Gynecologic Oncology 126 (2012) 149–156

Contents lists available at SciVerse ScienceDirect

Gynecologic Oncology

journal homepage: www.elsevier.com/locate/ygyno

Review

Surgical management of a suspicious adnexal mass: A systematic review ☆

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ARTICLE INFO

Article history:
Received 27 January 2012
Accepted 12 April 2012
Available online 19 April 2012

Keywords:
Adnexal mass
Surgical management
Laparotomy
Laparoscopy
Lymphadenectomy

ABSTRACT

Objective. To systematically review the existing literature in order to determine the optimal recommended protocols for the surgical management of adnexal masses suspicious for apparent early stage malignancy.

Methods. A review of all systematic reviews and guidelines published between 1999 and 2009 was conducted as a first step. After the identification of two systematic reviews on the topic, searches of MEDLINE for studies published since 2004 were also conducted to update and supplement the evidentiary base.

Results. The updated literature search identified 31 studies that met the inclusion criteria. A bivariate random effects analysis of 15 frozen section diagnosis studies yielded an overall sensitivity of 89.2% (95% CI, 86.3 to 91.5%) and specificity of 97.9% (95% CI, 96.6 to 98.7%). The surgical evidence suggests that systematic lymphadenectomy and proper surgical staging improve survival. Conservative fertility-preserving surgical approaches are an acceptable option in women with low malignant potential tumours. The accuracy and the adequacy of surgical staging by laparotomy or laparoscopic approaches appear to be comparable, with neither approach conferring a survival advantage. Intraoperative tumour rupture was indeed reported to occur more frequently in patients undergoing laparoscopy versus laparotomy in two retrospective cohort studies.

Conclusions. The best available evidence was collected and included in this rigorous systematic review. The abundant evidentiary base provided the context and direction for the surgical management of adnexal masses suspicious for apparent early stage malignancy.

Contents

☆ Cancer Care Ontario's Program in Evidence-based Care is sponsored by Cancer Care Ontario and the Ministry of Health and Long-term Care. Please see the Program in Evidence-Based Care section of Cancer Care Ontario's web site for a complete list of current Gynecology Cancer Disease Site Group members (http://www.cancercare.on.ca/cms/one.aspx?pageId=10245).

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doi:10.1016/j.ygyno.2012.04.018

Introduction

Despite improvements in the treatment of ovarian cancer, this tumour remains the leading cause of death for gynaecologic malignancies, with an estimated 2600 new cases and 1750 deaths in Canadian women during 2011 [1]. If caught early, ovarian cancer can be successfully treated, with survival rates in stage I reported to be over 90% [2]. Once a diagnosis of ovarian cancer is confirmed, it is recommended that patients with apparent early stage disease undergo surgical staging. However, what constitutes appropriate surgical staging, and how that is performed (laparotomy vs minimally invasive surgery) (for those surgeons technically competent and experienced to so), to improve overall survival, progression-free survival, and quality of life are unclear. The purpose of this article is to systematically identify and review the evidence for the surgical management of adnexal masses suspicious for apparent early stage malignancy to determine which surgical procedure confers the best survival outcomes and minimizes adverse effects.

Methods

The evidence-based series (EBS) guidelines developed by the Cancer Care Ontario (CCO) Program in Evidence-Based Care (PEBC) use the methods of the Practice Guidelines Development Cycle [3]. The PEBC is supported by the Ontario Ministry of Health and Long-Term Care through Cancer Care Ontario. All works produced by the PEBC are editorially independent from its funding source.

An environmental scan was initially conducted to search the National Guidelines Clearinghouse and other health organizations for existing guidelines and systematic reviews relevant to our research question. Guidelines were included if they were published since 1999 in English. One clinical practice guideline [4] identified through this environmental scan was deemed to be the most appropriate to answer the surgical question and one separate evidence report [2] appropriately addressed frozen section diagnosis.

As an exact search strategy for the Australian Cancer Network (ACN) guideline [4] was not available, an update of that literature search was approximated using the keywords provided in the report using MEDLINE (OVID: January 2004 through week 3, April 2009). This literature search combined disease-specific terms ('pelvic mass,' 'adnexal mass,' 'pelvic neoplasms,' 'ovarian cancer,' 'ovarian neoplasm,' 'ovarian carcinoma,' 'epithelial ovarian cancer,' 'borderline ovarian tumours' and 'tumours of low malignant potential') with surgical specific terms ('intraoperative pathological examination,' 'frozen section,' 'debulking surgery,' 'fertility sparing,' 'surgical staging,' 'bilateral salpingo-oophorectomy,' 'total hysterectomy,' 'node or nodal dissection,' 'surgical management,' 'treatment,' 'cytoreduction,' 'secondary cytoreduction,' 'interval cytoreduction,' 'laparotomy,' and laparoscopy') for all study designs.

Studies identified in the update of the Australian Cancer Network (ACN) [4] guideline were based on the following selection criteria: greater than 20 patients included in study; patients with an adnexal mass suspicious for early stage (I–II) malignancy; two-armed (or greater) study design with a comparison of surgical procedures/techniques/approaches; report on at least one of the following outcomes: optimal surgery, overall survival, progression-free or disease-free survival, reduction in the number of surgeries, morbidity, adverse events, quality of life. Studies identified in the update of the AHRQ report literature search were included based on the same inclusion criteria put forth in the AHRQ report [2].

Relevant articles and abstracts were selected and reviewed by two reviewers. The reference lists of included studies along with the personal reference lists of the guideline working group were searched for additional studies.

Criteria for assessing the quality of primary studies included assessments for study design, type of data collection, sampling method and blinding. All eligible studies underwent data extraction independently by a research methodologist (C.L), with all extracted data and information subsequently audited by an independent auditor. The following data were recorded for each article: (a) author and year of publication, (b) patient population and sample size, (c) surgical procedure, (d) survival outcomes and (e) adverse events.

Statistical analysis

A bivariate, random-effects meta-regression model was used to produce summary estimates of sensitivity and specificity and to plot summary receiver operating characteristic (ROC) curves with 95% confidence regions for frozen section diagnosis. Statistical analyses were executed with the statistical software package STATA version 11 [5] using the metandi command. The outcomes of the meta-analyses can be seen in Fig. 1. The Gynecology Cancer DSG decided not to pool the remaining surgical studies, but rather to present the results of each study individually in a descriptive fashion.

Results

A total of 1809 articles were identified, of which 16 met the surgical inclusion criteria [6–21]. Two systematic reviews [22,23] and 15 primary studies [24–38] published in or since 2004 considered the diagnostic accuracy of frozen-section diagnosis and were included.

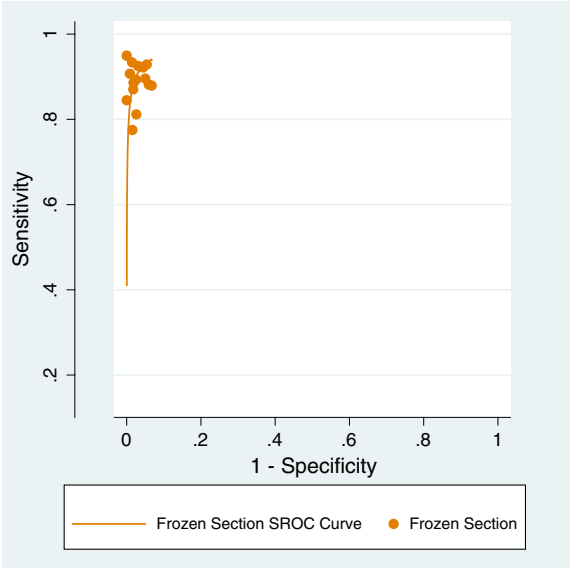

Fig. 1. Frozen section SROC curve.