# Comparison of short-term outcomes of robotic versus laparoscopic right colectomy for patients ≥ 65 years of age: a systematic review and meta-analysis of prospective studies

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## ABSTRACT

**Background:** The relative short-term performance of robotic right colectomy (RRC) versus laparoscopic right colectomy (LRC) in patients ≥65 years is unclear.

**Methods:** PRISMA systematic review and random-effects meta-analysis of prospective studies comparing RRC and LRC for colon cancer/adenoma (search to 21 Oct 2024; PROSPERO CRD42024603354). Outcomes included operative time, overall complications, lymph-node yield, wound infection, ileus, length of stay, and anastomotic leak.

**Results: Four studies (n=382)**. RRC had **longer operative time** (WMD **+43.91 min**; p=0.001; $I^2$=89%) but **lower overall complications** (OR **0.58**; p=0.04; $I^2$=2%). No differences in lymph-node harvest, wound infection, ileus, length of stay, or anastomotic leak. Sensitivity analyses supported robustness of key findings.

**Conclusions:** In older adults, RRC may reduce complications at the cost of longer operating time versus LRC, with similar oncologic proxy (lymph-node yield). Larger randomized trials are needed to confirm efficacy and define patient selection.

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## INTRODUCTION

Right-sided colon cancer is common in adults ≥65. While robotic right colectomy (RRC) is increasingly used, its short-term safety/efficacy versus laparoscopic right colectomy (LRC) in this age group remains uncertain.

## METHODS AND MATERIALS

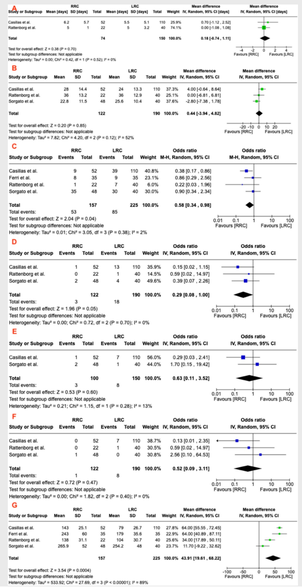
PRISMA-guided systematic review and meta-analysis (PROSPERO **CRD42024603354**). PubMed/Scopus/Cochrane to 21 Oct 2024. Prospective comparative studies of **RRC vs LRC** in patients **≥65 years** with colon cancer/adenoma. Random-effects models: WMD/OR with 95% CIs; heterogeneity by $I^2$; sensitivity analyses for operative time and lymph-node yield.

## RESULTS

**4 studies; n=382** (RRC 157; LRC 225).

- **Operative time:** longer with RRC (**+43.91 min**, 95% CI 19.61–68.22; **p=0.001; $I^2$=89%**).
- **Overall complications:** lower with RRC (**OR 0.58**, 95% CI 0.34–0.98; **p=0.04; $I^2$=2%**).
- **Lymph nodes:** no difference (WMD **0.44**, −3.94 to 4.82; **p=0.85; $I^2$=52%**).
- **Wound infection:** OR 0.63 (0.11–3.52; **p=0.60; $I^2$=13%**).
- **Ileus:** OR 0.29 (0.08–1.00; **p=0.05; $I^2$=0%**).
- **Length of stay:** WMD 0.18 days (−0.74 to 1.11; **p=0.70; $I^2$=0%**).
- **Anastomotic leak:** OR 0.56 (0.12–2.67; **p=0.47; $I^2$=0%**).

Sensitivity: operative time remained significantly longer for RRC; lymph-node results remained non-significant.




## DISCUSSION

In adults **≥65**, **RRC** takes longer but is associated with **fewer overall complications** versus **LRC**, with **comparable**lymph-node harvest, length of stay, ileus, wound infection, and leak rates. Evidence is limited by small sample size, non-randomized designs, and heterogeneity in operative time.

## CONCLUSIONS

**Conclusion:** RRC is a feasible option that may reduce complications in older patients, but higher-quality multicenter RCTs with short- and long-term endpoints are required.

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