Radiology Case Reports 14 (2019) 69–71

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case report

Usefulness of a distal access catheter in embolization of a short gastric artery pseudoaneurysm

Yasuyuki Onishi, MD[a,], Hiroyuki Kimura, MD, PhD[a], Mitsunori Kanagaki, MD, PhD[a], Shojiro Oka, MD[a], Genki Fukumoto, MD[a], Tomoaki Otani, MD[a], Naoko Matsubara, MD[a], Kazuna Kawabata, MD, PhD[a], Mio Namikawa, MD[b], Toshiyuki Kimura, MD, PhD[b]*

[a] *Department of Diagnostic Radiology, Hyogo Prefectural Amagasaki General Medical Center, 2-17-77 Higashinaniwa-cho, 660-8550 Amagasaki, Japan*
[b] *Department of Gastroenterology, Hyogo Prefectural Amagasaki General Medical Center, 2-17-77 Higashinaniwa-cho, 660-8550 Amagasaki , Japan*

ARTICLE INFO

Article history:
Received 17 September 2018
Accepted 30 September 2018
Available online 17 October 2018

Keywords:
Short gastric artery
Pseudoaneurysm
Embolization
Distal access catheter

ABSTRACT

A 59-year-old man was admitted to our hospital for hematemesis. A hematoma was found in the posterior wall of the stomach, but the source of bleeding was not identified. One month later, contrast-enhanced computed tomography revealed a pseudoaneurysm in the short gastric artery. Embolization of the pseudoaneurysm was difficult due to vessel tortuosity. Usage of a distal access catheter improved catheter stability and enabled successful embolization. We consider a distal access catheter to be useful for embolization of an aneurysm beyond a tortuous artery.

Introduction

Bleeding from the short gastric artery is rare and has been reported only in case reports [1–3], and embolization may be difficult because of vessel tortuosity. For neurovascular intervention, a flexible catheter called a distal access catheter (DAC) can be used to overcome vessel tortuosity and improve catheter stability. Here, we report the successful embolism of a short gastric artery pseudoaneurysm using a DAC.

Informed consent: Informed consent was obtained from the patient.
Funding: This study was not supported by any funding.
Declarations of interest: None.
Consent for publication: Consent for publication was obtained for the patient's data included in the study.
Acknowledgment: None.
Conflict of interest: The authors declare that they have no conflict of interest.
* Corresponding author.
E-mail address: robounoishi6114@yahoo.co.jp (Y. Onishi).
https://doi.org/10.1016/j.radcr.2018.09.019

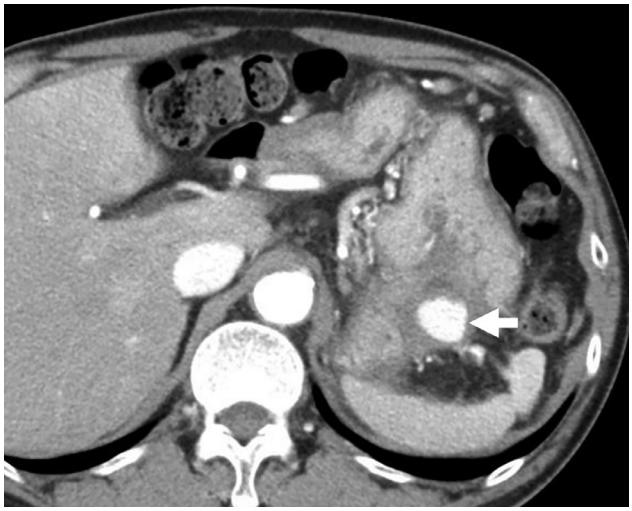

Fig. 1 – Arterial-phase contrast-enhanced CT showing a pseudoaneurysm (arrow) in the posterior wall of the stomach.

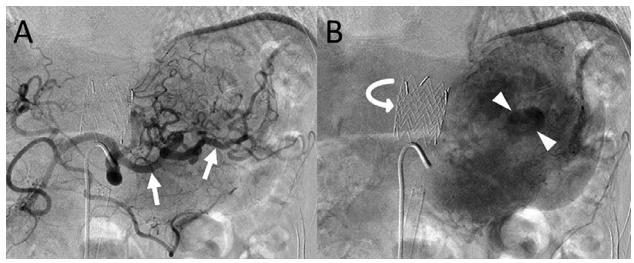

Fig. 2 – (A) Angiography of the celiac artery showing the tortuous splenic artery (arrows). (B) The pseudoaneurysm (arrowheads) is visualized a few seconds later. The aortic stent graft (curved arrow) was placed for aortic dissection.

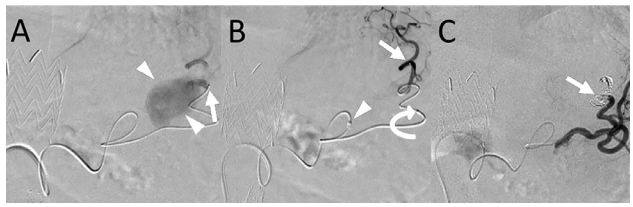

Fig. 3 – (A) Angiography of the short gastric artery reveals the pseudoaneurysm (arrowheads). The tip (arrow) of the 1.9-F microcatheter is located in the proximal part of the short gastric artery. It was not possible to advance this catheter any further due to catheter instability. (B) Angiography from the distal part of the short gastric artery. The tip (arrow) of the 1.9-F microcatheter was advanced beyond the origin of the aneurysm. The tip (arrowhead) of Fubuki is at the mid part of the splenic artery. The tip (curved arrow) of the 2.7-F microcatheter is at the proximal part of the short gastric artery. (C) After embolization, angiography from the distal part of the splenic artery demonstrates exclusion of the aneurysm. Coils (arrow) are placed in the short gastric artery.

Case report

A 59-year-old man was admitted to our hospital for hematemesis. He had a history of type B aortic dissection, and underwent stent placement to the descending thoracic aorta and superior mesenteric artery.

Contrast-enhanced computed tomography (CT) revealed a hyperdense mass in the posterior wall of the body of the stomach, suggesting a hematoma without evidence of extravasation or aneurysm. Upper endoscopy demonstrated an elevated lesion in the posterior wall of the body of the stomach, indicating a submucosal mass. Active hemorrhage was not seen on endoscopy and the source of bleeding was not identified. He was discharged home 7 days after admission because no bleeding recurred. Contrast-enhanced CT 1-month after discharge revealed an aneurysm (Fig. 1) in the posterior wall of the stomach, where the hematoma was observed on the previous CT. Pseudoaneurysm of the short gastric artery was suspected and emergent endovascular treatment was planned. As the splenic artery was tortuous, we considered reaching the aneurysm with a catheter to be difficult, and decided to use a guiding sheath and DAC to increase catheter stability.

Under local anesthesia, the right common femoral artery was punctured and a 58-cm-long 5-F shepherd hook guiding sheath (Parent Plus 45; Medikit, Tokyo, Japan) was introduced. The aneurysm was noted at the splenic hilum on celiac angiography (Fig. 2). A flexible 120-cm-long 4.2-F DAC (Fubuki, Asahi Intecc, Tokyo, Japan) was cut at the proximal shaft to make an 80-cm-long catheter. This catheter was advanced coaxially with a 125-cm-long 2.7-F microcatheter to the proximal part of the splenic artery with a 0.014-inch guide wire. A 1.9-F nontapered microcatheter (Carnelian Marvel; Tokai Medical Products, Aichi, Japan) was advanced through the 2.7-F microcatheter over the 0.014-inch guide wire. The aneurysm was visualized in the mid part of the short gastric artery by angiography from the proximal part of the short gastric artery (Fig. 3A). Advancing the 1.9-F microcatheter beyond the origin of the aneurysm was not successful due to the instability of the guiding sheath. As the distal part of the DAC had hydrophilic coating and high flexibility, we were able to easily advance the DAC over the microcatheter to the middle of the splenic artery. The catheter stability improved greatly and the 1.9-F microcatheter was advanced beyond the aneurysm (Fig. 3B). Embolization of the short gastric artery was performed with 4 detachable coils and 3 pushable coils. Angiography of the splenic artery after embolization confirmed successful exclusion of the aneurysm (Fig. 3C).

The patient was hospitalized for 4 days after the procedure, and then discharged home. Contrast-enhanced CT 1-month

after the procedure revealed thrombosis and shrinkage of the aneurysm. Currently, he has had no symptoms for 18 months.

Discussion

Bleeding from the short gastric artery is rare. Pseudoaneurysm of the short gastric artery can develop as a consequence of chronic pancreatitis [1]. Additionally, spontaneous hemorrhage from the short gastric artery after vomiting has been reported [2,3].

In endovascular intervention for bleeding from the short gastric artery, it is necessary to advance a microcatheter beyond the splenic artery. As the splenic artery is tortuous, advancing a catheter to the short gastric artery can be sometimes difficult and challenging.

A DAC is often used in neurovascular interventions [4,5]. It is inserted into a guiding catheter or guiding sheath and a microcatheter can be advanced from it. A DAC has a soft distal shaft and can be advanced deeply into the target vessel. As a result, catheter stability is improved and the microcatheter can be advanced more deeply. Fubuki is one of the most popular types of DAC in Japan. As this catheter is characterized by its flexible distal shaft and lubricated hydrophilic coating, it is useful for embolization of intracranial aneurysms or intracranial arteriovenous malformation beyond a tortuous artery. In this case, this catheter was able to be advanced deeply into the tortuous splenic artery and embolization was performed successfully. The disadvantage of using a DAC is that a guiding catheter or guiding sheath is required to advance it because the shaft of a DAC is usually soft. In addition, attention should be paid to the length of the catheters [4]. In this case, the proximal shaft of the Fubuki was cut because a DAC with a suitable length was not available.

The triaxial system consisting of a 1.9-F nontapered microcatheter, a 2.7-F microcatheter, and a 4-F catheter has been used for type 2 endoleak embolization after endovascular aneurysm repair [6]. This system is reported to be useful, when advancing a microcatheter via a tortuous and long artery [6]. We used a DAC and triaxial system, expecting synergistic effects. We consider a quadriaxial system consisting of a 1.9-F microcatheter, 2.7-F microcatheter, a DAC, and a guiding sheath to be a useful alternative, when advancing a microcatheter through a tortuous artery is necessary.

Conclusion

We report a case of a short gastric artery pseudoaneurysm, which was successfully treated with coil embolization using a distal access catheter. We consider a distal access catheter to be useful for embolization of an aneurysm beyond a tortuous artery.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. For this type of study, formal consent is not required.

REFERENCES

[1] Spezia L, Sozzi C, Contro A, Mansueto G. Successful post-pancreatitis pseudoaneurysm coagulation by percutaneous computed tomography (CT)-guided thrombin injection. Pol J Radiol 2017;82:24–7.
[2] Faraj W, Alaeddine M, Haydar A, Khalife M. Spontaneous intraperitoneal haemorrhage from short gastric artery avulsion secondary to forceful retching. BMJ Case Rep 2013. doi:10.1136/bcr-2012008250.
[3] Ho MP, Chang CJ, Huang CY, Yu CJ, Tsai KC, Chen HA, et al. Spontaneous rupture of the short gastric artery after vomiting. Am J Emerg Med 2012;30(3):e1–3 513.
[4] Spiotta AM, Hussain MS, Sivapatham T, Bain M, Gupta R, Moskowitz SI, et al. The versatile distal access catheter: the Cleveland Clinic experience. Neurosurgery 2011;68(6):1677–86 discussion 86.
[5] Colby GP, Lin LM, Xu R, Beaty N, Bender MT, Jiang B, et al. Utilization of a novel, multi-durometer intracranial distal access catheter: nuances and experience in 110 consecutive cases of aneurysm flow diversion. Interv Neurol 2017;6(1-2):90–104.
[6] Shimohira M, Hashizume T, Suzuki Y, Kurosaka K, Muto M, Kitase M, et al. Triaxial system for embolization of type II endoleak after endovascular aneurysm repair. J Endovasc Ther 2013;20(2):200–4.