

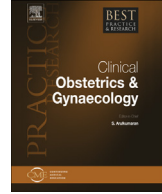


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11

The role of laparoscopy in staging of different gynaecological cancers



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Apart from cervical and vaginal cancers that are staged by clinical examination, most gynaecological cancers are staged surgically. Not only can pelvic and para-aortic lymphadenectomy offer accurate staging information that helps determine patients' prognosis and hence their treatment plan, but it may also provide a therapeutic effect under certain circumstances. In the past, such a procedure required a big laparotomy incision. With the advent of laparoscopic lighting and instrument, laparoscopic lymphadenectomy became popular since the late 1980s. Dargent et al. published the first report on laparoscopic staging in cervical cancers, and many studies then followed. To date, there are numerous case series and trials evaluating the efficacy and safety of laparoscopic surgery in managing gynaecological cancers. In general, compared with laparotomy, laparoscopic lymphadenectomy has less intra-operative blood loss and post-operative pain, fewer wound complications, shorter length of hospital stay and more speedy recovery. However, this is at the expense of longer operative time. The incidence of port-site metastasis is extremely low, although it may be higher in advanced ovarian cancer. Preliminary data showed that there was no significant effect on recurrence and survival, but long-term data are lacking. In this article, the roles of laparoscopy in staging of uterine, cervical and ovarian cancers, the three most common gynaecological cancers, will be reviewed. Novel technologies such as robot-assisted surgery, single-port surgery and sentinel node biopsy will also be discussed.

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Introduction

According to the International Federation of Obstetrics and Gynaecology (FIGO), most gynaecological malignancies, except cervical and vaginal cancers that are staged clinically with or without imaging examination, are staged surgically. In the past, staging was performed by laparotomy. Dargent first described the use of laparoscopic pelvic lymphadenectomy (PLND) together with radical vaginal hysterectomy in early cervical cancer in 1987 [1]. After his pioneering work, Querleu et al. published a series of 39 stage Ib–IIb cervical cancer patients receiving laparoscopic PLND via a transperitoneal approach [2], where an average of 8.7 lymph nodes (range 3–22) was obtained and the mean operation time was 80 min. Nezhat et al. and Childers et al. subsequently reported the first few cases of laparoscopic para-aortic lymphadenectomy (PALND) in addition to hysterectomy in cervical and endometrial cancers, respectively [3,4]. Laparoscopic surgery has a potential benefit compared to conventional laparotomy by reducing the amount of operative blood loss, the degree of post-operative pain, the rate of wound complications and the length of hospital stay (LOH). However, additional issues such as the yield of lymph nodes, risk of port-site metastasis, effect on patients' survival and recurrence need to be addressed when evaluating the feasibility of laparoscopic surgery.

In this review article, the role and safety of laparoscopic staging in the three most common gynaecological cancers, cervical, endometrial and ovarian cancers, will be discussed. The indications and controversies of staging in these cancers will be covered in other chapters. Robot-assisted and single-port surgery, as well as sentinel node biopsy, will also be described.

Roles of laparoscopic staging

Carcinoma of cervix

About 85% of cervical cancer occurs in developing countries where resources are limited. As a result, its staging relies heavily on clinical examination, and modern imaging techniques such as computed tomography (CT), magnetic resonance imaging (MRI) and positron emission tomography-CT (PET-CT), as well as surgical staging, are not mandatory. Nevertheless, although lymph node status is not incorporated in the FIGO staging system, lymph node metastasis is an independent prognostic factor of cervical cancer [5,6] and so lymphadenectomy forms an integral part in the treatment.

Early-stage diseases

The incidence of lymph node metastasis is about 0.1–2.6% in stage Ia1 diseases [7], and so lymphadenectomy can be safely obviated. However, the incidence increases after stage 1a2⁸ and therefore lymph node evaluation is essential for the treatment planning.

CT, MRI and PET-CT have been used before the start of treatment. Nevertheless, their accuracy in detecting metastatic lymph nodes is variable and the need of lymphadenectomy could not be precluded even in the absence of positive findings. On the other hand, laparoscopic staging can allow a direct assessment of the lymph node status for those surgical candidates. It can be performed before definitive surgery at a separate setting, or more commonly, at the same operation with radical hysterectomy (RH) or trachelectomy for those who wish to preserve fertility. For the latter, lymphadenectomy is usually performed first and frozen section may be needed if any suspicious lymph nodes are detected. Frozen section of lymph nodes has 80% sensitivity, nearly 100% specificity and positive predictive value, 90–99.5% negative predictive value, 0% false-positive rate and 4.5–19% false-negative rate [9,10]. In a study of 448 patients with stage Ia1–IIa undergoing laparoscopic lymphadenectomy before RH, 54 patients were found to have lymph node metastasis on frozen section and hence RH was abandoned [11]. In the remaining patients who had completed hysterectomy, only 9.9% required adjuvant chemo-irradiation due to other histological risk factors. This approach can delineate a group of patients with lymph node metastasis so that they could be directly treated by chemo-irradiation, avoiding both RH and adjuvant radiotherapy and hence potentially over-treatment.

It is difficult to examine the performance of laparoscopic lymphadenectomy alone as it is usually accompanied by hysterectomy/trachelectomy. In the early era, most centres had to validate

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