Available online at www.sciencedirect.com
SciVerse ScienceDirect
EJSO 39 (2013) 912–917
EJSO the Journal of Cancer Surgery
www.ejso.com

Laparoscopic staging for apparent early stage ovarian or fallopian tube cancer. First case series from a UK cancer centre and systematic literature review

E.C. Brockbank [a,*], V. Harry [a,d], D. Kolomainen [a], D. Mukhopadhyay [b,e], A. Sohaib [c], J.E. Bridges [a], M.A.E. Nobbenhuis [a], J.H. Shepherd [a], T.E.J. Ind [a,b], D.P.J. Barton [a,b]

[a] Department of Gynaecological Oncology, The Royal Marsden NHS Trust, Fulham Road, London SW3 6JJ, UK
[b] Department of Gynaecological Oncology, St George's Healthcare NHS Trust, Blackshaw Road, London SW17 0QT, UK
[c] Department of Radiology, The Royal Marsden NHS Trust, Fulham Road, London SW3 6JJ, UK

Accepted 8 May 2013
Available online 27 May 2013

Abstract

Objective: To describe the experience of laparoscopic staging of apparent early stage adnexal cancers.
Methods: Prospectively collected data on women who had laparoscopic staging for apparent early stage adnexal cancers from May 2008 to September 2012 was reviewed. All women had had a prior surgical procedure at which the diagnosis was made, without comprehensive staging. A systematic MEDLINE search from 1980 to 2012 for publications on laparoscopic staging was performed.
Results: Thirty-five women had laparoscopic staging. Median age was 45 years (range 21–73). Median operative time was 210 min (range 90–210). Four intra-operative and one post-operative complication occurred; overall complication rate 5/35 (14%). One vena cava and one transverse colon injury underwent laparotomies for repair. Laparotomy conversion rate 2/35 (6%). Following laparoscopic staging, the cancer was upstaged for eight (23%) women; microscopic omental involvement (four women), pelvic lymph node involvement (two women), para-aortic lymph node involvement (one woman) and contra-lateral ovarian involvement (one woman). After follow up for a median of 18 months (range 3–59) the disease free survival was 94% and overall survival was 100%. Nine studies were identified on laparoscopic staging of adnexal cancer, of which this is the largest single institution series.
Conclusions: This study adds to the evidence that laparoscopic staging is at least as safe as staging by laparotomy with appropriate and similar oncological outcomes, but with the advantages of minimal access surgery. We therefore advocate the use of laparoscopy to achieve surgical staging for women with presumed early stage adnexal cancer.

Keywords: Ovarian cancer; Fallopian tube cancer; Staging; Laparoscopy

Introduction

In 2009, 6955 women were diagnosed with ovarian cancer in the UK.[1] At diagnosis 19% of women have International Federation of Gynecology and Obstetrics (FIGO) stage I disease. Early diagnosis is often incidental following surgery for presumed benign adnexal mass.[2] Women with FIGO stage I disease have five year survival rates of 90%. However up to 30% of women with apparent early stage disease have microscopic metastasis; the disease is upstaged when comprehensive surgical staging is completed.[3,4] Full staging of presumed early stage disease provides important prognostic information, influences advice regarding adjuvant chemotherapy. When staging confirms stage I disease, fertility sparing treatment can

* Corresponding author. Tel.: +44 207 808 2623; fax: +44 207 811 8104.
E-mail addresses: Elly.Brockbank@rmh.nhs.uk, elly.brockbank@bartshealth.nhs.uk, ellycbrockbank@yahoo.com (E.C. Brockbank), vanessa.harry@nhs.net (V. Harry), Desiree.Kolomainen@rmh.nhs.uk (D. Kolomainen), Debjani.Mukhopadhyay@stgeorges.nhs.uk (D. Mukhopadhyay), Aslam.Sohaib@rmh.nhs.uk (A. Sohaib), Jane.Bridges@rmh.nhs.uk (J.E. Bridges), Marielle.Nobbenhuis@rmh.nhs.uk (M.A.E. Nobbenhuis), John.Shepherd@rmh.nhs.uk (J.H. Shepherd), Thomas.Ind@rmh.nhs.uk (T.E.J. Ind), Desmond.Barton@rmh.nhs.uk (D.P.J. Barton).
[d] Present address: Ward 42, Aberdeen Royal Infirmary, Foresterhill, Aberdeen AB25 2ZN, UK.
[e] Present address: Department of Obstetrics and Gynaecology, Southend University Hospital, Prittlewell Chase, Westcliff-on-Sea, Essex SS0 0RY, UK.

0748-7983/$ - see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.ejso.2013.05.007

appropriately be offered to young women. When ovarian or fallopian tube cancers have not initially been fully surgically staged, several comparative series showed a significant survival advantage in restaged groups over unstaged ones.[5–7]

In 1993 Querleu first described laparoscopic staging for two women with borderline ovarian tumours and the following year reported on laparoscopic staging for invasive disease.[8] Since then a number case series on laparoscopic staging have been reported but the majority include uterine and, or cervical cancers[9–11] or borderline ovarian tumours.[12–14] Borderline ovarian tumours in case series on laparoscopic staging will potentially skew surgical results and improve oncological survival outcomes. Previously no data on laparoscopic staging for presumed early adnexal cancers have been published from a UK cancer centre; we present our experience of laparoscopic staging from May 2008 to September 2012.

Methods

Data were collected on all women with presumed early stage ovarian or fallopian tube cancer who had laparoscopic staging at The Royal Marsden NHS Trust and St George's Healthcare NHS Trust (London) Gynaecological Cancer centre from May 2008 to September 2012. All women had a prior diagnostic surgical procedure without comprehensive staging performed elsewhere. The departments' contemporaneously collected surgical database was reviewed.

Following the initial gynaecological surgery, all women had the histology reviewed by a gynaecological-oncology-histopathologist. Serum tumour markers were recorded. A pre surgical-staging computerised tomography (CT) scan was performed. All patients were discussed in the Multi-Disciplinary Team Meeting (MDTM) prior to being advised laparoscopic staging. Informed consent was obtained, including possible conversion to laparotomy. Patients had bowel preparation with a stimulant laxative only (Bisocodyl 10 mg po day prior to surgery). All patients received a single dose of prophylactic intra-venous antibiotics at induction of general anaesthesia. Prophylactic low molecular weight heparin was given for 28 days from the day before or day of surgery. All laparoscopic procedures were performed via the transperitoneal route with port placement as per surgeon's preference. Operative procedures performed were individualised depending on prior surgery, cancer histological type and the patient's fertility wishes. Laparoscopic procedures performed included peritoneal washings, uni or bilateral salpingo-ophorectomy, total hysterectomy, omentectomy, pelvic and or para-aortic lymph node sampling, appendicectomy and peritoneal biopsies.

Operative time and estimated blood loss (EBL) were prospectively collected within the surgical database. Intra-operative and post-operative complications were recorded at the end of the procedure and at discharge from hospital. Any late (>30 days) surgical complications were added to the database by the reviewing clinician. The Clavien classification of post-operative complications was used; Clavien grade III or IV was regarded as significant and reported.[15] Hospital stay was counted from the first post-operative day. All pathology specimens were reported by a gynaecological-oncology-histopathologist. Advice in respect to adjuvant treatment was discussed at MDTM. Follow-up was scheduled every three months in the first year, every four months in the second year and every six months thereafter. Overall survival and disease-free survival were calculated from the date of the diagnosing surgical procedure. Patients still alive were censored at date of last follow-up.

A MEDLINE search for a meta-analysis of all available publications on laparoscopic staging was performed searching from 1980 to 2012, including publications in any language. The search headings "ovarian cancer", "fallopian tube cancer", "adnexal cancer", "laparoscopy" and "staging" were used. Included were reports which addressed specifically laparoscopic staging at first diagnosis of invasive ovarian or fallopian tube cancer. We excluded series which included different gynaecological malignancies if it was not possible to discriminate data related to women with adnexal cancer. Additionally we excluded series that included "second look staging" procedures after prior staging and chemotherapy as this was not a homogenous group for comparison with staging at presentation. Also excluded were series including borderline tumours as the surgical aim for staging differed from that with invasive disease and follow up data would be skewed. This study had ethical approval as a service evaluation by the Clinical Audit Committee of the Royal Marsden Hospital.

Results

From May 2008 to July 2012 35 laparoscopic staging operations for presumed early stage adnexal cancer were performed. All women had had a prior surgical procedure for this cancer which did not involve staging; 15 had a laparoscopic procedure, 13 had a transverse suprapubic laparotomy, six a midline laparotomy and one a hysteroscopy (a fallopian tube high grade serous carcinoma was diagnosed following the removal of a polyp from the tubal lumen at hysteroscopy). Sixteen (46%) women additionally had one or more other prior abdominal surgical procedure. Median age was 45 years (range 21–73). Median BMI was 24 (range 16.7–44). Of the 35 patients 24 were American Society of Anesthesiologists (ASA) grade one, 11 ASA grade two. Prior to the initial surgical procedure the median serum CA125 concentration was 28 IU (range 7–378). Prior to laparoscopic staging median CA125 was 22 IU range (3–104). The median time between the initial surgical procedure and laparoscopic staging was 56 days (range 18–279). The patient who had 279 days between the initial surgery and laparoscopic staging was pregnant at the time of the cancer diagnosis.