Editorial

Do we know enough?—sporadic non-ampullary duodenal neoplasms (SNADNs)

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Management of sporadic, non-ampullary duodenal neoplasms (SNADNs) has been a topic of increasing interest over the last decade due to increased recognition of these lesions, in part because of increase in surveillance and also with development of advanced endoscopic imaging including narrow band imaging, high resolution white light endoscopy with magnification and chromo-endoscopy. Duodenal adenomas have been shown to follow adenoma-carcinoma sequence making surveillance and treatment of this entity important. Most of the data about the treatment of SNADNs with endoscopic mucosal resection (EMR) in the past have come from retrospective studies from the eastern hemisphere. Studies from the east have shown high clinical success with low complications in patients with SNADNs treated endoscopically. However, the application of those results to the western population is debatable as smaller duodenal neoplasms are more often recognized in the eastern hemisphere likely due to gastric cancer screening programs (1).

Over the last decade or so, there have been multiple publications from the west describing experience with endoscopic management of these SNADNs (2-8). The recent study by Bartel *et al.* (9) confirms the previous published data about safety and efficacy of endoscopic resection of large duodenal polyps but also gives insight into the multi-modality or real-life management of the SNADNs. This retrospective study included patients with sporadic non-ampullary duodenal adenomas as well as sub-epithelial lesions. The patients were evaluated in a multi-disciplinary setting and underwent either EMR or if endoscopic resection was considered unfeasible, pancreas preserving duodenectomy. The decision regarding surgery versus endoscopic treatment was based on the location and size of the lesions as well as the consensus opinion between experienced advanced endoscopists and surgeons. In the study, 91 patients underwent endoscopic resection while 30 patients underwent pancreas-preserving duodenectomy. Macroscopic resection of lesions was successful in 90 out of 91 patients in the endoscopy group while all 30 patients in the surgery group had R0 resection both macroscopically and microscopically. R0 resection despite macroscopic resection could not be confirmed in a significant proportion of endoscopically treated patients (38% deep and 44% lateral) due to cautery artifact. Also *en-bloc* resection was performed only in 53% of these patients. As expected, endoscopic resection was associated with shorter procedure time and length of hospitalization. There was no significant difference in complications between the two groups and none of the patients who underwent endoscopic resection required surgery. Post endoscopic resection, recurrence occurred in 32% of the patients all of whom were treated with endoscopic therapy while all surgically treated patients were considered free of neoplasia. No association of size >20 mm, *en-bloc* resection, positive margins or procedural

complications were noted with the risk of recurrence.

Management of non-ampullary duodenal neoplasms remains a challenge due to multiple factors. Duodenum is a precarious portion of the gastrointestinal tract in terms of endoscopic interventions due to the luminal curvature, thin wall with high vascular supply and relatively thick sub-mucosal layer which makes vertical lifting challenging especially in flat, laterally spreading neoplasm (10). Surgical options for duodenal neoplasms traditionally have included trans-duodenal excision and pancreato-duodenectomy. Although former is less invasive it is associated with significant recurrence rate, while pancreato-duodenectomy is associated with significant morbidity and around 2% mortality. Pancreas preserving pancreato-duodenectomy was initially described in 1990 but has been shown to be an acceptable surgical alternative for patients with non-endoscopically resectable duodenal neoplasms, as demonstrated in this study.

The ASGE guidelines published in 2006 suggest endoscopic resection for lesions involving less than 33% of the circumference of the duodenum (11). However as discussed above, multiple other studies and this current study by Bartel *et al.* have confirmed that endoscopic resection can be safely performed for larger lesions. Intra-procedural bleeding and delayed bleeding are the most common adverse effects associated with EMR of duodenal neoplasms but can be easily managed with endoscopic therapy. A systematic review of endoscopic management of 485 NADPs, showed overall bleeding rate of 16% and delayed bleeding rate of 5% (12). Intra-procedure bleeding can be managed in majority of the cases by endoscopic hemostasis usually with soft coagulation or with monopolar coagulation graspers. If placement of hemostatic clips is required, care must be taken to avoid muscle layer injury. The resection defect is usually exposed to acid and bile, which in the setting of rich vascular supply of the duodenum can predispose to ulcer formation and delayed bleeding from the exposed sub-mucosal vessels. Some authors have proposed closure of defects with hemostatic clips to prevent delayed bleeding but placement of clips after large resections can be technically challenging and all studies have not shown decreased incidence of bleeding after clipping (3,13). We recommend high dose proton pump inhibitor (PPI) therapy for 8–10 weeks for all patients after duodenal EMR though the exact duration as well as the benefit of this approach is unclear. A significant percentage of the patients with delayed bleeding can be managed conservatively but those who require endoscopic therapy can be treated with soft coagulation or coagulation grasper forceps as clip placement in a post-resection ulcer can be technically challenging. Angiographic embolization and surgery are rarely needed for persistent bleeding. Risk of perforation with EMR is low (0–6%), compared to endoscopic submucosal dissection (2–50%) (14). Most of the perforations are identified intra-procedurally and endoscopic closure should be attempted. Depending on the location of perforation, retroperitoneal perforations can be managed conservatively while peritoneal perforations always require surgical therapy. Retroperitoneal perforations that fail to improve with conservative management usually require percutaneous drainage and/or surgery. Studies have explored the risk factors that can predict complications. Size greater than 20 mm and intra-procedural bleeding were identified as risk factors predictive of complications in one study (3).

The high incidence of recurrence after EMR and the need for surveillance is another topic of ongoing discussion after endoscopic resection. Bartel *et al.* showed a recurrence rate of 32% after initial resection and various studies have reported recurrence rates ranging from 0–47% (3). No association of polyp size or *en-bloc* resection was noted with recurrence while previous studies have shown increased recurrence after piecemeal resection (15,16) as well as in those with villous histology (3,4). Most of the recurrences however can be managed with endoscopic resection (17). The exact surveillance strategy after endoscopic resection is not clearly defined. In the absence of guidelines, we perform first follow-up endoscopy at 3 to 6 months after resection and then yearly. Further studies are needed to address the duration and timing of surveillance examinations.

Most of the above-discussed studies have not addressed the outcomes in patients who are not considered endoscopic resection candidates and are referred for surgical resection. This study by Bartel *et al.* highlights the importance of having multidisciplinary approach with advanced endoscopists and pancreato-biliary surgeons working together to devise an optimal treatment plan for each patient with duodenal lesions. Pancreas preserving duodenectomy offers a laparoscopic approach for resection of lesions not amenable to endoscopic resection while minimizing the risk of recurrence seen with trans-duodenal excision as well as the morbidity associated with pancreato-duodenectomy. It should be noted however that surgery was associated with longer length of stay and should be reserved for patients who are not candidates for endoscopic resection.

The study has its limitations. As the authors have highlighted, the retrospective nature and the possibility of

selection/referral bias can limit the generalizability of the study. The study grouped both mucosal and sub-epithelial neoplasms and hence it will be difficult to generalize the results of the study to either group as these two entities behave completely differently clinically as well as the risk of complications with resection and recurrence is also different between the two groups.

To summarize, there are multiple factors that play role in the successful outcomes in patients with SNADNs. Endoscopic resection should be the first line of treatment when available and is technically feasible. Patient selection is one of the most important factors, highlighting the importance of multidisciplinary approach. Another important factor is the local experience and available expertise (both endoscopic and surgical). It has to be realized that most of these studies have been done in tertiary care centers with expert therapeutic endoscopists and pancreato-biliary surgeons. This leads to additional difficulty of standardization of results and the issue of learning curve. Bhurwal *et al.* have shown approximately 100 EMR procedures have to be performed for large colorectal neoplasia to achieve critical outcomes (18), and it can be argued that given the technical difficulty with duodenal resections, a higher number might be needed but the lower incidence of SNADNs will make it even more difficult to achieve proficiency in duodenal EMR.

One thing is clear, EMR has consistently been proven to be an effective treatment for sporadic non-ampullary duodenal adenomas, even when we account for a high recurrence rate. Hence, endoscopic resection should be the first line treatment option for SNADNs in a multi-disciplinary approach with surgical resection reserved for unresectable lesions. There are multiple questions that still remain unanswered especially how to minimize recurrence and the optimal surveillance strategy. Hopefully future studies will address these and the ASGE guidelines regarding role of endoscopy in duodenal adenomas will be updated to reflect the knowledge gained from the recent studies. With advances in sub-mucosal endoscopy and full thickness resection techniques, we will definitely be seeing more endoscopic resections for sub-epithelial duodenal lesions in future.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Perumpail R, Friedland S. Treatment of Nonampullary Sporadic Duodenal Adenomas with Endoscopic Mucosal Resection or Ablation. Dig Dis Sci 2013;58:2751-2.
2. Tomizawa Y, Ginsberg GG. Clinical outcome of EMR of sporadic, nonampullary, duodenal adenomas: a 10-year retrospective. Gastrointest Endosc 2018;87:1270-8.
3. Singh A, Siddiqui UD, Konda VJ, et al. Safety and efficacy of EMR for sporadic, nonampullary duodenal adenomas: a single U.S. center experience (with video). Gastrointest Endosc 2016;84:700-8.
4. Navaneethan U, Lourdusamy D, Mehta D, et al. Endoscopic resection of large sporadic non-ampullary duodenal polyps: efficacy and long-term recurrence. Surg Endosc 2014;28:2616-22.
5. Binmoeller KF, Shah JN, Bhat YM, et al. "Underwater" EMR of sporadic laterally spreading nonampullary duodenal adenomas (with video). Gastrointest Endosc 2013;78:496-502.
6. Kedia P, Brensinger C, Ginsberg G. Endoscopic predictors of successful endoluminal eradication in sporadic duodenal adenoma and its acute complication. Gastrointest Endosc 2010;72:1297-301.
7. Perez A, Saltzman JR, Carr-Locke DL, et al. Benign nonampullary duodenal neoplasms. J Gastrointest Surg 2003;7:536-41.
8. Ahmad NA, Kochman ML, Long WB, et al. Efficacy, safety, and clinical outcomes of endoscopic mucosal resection: a study of 101 cases. Gastrointest Endosc 2002;55:390-6.
9. Bartel MJ, Puri R, Brahmbhatt B, et al. Endoscopic and surgical management of nonampullary duodenal neoplasms. Surg Endosc 2018;32:2859-69.
10. Marques J, Baldaque-Silva F, Pereira P, et al. Endoscopic mucosal resection and endoscopic submucosal dissection in the treatment of sporadic nonampullary duodenal adenomatous polyps. World J Gastrointest Endosc 2015;7:720-7.
11. Adler DG, Qureshi W, Davila R, et al. The role of endoscopy in ampullary and duodenal adenomas. Gastrointest Endosc 2006;64:849-54.
12. Navaneethan U, Hasan MK, Lourdusamy V, et al. Efficacy

and safety of endoscopic mucosal resection of non-ampullary duodenal polyps: a systematic review. Endosc Int Open 2016;4:E699-708.
13. Lépilliez V, Chemaly M, Ponchon T, et al. Endoscopic resection of sporadic duodenal adenomas: an efficient technique with a substantial risk of delayed bleeding. Endoscopy 2008;40:806-10.
14. Basford PJ, George R, Nixon E, et al. Endoscopic resection of sporadic duodenal adenomas: comparison of endoscopic mucosal resection (EMR) with hybrid endoscopic submucosal dissection (ESD) techniques and the risks of late delayed bleeding. Surg Endosc 2014;28:1594-600.
15. Kim HK, Chung WC, Lee BI, et al. Efficacy and Long-Term Outcome of Endoscopic Treatment of Sporadic Nonampullary Duodenal Adenoma. Gut Liver 2010;4:373-7.
16. Alexander S, Bourke MJ, Williams SJ, et al. EMR of large, sessile, sporadic nonampullary duodenal adenomas: technical aspects and long-term outcome (with videos). Gastrointest Endosc 2009;69:66-73.
17. Valerii G, Tringali A, Landi R, et al. Endoscopic mucosal resection of non-ampullary sporadic duodenal adenomas: a retrospective analysis with long-term follow-up. Scand J Gastroenterol 2018;53:490-4.
18. Bhurwal A, Bartel MJ, Heckman MG, et al. Endoscopic mucosal resection: learning curve for large nonpolypoid colorectal neoplasia. Gastrointest Endosc 2016;84:959-68.e7.

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