



Outcomes of lumen apposing metal stents (LAMS) in the management of benign colonic strictures and fistulae

Authors

Gbeminiyi Samuel¹, Kishan Darji^{2*}, Oluwaseun Samuel³, Adegboyega Olayode⁴, Prashant Mudireddy¹

¹Division of Gastroenterology, Brody School of Medicine at East Carolina University, Greenville, NC, USA
(work to be attributed to this division)

²Brody School of Medicine at East Carolina University, Greenville, NC, USA

³Hospitalist Medical Group, Vidant Medical Center, Greenville, NC, USA

⁴Division of Hospital Medicine, Emory University School of Medicine, Atlanta, GA, USA

*Corresponding Author

Kishan Darji

Brody School of Medicine at East Carolina University, Greenville, NC, USA

Abstract

Primary management in colonic strictures, leaks, and fistulae involve surgeries which have the risk of refractory cases, significant morbidity, and occasional mortality. It is essential to provide a more safe and efficacious approach in managing benign short segment colonic strictures, leaks, and fistulae. Lumen apposing metal stents (LAMS) have shown promise in the management of refractory colonic strictures and fistulae, as well as refractory cases in which surgery has failed.

Our study aimed to assess the safety and efficacy of LAMS (AXIOS, Boston Scientific, Marlborough, USA) of varying diameters in the treatment of colonic strictures and fistulae. Our patient sample comprised of five patients aged 57-81, three of which had an anastomotic leak/fistula and two of which had benign anastomotic strictures. Clinical success was obtained in four cases while one case had a multifactorial clinical failure.

Given these results, LAMS can be successfully utilized as a safe and effective alternative in the management of benign short segment colonic strictures and fistulae. While further prospective studies are needed to assess the outcomes of LAMS usage in the colon, the results from our study and others proves promising.

Introduction

Colonic strictures, leaks, and fistulae have proven to be a challenge in gastroenterology. Recurrence, morbidity, and occasional mortality have been seen with surgical management, and endoscopic balloon management alone has shown to have complications as well. Lumen apposing metal

stent (LAMS) placement has been investigated as a more safe and efficacious process in obtaining clinical success in colonic strictures, leaks, and fistulae.

Technical success can be defined by proper LAMS placement during endoscopy whereas clinical success can be defined by resolution of

symptoms at follow up without ongoing adverse effects of LAMS placement^[3,4].

While LAMS were originally developed for pancreatic fluid drainage, their utility has been well documented in aiding in several procedures including abscess drainage and intestinal obstruction^[1]. LAMS are 1-3 cm short, fully covered metal, can have varying diameters of 10mm, 15mm, or 20mm, and are less likely to migrate from their original site of placement than traditional self-expandable metal stents (SEMS)^[2,5].

Materials and Methods

We retrospectively reviewed data of five patients who had undergone LAMS placement for colonic

strictures, fistulae, or leaks in the past one year. Patient demographics, indication/location of stent, previous treatments, size of LAMS, intraprocedural adverse events, postprocedural adverse events, and other follow up data was collected.

LAMS placement is achieved by placing LAMS (depicted in Figure I) under fluoroscopic guidance using endoscopic visualization of the stricture or fistulae. An endoscope is advanced to the site of stricture or fistulae, a guide wire is further advanced across the area, and the LAMS is placed across the stricture or fistulae, as seen in Figure II^[1,4].

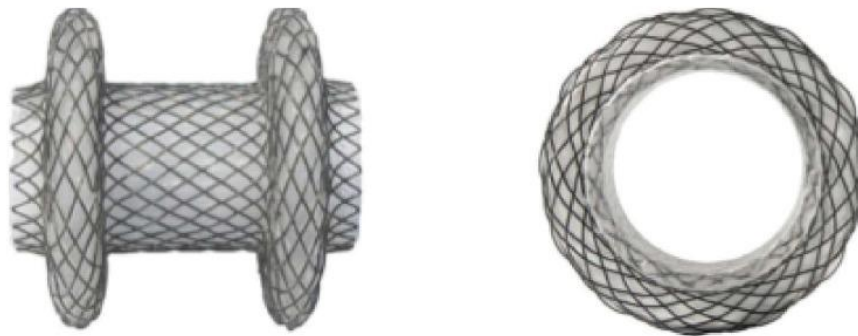


Figure I: depiction of LAMS



Figure II: LAMS placed across a stricture

Results

Our patient sample comprised of three females and two males with an age range of 57 to 81 years. Of the five patients, three had an

anastomotic leak/fistula (AF), while two had benign anastomotic strictures (S) in the sigmoid colon. The 20mm LAMS was deployed successfully in all patients without any evidence

of bleeding or stent mal-deployment. Of the five patients, three had failed prior intervention with either an Ovesco clip closure (two AF) or balloon dilatation (one S). Follow up data is available in four patients (two AF and two S); all had

resolution of the strictures/fistulae. One patient (AF) had the LAMS placed for 25 days prior to a sigmoid colectomy, which removed the LAMS. Table 1 provides concise data of all five patients.

Table 1: Patients undergoing lumen apposing metal stent (LAMS) placement

Patient	Age at time of LAMS placement	Gender	Indication	Length (mm)	Diameter (mm)	Location	Prior intervention	Duration of stent before removal (days)
1	67	Female	Anastomotic leak/fistula	30	n/a	sigmoid	Ovesco clip closure 14/6 a	64
2	72	Female	Anastomotic stricture	10	6	sigmoid	Balloon dilatation to 10mm	107
3	81	Female	Fistula	20	n/a	sigmoid	Ovesco clip closure 12/6 gc	25
4	75	Male	Anastomotic leak/fistula	20	n/a	sigmoid	None	47
5	57	Male	Anastomotic stricture	10	2	sigmoid	None	28

Discussion

The novel design of LAMS decreases the risk of migration and increases likelihood of clinical success in benign short segment colonic strictures and fistulae compared to standard endoscopic balloon dilation^[1,3]. The most common complications involving LAMS is migration of the stent distally, occurring in 19%-40% of short segment benign GI strictures^[1,4]. LAMS can be successfully utilized as a safe and effective alternative in the management of benign short segment colonic strictures and fistulae, as seen in our study with 4/5 patients having resolution of strictures/fistulae at follow up. Patient 3 did not achieve clinical success due to extensive history of intraabdominal surgeries causing adhesions in the sigmoid colon, warranting exploratory laparotomy and sigmoid colectomy 25 days post-LAMS placement. Further prospective studies are needed to assess the outcomes of LAMS usage in the colon with special attention to symptom resolution at different time intervals post-LAMS placement in benign short segment colonic strictures and fistulae.

References

1. Larson B, Adler DG. Lumen-apposing metal stents for gastrointestinal luminal strictures: current use and future directions. *Ann Gastroenterol*. 2019 Mar-Apr;32(2):141-146. doi: 10.20524/aog.2018.0337. Epub 2018 Dec 14. PMID: 30837786; PMCID: PMC6394263.
2. Pita I, Libânio D, Ponte A, Pimentel-Nunes P, Dinis-Ribeiro M, Bastos P. LAMS to the SEMS Rescue! *GE Port J Gastroenterol*. 2018 Dec;26(1):70-72. doi: 10.1159/000487277. Epub 2018 Apr 10. PMID: 30675507; PMCID: PMC6341363.
3. Reddy R, Patel U, Tarnasky P, Kedia P. Lumen-apposing stent placement for management of a short benign colonic anastomotic stricture. *VideoGIE*. 2018 Feb 1;3(3):99-101. doi: 10.1016/j.vgie.2017.12.001. PMID: 29916480; PMCID: PMC6004025.
4. Santos-Fernandez J, Paiji C, Shakhathreh M, Becerro-Gonzalez I, Sanchez-Ocana R, Yeaton P, Samarasena J, Perez-Miranda M. Lumen-apposing metal stents for

benign gastrointestinal tract strictures: An international multicenter experience. *World J Gastrointest Endosc.* 2017 Dec 16;9(12):571-578. doi: 10.4253/wjge.v9.i12.571. PMID: 29290912; PMCID: PMC5740102.

5. Vanbiervliet G, Bichard P, Demarquay JF, Ben-Soussan E, Lecleire S, Barange K, Canard JM, Lamouliatte H, Fontas E, Barthet M, Ponchon T, Saurin JC; Research Committee of the French Society of Digestive Endoscopy (SFED). Fully covered self-expanding metal stents for benign colonic strictures. *Endoscopy.* 2013;45(1):35-41. doi: 10.1055/s-0032-1325769. Epub 2012 Nov 7. PMID: 23136012.