ABSTRACT

Significance: Ampullary tumors are rare tumors accounting for 0.2% of gastrointestinal cancers. Open surgery has been the mainstay of treatment but with improved techniques and availability of high definition endoscopy, benign ampullary lesions can now be resected endoscopically.

Clinical Presentation: A 72-year old female was referred due to an incidental upper endoscopic finding of an ampullary tumor which biopsy had revealed tubular adenoma.

Management: Careful examination using high magnification and narrow band imaging together with chromoendoscopy, endoscopic ultrasound and ERCP were initially done to ensure the applicability of endoscopic ampullectomy. The ampullary tumor was seen extending to the periampullary area measuring 25mm with several islands of smaller tumors. EUS showed the muscularis propria to be intact. ERCP revealed a normal biliary tract without involvement of the distal common bile duct. A polyp snare was used to capture the ampullary and peri-ampullary tumor followed by ampullectomy through continuous cutting. Stents were then placed into the pancreatic duct and the common bile duct to allow for adequate drainage. A repeat esophagogastroduodenoscopy done 1-week post-ampullectomy showed the ampullectomy site to be clean without any bleeding or residual lesions. The pancreatic duct and common bile duct stents were also removed with good flow of bile observed. Repeat endoscopy 6 months after showed no recurrence.

Recommendation: Endoscopic ampullectomy of adenomatous ampullary tumors offers less invasive treatment approach. It is important to perform a comprehensive evaluation prior to endoscopic ampullectomy to ensure that the lesion is not invasive or malignant which would warrant surgical management.

Keywords: case report, ampullectomy, ampullary tumors
INTRODUCTION

Ampullary tumors are rare tumors accounting for 0.2% of gastrointestinal cancers (1). They typically present as painless jaundice, gastrointestinal bleeding or duodenal obstruction as they are commonly discovered late. With improved techniques and availability of high definition endoscopy, adenomatous lesions involving the ampulla of Vater and the peri-ampullary region are now being identified earlier and more frequently.

Ampullary tumors are usually managed with radical pancreaticoduodenectomy and less commonly with transduodenal resection and dual sphincterotomy (2). Endoscopic ampullectomy of ampullary adenomas is a less invasive treatment approach and is thus, a preferable alternative to open surgical treatment. The technique utilizes the side-viewing endoscope used in Endoscopic Retrograde Cholangiopancreatography (ERCP) and the tumor is then removed by snare papillectomy. It is an advanced therapeutic intervention and the endoscopist must have sufficient training and expertise to undertake the procedure (3).

Currently, there are no reported cases locally that have discussed the use of endoscopic ampullectomy and its clinical outcomes. This paper describes an adenomatous ampullary tumor and the feasibility of endoscopic ampullectomy as a minimally invasive alternative to surgery.

OBJECTIVES

1. To present a case of a 72-year-old female diagnosed with adenomatous ampullary tumor through endoscopy and biopsy
2. To describe the technique of endoscopic ampullectomy of an adenomatous ampullary tumor as a minimally invasive alternative to surgery
3. To review the incidence, diagnostics, and treatment modalities of adenomatous ampullary tumors

CASE PRESENTATION

This is a case of a 72-year-old female who was referred due to an incidental upper endoscopic finding of an ampullary tumor which biopsy revealed a tubular adenoma. She has no symptoms of abdominal pain, bleeding or obstruction. A repeat gastroscopy confirmed the ampullary tumor which extended to the peri-ampullary area. The tumor was seen as patches of 3 to 4 adenomatous areas ranging in size from 10 to 25 millimeters (Figure 1). Magnification with narrow band imaging showed an adenomatous looking lesion (Figure 2). A repeat biopsy was done to confirm that the lesion was indeed an adenoma since malignant lesions are not eligible for endoscopic ampullectomy. To prepare for the planned ampullectomy, an upper endoscopic
ultrasound (EUS) utilizing an Olympus GF UE160 endoscopic ultrasound scope was done to evaluate the depth of the tumor, and it confirmed that the muscularis propria was not involved. Endoscopic retrograde cholangiopancreatography revealed a normal biliary tract without involvement of the distal common bile duct.

![Figure 1. Duodenal lesion characterized as patches of 3 to 4 adenomatous areas ranging in size from 10-25 mm (as seen on white light)](image1)

![Figure 2. Magnification with narrow band imaging showed an adenomatous looking lesion](image2)

An Olympus TJF 160VR duodenoscope was used for the ampullectomy and allowed for accurate examination of the lesion. The ampullary tumor was seen to be about 2 centimeters in size with few islands of smaller tumors measuring 1 to 2 millimeters were seen around the main lesion. Indigo carmine was sprayed for better visualization of the tumor margins. A polyp snare was used to capture the ampullary and peri-ampullary tumor. Ampullectomy then performed by continuous cutting with electrocautery with ERBE settings Endocut Q, effect 3 (Figure 3). A raw post-ampullectomy defect was identified and promptly closed using hemoclips. Stents were then placed into the pancreatic duct (French 5) and the common bile duct (French 7) (Figure 4) to allow for adequate drainage. Patient was started on Ceftriaxone.
Figure 3. Ampullectomy done using a cauterized polyp snare capturing the tumor

Figure 4. Post-ampullectomy, an area suspicious for perforation was closed using hemoclips

The patient complained of abdominal pain one hour after the procedure and her amylase and lipase were noted to be elevated. She was managed as a case of post-ampullectomy pancreatitis, maintained on nothing per orem and started on somatostatin drip. The abdominal pain subsided the next day and her diet was gradually advanced as she was able to tolerate.

A repeat esophagastroduodenoscopy was done 1 week post-ampullectomy using an Olympus TJF 160VR duodenoscope which showed the ampullectomy site to have a clean base without any bleeding. The pancreatic duct and common bile duct stents were both removed with good flow of bile observed. The patient was discharged with no abdominal pain nor discomfort and was advised to have a repeat esophagastroduodenoscopy after 6 months to evaluate for recurrence.

DISCUSSION

The natural history of ampullary adenomas is not known but most of these tumors are of neoplastic origin following the adenoma to carcinoma sequence similar to colorectal adenocarcinoma (4). Approximately 75% of ampullary adenomas are sporadic whereas the remaining 25% occur in patients with familial polyposis syndromes (5). Sporadic ampullary adenomas are usually asymptomatic and only found incidentally on endoscopy such as this case.
Endoscopic ampullectomy of adenomatous ampullary and duodenal tumors offers a less invasive treatment approach as opposed to traditional surgical resection. It is an effective and safe therapeutic option, showing long-term cure rates of approximately 80% with recurrence rates of about 33%, making it a viable alternative therapy to surgery (4). There are currently no consensus guidelines regarding which lesions are candidate for surgery or endoscopic resection but a generally accepted criteria for ampullectomy include adenomas confined to the ampullary region without evidence of malignancy on endoscopy or biopsy, absence of extension into the biliary or pancreatic ducts, lack of invasion of the muscularis propria of the duodenum and the size is less than 4 cm (6).

It is important to perform a comprehensive evaluation prior to endoscopic ampullectomy to ensure that the lesion is not invasive or malignant which would warrant surgical management. In this case, careful examination using high magnification and narrow band imaging together with chromoendoscopy, endoscopic ultrasound and endoscopic retrograde cholangiopancreatography were done to ensure the applicability of endoscopic ampullectomy. An EUS can evaluate the depth of invasion of an ampullary lesion and the extent of any metastasis to adjacent lymph nodes (6). In this case, the EUS confirmed that the muscularis propria was intact. An ERCP is particularly essential to evaluate for the presence of intraductal extension, pancreas divisum, other cholangiopancreatic disorders and presence of CBD dilatation (7). Ampullectomy should only be done once complete lesion assessment is completed.

In terms of resection, en bloc remains the recommended method for ampullary adenoma resection as it allows the most accurate histological analysis and staging (6). If not feasible and for larger tumors, piecemeal resection can be done. Submucosal injection of the lesion prior to ampullectomy has also been studied and its purported benefit is that it protects the duodenal muscularis propria from injury. Nevertheless, although commonly performed, it is not required as it can carries potential deleterious effects such as alteration of the anatomy of the lesion after lifting the mucosa.

This promising, less invasive alternative still carry risk particularly that of post-procedural pancreatitis. Possible ways to prevent this complication is to avoid lifting the tumor before the ampullectomy and to place a biliary and pancreatic stent to allow for egress of bile and pancreatic secretions. Several studies have recommended that the pancreatic duct should be cannulated as soon as the resection is complete to minimize post-ampullectomy pancreatitis (7). However, pancreatic stent placement remains to be controversial, because some studies have shown no significant benefit (4). For this case, the patient still developed pancreatitis despite pancreatic duct stenting although it subsided immediately with conservative management. Biliary stenting on the other hand should be individualized as evidence for routine biliary stenting is lacking. Possible advantages include prevention
of biliary stenosis which may predispose to cholangitis and mitigation of bleeding. Other complications of endoscopic ampullectomy include hemorrhage and perforation. A plastic stent was inserted on the CBD in this case. Ultimately, the method of resection of the ampullary tumor may vary depending on the endoscopist and his or her expertise in performing such procedures (8). In this case, the degree of difficulty was substantially higher due to the size of the tumor which not only involved the ampulla but also extended into the peri-papillary area.

In terms of follow-up, a repeat endoscopy is recommended at 4-6 months and then annually for 3-5 years. The pancreatic and biliary stent should be removed within 1-2 weeks after ampullectomy to minimize the risk of ductal injuries and this gives the chance to evaluate the resection site immediately after discharge. Endpoints for surveillance in post-endoscopic ampullectomy patients have not yet been established (4).

CONCLUSION

Endoscopic ampullectomy of adenomatous ampullary tumors is a less invasive treatment approach which serves as an alternative to open surgical procedures and an option for benign, non-invasive tumors. It is important to perform a comprehensive evaluation prior to endoscopic ampullectomy to ensure that the lesion is not invasive or malignant which would warrant surgical management. Nevertheless, the endoscopist should have sufficient training and expertise as this is an advanced therapeutic intervention and risks of complications could be high.
REFERENCES


