Case Report

Endoscopic Submucosal Dissection: A Newer Technique to Remove GI Epithelial Lesion

MMSU Islam[1], MN Sarker[2] MMM Rashid[3], N Das[4], MS Rahman[5], SK Bhowmick[6], A Das[7], SF Hridy[8] ATMA Rahman[9]

Abstract

Background: Endoscopic submucosal dissection (ESD) is an established endoscopic method to resect early gastric neoplasm as well as large gastrointestinal epithelial lesions. It enables the removal of larger and potentially deeper lesions with curative intention.

Case Report: Here in this report, a 31-year-old female presented to us with dyspepsia. Gastroscopy revealed a large, wide-based, polypoid lesion at the antrum. We performed ESD, and follow-up gastroscopy after 3 months showed a healed scar with no residual lesion.

Conclusion: Only very few centers (1-2) are performing ESD in our country; extended practice of this relatively newer procedure can help our patients a lot.

Keywords: Endoscopic submucosal dissection.

Authors:
M. M. Shahin-Ul-Islam, MBBS, FCPS (Internal Medicine), MD (Gastroenterology), Associate Professor, Department of Gastroenterology, Faridpur, Faridpur. Email: shahin52dmc@gmail.com

Mst. Naznin Sarker, FCPS (Paediatrics), MD (Paediatric Gastroenterology), Assistant Professor, Department of Paediatric Gastroenterology and Nutrition, Faridpur Medical College, Faridpur. Email-ripa52dmc@gmail.com

M. M. Moshfiqur Rashid, MBBS, Assistant Registrar, Department of Gastroenterology, Faridpur, Faridpur. Email- mmmoshfiqk20@gmail.com

Nimai Das, MBBS, MD (Gastroenterology), Medical Officer, Department of Gastroenterology, FMCH, Faridpur. nimaidas05@gmail.com

Mohammad Sabidur Rahman, MBBS, MD (Gastroenterology), Resident Physician, FMCH, Faridpur. Email: srahmandr22@gmail.com

Sandip Kumar Bhowmick, MBBS, MRCP (UK), MD (Gastroenterology), Medical Officer, Department of Gastroenterology, FMCH, Faridpur. Email: sandip47rmc@gmail.com

Aditi Das, MBBS, FCPS part II trainee, Department of Gastroenterology, FMCH, Faridpur, aditidasarchi@yahoo.com

Sumaya Farhin Hridy, MBBS, MRCP (Paces), FCPS part II trainee, Assistant Registrar, Department of Gastroenterology, FMCH, Faridpur, Email: umayahridy5439@gmail.com

ATM Ataur Rahman, MD (Gastroenterology), Associate Professor, Department of Gastroenterology, BSMMC, Faridpur. Email: ataurrmc@gmail.com

Corresponding Author:
M. M. Shahin-Ul-Islam, MBBS, FCPS (Internal Medicine), MD (Gastroenterology), Associate Professor, Department of Gastroenterology, Faridpur, Email:shahin52dmc@gmail.com. Phone:+8801711986290

Introduction:

Tremendous advancement in medical science allows meticulous interventions of the specified issues. Upper GI endoscopy is widely accepted in determining the early neoplastic lesions commonly termed as gastrointestinal superficial lesions. Most superficial gastrointestinal (GI) lesions are usually treated by Endoscopic Mucosal Resection (EMR). EMR is less suitable for en bloc resection for lesions more than 2cm or of non-lifting lesions because it does not permit adequate histological information of early cancers.[1] To combat these limitations, here comes Endoscopic Submucosal Dissection (ESD), first invented in the late 80s in Japan.[2] It enables the operator to achieve an en bloc resection of superficial lesions irrespective of tumor size. It is now a widely accepted method for dealing with superficial GI lesions as it is an extremely effective and safe procedure. It is applicable to the esophagus, stomach as well as large bowel. Lesions in the duodenum and small bowel are not recommended for ESD.[1]

ESD is strongly recommended for superficial gastric lesions (low- or high-grade non-invasive neoplasm, adenocarcinoma with no evidence of deep submucosal invasions) as it ensures complete removal (R0) and en bloc curative resection with a good safety profile when compared to other therapies.[3-6] A large prospective study shows that en bloc and R0 resection rates are 99.2 and 91.6% respectively.2 For this reason, ESD is now included in the Japanese guideline for Gastric Cancer.[7] Here are a few indications of ESD, as these have a very low chance of nodal metastasis.[7-8]

- Non-invasive neoplasia independent of size.
- Intramucosal differentiated-type adenocarcinoma, without ulceration (size ≤ 2cm absolute indication, >2cm expanded indication).
- Intramucosal differentiated-type adenocarcinoma, with ulcer, size ≤3cm (expanded indication).
- Intramucosal undifferentiated-type adenocarcinoma, size ≤2cm (expanded indication).
- Differentiated-type adenocarcinoma with superficial submucosal invasion (sm1, ≤500μm), and size ≤3cm (expanded indication).

Recently, the European Society of Gastrointestinal Endoscopy (ESGE) panel opinionated that ESD may be considered for any lesion that has less chance of lymph node metastasis, whether it meets either the absolute or expanded indication criteria, even though surveillance may be difficult[1]. EMR was the first endoscopic treatment that was a real alternative to surgery for the treatment of early gastric cancer.[1] In the early stage, EMR cures cancer in 85% of cases, a value that approached gastrectomy outcomes at the time. In selected cases, long-term follow-up of this technique showed 99% disease-specific survival both at 5 and 10 years. However, EMR is associated with high rates of local recurrence (almost 30% in some studies), which must be treated either by another endoscopic treatment or surgery.[9-12] ESD has emerged as a technique that could allow higher en bloc resection rates for larger lesions, consequently with lower levels of recurrence. So it is undeniable that ESD is appreciated over EMR with higher en bloc resection, lower recurrence rate and complete histological resection. There are chances of a few procedural and post-procedural complications like bleeding and perforation.[13] Nevertheless, ESD is now a well-accepted technique to deal with larger gastric lesions. Here we are dicussing and ESD approach by our department.

Case report:

A 31-year-old female presented with dyspepsia for 6 months. Her dyspepsia was described as epigastric discomfort

aggravated by taking meals and associated with nausea. She gave no history of weight loss, any bleeding episodes, vomiting, dysphagia, abdominal lump, or positive family history of GI malignancy. She is a non-smoker and non-alcoholic. She took several courses of antibiotics by unregistered medical practitioners and Proton pump inhibitors for almost 3 months. General and systemic examination of this patient reveals no abnormalities. We advised a few routine investigations for this patient. Her investigations were normal. Then we approached for upper GI endoscopy. It revealed a large, wide-based polypoid lesion at the antrum. Then we planned for ESD.

Steps we followed during resection: The perimeter of the lesion was marked with cautery. Adrenaline mixed with Methylcellulose and normal saline was injected into the submucosa to elevate the lesion. The mucosa was then incised by using an electrosurgical knife (DualKnife J, Olympus) and cut circumferentially around the lesion by another electrosurgical knife (ITKnife, Olympus). The submucosa beneath the lesion was injected and then dissected in a free-hand manner by using an electrosurgical knife (Triangle Tip Knife J, Olympus) until the lesion had been completely resected.

No immediate complications occurred. Histopathology revealed adenomatous polyp. Follow up Endoscopy was done three months later, and a healed scar was seen. (Figure 1).

Figure 1: A. Image before ESD, B. Image during ESD and C. Image 3 months after ESD

Discussion:

ESD is a comparatively newer method for the treatment of mucosal and superficial submucosal lesions because of its unique characteristics of en bloc resection. Pre-procedural evaluation is an important part of a successful procedure. Multiple studies showed that endoscopic findings alone have high accuracy for predicting the depth of the lesion.[14-15] Findings associated with mucosal disease only included protrusion or depression of a smooth surface, slight marginal elevation and smooth tapering of converging folds where ESD is feasible. On the other hand, irregular surface, marked marginal elevation, clubbing, abrupt cutting or fusion of converging folds indicate the situation where ESD is not feasible. The necessity of EUS before ESD is controversial. Although EUS is considered to be the most reliable method for local staging, its global accuracy, particularly for gastric superficial lesions, is rather low.[16-17] A comparative study of EUS versus endoscopic evaluation for predicting endoscopic resectability favored endoscopy since EUS findings would indicate gastrectomy for many lesions that did not need surgery.[15] As EUS is not widely available nowadays in our country, we can strongly rely on endoscopic evaluation. CT abdomen is not generally necessary since the risk of metastatic disease is very low in a lesion where endoscopic resection is considered to be feasible.[17-20]

Though well accepted, ESD is a battle against intra-procedural bleeding, particularly in a lesion located in the upper and middle third of the stomach because large vessels penetrate the muscle layer horizontally, then go vertically and form a ramified network. Just above the muscularis mucosa, fewer vessel layers are found, so the safety depth for ESD is just above the muscle layer.[2] Bleeding is categorized as immediate or delayed. Some immediate bleeding is inevitable in almost all ESDs. If a large vessel is observed, it should be coagulated before proceeding with the dissection. The near-side approach combines the use of an insulated and needle-type knife strategy to reduce the risk of making the bleeding points difficult to recognize and does not impair the advantages of the IT knife as a safe and fast method.[2]

Perforation occurs in about 1% to 4% of the procedure. In such cases, visualization is the first step to be attempted. Then, sealing of the points with hemostatic clips should be tried.[21] Delayed perforation can also happen sometimes, but it is very rare. Concerning other possible complications of ESDs are stenosis, pneumonia, and mucosal lacerations, should be handled according to the clinician's experience and situation.[1]

The technical and histological outcome of ESD is an important discussion matter. After a lesion has been resected, the histopathological analysis will determine whether the resection was curative or whether further surgery is needed.[22] In a non-ulcerated, well-differentiated submucosal lesion, independent of size, R0 resection is thought to be curative. Small ulcerated lesions less than 30mm appear to be curative when treated through R0 resection.[1]

ESGE suggests that after an en bloc R0 resection of lesions meeting the expanded criteria (particularly ulcerated, minimally submucosally invasive, or undifferentiated/diffuse carcinomas), the option of gastrectomy should be discussed with the patient and a decision made on an individual basis considering patient pReferences, co-morbidities, and information from other procedures (for example CT in the case of suspicious lymph nodes).[1]

Long-term follow-up of patients after successful ESD for early gastric cancer has shown that these patients are at high risk, of around 10% to 20%, for developing synchronous or metachronous multiple gastric neoplastic lesions. In accordance with these results, Japanese guidelines also recommend annual or biannual endoscopy in all patients, as well as a CT abdominal scan in the subgroup of patients treated under extended indications.[7] It is recommended that the first endoscopy after ESD should be performed 3–6 months after ESD and then annually, similarly to the schedule in most series. If the resection was incomplete but there were no clear indications for surgery, it is recommended that a first endoscopy at 3 months be followed by another endoscopy in the first year, since some studies show that most of the recurrences after incomplete resection are identified in the first year.[23-27]

Conclusion:

Endoscopic submucosal dissection (ESD) has been developed to overcome the limitations of endoscopic mucosal resection (EMR).1 Our patient responded well and got relief symptomatically with ESD. With improvements in techniques and devices, excellent therapeutic results have been achieved despite the inherent technical difficulties of this procedure. Extended practice of ESD with expert gastroenterologists is recommended.

Conflicts of Interest: There is no conflict of interest.

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