

Endovascular embolectomy of the superior mesenteric artery using the Rotarex[®] system for the treatment of acute mesenteric ischemia

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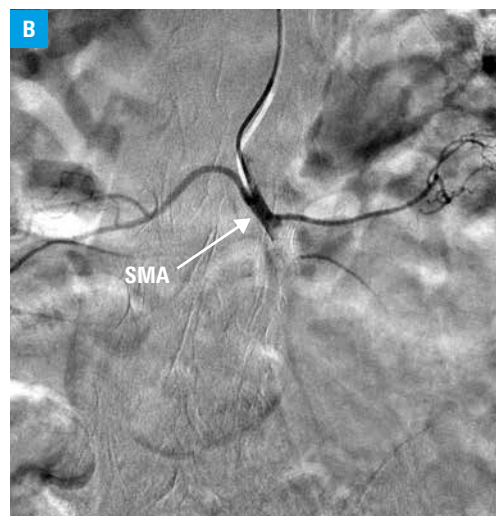
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Acute mesenteric ischemia (AMI) is a rare pathology with high mortality rates, namely, of 40% to 90%. Endovascular revascularization of an occluded superior mesenteric artery (SMA) is a good alternative to open surgical repair, especially for high-risk patients or those who may not tolerate a laparotomy. New methods of endovascular repair, such as mechanical thrombectomy, can potentially improve success rates in this challenging vascular territory.¹⁻⁴

We present a case of a successful embolectomy of an acutely occluded SMA with the use of an over-the-wire rotational thrombectomy catheter: Rotarex[®] (Straub Medical AG, Wangs,

Switzerland). According to the available data, this is the first reported use of this system for the treatment of AMI in Poland.

A 65-year-old woman was admitted to our hospital because of a 2-hour history of abdominal pain. She presented with persistent atrial fibrillation, and in the past, she underwent embolectomy of the brachial artery. On admission, the patient received anticoagulation with rivaroxaban. There were no signs of peritoneal irritation on a physical examination, and serum lactate levels were normal. Computed tomography angiography demonstrated occlusion of the SMA, about 7 cm from the aorta (FIGURE 1A). Considering the overall good clinical status of the patient, low probability of gut gangrene, and anticoagulation with rivaroxaban, we decided to attempt endovascular revascularization of the occluded artery. A catheter angiography confirmed the embolic occlusion of the SMA (FIGURE 1B). Considering the embolic



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Received: December 7, 2015.

Revision accepted: January 7, 2016.

Published online: February 12, 2016.

Conflict of interests: none declared.

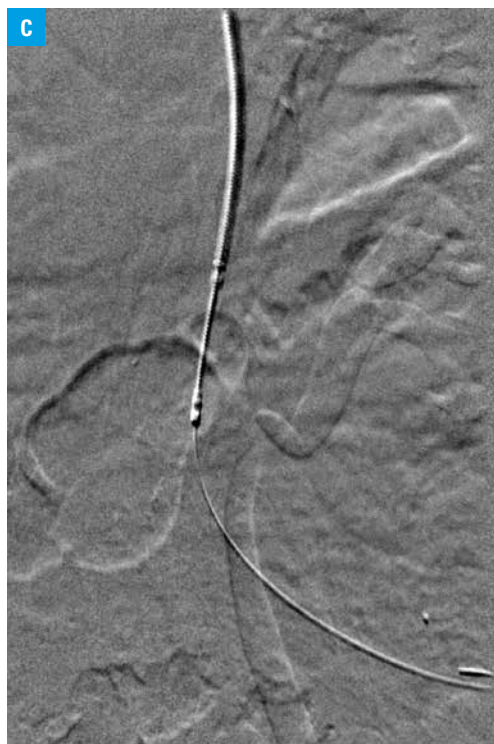
Pol Arch Med Wewn. 2016;

126 (3): 196-197

doi: 10.20452/pamw.3292

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FIGURE 1 **A** – preprocedural computed tomography angiography of the abdominal aorta and its branches: an occluded superior mesenteric artery (SMA) about 7 cm from the aorta (arrow) and patent celiac trunk and its branches; **B** – preprocedural catheter angiography of the occluded SMA: the arrow indicates confirmed embolic occlusion of the artery; **C** – advancement of the Rotarex®S catheter into the occluded SMA; **D** – the final angiographic result after additional aspiration embolectomy and balloon angioplasty of compromised side branches



nature of the occlusion and high probability of failed recanalization with the use of the aspiration technique, we decided to apply a rotational thrombectomy system. We injected 3000 units of unfractionated heparin through a diagnostic catheter, and then, over guidewire, we advanced a 6F Rotarex®S rotational thrombectomy catheter. Using this system, we performed mechanical embolectomy of the SMA and its branches. First, we removed emboli from the SMA (**FIGURE 1C**). Then, we changed the position of the Rotarex and performed embolectomy of the main side branches, consequently aspirating emboli from all occluded arteries. Finally, we used an extraction catheter Hunter® (IHT Cordynamic, Barcelona, Spain) to remove the remaining small emboli and also performed angioplasty of the branches that still presented with compromised flow, achieving a good final outcome (**FIGURE 1D**).

During the hospital stay, there were no clinical signs of peritoneal irritation or impaired peristalsis. Starting with day 6 after revascularization, the patient was free from abdominal pain. She was discharged after 8 days, with the recommendation of antiplatelet therapy and anticoagulation with low-molecular-weight heparin.

Endovascular treatment offers potential advantages over open surgery, such as a more rapid revascularization of bowel vessels, no need for visceral exposure, no significant blood loss, and reduced risk of acute renal or pulmonary failure. The success of endovascular repair in embolic AMI may potentially be improved by using mechanical embolectomy instead of traditional aspiration associated with local thrombolysis. The latter technique is likely to fail if the artery is occluded by an organized embolic material. However, small branches of the SMA, which are prone to rupture, should be managed with aspiration

thrombectomy. Importantly, because endovascular repair of the SMA using mechanical embolectomy is a challenging procedure and technical failures can dramatically increase mortality, it should be performed by experienced interventionists who are familiar with these devices.

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