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Review of Robotic Simultaneous Resection of Colorectal Cancer with Synchronous Liver Metastases Using Da Vinci Xi: Technical Considerations and Outcomes

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Abstract
Background: Robotic surgery has revolutionized the field of minimally invasive oncologic surgery. The Da Vinci Xi platform is a significant upgrade from older Da Vinci platforms facilitating multi-quadrant and multi-visceral resection. We review the current technical factors and outcomes in robotic surgery for simultaneous resection of colon and synchronous liver metastases (CLRM) and provide future perspective on technical considerations for combined resection.
Methods: A literature search on PubMed was performed and relevant studies from January 1st 2009 to January 20th 2023 were identified. Seventy-eight patients who underwent synchronous colo-rectal and CLRM robotic resection with the Da Vinci Xi were analysed and their indication, technical factors, and post-operative outcomes were studied.
Results: The median operative time was 399 minutes and mean blood loss of 180 ml for synchronous resection. Post-operative complications were developed by 71.7% (43/78) patients, 41% being Clavien-Dindo Grade 1 or 2. There was no 30-day mortality reported. Technical factors including port placements and operative factors were presented and discussed for the various permutations of colonic and liver resections performed.
Conclusion: Robotic surgery with the Da Vinci Xi platform is a safe and viable approach for simultaneous resection of colon cancer and CLRM. Future studies and sharing of technical experience will potentially facilitate standardization and increased uptake of robotic multi-visceral resection in metastatic liver only colorectal cancer.
Key words: synchronous colorectal liver metastases, robotic surgery, colorectal cancer, Da Vinci Xi