



## Ampullary Lesions Q&A

Ask the Expert features questions submitted by members, with answers provided by ASGE physician experts. In this issue, Michael J. Bourke, MD, responds to questions on ampullary lesions.



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### 1. Q. When do you perform endoscopic ultrasonography (EUS) in patients referred for ampullectomy?

- A. Careful endoscopic interrogation is an important component of the pre-resection assessment; however, even with careful assessment through a side-viewing duodenoscope, certain pieces of information may not be gleaned. These are the degree, if any, of intraductal extension, the possibility of covert invasive disease and the risk of lymph node metastasis. When concern for any of these features exists, then staging should be multimodal and include EUS, magnetic resonance cholangiopancreatography (MRCP), contrast-enhanced multi-detector computed tomography (CT) and careful cholangiopancreatography at the time of ampullectomy.

EUS should always be performed for submucosal lesions (e.g., carcinoids or gangliocytic paragangliomas). For lesions less than 20 mm, particularly those with a granular morphology that have a benign appearance and are obviously quite mobile, we tend not to perform EUS.

### 2. Q. Do you routinely perform cholangiography, pancreatography, or both, in all patients prior to ampullectomy?

- A. Preferably, both. Endoscopic retrograde cholangiopancreatography (ERCP) at the time of ampullectomy is an important part of the staging procedure. It corroborates the findings from the prior MRCP, and in my view, is probably the most accurate means of detecting subtle intraductal extension, whether biliary or pancreatic. If the apparent intraductal extension is contained within the papilla, then a complete papillectomy at the level of the duodenal wall, which is generally my intended therapeutic goal, will still completely excise the neoplasm. ERCP is also used to detect features of invasive disease, such as an irregular or shouldered stricture. The clues are both visual and tactile. The endoscopist can sense the resistance to the passage of the catheter across the papilla.

However, obtaining both a cholangiogram and pancreatogram prior to ampullectomy is not always readily possible. Exhaustive attempts, particularly with small (< 20 mm), ostensibly benign lesions may

not be helpful and may unnecessarily prolong the procedure and increase the risks of pancreatitis. Sometimes we cannot find the papilla with very large, laterally spreading lesions (LST-P). If prior imaging with MRCP, CT and EUS has not raised any concern, we do not worry. If we start the resection peripherally with endoscopic mucosal resection (EMR) of the lateral components, we eventually identify and isolate the papilla, which is then removed en-bloc.

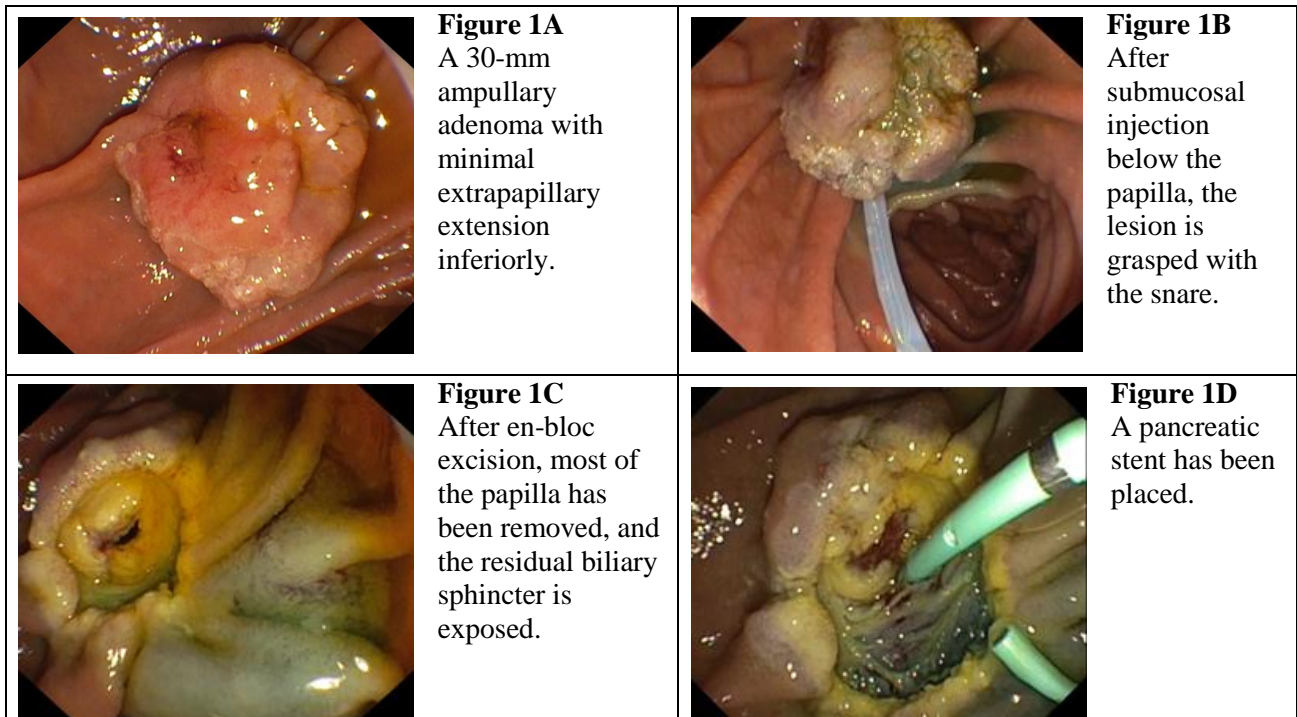
**3. Q. For routine, uncomplicated ampullectomy for a known adenoma:**

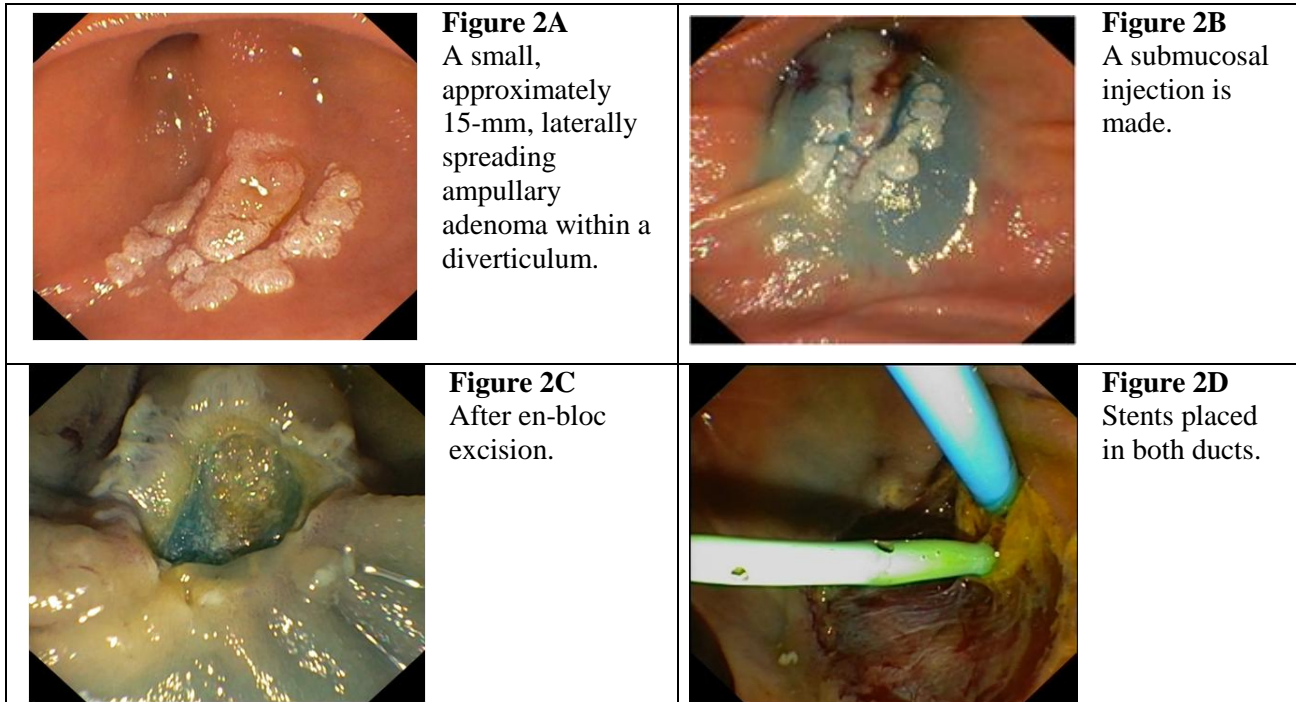
**a) Do you perform ampullectomy with or without submucosal injection?**

A. For lesions without extrapapillary extension, there is no role for submucosal injection. The papillary mechanism is attached to the biliary and pancreatic ducts, which are attached to their respective parent organs, and as such, submucosal injection will not elevate the papilla to any meaningful extent. In fact, submucosal injection may spread in a peripapillary distribution, making subsequent resection more difficult. Our intended therapeutic goal is generally to take the papilla off at the level of the duodenal wall, and a submucosal injection may make this more difficult.

There are, however, two exceptions:

- (i) In the case of limited extrapapillary extension, with intended en-bloc excision: Generally, in the early phases of extrapapillary extension, the adenoma grows inferiorly downward from the papilla, so a submucosal injection inferior to the papilla, beneath the adenomatous extension, can enable excision of the entire specimen in a single piece (Figures 1A–D). This injection should be limited to the submucosal space beneath the extrapapillary extension.
- (ii) If the papillary adenoma is within a diverticulum, particularly if there is extrapapillary extension: Here I favor a peripapillary sublesional injection to create a safety margin and limit the risk of transmural deep thermal injury in the thin-walled diverticulum (Figures 2A–D).





**b) Do you routinely place a stent in the bile duct, pancreatic duct, both ducts or neither duct?**

A. Unless the patient is confirmed to have pancreas divisum, stenting of the pancreatic duct after excision of the major papilla should always be attempted. A small randomized trial showed that stenting significantly reduces post-ERCP pancreatitis. It is likely, however, to be most important in those patients who are most difficult to stent, i.e., those who do not have a dilated pancreatic duct. In these cases, the orifice may be difficult to find.

Prior cannulation before ampullectomy with photodocumentation of the orientation of the sphincterotome to the papilla, in association with an x-ray image of the pancreatogram, is helpful. After ampullectomy, the images can be used to facilitate access. Those patients with a dilated pancreatic duct (PD) are likely to be less susceptible to edema-related PD obstruction, which is the mechanism for pancreatitis after ampullectomy. Paradoxically, the dilated PDs are far more easily cannulated for stent placement.

Stenting of the bile duct is not mandatory, but should be considered if there is concern for microperforation (a removable, fully covered metal stent is preferred), intraductal extension or significant risk of postampullectomy bleeding. In the last case, the stent can help to prevent complications from hemobilia and acts as a reference point to locate the biliary orifice if repeat endoscopy is necessary. When there is major bleeding, often the second part of the duodenum is completely full of blood and blood clots, and it can be difficult for the endoscopist to orient himself or herself. The biliary stent acts as a reference point.

**4. Q. Would you consider endoscopic ampullectomy for a biopsy-proven ampullary carcinoma or even high-grade dysplasia?**

A. The presence of high-grade dysplasia is not a contraindication to ampullectomy. The majority of these lesions are tubulovillous adenomas, and in our practice, at least one third of such patients will have

high-grade dysplasia; most will not have invasive cancer. Invasive cancer may be discovered in a small minority (<5 percent) after endoscopic resection when the lesion was believed to be benign. In these instances, the ampullectomy has served as a definitive staging procedure.

A decision then needs to be made as to whether the patient should proceed to surgery, and this decision is predicated on the age and comorbid status of the patient, his or her underlying life expectancy in the context of their comorbidity (frequently, these patients are elderly, with significant comorbidity) and the histologic features that favor lymph-node metastasis, including tumor differentiation and lymphovascular invasion. If the lesion has been completely excised, some patients will opt for non-surgical management, given the risks associated with a Whipple resection. All cases should be discussed in a multidisciplinary team setting.

Endoscopic ampullectomy for an obviously invasive lesion has a limited role. In this setting, it is unlikely that the lesion can be completely excised, and the risks of bleeding and perforation are undoubtedly magnified.

**5. Q. What are the treatment options for ampullary adenomas in patients who are unfit for surgery and have lesions that are not amenable to endoscopic resection?**

- A. Ampullary adenoma is usually a slowly progressive premalignant condition. In elderly patients with significant comorbidity (particularly cardiac or renal), the time frame to malignant transformation may not exceed the patient's reasonable life expectancy, and the physiologic tolerance to ampullectomy-related complications, particularly bleeding, may be very poor. These aspects need to be factored into the therapeutic decision making. Paradoxically, those patients least likely to benefit from endoscopic excision are most at risk of serious complications.

In my view, no matter how extensive, most benign ampullary lesions should be able to be resected endoscopically by appropriately trained and skilled endoscopists. These skills require a combination of advanced resection techniques, mastered in the colon, and sound ERCP technique. The main risk is postprocedural bleeding, and this risk needs to be factored into the considerations, as it may be extremely high. For very large, laterally spreading lesions that involve more than half the circumference of the duodenal wall, melena is common, and an extended inpatient stay from three to four days is necessary.

If the lesion cannot be removed but is asymptomatic, however, then observation may be the best option, particularly if the patient is elderly since these lesions tend to be fairly slow growing. Obstructive jaundice in the absence of stone disease usually implies a malignant process. In this case, if the patient is not surgically fit, then metal stenting at the time of ERCP is the best option once histologic confirmation has been obtained.

**6. Q. When is a transduodenal surgical ampullary resection appropriate (as opposed to a Whipple procedure)?**

- A. Transduodenal surgical ampullary resection is an operation that is reserved for benign disease. Increasingly, there is less and less of a role for this approach, because patients with benign disease should be treated endoscopically. Endoscopy carries fewer risks, and the outcomes are probably better because endoscopic imaging is vastly superior to that which can be obtained at the time of surgery; hence, the risk for significant recurrence is minimized. If appropriate surveillance is in place, recurrence is usually unifocal, diminutive and easily treated at follow up.

Therefore, in my view, surgery is only indicated for malignant disease, in which case a Whipple resection is the procedure of choice.

**7. Q. Do you consider endoscopic resection for an ampullary adenoma that invades retrograde up the bile duct on cholangiography, cholangioscopy or EUS?**

- A. In my experience, EUS is neither particularly sensitive nor specific for detecting minimal intraductal extension. I prefer to rely on careful endoscopic cholangiography and MRCP. Intraductal extension may be confined within the intrapapillary segment of the bile duct, and a complete papillectomy will cure the patient. Intraductal extension is more worrying where there are features to suggest malignancy, such as presentation with jaundice (which usually indicates a malignant process) or an irregular or shouldered stricture. Therefore, if the lesion is believed to be benign, even if there is a suggestion of intraductal extension, it is safe and reasonable to proceed with ampullectomy, because the patient may still be cured endoscopically, and an endoscopic approach confers a significant morbidity and mortality advantage in comparison with surgery.

**8. Q. In patients with polyposis or attenuated polyposis syndromes, what is your approach for screening and surveillance of the ampulla?**

- A. Patients with polyposis syndromes, including familial adenomatous polyposis (FAP), attenuated FAP, Lynch syndrome and MYH-associated polyposis, are at increased risk of duodenal and ampullary adenomas, which in a proportion will progress to invasive malignancy. All patients in these categories should at least be screened for both duodenal and papillary adenomas, with both forward- and side-viewing endoscopy.

The medial, and to a lesser extent, anterior wall of the second part of the duodenum, is not well seen with conventional forward-viewing endoscopes, and a large flat papillary adenoma can lurk there for many years without recognition. Patients with both forms of FAP require ongoing surveillance annually or biannually.

Ampullary adenomas in the setting of FAP undergo a slow and gradual transition to invasive cancer. Therefore, endoscopic ampullectomy is generally best deferred until the patient is around 30 years of age or older and the lesion is at least 1 cm in size. Under these circumstances, there tends to be a pendulous component that consequently expands the plane of intended resection, separating the papilla from the duodenal wall. Endoscopic ampullectomy is best undertaken before significant extra-papillary extension of the adenoma occurs, because this certainly makes the procedure more difficult and increases the likelihood of recurrence.

**9. Q. Do you inject methylene blue dye into the ampulla before planned ampullectomy, and do you find that this aids in cannulating the duct for prophylactic stent placement?**

- A. No. While the idea is appealing, in practice it does not tend to work. There are several keys to identifying the pancreatic duct after the procedure. These include:
- Preferably a pancreatogram prior to ampullectomy, with photodocumentation of the orientation of the sphincterotome and position on the papilla at the time of pancreatic duct cannulation.
  - A complete papillectomy at the level of the duodenal wall. After this, the orifice of both duct systems is usually obvious, particularly if they are dilated. The pancreatic duct is usually found in the 5 o'clock position. In a few percent of patients, the relationship between the pancreatic orifice and the biliary orifice may be aberrant.
  - Cannulation of the ductal structures gently with a soft-tipped hydrophilic wire.



**Video:**

Dr. Bourke provided a clip from an endoscopic resection of a large hemicircumferential laterally spreading papillary tumor. See the digital version of *ASGE Connection*'s June 2013 issue and view the video posted in the Ask the Expert column.

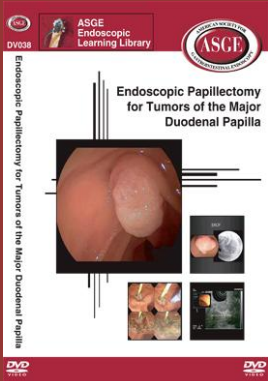
**Disclosures:**

Dr. Bourke has no disclosures to report.

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**Suggested Reading**

- M Bassan and MJ Bourke. Ampullectomy: A practical guide. *Journal of Interventional Gastroenterology* 2012; 2(1): 23–30.
- Irani S, Arai A, Ayub K, Biehl T, Brandabur JJ, Dorer R, et al. Papillectomy for ampullary neoplasm: results of a single referral center over a 10-year period. *Gastrointestinal Endoscopy* 2009; 70:923–32.
- AD Hopper, MJ Bourke, SJ Williams, M Swan. Giant laterally spreading tumours of the papilla: Endoscopic features, resection technique and outcome. *Gastrointestinal Endoscopy* 2010; 71(6):967–75.

	<b>Endoscopic Learning Library DVD</b>	<b>Additional resources</b>
<p>Endoscopic Papillectomy for Tumors of the Major Duodenal Papilla</p> <p>Tae Yoon Lee, MD, Myung-Hwan Kim, MD, Sang Soo Lee, MD, Dong Wan Seo, MD and Sung Koo Lee, MD</p> <p>DV038 0.25 CME Credit Member price: \$59; non-member price: \$99</p> <p>Visit the Education section at <a href="http://www.asge.org">www.asge.org</a> to order.</p>	<b>ASGE Practice Guidelines:</b>	
		<p>"The role of endoscopy in the evaluation and treatment of patients with biliary neoplasia," 2013</p> <p>"The role of endoscopy in ampullary and duodenal adenomas," 2006</p> <p>"Guidelines for Training in Endoscopic Ultrasound," 1999</p>