Case Report

Endoscopic Resection of Asymptomatic, Colonic, Polypoid Arteriovenous Malformations: Two Case Reports and a Literature Review

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ABSTRACT

A colonic arteriovenous malformation (AVM) is a significant vascular lesion of the gastrointestinal tract and a common cause of lower gastrointestinal bleeding. AVMs are usually identified endoscopically as bright red, flat lesions. AVMs with a polypoid appearance are extremely rare in the large intestine. We present two cases of colonic polypoid AVM, which were detected incidentally during screening colonoscopy. Both the patients had no history of gastrointestinal bleeding such as melena or hematochezia. Colonoscopy revealed pedunculated polyps overlaid by hyperemic mucosa in the ascending colon and proximal sigmoid colon. Microscopic examination showed aberrant vessels with thickened, hypertrophic walls in the mucosa and the submucosa, and arteries were directly connected to veins without capillary beds. These features were compatible with a diagnosis of AVM with a polypoid appearance. No immediate or delayed bleeding was noted after polypectomy.

Key Words: Angiodysplasia, arteriovenous malformations, colonoscopy, vascular malformations

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Intestinal vascular lesions are incidental findings in 3–6% of the general population undergoing colonoscopy and are reported in up to 25% of the elderly.[1,2] The most common type of intestinal vascular abnormality is vascular ectasia or angiodysplasia, which is thought to be caused by degenerative changes.

Unlike other small vascular abnormalities (such as vascular ectasia or angiodysplasia), arteriovenous malformations (AVMs) have distinct clinical characteristics. An AVM is a condition in which arteries and veins are directly connected without intermediary capillary beds. Colonic AVMs are common causes of lower gastrointestinal (GI) bleeding, accounting for 6.0% of all such cases.[3] AVMs are not confined to elderly patients; are usually solitary; can be identified endoscopically as bright red, flat lesions that are not confined to the right colon; and are much larger than other lesions.[4,5]

AVMs of polypoid morphology are extremely rare in the colon. To date, 13 cases of polypoid colonic AVMs have been reported in the English-language literature. Here, we report two such cases of AVMs that were incidentally detected on screening colonoscopy. The lesions were successfully resected via conventional polypectomy or endoscopic mucosal resection (EMR) without any complications.

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CASE PRESENTATIONS

Case 1

A 65-year-old man underwent screening colonoscopy by his primary physician. During colonoscopy, a pedunculated polyp was identified in the ascending colon. He was referred to our institution for colonoscopic polypectomy. The patient was in good health with no history of GI bleeding, such as melena or hematochezia. He had no symptoms. Regarding laboratory findings, his hemoglobin was 14.7 g/dL and hematocrit was 42.3%. Repeat colonoscopy for polyp resection revealed a 3.0-cm-long pedunculated polyp in the ascending colon [Figure 1a], the head of which was overlaid with hyperemic mucosa. Conventional polypectomy was performed. The polyp was looped with a snare and resected at the lower third of the stalk. After resection, the mucosal defect was closed using an endoclip. Microscopically, epithelial hyperplasia and thickening of the muscularis mucosa were present, and numerous dilated and irregularly thickened blood vessels were present in the mucosa and submucosa [Figure 2a and b]. These various-sized vessels had characteristics of arteries and veins without intervening capillaries. Such features were compatible with a diagnosis of AVM with a polypoid appearance. No complication (delayed bleeding or perforation) was encountered.

Case 2

A 60-year-old man presented for resection of a polyp detected during screening colonoscopy performed by his primary physician. He was receiving treatment for hypertension and diabetes mellitus. His medical history included a saphenous stripping for varicose veins. On admission, he had no clinical symptoms. Regarding laboratory findings, his hemoglobin was 12.6 g/dL and hematocrit was 37.3%. Colonoscopy revealed a 2.0-cm-long pedunculated polyp overlaid by hyperemic mucosa in the proximal sigmoid colon [Figure 1b]. EMR using the inject-and-cut technique was performed, and the polyp was resected *en bloc*. Microscopic examination of the polyp demonstrated dilated blood vessels with thickened, hypertrophic walls [Figure 2c]. This was compatible with AVM with a polypoid appearance. No immediate or delayed bleeding was noted after polypectomy.

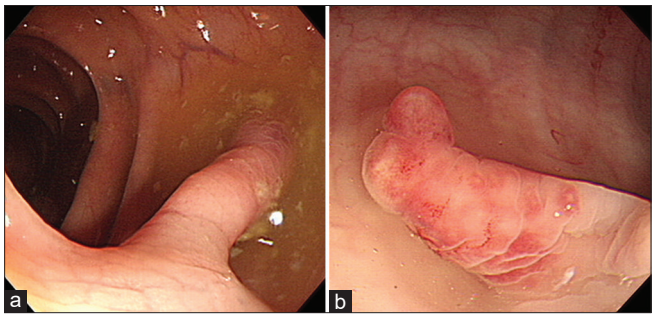

Figure 1: Endoscopic views of the polyps. (a) Colonoscopy revealed a 3.0-cm-long pedunculated polyp in the ascending colon (Case 1). (b) Colonoscopy revealed a 2.0-cm-long pedunculated polyp overlaid with hyperemic mucosa in the proximal sigmoid colon (Case 2)

DISCUSSION

Various types of vascular lesions can develop in the GI tract. However, no consensus on how to describe such lesions has emerged. Various descriptors are used in an inconsistent manner, which include angiodysplasia, vascular ectasia, and AVM. Differentiation of vascular lesions is difficult because their endoscopic appearance is similar, and a precise diagnosis usually requires histological examination. Vascular ectasia or angiodysplasia, the most common GI vascular malformation, typically affects the cecum or ascending colon of elderly patients. This lesion features thin, tortuous veins lacking an internal elastic layer. AVMs are histologically and clinically distinguishable from vascular ectasia.

In terms of histogenesis, AVMs are believed to be degenerative in nature and caused by chronic, intermittent low-grade obstruction of the submucosal veins penetrating the muscular layers of the large intestine. Thus, small direct arteriovenous communications develop.[6] Moore *et al.*[1] classified AVMs of the GI tract into three types by reference to angiographic characteristics, location, patient age, and family history. Type 1 AVMs are solitary localized lesions of the right colon and usually develop in patients over 55 years of age. Type 2 AVMs usually develop in the small intestine

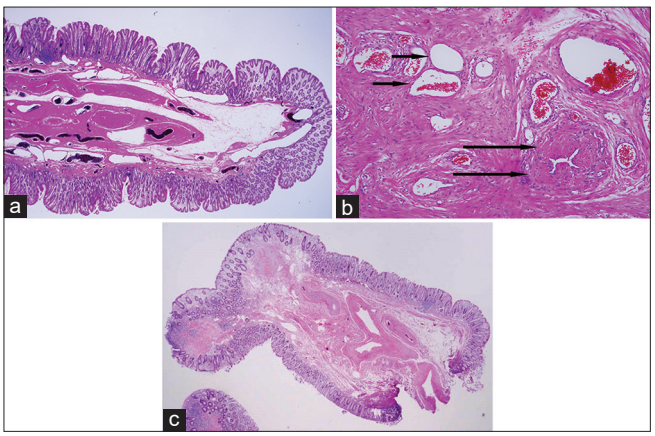

Figure 2: Histological findings of resected specimens. (a) Case 1. Numerous dilated and irregularly thickened blood vessels are observed in the mucosa and submucosa (hematoxylin and eosin staining, magnification ×10). (b) Case 1. At higher magnification, some vessels have thin collagenous walls of veins (short arrows), whereas others have muscular and elastic laminae of arteries (long arrows). There is no intervening capillary bed (hematoxylin and eosin staining, magnification ×200). (c) Case 2. Tangles of abnormal vessels of various diameters are evident (hematoxylin and eosin staining, magnification ×10)

Table 1: Summary of colonic polypoid arteriovenous malformations reported in the English-language literature

Authors*	Age /sex	Chief complaint	Location	Maximal size, mm	Gross finding	Treatment	Result
Koziara *et al*. (1996)	84/F	Hematochezia	Sigmoid	35	Pedunculated	Snare polypectomy	Hemostasis
	58/M	Iron-deficiency anemia	Transverse	15	Pedunculated	Snare polypectomy	Improvement of anemia
Park *et al*. (2000)	41/M	Hematochezia	Descending	10	Pedunculated	Snare polypectomy	Hemostasis
D'Arienzo *et al*. (2001)	53/M	Hematochezia	Sigmoid	20	Pedunculated	Snare polypectomy	Hemostasis
McKevitt *et al*. (2002)	24/M	Hematochezia	Rectum	7	Semipedunculated	Snare polypectomy	Hemostasis
Maeng *et al*. (2004)	59/F	Hematochezia	Transverse	62	Pedunculated	Surgery	Hemostasis
Nasseri-Moghaddam *et al*. (2004)	26/M	Hematochezia	Sigmoid	30	Pedunculated	Snare polypectomy	Hemostasis
Ji *et al*. (2005)	81/M	Hematochezia	Transverse	35	Semipedunculated	EMR after application of endoloop	Hemostasis
Choi *et al*. (2008)[7]	18/F	Hematochezia	Cecum	6	Pedunculated	Snare polypectomy	Hemostasis
Kim *et al*.(2009)	66/F	Screening	Cecum	5 and 4	Semipedunculated	Cold biopsy	No bleeding
Chen and Yan (2012)	57/M	Positive fecal blood test	Sigmoid	NA	Pedunculated	Snare polypectomy	No bleeding
Cullen *et al*. (2013)[8]	59/M	Hematochezia	Sigmoid	25	Pedunculated	Snare polypectomy	No bleeding
Andrisani *et al*. (2014)[9]	68/M	Abdominal pain	Sigmoid	80	Pedunculated	Snare polypectomy after endoloop	No bleeding
Present	65/M	Screening	Ascending	35	Pedunculated	Snare polypectomy	No bleeding
Present	60/M	Screening	Sigmoid	20	Pedunculated	EMR	No bleeding

*All cases lacking reference numbers were cited in Lim *et al*. (2014)[10]; NA: Not available

and are much larger, rarer, probably congenital in origin, and are usually seen in patients younger than 55 years of age. Type 3 AVMs are punctate angiomas that cause GI hemorrhage and develop in patients with hereditary hemorrhagic telangiectasia.

Endoscopically, colonic AVMs typically present as bright red, flat areas with irregular borders (termed the "coral bank").[3] A polypoid morphology is extremely rare in the large intestine. To date, only 15 cases of polypoid colonic AVMs, including our present cases, have been reported in the literature [Table 1].[7-10] The mean polyp length was 2.8 cm (range, 0.4–8.0 cm). Colonic polypoid AVMs are less common in females (male: female ratio of 11:4). The mean age of patients with polypoid AVM was 54.6 years (range, 18–84 years). The gross appearance was pedunculate in 80% of all cases and semipedunculate in 20%. The polyps were located in the cecum (2 cases), ascending colon (1 case), transverse colon (3 cases), descending colon (1 case), sigmoid colon (7 cases), and rectum (1 case). Thus, colonic AVMs may have no preferred site within the GI tract.

The most common initial clinical symptom was hematochezia (60%). However, as we have found, asymptomatic colonic polypoid AVMs will become more frequently diagnosed because colonoscopy is being increasingly used to screen for colorectal cancer. Most AVMs in the large intestine were treated endoscopically (a single exception has been reported). The latter case presented with a 6.2-cm-long polypoid mass in the transverse colon and was treated by segmental resection.[4] The diagnosis was finally made after histological review because most cases were confused with other polypoid lesions on the basis of gross findings alone. Our patients also underwent successful endoscopic resection.

CONCLUSION

Colonic AVM can present as a polypoid shape, albeit rarely. Endoscopic resection is safe and effective when used to treat most colonic polypoid AVMs if endoscopists are fully aware of the endoscopic and clinical characteristics. Such lesions are increasingly detected possibly because of improved endoscopic image resolution and an increased awareness by clinicians that vascular lesions of the GI tract are important causes of GI blood loss.

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Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Moore JD, Thompson NW, Appelman HD, Foley D. Arteriovenous malformations of the gastrointestinal tract. Arch Surg 1976;111:381-9.
2. Heer M, Sulser H, Hany A. Angiodysplasia of the colon: An expression of occlusive vascular disease. Hepatogastroenterology 1987;34:127-31.

3. Foutch PG. Angiodysplasia of the gastrointestinal tract. Am J Gastroenterol 1993;88:807-18.
4. Maeng L, Choi KY, Lee A, Kang CS, Kim KM. Polypoid arteriovenous malformation of colon mimicking inflammatory fibroid polyp. J Gastroenterol 2004;39:575-8.
5. Kim BK, Han HS, Lee SY, Kim CH, Jin CJ. Cecal polypoid arteriovenous malformations removed by endoscopic biopsy. J Korean Med Sci 2009;24:342-5.
6. Boley SJ, Sammartano R, Adams A, DiBiase A, Kleinhaus S, Sprayregen S. On the nature and etiology of vascular ectasias of the colon. Degenerative lesions of aging. Gastroenterology 1977;72:650-60.
7. Choi HK, Park CI, Shin JA, Moon JT, Lee SJ, Park CI, *et al*. Hematochezia with colonic polypoid angiodysplasia in a young female patient. Gut Liver 2008;2:126-9.
8. Cullen NR, Yfantis HG, von Rosenvinge EC. "Stalk"ing the etiology of rectal bleeding. Gastroenterology 2013;144:1355, 578.
9. Andrisani G, Petruzziello L, Ricci R, Spada C, Costamagna G. Giant arteriovenous malformation of the colon mimicking lipoma. Dig Liver Dis 2014;46:89-90.
10. Lim DH, Ahn JY, Seo M, Yun JH, Kim TH, Jung HY, *et al*. Polypoid arteriovenous malformation presenting with jejunojejunal intussusceptions in an adult. Clin Endosc 2014;47:575-8.