

**Abdominoperineal Resection for Rectal Cancer: Open, Laparoscopic or Robotic Approach
What is the treatment of choice in experienced minimally invasive surgical teams?**

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Abstract

Objectives: The present study compares abdominoperineal resection (APR) performed by minimally invasive and open approach, regarding preoperative selection criteria, intraoperative and early postoperative aspects, in choosing the suitable technique performed by surgical teams with experience in both open and minimally invasive surgery (MIS).

Methods: This is a retrospective study, conducted between 2008-2020. Two hundred thirty-three patients with APR performed for low rectal or anal cancer were included. The cohort was divided into two groups, depending on the surgical approach used: Minimally Invasive Surgery (laparoscopic and robotic procedures) and Open Surgery (OS). The perioperative characteristics were analyzed in order to identify the optimal approach and a possible selection criteria.

Results: We identified a high percentage of patients with a history of abdominal surgery in the open group ($p = .0002$). Intraoperative blood loss was significantly higher in the open group ($p = .02$), with an increased number of simultaneous resections ($p = .041$). The early postoperative outcome was marked by significantly lower morbidity in the MIS group ($p = .005$), with mortality recorded only in the open group (3 cases), in patients that associated severe comorbidities. The histopathological results identified a significant number of patients with stage T2 in the MIS group ($p = .037$).

Conclusions: Minimally invasive surgery provides a major advantage to APR, by avoiding an additional incision, the specimen being extracted through the perineal wound. The success of MIS APR seems to be assured by a good preoperative selection of the patients, alongside with experienced surgical teams in both open and minimally invasive rectal resections. The lack of conversion identified in robotic APR confirm the technical superiority over laparoscopic approach.

Key words: rectal cancer, abdominoperineal resection, minimally invasive surgery, robotic approach, total mesorectal excision