Consequences of Conversion To Open During Minimally Invasive Colorectal Resections: A Systematic Review and Meta-analysis

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Introduction

- Conversion to open during minimally invasive surgery (MIS) colectomies is a burden, with an incidence that varies between 7% to 30% in oncologic cases, and of up to 13% for benign diseases.
- Evidence is lacking for oncological outcomes following converted colorectal resections and benign cases.
- We aimed to assess the consequences of conversion to open during MIS colorectal resections.

Methods

- MEDLINE, EMBASE, and Cochrane databases were searched without language or date restrictions from inception to February 2024 by two authors.
- Primary outcomes were: 5-year overall survival, 5-year disease-free survival, cancer recurrence, and 30-day mortality.
- Secondary outcomes were: overall complications, readmissions, ileus, leakage, post-operative bleeding, surgical site infections, time to flatus, blood transfusion, operative time, intraoperative blood loss.

5,407
Studies were retrieved from the primary search

→ **39 studies** were included in the analysis

→ **107,063 patients included**

Conversion to open
13,112 (12.2%)

MIS completed surgeries
93,951 (87.8%)

MAIN FINDINGS

✓ **The conversion group presented higher incidence of:**
- **Overall postoperative complications (RR 2.2; 95% CI 1.76, 2.75; p<0.001);**
- **Readmissions (RR 1.54; 95% CI 1.44, 1.66; p<0.001);**
- **Blood transfusions (RR 2.73; 95% CI 2.41, 3.08; p< 0.001);**
- **Anatostomotic leak (RR 1.75; 95% CI 1.53, 2,01; p< 0.001);**
- **Postoperative ileus (RR 2.26; 95% CI 1.64, 3.12; p< 0.001);**
- **Surgical site infections (RR 2.58; 95% CI 2.1, 3,0; p< 0.001);**
- **Recurrence (RR 1.57; 95% CI 1.24, 1.98; p< 0.001).**

✓ **The conversion group also presented:**
- **Greater intraoperative blood loss (MD 196.7 mL; 95% CI 117.4, 275.2; p< 0.001);**
- **Longer operative time (MD 27 min; 95% CI 17.7, 36,3; p< 0.001);**
- **Longer time to flatus (MD 0.8 day; 95% CI 0.52, 1,0; p< 0.001);**
- **Higher 30-day mortality (RR 3.26; 95% CI 1.5, 7,0; p= 0.003)**
- **Lower 5-year overall survival (RR 0.85; 95% CI 0.76, 0.94; p= 0.002);**
- **Lower 5-year disease-free survival (RR 0.78; 95% CI 0.65, 0.95; p= 0.012).**

✓ **Subgroup analysis showed similar results for both malignant and benign diseases.**

Conclusion

- Our systematic review and meta-analysis demonstrated that conversion to open during MIS colorectal resections is associated with increased perioperative complications for both benign and malignant diseases.

References

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