

## “Post-ERCP Pancreatitis”

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Post-ERCP pancreatitis (PEP), along with failure to achieve technical success in all patients, remains the Achilles heel of therapeutic ERCP. In unselected series the rate of post-ERCP pancreatitis varies between 5 and 10 %; most of these cases are mild, but some are moderate and less commonly some are severe. Severe PEP is a devastating illness for the patient and the endoscopist, as well as a drain on resources. The question is what can be done to minimize post-ERCP pancreatitis.

There are four sets of variables which can be addressed to potentially reduce PEP:

1. Patient variables
2. Technical variables of the
3. Pancreatic stents
4. Pharmacologic interventions.

Patient risk factors that are significant after multivariable analysis include:

Female gender, younger age, clinical suspicion of sphincter of Oddi dysfunction (SOD), a history of prior post-ERCP, and the absence of chronic pancreatitis<sup>1-2</sup>.

Patient selection is important to reduce post-ERCP: avoid marginally indicated ERCP's especially in high-risk patients. The use of less invasive tests to image the bile duct such as MRCP, endoscopic ultrasound (EUS) or intra-operative cholangiogram allows one to exclude unnecessary “diagnostic ERCP” and select the patients most likely in need of therapeutic ERCP.

Procedural risk factors that are significant after multivariable study include:

difficult/failed cannulation, precut sphincterotomy, extent of pancreatic duct injection, sphincter balloon dilation, pancreatic sphincterotomy and minor papilla sphincterotomy<sup>1</sup>.

After one decides to proceed with ERCP, close attention should be given to endoscopic technique. Once cannulation is begun efforts should be made to minimize trauma to the papilla and limit the number and extent of injections of the pancreatic duct. If sphincter of Oddi manometry is performed an aspirating catheter should be used. If cannulation is not achieved quickly, avoid simply repetitive attempts to cannulate the CBD. The endoscopist should efficiently work through an algorithm of various devices and techniques. There is now an armamentarium of devices to facilitate cannulation such as tapered catheters, angled catheters, sphincterotomes and guidewires, in addition to changing the patient's position or the operator. In some patients with a floppy papilla placing a guidewire into the pancreatic duct first, may anchor the papilla and facilitate biliary cannulation. For expert endoscopists, if multiple attempts at cannulation fail performing a precut, or access, sphincterotomy may facilitate cannulation and shorten the procedure without increasing the risk of PEP<sup>3</sup>. It must be emphasized however, that precut sphincterotomy is not a substitute for good technique and does not improve your position when you have an anatomically unfavorable position in front of the papilla.

Guidewire cannulation (GWC) of the bile duct without first injecting contrast, first described by Jerry Siegel in 1987, has been proposed as a technique to reduce trauma to the pancreas and reduce pancreatitis<sup>4-7</sup>. There are 2 techniques: 1) first impacting the sphincterotome into the papilla and then manipulating the wire; or 2) feeding the wire into the bile duct without the sphincterotome touching the papilla. GWC has the benefit of increasing cannulation success but either requires a skilled assistant or the endoscopist to use a short-wire system, and it may increase the risk of guidewire perforation.

Several studies have suggested that using “pure cut” electrical cautery current while performing sphincterotomy reduces the incidence of post-ERCP pancreatitis<sup>1</sup>.

It is now established that placing a pancreatic stent in high-risk patients reduces the incidence and severity of post-ERCP pancreatitis<sup>8-9</sup>. Placing pancreatic stents raises multiple technical issues: achieving deep cannulation of the PD, what type and length of stent should be used, how long should the stents stay in place<sup>10</sup>, and what are the potential risks of pancreatic stents? The downside of trying to place a pancreatic stent is technical failure, which places the patient at an even higher risk of post-ERCP

pancreatitis. Additionally, inappropriate guidewire use or stents can damage the pancreatic duct, stents can migrate into the duct, or patients can get lost to follow-up and the stent can remain in place too long leading to longterm problems. Nevertheless there is overall consensus that prophylactic stents should be placed for high-risk patients: SOD patients regardless of whether they had a sphincterotomy, after endoscopic ampullectomy, after sphincter dilation, difficult cannulation, precut sphincterotomy, prior history of PEP. To prevent ductal changes the stents should be either short 5 F or very long 3 and 4F stents; the inner flaps of the stents should not be used, and stent out- migration has to be documented within several weeks, or the stents have to be removed endoscopically.

At this time there are no practical, efficacious pharmacologic therapies available in the US. This is an avenue for future development.

#### References

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