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Improved quality of care for patients undergoing an abdominoperineal excision for rectal cancer

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Abstract

Introduction: New diagnostics, the emergence of total mesorectal excision and neoadjuvant treatments have improved outcome for patients with rectal cancer. Patients with distal rectal cancer undergoing an abdominoperineal excision seem to do worse compared to those treated with sphinctersparing techniques. The aim of this study was to evaluate the quality of care for patients undergoing an abdominoperineal excision for distal rectal cancer during the last 15 years.

Materials and methods: All patients with rectal cancer, who underwent an abdominoperineal excision between December 1996 and December 2010 in 5 Dutch hospitals were analysed. Patients were divided into three cohorts; 1996–2001, 2001–2005 and 2006–2010. All data was extracted from medical records.

Results: 477 patients were identified. There was no significant difference in sex, age, BMI, prior pelvic surgery and ASA stages between the cohorts. MRI became a standard tool in the work-up, the use increased from 4.5% in the first, to 95.1% in the last cohort ($p < 0.0001$). Neoadjuvant treatment shifted from predominantly none (64.9% in cohort 1) to short course radiotherapy (66.7% in cohort 2) and chemoradiation therapy (55.7% in cohort 3). There was a trend towards a decreased circumferential resection margin involvement in the cohorts (18.8%, 16.7% and 11.4%; $p = 0.142$). Accidental bowel perforations have significantly decreased from 28.6%, and 21.7% to 9.2% in cohort 3 ($p < 0.0001$).

Conclusion: Significant improvements in work-up, neoadjuvant and surgical treatment have been made for patients with low rectal cancer, undergoing an abdominoperineal excision. These improvements result in improved short term outcome.

Keywords: Rectal cancer; Abdominoperineal excision; Extralevator abdominoperineal excision; Neoadjuvant treatment; Circumferential resection margin

Introduction

The golden standard for patients with rectal cancer patients is currently total mesorectal excision (TME) as part of a low anterior resection or an abdominoperineal excision (APE). The adoption of this surgical technique decreased 5-year local recurrence rates to less than 10% compared to 30–40% with blunt dissection.[1,2] Besides the oncological benefit, the technique contributes towards less morbidity,

Abbreviations: APE, abdominoperineal excision; elAPE, extralevator abdominoperineal excision; TME, total mesorectal excision; LAR, low anterior resection; CRM, circumferential resection margin; SRT, short course radiotherapy; LRT, long course radiotherapy; CRT, chemoradiation therapy.

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such as urine incontinency and sexual dysfunction due to nerve sparing dissection.[3] Except for the improvement of the surgical technique, the addition of short course radiotherapy (SRT) has shown a further decrease of the 5-year local recurrence rate to 6%, although this did not improve overall survival.[2,4] In patients with locally advanced disease requiring downsizing or downstaging, long course neoadjuvant radiation is indicated. The addition of chemotherapy to long course radiotherapy further increases response rates and decreases local recurrence rates after 5 years of follow-up, as shown in two large multicenter trials.[5–7]

In patients with distal rectal cancer in whom sphincter sparing TME is not an option, abdominoperineal excision (APE) is the treatment of choice. However, patients who undergo an APE have been associated with lower overall survival and considerably higher local recurrence rates (LRR) compared with those who underwent a low anterior resection (LAR) even though both techniques adhere to the principle of total mesorectal excision.[8–11] One of the reasons for this high LRR might be the result of the higher CRM-involvement rate in patients treated by an APE.[12] Distal rectal tumours are located closer to the anal verge and as such surrounded by less mesorectum and are more often locally advanced.[11,13] New surgical techniques, such as extralevator APE (elAPE) aim at a radical resection of the tumour, resulting in a negative CRM and better oncological outcome in patients with distal rectal cancer.[14–16] However, even after correction for stadium and distance from the anal verge, patients treated with an APE seem to have a worse prognosis than those treated with sphincter sparing techniques.[13]

The aim of this study was to evaluate quality of care for patients undergoing an APE for distal rectal cancer during the last 15 years in five different hospitals in the Netherlands.

Materials and methods

Patients

All patients with a distal rectal adenocarcinoma, who underwent an APE between December 1996 and December 2010 in five hospitals in the Netherlands (1 university hospital, 3 teaching hospitals and 1 community hospital) were analysed. Patients were selected from databases provided by the Netherlands Cancer Registry and the Cancer Registry of Comprehensive Cancer Center South. All demographic and clinical data were extracted from the medical records and operation reports.

Cohorts

The selected patients were retrospectively divided into three cohorts. These cohorts were based on the date of operation, 1996–2001, 2001–2005 and 2006–2010. Separation of the cohorts was based on important changes in neoadjuvant treatment strategies in the Netherlands. Firstly, the introduction of standard SRT after 2001 and, secondly, the introduction of CRT for patients with locally advanced disease after 2006.

Neoadjuvant treatment

Patients treated with SRT received radiotherapy in a total dose of 25 Gy, administered in 5 fractions of 5 Gy. Surgery was usually performed within 1 week. Long course radiotherapy (LRT) was defined as hypofractionated radiotherapy (doses between 1.8 and 2 Gy) with a total dose between 45 and 50.4 Gy. Chemoradiation therapy was defined as LRT with concomitant fluoropyrimidine-based chemotherapy (intravenous or oral capecitabine). After LRT and CRT, surgery was usually performed 6–8 weeks after the end of chemoradiation therapy. Patients with tumours invading deeper than T1 on imaging received SRT during the last two cohorts. Patients with a clinically involved mesorectal fascia (T3, CRM+), a T4 tumour, or with more than 4 clinically "positive" nodes (diameter >5 mm) received CRT or earlier; LRT. This guideline was recently updated.

Surgical and histopathological data

All histopathological data were extracted from the pathology reports. After longterm neoadjuvant treatment ypT/N-stages were reported separately. A negative or free circumferential resection margin was defined as more than 1 mm, or when "free" was reported in the pathology report. A positive resection margin was defined as a margin of 1 mm or less, or when "positive" was reported. All available operation reports were reviewed. Patient position during the perineal phase and if the procedure was started with perineal or abdominal phase was registered. Reports were reviewed for standard or extralevator APE for patients operated during the last cohort. The operation was registered as a standard APE-procedure when a closure of the levator muscles was reported. ElAPE was registered when a complete lateral resection of the levator muscles was reported.

Statistical analysis

Statistical analysis was performed in SPSS version 20. Differences between groups were analysed using a Chi-square test for discrete variables and a one-way ANOVA for continuous and variables.

Results

A total of 477 patients who underwent APE were identified; 295 (61.8%) males and 182 (38.2%) females. There was no significant difference between gender balances, age, BMI, prior surgery and ASA classification within the different time cohorts (Table 1).