

# ADVANCES IN ENDOSCOPY

Current Developments in Diagnostic and Therapeutic Endoscopy

Section Editor: John Baillie, MB ChB, FRCP

## The Significance and Management of Nonampullary Duodenal Polyps

Firas H. Al-Kawas, MD  
Professor of Medicine  
Chief of Endoscopy  
Georgetown University Hospital  
Washington, DC

### G&H What are the characteristics of nonampullary duodenal polyps?

**FA-K** Duodenal polyps can occur in 2 different settings: familial adenomatous polyposis syndrome (in which duodenal polyps are common) and sporadic polyps (in which duodenal polyps are not common). Sporadic duodenal polyps are usually found incidentally during upper endoscopy. Retrospective series have reported duodenal polyps in up to 1.5% of patients referred for upper endoscopy. Polyps can involve the major or minor ampulla or the nonampullary areas of the duodenum. Nonampullary duodenal (NAD) polyps are frequently seen in the first and second parts of the duodenum. These polyps are frequently sessile and can vary in size from several millimeters to several centimeters. Polyps more than 10 mm in size are frequently adenomas. Other encountered pathology, particularly in the duodenal bulb, include Brunner gland adenomas and carcinoids.

### G&H What are the causes of these polyps?

**FA-K** Duodenal polyps can originate from the mucosa (eg, adenomas) or the submucosa (eg, carcinoids); or, duodenal polyps can be hamartomas (eg, Brunner gland hyperplasia; Figures 1A, 2A, and 3A). Rarely, metastatic disease from breast, lung, or renal cancer can be seen in the duodenum as a polyp.

### G&H What is the goal of managing NAD polyps?

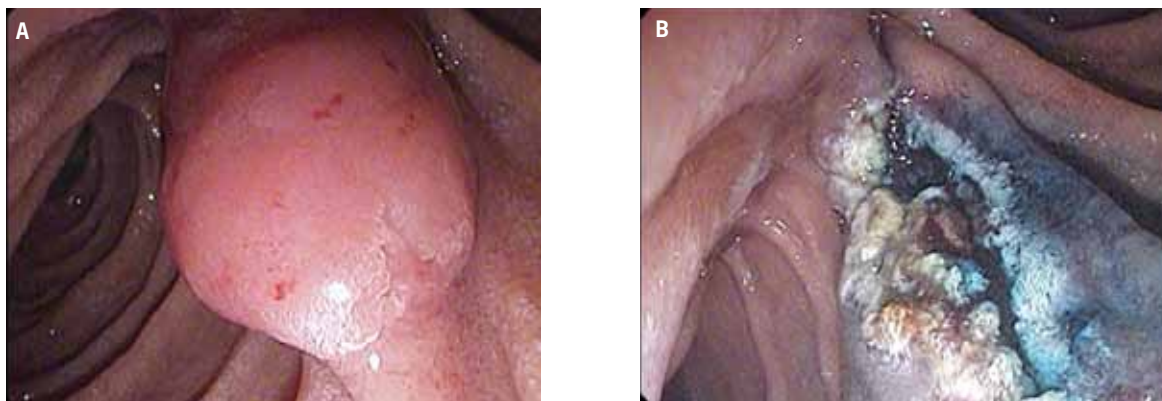
**FA-K** For all polyps, the goal of management is to determine their histology and eliminate the risk of cancer or any symptoms associated with the polyps. Similar to colonic adenomas, removal of duodenal adenomas eliminates the risk of progression to cancer. All duodenal polyps should be sampled or removed, if feasible. Even small polyps can be adenomas or carcinoids and may present a risk for cancer development. The risk of cancer increases with polyp size; however, most polyps, even those larger than 2 cm, are benign and should be removed endoscopically, if feasible.

### G&H What therapeutic options are available for these polyps?

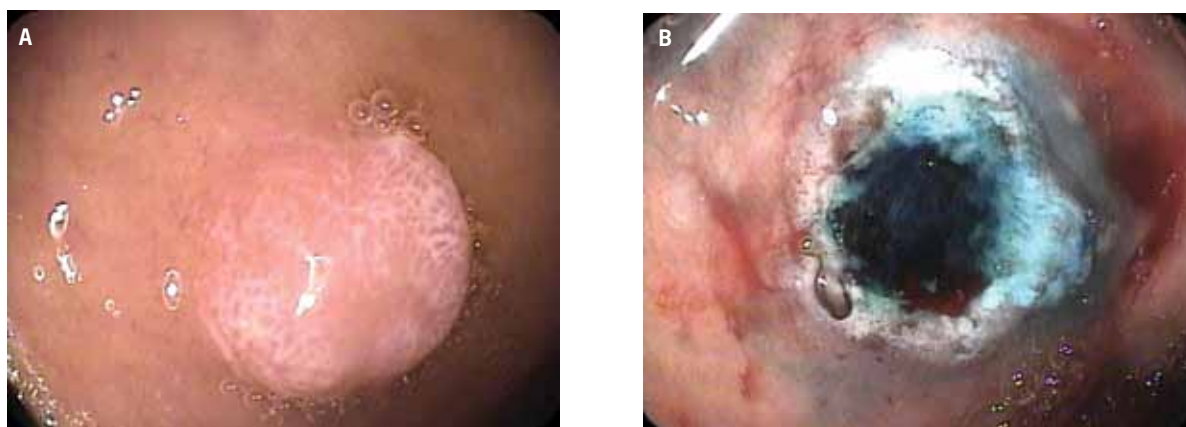
**FA-K** Therapeutic options for NAD polyps include endoscopic removal or surgical resection. Surgical resection frequently involves the head of the pancreas (Whipple resection). For smaller lesions (ie, <2 cm), an endoscopic approach using biopsy forceps or snare polypectomy is simple and safe (Figure 3). Removal of larger polyps requires extensive experience in endoscopic techniques. Because of the thin wall of the duodenum, endoscopic mucosal resection (EMR) techniques using saline lift with or without the addition of methylene blue or indigo carmine are frequently required to minimize the risk of perforation. In addition, argon plasma coagulation (APC) further ablates any remaining tissue and likely reduces the recurrence rate (Figures 1B and 2B). Potential complications of these therapeutic options include immediate or delayed bleeding or perforation.

### G&H What endoscopic accessories can aid in the management of NAD polyps?

**FA-K** Polyp size and location determine the use of various endoscopes, accessories, and procedures (including



**Figure 1.** A sessile adenoma in the descending duodenum (A). The polypectomy site following saline/methylene blue lift, snare polypectomy, and argon plasma coagulation ablation (B).



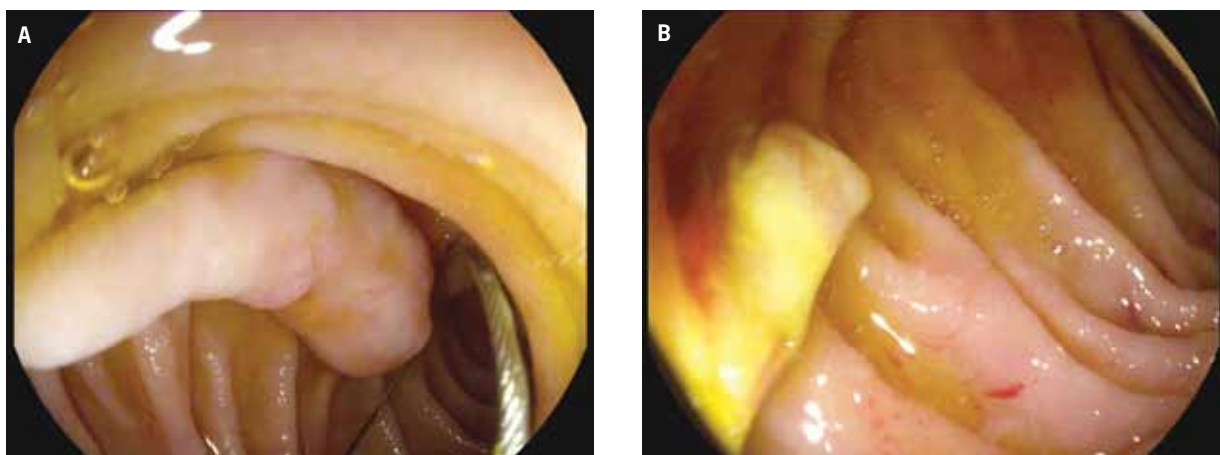
**Figure 2.** A carcinoid in the bulb (A). The polypectomy site following saline/methylene blue lift and snare polypectomy (B).

endoscopic retrograde cholangiopancreatography (ERCP) scopes, pediatric colonoscopes, injection needles, various snares, and APC). Having appropriate expertise and accessories facilitates the management of the majority of duodenal polyps. However, polyps that occupy more than 50% of the lumen or extend over 2 duodenal folds are challenging to manage endoscopically and may require surgical intervention.

**G&H** You and your colleagues recently conducted a study on NAD polyps. What were your main findings?

**FA-K** In a recent issue of *Gastrointestinal Endoscopy*, my colleagues and I reported the endoscopic management of 59 patients with NAD polyps who underwent 96 procedures. The median polyp size was 17.2 mm (range,

3–50 mm). Resection was successful in 98% of the procedures using the techniques previously mentioned. A pediatric colonoscope was used in 22% of the procedures, an ERCP scope in 40%, and EMR techniques in 60%. Adenomas were found in 68% of lesions. Only 1 lesion (1%) was malignant. Most lesions measuring at least 2 cm in size were adenomas. Polyps found in the bulb were significantly more likely to be carcinoids. Follow-up examination indicated an adenoma recurrence rate of 37%. Adenomas measuring at least 2 cm in size had a recurrence rate of 63% after undergoing a resection that had been presumed to be successful. All recurrences were successfully treated using the same endoscopic techniques. We concluded that endoscopic management of sporadic NAD polyps is frequently successful and safe. However, frequent polyp recurrence mandates vigilant follow-up examinations, particularly in the first 2 years after resec-



**Figure 3.** A pedunculated Brunner gland hyperplasia (A). The site post-snare polypectomy (B).

tion. Colonic adenomas were found in 53% of patients with duodenal adenomas.

**G&H** What complications were noted in your study?

**FA-K** Our complications consisted of 3 cases of bleeding, 1 case of abdominal pain, and 1 case of hypoxemia. Although the duodenum is often considered a high-risk area for perforation after polypectomy (due to the thin wall of the organ), no perforations were found in our study. The use of EMR techniques, including generous submucosal injection of saline, was likely an effective aid for reducing the risk of perforation. In addition, APC ablation and the selective use of endoclips may have reduced the risk of delayed bleeding.

**G&H** Why is there considerable variation in the resection and recurrence rates of NAD polyps among different studies?

**FA-K** It is difficult to know the reason for this variation. However, endoscopist expertise, the length of follow-up, definition of recurrence, and frequency of the use of the EMR techniques described above may have an impact on the variable success and complication rates.

**G&H** What is the role of endoscopic ultrasound in the management of NAD polyps?

**FA-K** Some investigators have advocated the use of endoscopic ultrasound (EUS) for all large (>2 cm) polyps to find evidence of deep invasion, which prevents safe and curative endoscopic resection. However, only 5% of the patients in our series underwent EUS prior to attempted

resection. We used saline lift in all of the larger polyps. A positive saline lift precludes invasion and further indicates safety of endoscopic removal using EMR techniques. This was confirmed by our results.

EUS may be helpful if any features suggestive of malignancy are noted (ie, spontaneous bleeding, ulceration, or firmness). However, the routine use of EUS would likely increase the cost of managing these patients without adding much benefit.

**G&H** How much training should endoscopists undergo before attempting endoscopic resection of NAD polyps?

**FA-K** EMR techniques are frequently used for removal of sessile colonic polyps. These techniques are relatively simple and can be learned by most endoscopists. There are currently no training guidelines; however, as with similar techniques, the best path for developing competency involves observing the technique being performed by experts followed by self-study and tutoring/certification by an expert colleague, if available. As always, knowledge of self-limitations and performance of the procedure for the right indication by an adequately trained individual provide the best results.

**G&H** Do you routinely send large polyps for testing (eg, for microsatellite instability) to distinguish sporadic NAD polyps from polyps occurring in familial polyposis syndromes?

**FA-K** We do not. However, we recommend performing colonoscopy in all patients, as current data suggest the increased prevalence of colonic adenomas in this population. Further studies are needed on this issue.

## G&H What are the next steps for research in this area?

**FA-K** Longer follow-up and further studies are needed on the molecular and genetic aspects of these polyps to better understand the natural history and underlying etiology of sporadic NAD polyps. Studies are also needed to look at the potential role of optical biopsy technologies, such as confocal laser endomicroscopy, for further guiding endoscopic therapy, improving its precision, and potentially reducing polyp recurrence rates.

## Suggested Reading

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maneuvers, or other oropharyngeal exercises—to improve the strength of the swallowing muscles. Prompt evaluation of the swallow mechanism after stroke is the accepted standard of care.

## G&H Are there any emerging treatment options currently being investigated?

**RS** A recent study evaluated the feasibility and effects of transcranial magnetic stimulation on poststroke dysphagia. The treatment was applied for 20 minutes daily for 5 days. After the end of this treatment, the researchers noted improved swallow reaction time, decreased aspiration scores for liquids, decreased residue for pastes, and no effect on oropharyngeal transit time or glottal closure. There is also ongoing research on the creation of an electrical device that can help synchronize and organize the swallowing muscles. This approach, which uses electrical stimulation to train the peripheral muscles, requires further investigation. In addition, there are currently attempts to stimulate the brain to recover from a stroke as well as to stimulate the unaffected side of the brain to take over more function from the damaged side. Preliminary experimental results are encouraging, but these techniques are still investigational and need clinical confirmation before being used in practice.

## G&H Is treatment always necessary in these patients, or can dysphagia spontaneously resolve?

**RS** Some dysphagic conditions improve spontaneously over time. However, when a system, particularly one

that involves striated muscles, is not used, the apparatus becomes weak and begins to atrophy. Although the ability to swallow may return without therapy, the swallowing muscle becomes weaker and weaker during this waiting period. Therefore, physicians should not postpone treatment in the hopes of a spontaneous recovery. Swallow therapy is particularly important in this patient population, as the swallowing muscle must be kept strong.

## G&H What other studies are currently being conducted in this area?

**RS** There are important studies currently ongoing in our laboratory at the Medical College of Wisconsin and at other institutions to devise approaches to improve recovery from dysphagia using neuroplasticity of the central nervous system as well as targeted rehabilitative techniques and sensory motor function improvement.

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