Three Different Approaches to the Inferior Mesenteric Artery during Robotic D3 Lymphadenectomy for Rectal Cancer

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ABSTRACT

Background. In rectal cancer surgery, proximal ligation of the inferior mesenteric artery (IMA) with radical lymphadenectomy is the accepted standard of care.¹ Our purpose is to describe three different standardized technical approaches for the management of the IMA during D3 lymphadenectomy.²

Methods. Operative videos of three robotic D3 lymphadenectomy procedures for rectal cancer were reviewed and annotated with schematic anatomical descriptions for clarification.

Results. There are three methods for the management of the IMA during D3 lymphadenectomy for rectal cancer. Standard high ligation is technically the simplest to perform and provides excellent mesenteric length but relies solely on marginal vessel blood supply from the middle colic artery.³ Low ligation with ascending left colic artery preservation is more complex technically but affords excellent vascular supply due to preservation of IMA blood flow, while potentially limiting mesenteric length.⁴ The central vascular sparing technique is the most complex to perform but allows excellent mesenteric length due to the presence of two separate points of mesenteric division, while also potentially improving blood supply due to decreased vascular resistance and improved collateralization. With each technique, central ligation of the inferior

mesenteric vein above the splenic flexure tributary is performed to release the mesentery.

Conclusions. The three methods to manage the IMA vary in their technical complexity, preservation of colonic conduit blood supply, and provision of mesenteric length, with associated advantages and disadvantages. The choice of technique is dependent on anatomical and oncological considerations.

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