



Preoperative Colonoscopic Tattooing with Autologous Blood in Laparoscopic Colorectal Cancer Surgery: Red-Flagging for an Invisible Enemy

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In patients with early colorectal cancer, intraoperative localization of the target lesion is troublesome. Several strategies have also been studied for the preoperative localization of colorectal tumors. These include CT colonography, endoscopic metal clipping, endoscopic tattooing, and intraoperative colonoscopy. On the other hand, preoperative tattooing can lead to technical failure for effective tattooing or result in intraperitoneal complications. To minimize these adverse events, several studies performed tattooing with the patient's blood.

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The surgical treatment of tumors can be difficult if they are small, premature, or deeply located. Furthermore, in this era of minimally invasive surgery, the development of preoperative localization or visualization techniques for invisible tumors has become even more important. With the help of this technique, it is possible to expect good long-term results through an optimal resection, and minimize unnecessary resections of normal tissues, thereby improving the patient's quality of life.

Intraoperative localization of a target lesion is also troublesome, even during a laparotomy, in patients with malignant colorectal polyps that had been previously removed by an endoscopic resection, or small early colon cancer. Several strategies for the preoperative localization of colorectal tumors have also been studied, such as CT colonography, endoscopic metal clip-

ping, endoscopic tattooing, and intraoperative colonoscopy.^{1,2} On the other hand, preoperative endoscopic tattooing, which uses tattooing agents, such as methylene blue, India ink, and indocyanine green (ICG), could lead to technical failure for effective tattooing or result in intraperitoneal complications caused by tattoo chemical spillage. Many studies have performed tattooing with the patient's blood to minimize these adverse events.^{3,4} Tattooing agent-associated inflammatory complications do not occur when it comes to autologous blood tattooing because it is not a foreign body, unlike other tattooing agents.

In this issue of *J Minim Invasive Surg*, Yeo and Sung et al. reports a promising result of colonoscopic tattooing with autologous blood in laparoscopic colorectal cancer surgery dealing with a pragmatic surgical innovation at a single institutional

level.⁵ The authors tried to introduce the feasibility and safety of autologous blood tattooing while maintaining the usefulness of preoperative endoscopic tattooing. More than 90% of patients were precise in the visibility of localization during surgery. The surgical resection margin was negative in all patients. In addition, there were no complications related to the spillage or abscesses induced by tattooing. This study is a retrospective study comprised of a small sample size, which may have a surgeon's selection bias and introduced bias. Despite these limitations, the study demonstrates the efficacy of preoperative autologous blood tattooing. Because autologous blood tattooing is simple and convenient, requiring no chemical tattooing agent or equipment, this method of preoperative colonoscopic tattooing could be implemented widely in clinical practice and improved continuously based on sound evidence. A large-scale prospective study is warranted for standard guidelines regarding effective preoperative tumor localization.

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CONFLICT OF INTEREST

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