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#### **Original Article**

# The impact of laparoscopic surgery in colorectal cancer resection with respect to the development of liver metastasis in the long-term



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#### ABSTRACT

Introduction: Colorectal cancer (CRC) shows high incidence and mortality worldwide, particularly in Western and developed countries. The objective of this study is to evaluate the oncologic results during a minimum follow-up of 2 years of curable CRC patients submitted to laparoscopic resection in our environment, regarding to the development of hepatic metastases.

Methods: Medical records of 189 colon and rectal patients with potentially curable adenocarcinoma who have been submitted to laparoscopic resection have been reviewed through a retrospective cohort between January 2005 and March 2012 at a single institution regarded as reference to this type of treatment. Pearson's  $\chi^2$  and Long-rank tests have been used for statistical analysis and data was analyzed by statistic package STATA version 11.0.

Results: The eligible population for the study was 146 patients, 91 women (62%), with a mean age of  $61\pm13$  years. Minimum follow-up was 24 months, having an mean follow-up of  $60\pm27$  months and an mean follow-up of global disease recurrence of  $27\pm11$  months. Hepatic metastases occurred in 7.5% of the population, most from stage III, and the mean recurrence period was  $25\pm16$  months.

Conclusions: Laparoscopic resection for potentially curable CRC in this cohort did not change the long-term incidence of hepatic metastases, considering that our results are comparable to large randomized clinical trial results. Laparoscopic resection was effective and safe for analyzed patients, regarding long-term oncologic results.

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### Impacto da cirurgia videolaparoscópica em ressecções de câncer colorretal quanto ao desenvolvimento de metástases hepáticas a longo prazo

RESUMO

Palavras-chave:
Câncer colorretal
Cirurgia laparoscópica
Colectomia vídeo-assistida
Resultados a longo prazo
Metástases hepáticas

Introdução: O câncer colorretal (CCR) apresenta elevada incidência e mortalidade mundial, especialmente nos países ocidentais e desenvolvidos. O objetivo deste estudo é avaliar, durante um seguimento mínimo de 2 anos, pacientes com CCR potencialmente curável submetidos a ressecções laparoscópicas, em relação ao surgimento de metástases hepáticas.

Métodos: Através de coorte retrospectiva foram revisados os prontuários de 189 portadores de adenocarcinoma de cólon e reto potencialmente curáveis, submetidos a ressecção laparoscópica entre janeiro de 2005 e março de 2012, numa única instituição considerada de referência neste tipo de tratamento. Para análise estatística foram usados o teste  $\chi^2$  de Pearson e o teste Log-rank, e os dados foram analisados pelo pacote estatístico STATA versão 11 0

Resultados: A população elegível do estudo foi de 146 pacientes, sendo 91 mulheres (62%), com idade média de  $61\pm13$  anos. O seguimento mínimo foi de 24 meses, sendo o tempo médio de seguimento de  $60\pm27$  meses, e o tempo médio de recorrência global da doença de  $27\pm11$  meses. Metástases hepáticas ocorreram em 7,5% da população, a maioria proveniente do estadio III, e o tempo médio de recorrência no fígado foi de  $25\pm16$  meses. Conclusões: Para esta coorte a ressecção do CCR potencialmente curável por via laparoscópica

Conclusões: Para esta coorte a ressecção do CCR potencialmente curável por via laparoscópica não modificou a incidência de metástases hepáticas a longo prazo, ao comparar nossos resultados aos dos grandes ensaios clínicos randomizados. Para os pacientes analisados, a ressecção laparoscópica foi eficaz e segura em relação aos resultados oncológicos a longo prazo.

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#### Introduction

Worldwide, colorectal cancer (CRC) is the third most common malignancy and the fourth most responsible for mortality related to cancer. Its incidence is higher in industrialized and Western countries, such as those in Western Europe, USA and Australia, and is growing in Asian countries such as Japan and Hong Kong, where historically the risk of the disease was low. Left its incidence is also high in Brazil; and for the year 2014, the National Cancer Institute (INCA) estimated 32,600 new cases.

Despite the medical technology and pharmaceutical industry advancements observed, surgical resection remains the main therapeutic modality for CRC, being the only considered curative.  $^{8-11}$ 

After initial reports of colorectal resections by laparoscopy, from the first publication in 1991 by Jacobs et al. <sup>12</sup> the technique has become widespread. Concerns about the quality of resection, including the status of surgical margins and the radicalism of the lymphadenectomy, and also about the long-term oncological results, prompted a series of studies and randomized prospective clinical trials, the most important being the Barcelona, COST, CLASICC and COLOR studies. <sup>13–23</sup> The results of these trials showed that, in experienced hands, laparoscopy has a beneficial effect on post-operative recovery, when compared to open surgery, without compromising the oncological results in the long run.

Because of numerous publications speaking in favor of the technique and the increasing ability of surgeons, there was a significant increase in the number of colorectal surgeries by laparoscopy in the last decade around the world, and also among us. As the approach had a strong penetration in the treatment of malignant disease, we believe that it is necessary to ensure that the good results obtained in randomized clinical trials are similarly occurring also outside of these contexts.

Whereas the most frequent site of colorectal metastasis is the liver, <sup>24</sup> and liver metastases are the main cause of mortality in these patients, <sup>25</sup> this study aims to verify the emergence of liver metastasis in potentially curable CRC patients operated by laparoscopy in a reference center in our midst during a minimum follow-up of 2 years.

#### Patients and methods

#### **Patients**

This study follows a retrospective observational model, having been submitted and approved by the Ethical Committee of the Hospital e Maternidade Municipal Nossa Senhora Monte Serrat.

The study included patients with colon and rectum adenocarcinoma in stages I, II and III by TNM classification, according to the American Joint Committee on Cancer

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