European Journal of Cancer 65 (2016) 185–191

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.ejcancer.com

Original Research

Long-term oncological safety of minimally invasive surgery in high-risk endometrial cancer

Martin Koskas [a,b,c,*], Marta Jozwiak [d], Marie Fournier [a], Ignace Vergote [b,c], Hans Trum [d], Christianne Lok [d], Frédéric Amant [b,c,d]

[a] *Gynecologic Oncology, Bichat University Hospital, Paris Diderot University, Paris, France*
[b] *Gynecologic Oncology, University Hospitals Leuven, Leuven, Belgium*
[c] *Department of Oncology, KU Leuven, Leuven, Belgium*
[d] *Center for Gynecologic Oncology Amsterdam (CGOA), Antoni Van Leeuwenhoek-Netherlands Cancer Institute, Amsterdam, The Netherlands*

Received 16 May 2016; received in revised form 23 June 2016; accepted 5 July 2016
Available online 6 August 2016

KEYWORDS
Endometrial cancer;
Minimally invasive surgery;
Laparoscopy;
Laparotomy;
Staging;
Survival

Abstract ***Background:*** Several studies showed that women with low-risk endometrial cancers staged by minimally invasive surgery (MIS) experience fewer postoperative complications compared to those staged by laparotomy with similar disease-free survival (DFS) and overall survival (OS). However, high-risk patients were poorly represented. In this study, we compared DFS and OS in high-risk endometrial cancer patients who underwent surgical staging via MIS versus laparotomy.

Methods: Using a multicentric database, we compared DFS and OS between 114 patients with high-risk histology who underwent surgical staging via MIS and 114 patients who underwent laparotomy. Patients were matched for age, tumour type, FIGO stage and management criteria.

Results: Among the 114 patients who underwent MIS, 93 underwent laparoscopy and 21 robotic surgery. Groups were comparable for stage, body mass index, histology and adjuvant therapies. However, patients in the MIS group underwent paraaortic lymphadenectomy less frequently (13% versus 29%; $p = 0.01$), had less lymph nodes removed (19.0 versus 28.6; $p < 0.01$) and had lower mean tumour size (30 versus 40 mm; $p < 0.01$). With a median follow-up time of 49 months, DFS and OS were not significantly different between the surgical cohorts. In multivariable analysis, both higher stage (hazard ratio [HR] = 2.2) and histology (HR = 4.9) were associated with DFS in contrast to surgical procedure (HR = 0.9).

* *Corresponding author*: Department of Obstetrics and Gynecology, CHU Bichat Claude Bernard, 46, rue Henri-Huchard, 75018 Paris, France. Fax: +33 (0)1 40 25 67 57.
E-mail address: martin.koskas@wanadoo.fr (M. Koskas).

http://dx.doi.org/10.1016/j.ejca.2016.07.001

Conclusions: Beyond the benefit of MIS on immediate surgical outcome, our results show that fear for a poor long-term outcome should not be the reason to refrain from MIS in patients with high-risk endometrial cancer.

1. Introduction

Endometrial cancer is the fourth most frequent cancer in women in Europe [1]. Most patients are diagnosed after 60 years of age. Although endometrial cancer is often diagnosed at an early stage with low-grade (1 or 2) endometrioid tumour, about one fifth of all patients are diagnosed with grade 3 or type 2 endometrial cancer [2].

In a meta-analysis including eight randomised studies, laparoscopy has been shown to be associated with a similar rate of intraoperative complications but with a lower rate of postoperative complications [3]. Obesity is associated with an increased risk of surgical morbidity in EC patients and is most apparent in open surgery and among the morbidly obese [4].

Considering that laparoscopic surgery has similar recurrence rate and survival compared to laparotomy [5], recommendations for the surgical management of endometrial cancer favour the use of laparoscopy [6]. However, all randomised studies have focused on patients with low-risk endometrial cancer, and only several retrospective studies investigated the outcome of patients with high-risk disease related to the route of surgery [7].

In particular, data reporting long-term survival outcomes, reflecting oncologic safety, after minimally invasive surgery (MIS) remain limited. Fader *et al.* [7] compared the outcomes in women with high-risk disease who underwent surgical staging via MIS (laparoscopy or robotic) versus laparotomy. In the retrospective, multicentric study, no matching or propensity score was applied, making the two groups poorly comparable. Moreover, in this study, no information concerning tumour size in the two groups was provided, whereas it can be expected that this tumour characteristic influences both the decision to perform MIS and survival [8,9].

Because women diagnosed with high-risk endometrial cancer are usually older, suffer from comorbidities [10] and are more likely to require postoperative chemotherapy and/or radiotherapy, the use of MIS in such patients is advocated. However, there is only limited data regarding the long-term safety of MIS in patients with high-risk endometrial cancer. For this reason, the European guidelines for the management of endometrial cancer considered that MIS can be considered in the management of high-risk endometrial cancer (level of evidence: IV, strength of recommendation: C) when MIS is recommended in low- and intermediate-risk endometrial cancer (level of evidence: I, strength of recommendation: A) [6].

The aim of this retrospective multicentric study was to compare the oncologic outcome of women with high-risk endometrial cancers who were staged by (robotic-assisted) laparoscopy versus laparotomy.

2. Methods

2.1. Study population

Data on 350 patients with high-risk endometrial cancer treated between January 1995 and December 2014 were recorded into a single database; the patients' data were retrieved from three institutions: Gasthuisberg Hospital (Leuven, Belgium, n = 252), Bichat Hospital (Paris, France, n = 37) and Center for Gynecologic Oncology Amsterdam (Amsterdam, the Netherlands, n = 61). Only patients with a histopathologic diagnosis of a grade 3 endometrioid, serous carcinoma, clear cell carcinoma, carcinosarcoma or mixed histology tumour and who underwent primary surgery were eligible. Patients who received neoadjuvant chemotherapy, who had concomitant ovarian or cervical carcinoma or stage IV disease were excluded (Fig. 1).

2.2. Comparison of survival between patients who underwent laparotomy and those who underwent MIS

One-to-one matching was performed according to the following criteria:

- Demographic criteria: patient age group (<60, 60–80, >80 years).

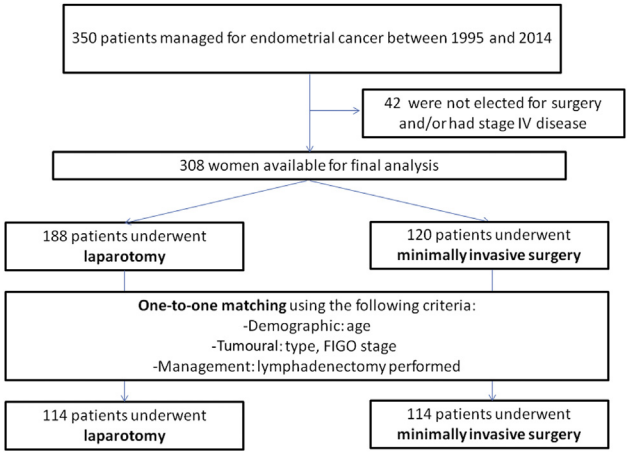

Fig. 1. Flow chart.