

Thirty Years of Minimally Invasive Colorectal Surgery at the Fundeni Clinical Institute: An Institutional Experience

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Abstract

Background: Minimally invasive colorectal surgery has evolved considerably in our country over the past three decades, although its early adoption was slow and uneven in many centers. At the Fundeni Clinical Institute, this evolution began in 1995 with the first reported laparoscopic colorectal operation performed in Romania, marking the start of a gradual transition from the open approach to minimally invasive surgery for both colonic and rectal pathology.

Methods: We conducted a retrospective institutional review, integrating historical milestones, published experience, and analysis of internal databases. Laparoscopic, robotic-assisted, and transanal techniques were evaluated, with emphasis on oncologic colorectal surgery and the progressive expansion of minimally invasive indications.

Results: After an initial period of cautious and limited dissemination, minimally invasive colorectal surgery progressively expanded as surgical expertise and technological resources improved. The adoption of advanced laparoscopic procedures, including the laparoscopic reversal of the Hartmann procedure and various transanal techniques, reflected the extension of minimally invasive colorectal practice beyond selected cases, to more complex colorectal surgery. Between 2012 and 2023, 2,447 rectal cancer resections were performed, of which 446 were minimally invasive. After discontinuation of the robotic program, laparoscopic surgery served as the sole minimally invasive approach and was paradoxically associated with a further increase in minimally invasive procedures, despite the absence of robotic surgery, without compromising oncologic or postoperative outcomes.

Conclusions: The experience of the Fundeni Clinical Institute illustrates the successful maturation of minimally invasive colorectal surgery from an early pioneering stage to a stable and expanding practice. Despite initial limitations and the discontinuation of the robotic program, laparoscopic surgery became the main driver of minimally invasive procedures, enabling their extension to more complex cases without compromising oncologic or perioperative outcomes. This evolution highlights the institute's role in consolidating minimally invasive colorectal surgery as a reliable standard in a high-volume center.

Keywords: minimally invasive surgery, laparoscopic colorectal surgery, rectal cancer, robotic-assisted surgery, oncologic outcomes, institutional experience