

Colonic ischemia and the role of inferior mesenteric artery reimplantation after abdominal aortic aneurysm repair

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Colonic ischemia is a serious and potentially life-threatening complication of open abdominal aortic aneurysm (AAA) repair, with a reported incidence of 1% to 6% in elective cases and up to 60% after aneurysmal rupture.¹⁻³ It can range from reversible mucosal ischemia to irreversible transmural damage. Colonic ischemia after aortic repair is multifactorial, the risk factors include pre-existing vascular disease, blood loss of >1 L, inferior mesenteric artery (IMA) sacrifice, longer surgeries, and prolonged hypotension, all of which compromise perfusion to the colon.¹⁻³ The role of IMA reimplantation in preventing colonic ischemia remains debated.

The IMA is occluded in 40% to 50% of AAA patients owing to atherosclerosis or mural thrombus. To prevent ischemia, IMA replantation can be performed immediately at the discretion of the surgeon based on the intraoperative findings. IMA replantation can be considered if the artery is patent, with the decision made based on findings such as colon appearance, Doppler signals at the mesocolon, IMA back-bleeding, or stump pressure measurements. Additional factors in the decision to reimplant the IMA include chronic occlusion of the hypogastric arteries and a history of previous colon procedures. The presence of collateral circulation (eg, right colic and ileocolic arteries) and anastomoses between the SMA and IMA may often provide enough blood flow to the colon to avoid ischemic complications.

IMA reimplantation after AAA repair can involve an end-to-end anastomosis if the IMA is healthy. If not, a bypass using synthetic or autologous grafts may be required. However, despite theoretical benefits, evidence supporting IMA replantation in reducing

ischemic colitis is limited.¹⁻⁶ A randomized clinical trial by Senekowitsch et al⁶ showed no statistically significant difference in outcomes between replanting and ligating the IMA, even though colonic ischemia and mortality were more common in the ligation group. Conversely, IMA replantation has drawbacks, including prolonged operative times, increased exposure to general anesthesia, a higher rate of wound complications, and a greater likelihood of returning to the operating room.^{4,6}

According to vascular surgery guidelines,^{7,8} routine IMA replantation is not recommended and should be reserved for cases with a significant concern for mesenteric ischemia, particularly in patients with a small IMA or poor collateral circulation. Additionally, prophylactic treatment for asymptomatic high-grade stenosis of the superior mesenteric artery is advised when a meandering mesenteric artery based off of a large IMA, which will be sacrificed during the course of treatment.

In conclusion, routine IMA replantation is not advised, but it should be considered on a case-by-case basis after open infrarenal AAA repair, with decisions based on pre-operative imaging, collateral circulation, and surgeon expertise.

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