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Feasibility and Safety of Robotic-Assisted Surgery for Rectal Cancer: Short-Term Outcomes of a Pilot Study with da Vinci Xi Platform During Covid-19

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Abstract
Background: Colorectal cancer is a major cause of morbidity and mortality in the world. Approximately, one of three diagnosed colorectal cancers is a rectal cancer. Recent developments in the field of rectal surgery promoted the use of surgical robots, which are of great need when surgeons face anatomical difficulties, such as a narrowed male pelvis, bulky tumour, or obese patients. This study aims to evaluate the clinical results of robotic rectal cancer surgery during the introduction period of a surgical robot system. Moreover, the period of the introduction of this technique coincided with the first year of Covid-19 pandemic.
Methods: Since December 2019, the Surgery Department of the University Hospital of Varna has become the newest and the most modern Robotic Surgery Center of Competence in Bulgaria, equipped with the most advanced da Vinci Xi surgical system. From January 2020 to October 2020 a total number of 43 patients have underwent surgical treatment, of which 21 had robotic-assisted procedures and the rest - open procedures.
Results: Patient characteristics were close between the studied groups. The mean patient age in robotic surgery was 65 years, as six of these patients were females, while in case of open surgery these values were 70 and 6, respectively. 66.7% of the patients operated with da Vinci Xi were with tumour stage 3 or 4 and approximately 10% had the tumour located in the lower part of the rectum. The median value of the operation time was 210 min, while the length of hospital stay was 7 days. These short-term parameters were not found to have a large difference in respect to the open surgery group. A significant difference is depicted for the number of lymph nodes resected and the blood loss, with both parameters demonstrating advantage for the robot-assisted surgery. The blood loss more than twice less than the case of open surgery.
Conclusions: The results confidently showed the successful introduction of the robot-assisted platform in the surgery department although the limitations created by the COVID-19 pandemic. This technique is expected to become the main choice of minimally invasive technique applied to all types of colorectal cancer surgery in the Robotic Surgery Center of Competence.
Key words: da Vinci Xi, open surgery, short-term clinical outcomes, rectal cancers