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Endoscopic pancreatic stenting following pancreatic papilla dilation without pancreatic sphincterotomy

Pankreatik sfinkterotomi yapılmaksızın pankreatik papilla dilatasyonu sonrası endoskopik pankreatik stent yerleştirilmesi

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ÖZET: *Bu çalışmada, pankreatik sfinkterotomi yerine buji ile pankreatik sfinkter dilatasyonu sonrası pankreas kanadına stent yerleştirilmesinin etkinlik ve güvenirliği araştırılmıştır.*

Girişim, pankreatik ağrısı, bulunan yaşları 19-55 yıl olan, 9'u kadın, 6'sı erkek 15 hastaya uygulanmıştır. Derin kanülizasyonu takiben kılavuz tel pankreatik kanala yerleştirildikten sonra 4,6,10F dilatasyon kateterleri sırayla geçen tel üzerinden kaydırılarak dilatasyon yapıldı, daha sonra pankreatik stent yerleştirildi.

Ortalama 18 aylık takipte 15 hastanın 14'ünde pankreatik ağrı geçti, 8 hastadan 7'sinde psödokistin komplet rezolüsyonu gerçekleşti.

Bu deneyim, seçilmiş pankreatitli hastalarda sfinkterotomi yapılmaksızın pankreatik papilla dilatasyonu takiben pankreas kanalına stent yerleştirilmesinin güvenli ve efektif bir girişim olduğunu göstermiştir.

Anahtar Kelimeler: **Kronik pankreatit, tedavi, endoskopik, stent.**

SUMMARY: *This study prospectively evaluated the efficacy, safety, and outcome of endoscopic pancreatic stenting (EPS) following pancreatic papilla dilation by dilating catheters instead of pancreatic sphincterotomy in selected patients with pancreatitis.*

The approach was used in nine women and six men, aged 19 to 55, with pancreatic pain. A guide wire was pushed into the pancreatic duct after its deep cannulation. Then, pancreatic papilla dilation was performed using 4.6F to 10F dilating catheters, and a pancreatic stent was inserted.

With a mean 18 months follow-up, pancreatic pain improved in 14 of 15 patients and complete pseudocyst resolution occurred in seven of eight patients.

This experience indicates that EPS after pancreatic papilla dilation, without sphincterotomy, is a safe and effective procedure for pancreatic pain relief and pseudocyst resolution in selected pancreatitis patients

Key Words: **Chronic pancreatitis, therapy, endoscopic, stenting.**

ENDOSCOPIC pancreatic stenting (EPS) has been used to manage a variety of pancreatic ductal diseases, including pancreatitis with pancreatic pseudocyst(s), stricture(s), ductal disruption, fistulas, and pancreas divisum EPS, through the major or minor papilla, to relieve obstruction is similar to biliary stent placement. Data are needed, however, regarding several aspects of the procedure, such as expected time from stenting to pain relief and/or pseudocyst resolution and the need for pancreatic sphincterotomy. To increase access to the pancreatic duct before EPS, sphincterotomy has been performed in most patients (1-4). The present prospective study was undertaken to assess the efficacy, safety, and outcome of EPS following pancreatic papilla dilation by hydrophilic dilating catheters instead of pancreatic sphincterotomy.

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MATERIALS AND METHODS

This approach was used between October 1992 and February 1996 at The Methodist Hospital/Baylor College of Medicine, in 15 selected patients with various nonmalignant pancreatic disorders causing pain. The patients were nine woman and six men, aged 19 to 55 years. Nine had chronic pancreatitis, six had pancreatic pseudocyst(s) and three evidence of pancreatic duct stricture. Four had pancreas divisum with well-documented attacks of pancreatitis and 2 had acute pancreatitis with pseudocyst formation. Chronic pancreatitis was considered to be idiopathic (1), hereditary (1), or due to alcohol abuse (5), hyperparathyroidism (1), or alpha-antitrypsin deficiency (1). One case of acute pancreatitis was due to common bile duct stones; the other arose after endoscopic retrograde cholangro pancreato graphy (ERCP). Pseudocysts were diagnosed by abdominal ultrasound or computed tomography (CT) and were 4 to 8 cm in diameter. Two patients (both with chronic panc-

reatitis) each had two detectable pseudocysts; the other six had one pseudocyst. Pseudocysts were located in the head (7), body (2), and tail (1) of the pancreas. All were present for more than 6 weeks without evidence of regression during conventional medical management, and all were demonstrated by ERCP to communicate with the pancreatic duct.

The method of dilation for EPS was determined after diagnostic ERCP was performed using an Olympus duodenoscope (Olympus America Inc., Lake Success, N.Y.). All patients with a pseudocyst received intravenous antibiotic therapy at the time of ERCP and for 48 hours after EPS; patients without pseudocyst formation received no antibiotic prophylaxis. Deep cannulation of the dorsal duct was performed, using a 0.018-inch or 0.025-inch hydrophilic guide wire, in the four patients with pancreas divisum. Deep cannulation of the main pancreatic duct was performed, using a 0.035-inch wire, in all other patients. Next, pancreatic papilla (and, if applicable, pancreatic stricture) dilation was performed using hydrophilic dilating catheters with outer diameters of 46 to 10F (Microvasive Lab, Boston, Mass). The guide wire was inserted to contact the pseudocyst or preferably into the cyst cavity (Fig. 1A,B). After adequate dilatation was achieved, a pancreatic stent (Wilson-Cook Medical Inc., Winston-Salem, N.C.) or nasopancreatic tube was inserted, using the guide wire. The pancreatic stents have end -and multiple side- holes which are flapped and various lengths, depending on the need. In the patients with pancreas divisum, a 5F, 5-cm stent was inserted via the minor papilla. In the remaining patients, the procedure was via the major papilla into the major duct; using 7F stents of various lengths (depending on ERCP findings) in 10 patients and a 6.5F nasopancreatic tube in the remaining patient, who had chronic pancreatitis and a pseudocyst in the tail of the pancreas.

Patients were informed of the results of their ERCP and EPS. During hospitalization, they were interviewed in detail about their pain to aid in recognizing any complications. After discharge, symptom follow-up was conducted at 2 to 4 week intervals. To enable assessment of the effect of EPS on pancreatic pain, no other pain management methods besides EPS were used. Pseudocyst size was evaluated by abdominal ultrasound every 2 weeks, and pseudocyst resolution was confirmed by abdominal CT. Stents were removed (and not replaced) if repeat ERCP confirmed pseudocyst resolution and there was unimpeded drainage of contrast medium from the pancreatic duct.

RESULTS

EPS was accomplished in all 15 patients, and in each case only one pancreatic stent was used. Communication between the endoscopist, radiologist, and endoscopy assistant was extremely important in coordinating each step of the procedure. No sphincterotomy to the pancreatic papilla was performed; only one patient, (with acute pancreatitis induced by common bile duct stones occurring after laparoscopic cholecystectomy) received sphincterotomy to the biliary papilla. Patientsw ere observed in the hospital for 24-48 hours after EPS, and all except one, a patient with pancreas divisum, tolerated oral food intake 6 to 12 hours after the procedure. Pancreatic stents were removed after 4 to 12 weeks depending on case selection and follow-up findings. All stents were examined after removal for occlusion. Three stents were occluded, all in patients with pancreatic pseudocyst.

At a mean 28 months' follow-up after EPS (range, three to 42 months), pancreatic pain improved in 14 of 15 patients. Eleven were completely pain free, including all four patients with pancreas divisum (stents removed after 12 weeks) and both patients with acute pancreatitis (stents removed after four and six weeks). None of the 11 had recurrent pain during follow-up, and none of those with pancreas divisum had a pancreatitis attack during this period. Four of the nine patients with chronic pancreatitis continued to have pancreatic pain after EPS. Three of the four had pancreatic pseudocyst (two of the three had pancreatic stricture as well); re-EPS was performed in all three (with redilation of pancreatic stricture as applicable), and in two the pesudocyst was resolved and pain improved after re-EPS.

The proximal tip of the pancreatic stent was positioned into the pesudocyst cavity in six of the eight patients with pseudocyst(s). In the other two patients, the proximal tip of the catheter could not be introduced into the cyst cavity but was placed near the pseudocyst. Duration of stenting in the eight patients ranged from four to eight weeks. There was complete pseudocyst resolution (Fig. 1) in seven of the eight. Three of the eight needed re-EPS during follow-up because the pseudocyst was not resolved (as shown by transabdominal ultraso-

und); the removed stents were occluded, possibly by viscous cystic material. Two of the three had pseudocyst resolution after re-EPS. The third, who had chronic pancreatitis and a pseudocyst located in the head of the pancreas, did not have pseudocyst resolution until laparoscopic cystogastrostomy was performed by our surgical team, despite placement of the stent tip into the pseudocyst cavity in both EPS sessions. Six of the seven patients with pancreatic pseudocyst resolution by EPS remained pseudocyst free at a mean follow-up of 11 months (range, six to 31 months) by abdominal ultrasound follow-up. Resolution of pancreatic pseudocyst with associated pancreatic duct stricture was successfully managed by ductal dilation with hydrophilic dilating catheters and stent placement beyond the stricture, in all three patients with stricture (Fig. 2) (in 2 after re-EPS).

Only two complications, both of them minor, were observed in this series. Post-EPS pancreatitis developed in one patient who had type II pancreas divisum. The pancreatitis was controlled within 48 hours by conservative management without withdrawal of the stent. The other patient, with chronic pancreatitis, had inward stent migration; the stent was retrieved using a mini-snare catheter, and the migration entailed no other consequences. Although post-EPS pancreatic duct changes (Fig. 2) were more prominent in patients with pancreas divisum, none of these patients had re-EPS and no problems were detected during follow-up. One death occurred during follow-up; the patient, who had chronic pancreatitis, died of a non-gastrointestinal bleeding problem eight months after her pancreatic pseudocyst was resolved and the pancreatic stent removed.

DISCUSSION

Most nonsurgical management efforts in pancreatitis are directed toward control of symptoms and complications. Surgery has been the main therapeutic recourse for patients with disabling symptoms and complications that fail to improve with conventional nonsurgical approaches. Endoscopic therapy of pancreatitis has recently been applied in selected cases (1-5). One of the aims of endoscopic therapy is to alleviate obstruction of exocrine pancreatic secretion flow, which may be caused by major or minor papilla stenosis, pseudocysts, or pancreatic duct strictures or stones. Although endoscopic therapy has never been directly compared with surgery, endoscopic drainage is appealing in that it may offer an alternative to surgical drainage procedures with hess morbidity and mortality. Our study was undertaken to help define the role of EPS following pancreatic papilla dilation, without pancreatic sphincterotmy, in symptomatic patients with various nonmalignant pancreatic disorders. The therapeutic end points were improvement of pancreatic pain and, in patients with mature pancreatic pseudocyst, pseudocyst resolution.

In our series, as in previous studies of EPS (most of them using sphincterotomy), the majority of patients experienced significant pain relief, with particularly good results in patients with pancreatitis attacks induced by pancreas divisum' and in pancreatitis patients with pseudocyst resolution (1-4). Among our patients, 93% had significant pain relief and 73% were pain free after EPS. In a recent series of 21 patients with pancreatic ductal stricture who underwent ERCP with pancreatic stent placement, no patient experienced long-term relief of pain (4). In our patients with chronic pancreatitis and pancreatic stricture, two of three experienced pain relief. Our observation may be biased by a small sample size.

We prefer to use EPS to drain pancreatic pseudocysts connected to the duct. EPS is less invasive, and hence potentially safer, than other nonsurgical approaches such as percutaneous or endoscopic transmural drainage. Recent prospective and retrospective reports describe the use of EPS for drainage of communicating pseudocysts in fewer than 100 patients (1-4). The success rates for pseudocyst resolution in these reports are reasonable, ranging from 58% to 100%. In our study, post-EPS pseudocyst resolution was achieved in seven of eight patients (88%). Although our sample size is limited, the size and number of pseudocysts did not influence outcome (data not shown).

According to published reports (1-4), pancreatic sphincterotomy (immediately after biliary sphincterotomy) has been performed before EPS in selected patients to obtain better access to the pancreatic duct; preliminary results indicate minimal problems or complications. Nevertheless, endoscopic pancreatic sphincterotomy may entail unnecessary risk and best be avoided. The present preliminary study showed that performing EPS after pancreatic papilla dilation rather than after sphincterotomy can be safe and effective in selected patients with nonmalignant pancreatic disorders. Randomized, controlled studies are needed to compare pancreatic sphincterotomy and panc-

reatic papilla dilation prior to EPS. The future role of pancreatic endoscopic therapy depends on evolving technology and the results of randomized, controlled studies addressing clinical outcomes.

REFERENCES

1. Smits ME, Rauws EAJ, Tytgat GNJ, et al. The efficacy of endoscopic treatment of pancreatic pseudocysts. Gastrointest Endosc 1995; 42:202-207.
2. Barthet M, Sahel J, Bodiou-Bertei C, et al. Endoscopic transpapillary drainage of pancreatic pseudocysts. Gastrointest Endosc 1995; 42:208-213.
3. Binmoeller KF, Seifert H, Walter A, et al. Transpapillary and transmural drainage of pancreatic pseudocysts. Gastrointest Endosc 1995; 42:219-224.
4. Ashby K, Lo SK. The role of pancreatic stenting in obstructive ductal disorders other than pancreas divisum. Gastrointest Endosc 1995; 42:306-311.
5. Lans JI, Geenen JE, Johanson JF, et al. Endoscopic therapy in patients with pancreas divisum and acute pancreatitis: a prospective, randomized, controlled clinical trial. Gastrointest Endosc 1992; 38:430-434.