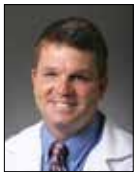


ADVANCES IN ENDOSCOPY

Current Developments in Diagnostic and Therapeutic Endoscopy

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A Comprehensive Approach to Preventing Pancreatitis Following Endoscopic Retrograde Cholangiopancreatography



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G&H How often does pancreatitis develop following endoscopic retrograde cholangiopancreatography?

TG Approximately 3% to 5% of patients undergoing endoscopic retrograde cholangiopancreatography (ERCP) develop pancreatitis following the procedure. Depending on the type of ERCP that is being performed, the risk can be higher or lower.

G&H What are the appropriate indications for ERCP, and when should ERCP be avoided?

TG The main indication for ERCP is a common bile duct stone, but the procedure can also be performed when blockages occur that require drainage of the bile duct. Other indications include diseases of the pancreas, such as pancreatic duct stones and obstructions in the pancreatic duct. ERCP should be avoided if alternative procedures can be performed or if the condition is capable of resolving on its own. It is important to ensure that the indication is correct, the physician has experience with the procedure, and the patient can tolerate the procedure based on his or her medical comorbidities.

G&H What are the risk factors for post-ERCP pancreatitis?

TG Risk factors for post-ERCP pancreatitis can be patient- or procedure-related. The most common patient-related risk factor is a history of post-ERCP pancreatitis. Risk factors from an epidemiologic perspective are young age (<50 years), female sex, suspicion of sphincter of Oddi dysfunction, and a need for pancreatic duct work. Normal bilirubin, nondilated bile ducts, and the presence of intraductal papillary mucinous neoplasm are also patient-related risk factors.

Procedure-related risk factors include high-risk interventions during ERCP, such as attempted cannulation of the ampulla more than 8 times, placement of a wire into the main pancreatic duct, contrast injection into the main pancreatic duct, and balloon dilation of an intact ampulla. Additional risk factors are biliary, pancreatic, and precut sphincterotomies.

G&H Which procedural techniques and equipment are available to help prevent the incidence of post-ERCP pancreatitis?

TG Procedural techniques and equipment that can be used to help mitigate post-ERCP pancreatitis include guidewire-assisted cannulation of the ampulla, minimization of contrast injection, utilization of a hydrophilic wire to cannulate the pancreas, and inclusion of a narrow sphincterotome. There should be as little manipulation

of the ampulla as possible in order to achieve the desired cannulation. A recent study shows that guidewire

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cannulation performed by a physician, as opposed to a technician, results in a lower rate of pancreatitis.

G&H What have studies shown regarding the efficacy of pancreatic duct stent placement for preventing post-ERCP pancreatitis?

TG Several meta-analyses have been published demonstrating that pancreatic duct stent placement is efficacious for preventing post-ERCP pancreatitis, particularly in patients who are at high risk for the condition.

G&H Which type of stent is the most effective for prophylaxis of post-ERCP pancreatitis?

TG Numerous studies have assessed various stent sizes in terms of the diameter, length, or stiffness of the contour, and the results are variable. In general, soft stents with a diameter less than 5 French and a length between 3 cm to 5 cm are less likely to cause damage to the pancreatic duct upon insertion, whereas larger-caliber stents are more reliable for reducing pressure in the pancreatic duct.

G&H What risks or limitations are associated with prophylactic pancreatic duct stents?

TG The main limitation regarding prophylactic pancreatic duct stents is that they can be technically challenging to place, as the pancreatic duct can be irregular in contour (eg, twisting). Additionally, stents can be difficult to remove if they are placed so far into the pancreatic duct that they become caught. The location of the inserted pancreatic stent can also affect the frequency of post-ERCP pancreatitis, which is why shorter stents are generally used.

G&H Which pharmacologic agents are available to aid in the prevention of post-ERCP pancreatitis?

TG The most common pharmacologic agent used for prophylaxis of post-ERCP pancreatitis is rectal indomethacin. Studies have shown that it is a very effective intervention for patients at high risk for post-ERCP pancreatitis. In patients who are at average risk, it is unclear whether or not rectal indomethacin is a benefit, but certainly the harms of the medication are very low. Other nonsteroidal anti-inflammatory drugs, such as diclofenac, have been evaluated for the prevention of post-ERCP pancreatitis, but the evidence behind these medications has not been as robust. Aggressive intravenous fluid resuscitation is another medication that can be used in patients undergoing ERCP. Various other pharmacologic agents, including corticosteroids, secretin, and epinephrine sprayed on the ampulla, have been evaluated as well; however, none of these methods appear to have the same efficacy as rectal indomethacin.

G&H When using a pharmacologic agent, what is the optimal timing of its use as well as the optimal route of its administration for preventing post-ERCP pancreatitis?

TG It is unclear whether timing (eg, pre- or post-ERCP) makes a noticeable difference, and several ongoing studies are investigating this topic. Currently, the majority of physicians administer rectal indomethacin during the procedure. It is believed that there is some benefit to administering aggressive intravenous fluid resuscitation during and immediately following ERCP to prevent pancreatitis. Regarding the optimal route, numerous studies have established that indomethacin administered rectally (as opposed to orally) is ideal, likely due to the rapid absorption of the agent.

G&H What is the role of statins in the management of post-ERCP pancreatitis?

TG Currently, there is no definitive recommendation that statins have any role in preventing post-ERCP pancreatitis. Some studies have concluded that statins may cause pancreatitis, whereas others have suggested that they may be protective against pancreatitis.

G&H In which patients should lactated Ringer solution be considered?

TG Lactated Ringer solution has not been fully studied in a head-to-head comparison with saline specifically for patients with post-ERCP pancreatitis, but as it is vital for treating acute pancreatitis, the solution likely should be used in all patients to prevent post-ERCP pancreatitis.

G&H What risks are associated with the use of nonsteroidal anti-inflammatory drugs and intravenous fluids?

TG The risks associated with rectal indomethacin are very minimal but include kidney disease and gastrointestinal bleeding. With intravenous fluids, patients can experience volume overload, which can manifest as pulmonary edema and cause hypoxia in patients who have cardiac disease. Hypoxia can then put increased pressure on the heart and lead to myocardial ischemia. The major risk of fluid resuscitation is patients developing intra-abdominal compartment syndrome, in which a large amount of volume in the abdomen leads to organ damage within the abdomen.

G&H How should patients be monitored following ERCP?

TG Patients should be kept a minimum of 1 hour in the recovery area following ERCP. Patients should only be checked for post-ERCP pancreatitis with laboratory tests if they have severe abdominal pain requiring admission. Otherwise, physicians should check for routine vital signs and ensure that patients are well enough to go home.

G&H What are the next steps for research?

TG The biggest step for research is performing comparative-effectiveness trials on the interventions that we know work. Research should continue into which stents are best and whether there is an additive benefit for prevention. For example, is receiving rectal indomethacin, pancreatic stents, and aggressive intravenous fluids more effective than receiving one of those interventions alone? There is currently a lot of interest in preventive medications for acute pancreatitis that work on various parts of the inflammatory pathway. Bringing some of the newer agents into the endoscopy suite for evaluation for post-ERCP pancreatitis prevention would be a good next step.

Dr Gardner has no relevant conflicts of interest to disclose.

Suggested Reading

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