Robotic Approach is Associated With Lower Conversion Rate Compared to Laparoscopic Approach for Patients Undergoing Colectomy for T4b Colon Cancer

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Background

- Recent advances in minimally invasive approaches and techniques have led to increased adoption in recent years.
- The diagnosis and management of malignant colon tumors that invade adjacent organs (T4b) is quite challenging.
- En-bloc multi-visceral resection that is required to achieve complete resection of T4b colon cancer has significantly limited the use of minimally invasive approaches in patients.

Objectives

- To assess the characteristics and perioperative outcomes of patients undergoing colectomy for clinical T4b colon cancer via open, laparoscopic or robotic approaches.
- To explore factors associated with conversion to an open approach in patients undergoing minimally invasive colectomy
- To study the consequences of conversion to an open approach and its effects on oncologic and perioperative outcomes

Methods

- The study included all patients ≥18-yr who underwent colectomy for clinical T4b colon cancer in the NCDB (2010-2016).
- Patients undergoing laparoscopic or robotic colectomy were matched using Propensity-Score analysis.
- In patients undergoing minimally invasive surgery (MIS), factors associated with conversion to an open approach were assessed using Logistic-regression multivariable-analysis (MVA).

Results

- Colectomy for cT4b colon cancer was performed in 9,030 patients (open: n=6,543, robotic: n=157, laparoscopic: n=2,330).
- In the propensity matched groups, robotic approach had lower rate of conversion (12% vs. 37%, P<0.001), shorter hospital stays (5 vs. 7 days, P=0.02), and similar overall survival (5-yr: 49% vs. 39%, P=0.16) (Fig-1), compared to laparoscopic approach.
- Conversion to an open approach was noted in 801 (32%) of the patients undergoing MIS colectomy (robotic n=23 (15%), laparoscopic n=778 (33%).
- Factors associated with lower rate of conversion on MVA included recent year of surgery (95%CI:0.88-0.97), robotic approach (95%CI:0.22-0.56), and surgeries performed in Academic hospitals (95%CI:0.65-0.96).
- MIS surgeries converted to an open approach was associated with higher rate of positive parenchymal margin (31% vs. 25%, P=0.001), higher rate of 30-day readmission (12% vs. 9.5%, P=0.04), and similar overall survival (5-yr: 32% vs. 35%, P=0.19) (Fig-2), compared to those who had no conversion.

Conclusion

- Patients undergoing colectomy for T4b colon cancer via a robotic approach had more favorable perioperative outcomes compared to laparoscopic approach.
- The use of a robotic surgery approach was associated with lower conversion rates and shorter hospital stays
- Conversion to open approach did not compromise long term survival, despite being associated with higher rate of positive margins and readmissions rate.

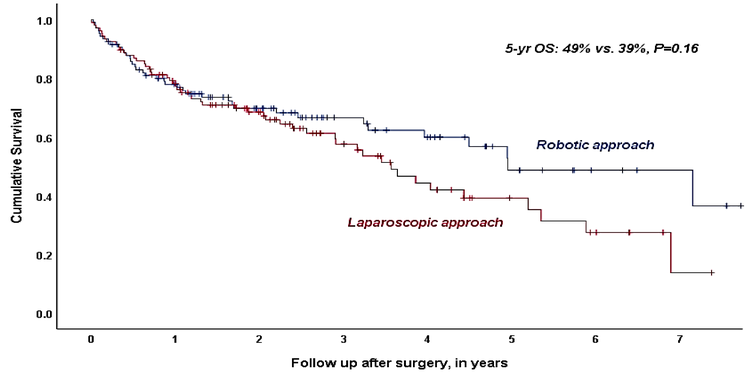


Figure 1: Overall survival rate of patients who underwent MIS colectomy via a robotic or laparoscopic approaches, propensity matched groups.

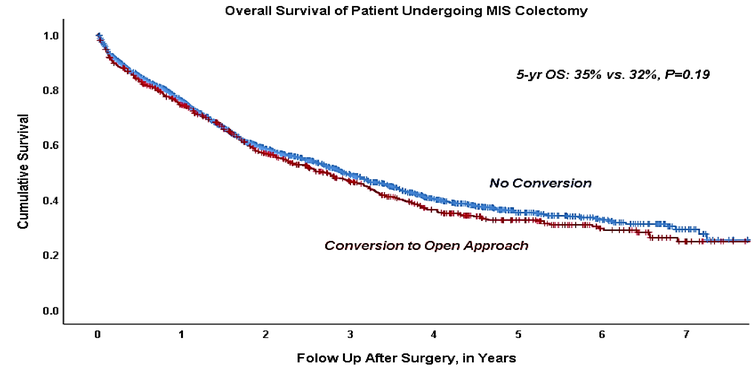


Figure 2: Overall survival rate of patients who underwent MIS colectomy and had or did not have a conversion to an open approach.

References

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