Sexual Functional Outcomes in Robotic vs. Laparoscopic Rectal Cancer Surgery: A Comparative Meta-Analysis

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Background

Sexual dysfunction is a prevalent postoperative concern in rectal cancer surgery, significantly affecting both quality of life and psychological well-being. Minimally invasive techniques, such as laparoscopic and robotic surgeries, aim to preserve autonomic nerves to reduce this issue. However, evidence on which technique better preserves sexual function remains conflicting, and understanding the impact of each approach is critical for surgical decision-making. This study compares changes in sexual function from preoperative status to six months postoperative between laparoscopic and robotic rectal cancer surgeries in male and female patients.

Methods

A comprehensive literature search was performed using PubMed, Embase, and the Cochrane Library up to August 2024. Studies reporting preoperative and six-month postoperative sexual function scores using the International Index of Erectile Function (IIEF) for males and the Female Sexual Function Index (FSFI) for females were included.

Methods

Mean differences (MD) between pre- and postoperative scores were calculated for laparoscopic and robotic surgery groups using a random-effects meta-analysis model. Statistical analyses were conducted using R version 4.0.3 with the 'metafor' and 'meta' packages.

Results

Four studies involving 316 female patients (162 robotic, 154 laparoscopic) and three studies involving 146 male patients (71 robotic, 75 laparoscopic) met the inclusion criteria. For male patients undergoing laparoscopic surgery, the mean difference in IIEF scores was 4.48 (95% CI: -1.01 to 10.05, p = 0.11, I^2 = 84%), indicating a non-significant improvement in sexual function from preoperative to 6 months postoperative. Similarly, for males in the robotic surgery group, the mean difference was 2.54 (95% CI: -1.88 to 6.96, p = 0.26, I^2 = 87%), also reflecting a non-significant change in sexual function.

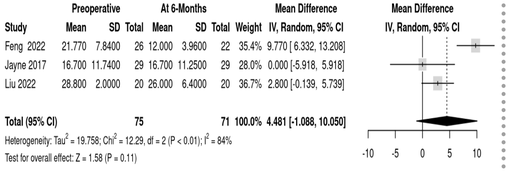
Results

For female patients, those undergoing laparoscopic surgery showed a mean difference in FSFI scores of 6.97 (95% CI: 3.93 to 10.02, p < 0.01, I^2 = 87%), indicating a significant decline in sexual function. Females in the robotic surgery group had a mean difference of 4.45 (95% CI: 2.65 to 6.25, p < 0.01, I^2 = 65%), also showing a significant decline, though less pronounced compared to the laparoscopic group.

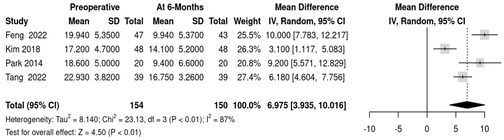
Conclusion

Both laparoscopic and robotic surgeries are associated with declines in sexual function at six months, especially in female patients. While no significant changes were observed in males, females experienced significant declines in both groups, with robotic surgery showing a lesser decline, suggesting better preservation of sexual function. Further randomized controlled trials are needed to confirm these findings.

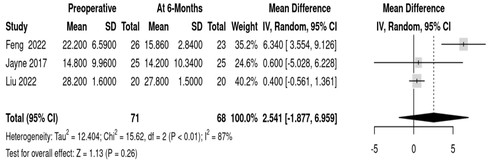
Male – Laparoscopic



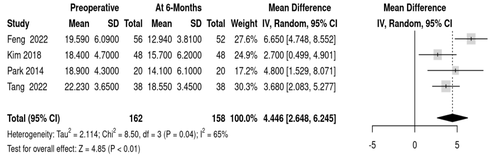
Female - Laparoscopic



Male – Robotic



Female – Robotic



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Conflict of interest

No conflict of interest to declare.

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