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Research Article

Endoscopic Papillectomy for Ampullary Adenomas: A Single-Center Experience

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Abstract

Objective: Endoscopic papillectomy is widely accepted as an effective and safe therapeutic modality for the treatment of non-invasive ampullary adenomas. The aim of this study was to evaluate the clinical outcomes of endoscopic papillectomy performed for ampullary adenomas at a single center.

Methods: This retrospective study includes patients who underwent endoscopic papillectomy between September 2017 and June 2022. The patients were evaluated with cross-sectional imaging for distant metastasis and intraductal spread before papillectomy. Complete resection was defined as negative vertical and horizontal margins in the histopathological findings after the procedure.

Results: Papillectomy was performed in 6 patients (2 male and 4 female) and the mean age of the patients was 59.3 (41-70). The lesion sizes were between 15 mm and 30 mm in endoscopic evaluation. Complete resection was achieved in 4 (67%) patients who underwent en bloc resection, but not in those who underwent piecemeal resection. Post-procedural pathological evaluation of 2 patients who underwent partial resection revealed adenocarcinoma at the resection margin and both were referred to surgery, but none of the patients who underwent en bloc resection had adenocarcinoma. No recurrence was observed in the follow-up of the patients who underwent complete resection. Bleeding that did not require blood transfusion and endoscopic intervention developed in only one patient.

Conclusion: Endoscopic papillectomy is a safe and successful treatment modality for both treatment and definitive diagnosis and staging in patients with adenoma confined to the ampulla. Patients undergoing complete resection should be followed up for possible recurrence.

Keywords: Ampullary adenoma, endoscopic ampullectomy, papillectomy

INTRODUCTION

Ampullary adenomas (AAs) are rare polypoid structures originating from the ampulla and surrounding tissue, with autopsy prevalence varying between 0.04% and 0.12%.[1] Most of these lesions are seen sporadically or in association with some polyposis syndromes. Ampullary adenomas often do not cause symptoms. They are detected incidentally during endoscopy performed for another reason. However, they can cause clinical findings such as cholestasis or pancreatitis, usually associated with pancreatico-biliary obstruction. More importantly, there is a risk of malignant transformation of adenomas into ampullar carcinomas. The diagnosis of AA is usually made by histopathology obtained by biopsy, but resection of the AA is necessary to definitively exclude a malignant focus. Because the diagnostic accuracy of biopsy before endoscopic papillectomy (EP) is between 38.3% and 85%, biopsy alone is insufficient to determine appropriate treatment modalities.[2-5] In addition, 30% of benign adenomas can transform into malignant carcinomas.[6,7] Therefore, guidelines recommend performing EP for both diagnosis and treatment in patients with biopsy-proven AA.[5,8]

Although surgical resection has historically been the standard treatment for AA, in recent years, EP has been recognized as a less invasive and safe alternative treatment to surgery.[5,8-11] Endoscopic papillectomy was first reported in 1983 as an endoscopic therapeutic modality for AA.[12] In the following years, EP started to be performed more and more instead of surgery in these patients.[11] However, there are some concerns with the EP. Some complications such as pancreatitis, bleeding, and perforation develop in approximately 25% of the patients after the procedure.[7,13] In addition, the incidence of incomplete resection after EP has been reported to be 10.6%-57.1%, and the recurrence rate has been reported as 10%-33%.[11,14] In order to avoid possible complications and unnecessary procedures, patients should be evaluated for distant metastasis and intraductal invasion by tomography, magnetic resonance imaging, and/or endoscopic ultrasonography before papillectomy.

The aim of this study was to investigate the technical success, complications, recurrence, and clinical outcomes of EP applied in a single center for AAs.

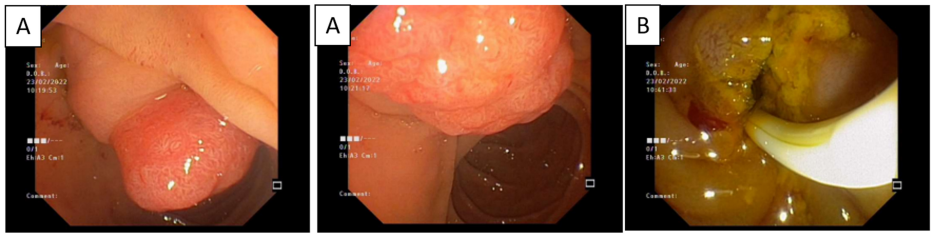

Figure 1. Endoscopic view of an ampullary adenoma: (A) pre-papillectomy view, (B) post-papillectomy view.

Table 1. Clinical and Pathological Results of 6 Patients Who Underwent Endoscopic Papillectomy

Case	Age	Sex	Symptoms	Tumor Size (cm)	Pre-Procedural Pathology	Endoscopic Resection	Post-Procedure Pathology	Resection Margin	Surgery
1	48	Male	Jaundice, weight loss	2.5	Adenoma with low-grade dysplasia	Piecemeal	Adenocarcinoma	Positive	Whipple
2	64	Male	Abdominal pain, dyspepsia	1.5	Adenoma with high-grade dysplasia	En-bloc	Adenoma with high-grade dysplasia	Negative	–
3	70	Female	Jaundice, weakness, itching	3	Adenoma with high-grade dysplasia	Piecemeal	Adenocarcinoma	Positive	Whipple
4	66	Female	Nausea, itching	2	Adenoma with low-grade dysplasia	En-bloc	Adenoma with high-grade dysplasia	Negative	–
5	41	Female	Dyspepsia	1.5	Adenoma with low-grade dysplasia	En-bloc	Adenoma with high-grade dysplasia	Negative	–
6	67	Female	Dyspepsia	1.5	Adenoma with low-grade dysplasia	En-bloc	Adenoma with low-grade dysplasia	Negative	–

METHODS

Patients with AA who have performed EP at Karadeniz Technical University Faculty of Medicine between 2017 and 2022 were included in this study. Demographic data, endoscopy findings, and clinical results of the patients were evaluated retrospectively. Before papillectomy, patients were evaluated for tumor staging and intraductal involvement using computed tomography and/or magnetic resonance imaging. The diagnosis of adenoma was confirmed by taking biopsies for histological evaluation from all patients before papillectomy. Patients with evidence of ampullar carcinoma on preoperative biopsy and patients unsuitable for endoscopic resection (suspicion of intraductal invasion, lesion size >3 cm, and findings suggestive of malignancy such as ulcers and bleeding on the lesion) were excluded from the study and surgery was recommended. This study was conducted in accordance with the Declaration of Helsinki and the combined Good Clinical Practices guidelines and was approved by the ethics committee of Karadeniz Technical University Faculty of Medicine (Date: March 22, 2023, Number: 24237859-207).

Informed consent was obtained from the patient before EP procedures and then performed under sedation by a single endoscopist. The lesions limited to the ampulla were initially tried to be removed as a block with a standard polypectomy snare using a blended electrosurgical current (ERBE VIO 300 D; Germany), but those that could not be removed as a block were resected piecemeal. In all cases, the tumor was tried to be completely resected endoscopically (Figure 1). Complete resection was defined as negative vertical and horizontal margins in the histopathological findings after the procedure. All resected specimens were collected for histopathological evaluation. After the procedure, the patients were hospitalized in the gastroenterology service and followed up for possible complications.

MAIN POINTS

- Endoscopic papillectomy is a safe and successful method for both treatment and definitive diagnosis in patients with adenoma confined to the ampulla of Vateri.
- Piecemeal resection is an important risk factor for non-curative resection.
- Patients undergoing complete resection should be followed up for possible recurrence.

RESULTS

In our study, EP was performed in 6 patients (3 females and 3 males) between 2017 and 2022. The mean age of the patients was 59.3 (41-70). The basic characteristics of the patients, endoscopic procedures for lesions, pathological diagnoses, and clinical results are summarized in Table 1. In the histopathological examination performed before the procedure, adenoma with low-grade dysplasia was detected in 4 patients and adenoma containing high-grade dysplasia was detected in 2 patients. The lesion sizes were between 15 mm and 30 mm in endoscopic evaluation. En-bloc resection was performed in 4 patients (67%), while piecemeal resection was performed in 2 patients (23%). While complete resection was achieved in those who underwent en-bloc resection, it was not achieved in those who underwent picemeal resection. The complete resection rate in EP is 67%. Only 1 patient developed melanoma after papillectomy, and no active bleeding was detected in the control endoscopy performed 1 day after the procedure. No blood transfusion was required for this patient. The prophylactic pancreatic stent was placed in only one patient after papillectomy. None of the patients developed procedural pancreatitis, cholangitis, or perforation. In the histopathological examination after EP, it was reported as adenoma with dysplasia foci in 4 patients who underwent en-bloc resection and as adenocarcinoma in 2 patients who underwent piecemeal resection. Patients who underwent en-bloc resection were followed up for 6 months and annually thereafter for possible recurrence, and none of these patients had recurrence. In 2 patients

who underwent piecemeal resection, continued carcinoma at the resection margin was detected and both were referred for surgery. Pancreaticoduodenectomy was performed in both patients and R0 resection was achieved in one of them after the operation. The other patient was given chemotherapy after the operation because of the detection of metastases in the lymph nodes.

DISCUSSION

Endoscopic papillectomy, which was previously thought to be beneficial only in patients at high risk of surgery, is now widely accepted as an effective and generally safer therapeutic method for the treatment of non-invasive ampullary adenomas. After the first EP performed approximately 4 decades ago, many studies have been published that provide valuable data on aspects such as pre-procedural evaluation, resection technique, side effects, recurrence, and endoscopic success rates. Following these studies, some guidelines have recently been published on the endoscopic treatment of ampullary neoplasms.[5,8] According to these guidelines, EP is recommended for adenomas without intraductal involvement in the pancreatico-biliary duct or carcinomas confined to the mucosa (Tis–T1a). If there is lymphovascular invasion or invasive cancer in the pathological examination after ampelectomy, additional surgical excision is recommended.

Although endoscopic biopsy and histological examination are considered mandatory in the diagnosis of ampullar tumors, the diagnostic accuracy of preprocedural biopsy has been reported to range from 38.3% to 85%, which is insufficient to determine appropriate treatment modalities.[2,3,10,11,15] Biopsies taken using a forward-viewing endoscope prior to papillectomy may be insufficient for accurate histopathological evaluation of the lesion. In our study, we found that the diagnostic accuracy of pre-procedural biopsy was 50%. On the other hand, the final pathological outcome of 3 cases with low-grade dysplasia on biopsy before papillectomy was high-grade dysplasia in 1 case and adenocarcinoma in 2 cases (33.3%). Atilla et al[13] in a multicenter retrospective study evaluating patients undergoing papillectomy for benign ampullary lesion, histopathological evaluation after papillectomy was reported as adenocarcinoma in 32% of cases, despite efforts to exclude an underlying malignancy by endoscopic appearance of ampullar lesions and pre-procedural biopsies.[13] Therefore, even if the pathology result is benign before papillectomy, EP should be performed for both more detailed pathological evaluation and treatment. Even if complete resection is not achieved after papillectomy complementary surgery can be performed in these patients.

In this study, we evaluated the clinical outcomes of patients with AA after EP. While complete resection was achieved in all (67%) of the patients who underwent en-bloc papillectomy, it could not be achieved in any of the patients who underwent piecemeal papillectomy. While no recurrence was observed in any of the patients who underwent complete resection during the follow-up period, 2 patients who did not achieve complete resection were referred for surgery. In the studies performed, complete resection was defined as the absence of microscopic lesion on the horizontal and vertical edges of the resected specimen in the histopathological examination after papillectomy, and the rate of complete resection was reported as 47%-94.2%.[7,8,13,14,16] In a pooled analysis by Spadaccini et al[7] that included 29 studies reporting EP outcomes in a total of 1751 patients, the rate of complete endoscopic resection was reported as 94.2%. In this study, en bloc resection was achieved in 82.4% of cases and en bloc resection was the only factor affecting curative resection [odds ratio (OR) 3.55, 95% CI 1.11-5.99, $P = .004$]. In a retrospective cohort study by Ridtitid et al,[14] en bloc resection was significantly associated with a higher rate of complete resection compared to piecemeal resection (OR 4.05, 95% CI 1.71-9.59, $P < .001$). In a recent retrospective study of 106 patients by Choi et al,[10] 16 patients (15.1%) underwent piecemeal resection and piecemeal resection was shown to be an important risk factor for recurrence (OR = 6.610, $P = .005$) and non-curative resection (OR = 5.424, $P = .007$). Therefore, guidelines recommend en bloc resection of ampullary adenomas up to 20-30 mm in diameter to achieve R0 resection, tooptimize the complete resection rate, ensure optimal histopathology, and reduce the recurrence rate after EP.[5,8]

The biggest obstacle in performing EP is considered to be the possible complication risk due to the procedure. However, the risk of serious complications and mortality associated with the procedure has been reported at a very low rate.[7,13] In a pooled analysis by Spadaccini et al[7] that included 29 studies reporting EP outcomes in a total of 1751 patients, the overall adverse event rate was reported as 24.9% and the procedure-related mortality rate was only 0.34%. As expected, the most common adverse event in this study was postprocedure pancreatitis, with a pooled rate of 11.9%, most of them mild or moderate. Other most common complications were reported as bleeding (10.6%), perforation (3.1%), cholangitis (2.7%), and stenosis (2.4%), respectively.[7] In our study, only 1 patient developed post-procedural bleeding, but it was controlled without any intervention. The absence of other complications such as pancreatitis, perforation, and cholangitis is probably related to the small number of patients.

Our study has some limitations. The number of patients was too small to be statistically evaluated. Due to the retrospective nature of the study, we did not have a predefined protocol for the procedure and so the possibility of selection bias may exist. In addition, since endoscopic ultrasonography could not be performed in our center, intraductal involvement may not have been fully demonstrated with only cross-sectional imaging. Since the low rate of procedure-related complications may be related to the small number of patients, it cannot be generalized.

In conclusion, EP is a safe and successful treatment modality for both treatment and definitive diagnosis and staging in patients with adenoma confined to the ampulla. It is important to carefully evaluate the patients in terms of indication before the procedure. Instead of surgery, which has a high morbidity and mortality rate, it may be more appropriate to perform EP first and make a decision based on the pathology result.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Karadeniz Technical University (Date: March 22, 2023, Number: 24237859-207).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Declaration of Interests: The author declares that they have no competing interest.

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