Jie, Melena Bellin, Bernhard J. Hering, Martin L. Freeman, Greg J. Beilman, and David E.R. Sutherland

Total pancreatectomy and islet autotransplantation are done for chronic pancreatitis with intractable pain when other treatment measures have failed, allowing insulin secretory capacity to be preserved, minimizing or preventing diabetes, while at the same time removing the root cause of the pain. Since the first case in 1977, several series have been published. Pain relief is obtained in most patients, and insulin independence preserved long term in about a third, with another third having sufficient beta cell function so that the surgical diabetes is mild. Islet autotransplantation has been done with partial or total pancreatectomy for benign and premalignant conditions. Islet autotransplantation should be used more widely to preserve beta cell mass in major pancreatic resections.

**Management of Internal and External Pancreatic Fistulas**

1503

Katherine A. Morgan and David B. Adams

A pancreatic fistula is an uncommon and challenging problem for the general surgeon. Protean in presentation, the underlying pathophysiology of a pancreatic duct disruption is consistent. Several basic principles, when followed, simplify management. These tenets include medical stabilization and nutritional optimization, definition of the underlying duct disorder, and, finally, definitive management with or without surgery. With appropriate prompt care, patients can achieve good outcomes.

**The Management of Pancreatic Trauma in the Modern Era**

1515

Anuradha Subramanian, Christopher J. Dente, and David V. Feliciano

Pancreatic trauma presents challenging diagnostic and therapeutic dilemmas to trauma surgeons. Injuries to the pancreas have been associated with reported morbidity rates approaching 45%. If treatment is delayed, these rates may increase to 60%. The integrity of the main pancreatic duct is the most important determinant of outcome after injury to the pancreas. Undiagnosed ductal disruptions produce secondary infections, fistulas, fluid collections, and prolonged stays in the intensive care unit and hospital. This article analyzes the epidemiology, diagnostic approaches, options for nonoperative and operative management, and outcome after blunt and penetrating pancreatic trauma.

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