Laparoscopic total mesorectal excision for rectal cancer

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CHAPTER 1
INTRODUCTION,
AIM AND OUTLINE OF THE THESIS
Introduction

Colorectal cancer is one of the most common cancers in the Western world. In 2003, 9900 new patients with colorectal cancer were registered in the Netherlands. Approximately 25% of these patients had rectal cancer (www.ikcet.nl).

Considerable progress has been made over the last two decades in the management of patients with rectal cancer. Total Mesorectal Excision (TME) technique, creates the best chance for cure in these patients\(^1,2\). Adjuvant therapy by short-term preoperative radiotherapy leads to an additional reduction of local recurrence rate\(^3\).

The laparoscope offers optimal visualization of the pelvic cavity which may facilitate mobilization of the colon and rectum. A meta-analysis comparing short-term results of laparoscopic and open colon resection under traditional perioperative treatment shows that laparoscopic colonic resection has clinically relevant advantages in selected patients\(^4\). Another meta-analysis of four trials randomizing patients with colonic cancer to either laparoscopically assisted or open colectomy (COST trial, Barcelona trial, CLASSIC trial and COLOR trial) showed that laparoscopically assisted colectomy for cancer is oncologically safe\(^5\). With the introduction of laparoscopic TME (LTME) for treatment of rectal cancer the question has arisen whether, apart from the possible short-term benefits, equal oncologic resection could be achieved by the laparoscopic approach as compared with open TME (OTME).

Until now research in treatment of rectal cancer has mainly focused on local recurrence and survival rates. But as nowadays survival of patients with rectal cancer is increasing, more interest is coming in the Quality of Life (QoL) of rectal cancer survivors. Quality of life studies after OTME have just been started\(^6\) and there are no data on prospective studies reporting on QoL changes over time after LTME.

Besides QoL, urogenital functioning after rectal surgery has come within scope in the last few years. Though, sexual and bladder dysfunction are known complications after OTME, data of these complications after LTME are scarcely documented\(^7,8\). So far, no studies are available assessing both somatic and psychological factors determining sexual functioning of male and female patients after LTME.

The definitive criterion for the evaluation of LTME as an established therapeutic technique in curative rectal surgery is the long-term oncologic outcome, particularly long-term survival and local recurrence rates. As this time, these long-term oncologic data are lacking but results are keenly awaited from studies such as the CLASSIC trial\(^9\). Meanwhile, in this thesis several studies were undertaken in order to determine feasibility and short-term outcome after LTME. Furthermore, quality of life and sexual functioning in male and female patients after LTME were assessed.

Aim and outlines of this thesis

Main goal of the present study was to evaluate the results of preoperative short-term radiotherapy and LTME in the treatment of potentially curative rectal cancer.

In Chapter 2 we reviewed published literature in a systematic review according to the Cochrane principles to evaluate whether there are any relevant differences in safety and efficacy after elective LTME, compared with OTME.

Besides the oncological clearance of the tumour, preservation of the pelvic
autonomic nerves is important in rectal surgery to minimize urogenital dysfunction. Even with incorporation of autonomic nerve preserving techniques postoperative sexual and urinary dysfunction is considerable after OTME\textsuperscript{10-13}. In Chapter 3 the technique for autonomic nerve preserving LTME is described as it is performed in Medical Centre Leeuwarden.

Chapter 4 provides the results of a clinical feasibility study of LTME for rectal cancer. A prospective study was carried out to evaluate feasibility and short-term outcome of LTME after preoperative radiotherapy. There data were compared with the results of a historical matched-control group of patients who underwent OTME.

Various strategies can be followed to evaluate the results of a surgical procedure of which evaluation of resection margins is one of the standard methods. The macroscopic integrity completeness of mesorectal fascia may serve as a surgeon-related factor and as a quality control of the TME\textsuperscript{14}. In Chapter 5 we analysed the resection specimens of the LTME group macroscopically to assess its completeness and compared the results with a matched group of resection specimens of patients who underwent OTME.

To determine how quality of life changes over time and to assess how factors like surgical procedures, low anterior resection (LAR) or abdominoperineal resection (APR), age and gender influence QoL in patients after LTME we conducted a prospective study with a follow-up of one year. The results of this prospective QoL study are presented in Chapter 6.

In Chapter 7, we assessed sexual functioning in male patients after LTME in a prospective study by an international validated questionnaire, the International Index of Erectile Function (IIEF), repeated pharmaco duplex-ultrasonographic investigations of the cavernous arteries and nocturnal penile tumescence and rigidity (NPTR) monitoring. Lower urinary tract symptoms were assessed by the International Prostate Symptom Score (IPSS). The above mentioned investigations were done just before the start of the preoperative radiotherapy and 15 months after surgery.

In Chapter 8 we assessed female sexual dysfunction postoperatively in two female patients, who underwent LTME, by vaginal photopleysmography, the validated Questionnaire for Screening Sexual Dysfunction and by in-depth interview. The results were compared with two patients after OTME and with 7 healthy Dutch women.

In Chapter 9 the results of the forementioned studies are summarized and future prospects are discussed. Chapter 10 contains a Dutch version of the summary.
Reference List
