Endoscopic Resection of Ampullary Neoplasms

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Historically, ampullary neoplasms were often found late, presented with symptoms of chronic gastrointestinal bleeding or pancreaticobiliary obstruction, and were treated with radical surgery or, less commonly, local resection. Currently, the majority of ampullary adenoma patients seen in my practice are referred from other gastroenterologists and found incidentally during evaluation of gastroesophageal reflex disease (GERD) or dyspepsia. Alternatively, they may be found during screening in Gardner/familial polyposis patients or at time of endoscopic retrograde cholangiopancreatography (ERCP) for mild elevations of liver function levels or amylase and lipase elevations. Patients who present with obstructive jaundice, relapsing pancreatitis, extremely large lesions, or those that encompass more than one third of the luminal circumference have been less amenable to endoscopic cure in my practice, as have those with submucosal lesions. The latter include islet cell tumors, carcinoids, and gut stromal tumors.

ENDOSCOPIC TREATMENT

Endoscopic options for invasive, malignant ampullary lesions are limited to palliation. This includes preoperative decompression of the pancreaticobiliary tree and stent insertion (usually placement of a self-expandable metal stent into the bile duct for surgically unfit patients or those with metastatic disease.

Endoscopic options for patients with potentially curable lesions include thermal ablation (Nd:YAG laser or argon plasma coagulation [APC]) or papillectomy in conjunction with sphincterotomy and/or stent placement into the pancreaticobiliary tree. Diagnostic prerequisites before attempting ampullary resection or ablation include baseline laboratory studies to include tumor markers (CEA/CA19-9), a pancreas protocol computed tomography (CT) scan, multiple biopsies (if there is a question of invasive malignancy), and selective endoscopic ultrasonography or intraductal ultrasound.

ENDOSCOPIC TECHNIQUE

Although there have been multiple techniques for endoscopic removal of the papilla that have been described, I undertake baseline ERCP in all patients followed by piecemeal or single-snare papillectomy and immediate retrieval of the tissue specimen. Smaller fragments can be suctioned through the scope, but larger ones require endoscopic removal.

Dual sphincterotomies and stent placements minimize the acute risk of cholangitis and pancreatitis, respectively, and the subsequent risk of stenosis of the pancreaticobiliary outlets. APC or Nd:YAG laser can be used for lateral extensions of tumor, although saline injection should be considered to preclude transmural burn.

Variations of the above technique include (1) papillectomy first, ERCP, sphincterotomy, and stents next and (2) piecemeal polypectomy after initial sphincterotomy or stent placement through tumor.

Alternatively, extensive thermal ablation of the papilla by means of laser, APC, or bipolar cautery has been undertaken after multiple biopsy samples have been taken. I have limited this therapy in my practice to patients with a limited recurrence postpapillectomy in the setting of widely patent pancreatobiliary sphincterotomies.

RESULTS OF PAPILLECTOMY

The literature is replete with reports that papillectomy is associated with both acute and subacute or chronic complications.[1] The former may include bleeding, perforation (usually limited to excision or treatment of lateral tumor extension), and acute pancreatitis or cholangitis from edema of the pancreatic duct or biliary orifices, respectively. Delayed complications can include bleeding, usually at 7–10 days postprocedure, and duodenal or papillary stenosis. The latter may present as pancreatitis or biliary colic.

Thermal destruction of the papilla appears to be both riskier and less successful for cure compared with papillectomy. Saurin et al.[1] treated 25 patients

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with Nd:YAG laser, of whom two thirds had endoscopic and histologic remission. There was one recurrence at a median follow-up of 66 months. Five patients (21%) had their endoscopic treatment discontinued because of advanced age or severe unrelated disease, and three patients (12.5%) had treatment failure because of either severe pancreatitis or tissue ingrowth into the pancreaticobiliary tree. At a median follow-up of 81 months, two patients had undergone pancreaticoduodenectomy, one third had died of unrelated causes, and 58% were alive, in whom one cancer developed.

Familial polyposis (FAP) patients seem to fare less well. In a retrospective review of 59 FAP patients and 32 with sporadic ampullary adenomas treated at the Mayo Clinic, ablation was successful in 44% of sporadic and 34% of FAP adenomas at a median follow-up of 24 months.[2] Complications occurred in 15 (19%), of which 3 (4%) were severe and included duodenal stenosis, necrotizing pancreatis, and transmural burn (1 each). Thirteen patients (16%) were referred for surgery during follow-up.

There have been a number of series that have looked at a small number of patients treated with papillectomy for ampullary adenoma.[3,4] Combining the results of four series published in 2000 and 2001, 47 of 49 patients had successful papillectomy.[1,3,5,6] The complication rate in these series ranged from 0% to 25%, and there was recurrence in four (8.5%), of whom one was ultimately shown to have cancer. Three patients (6.3%) had subsequent surgery.

In the largest, multicenter retrospective review of patients with endoscopically removed ampullary adenomas, 103 patients who underwent papillectomy at four referral centers were reviewed.[7] Seventy-two of these had sporadic adenoma and the remaining patients had a variant of FAP. Presenting symptoms were jaundice/cholangitis/pain (n = 59), pancreatitis (n = 18), and bleeding (n = 12). Twenty-six patients were asymptomatic. Long-term endoscopic treatment was successful in 83 patients (80%). Older patients, smaller lesions (21 versus 30 mm, $P < 0.0001$), and sporadic lesions (63 of 72 [86%] versus 20 of 31 [67%], $P = 0.02$) were more likely to be treated successfully. There were 10 complications (10%), which included acute pancreatitis (n = 5), bleeding (n = 2), and late papillary stenosis (n = 3). Acute pancreatitis was more common in those who did not have pancreatic duct stents inserted (17% versus 3.3%), whereas papillary stenosis was also more common (15.4% versus 1.1%) in patients who did not have pancreatic stent placement.

Studies have also been published looking at thermal ablation of ampullary adenomas compared with papillectomy. For instance, Vogt et al.[3] retrospectively reviewed 36 patients treated with papillectomy (n = 18) or thermal ablation (n = 18). Median follow-up was 75 and 33 months, respectively. The incidence of subsequent ampullary cancer was calculated to be threefold higher in the ablation group (1:15.5 patient-years compared with 1:52.8 patient-years), and there was a significant decrease in the incidence of cancer-related death in the papillectomy group ($P = 0.0045$). The authors correctly concluded that snare resection of ampullary adenomas was preferable to thermal destruction.

FOLLOW-UP

Despite an increased willingness for endoscopists to treat ampullary tumors, a word of caution is in order. On the one hand, patients with Gardners/FAP have a field defect, and despite papillectomy and treatment with sulindac or a cyclooxygenase 2 inhibitor, recurrence at the papillectomy site is a real concern. Because of this, the malignant potential for other C-loop polyps, and the absence of conclusive data showing that papillectomy decreases the rate of periampullary cancer in this patient population, lifelong follow-up at 6- to 12-month intervals is mandatory. I also follow-up patients with sporadic adenomas who have undergone papillectomy yearly for at least 3–5 years and sporadically thereafter and suggest screening colonoscopy to rule out concomitant colorectal polyps.

Indications for subsequent surgery in my practice include evidence of invasive cancer, significant residual adenomatous tissue which involves the distal bile or proximal (head) pancreatic duct, or development of significant lateral extensions in which risk of perforation or subsequent duodenal stenosis appears prohibitive.

SUMMARY

The endoscopic treatment of benign ampullary neoplasm in expert hands carries at least a 10% procedural or postprocedural risk. As such, consider referral to a center with more experience. Papillectomy (plus sphincterotomy/stent) is both safer and more effective than thermal therapies alone. Stent therapy alone is acceptable (preferably metal stents) in patients of high surgical risk or those with unresectable cancer. Surgery is the treatment of choice for all other good-risk patients with demonstrable invasive cancer. Finally, long-term follow-up is mandatory for patients with benign disease who are treated endoscopically to rule out recurrence or residual intraductal disease.

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