

## Increased Rate of Minimally Invasive Surgery and Improved Outcomes in Colorectal Surgery Following Implementation of LAPCO-Ro

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### Abstract

**Background:** Despite the recognised benefits of laparoscopic colorectal surgery (LCS), its uptake in Romania has remained low, with less than 4% of cases performed using laparoscopy in 2018. To address this gap, LAPCO Romania (LAPCO-Ro), modelled on the UK National Training Programme, was established as a structured network for mentorship, competency-based evaluation and faculty development. The objective of this study is to evaluate the impact of this programme on the use of minimally invasive surgery in colorectal pathology and on complication rates.

**Methods:** We describe the structure and early experience of LAPCO-Ro and evaluate its effect on nationwide LCS implementation, focusing on changes in adoption rates, comparison of complication rates between procedures supervised by LAPCO-Ro and those that were not, and projections of national outcomes in the absence of the programme.

**Results:** From 2017 to 2024, the proportion of laparoscopic colorectal resections in Romania increased from 3.2% to 11.6%. Complication rates for laparoscopic cases remained consistently lower than open surgery (mean 2.8% vs 4.8%), with relative risk ranging from 0.31 to 0.87, indicating a 13–69% reduction in morbidity compared to open procedures. Excluding LAPCO-Ro trainee-related cases, the national trend in Romania would have followed its earlier linear trajectory (+177 cases/year), reaching only about 10% laparoscopic adoption by 2024 instead of the actual 13%. LAPCO-Ro thus accelerated national diffusion by 30–35%, resulting in approximately 500 additional minimally invasive colectomies in 2024 and over 1,000 since the start of the programme. Within LAPCO-Ro, mentored laparoscopic colorectal cases were associated with low postoperative morbidity (2.46%).

**Conclusions:** The LAPCO-Ro experience demonstrates that a structured, competency-based national training network can accelerate the dissemination of minimally invasive colorectal surgery in a late-adopter health system.

**Keywords:** laparoscopic colorectal surgery, minimally invasive surgery, national training program, surgical education, mentorship, Romania