Laparoscopic Surgery for Gynecologic Cancers

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Surgery plays an important role in the management of most gynecologic cancers; however, many aspects of its use are controversial. Advancement in laparoscopic instrumentation and the knowledge regarding the benefits associated with laparoscopic procedures for benign gynecologic conditions encouraged gynecologists to apply laparoscopy for evaluation and treatment of patients with gynecologic cancer. Laparoscopic oncologic surgery was commenced with laparoscopic assessment of the pelvic lymph nodes to select patients with early cervical cancer whose disease could be preferably managed with vaginal radical hysterectomy rather than with classical abdominal radical hysterectomy. For many years, lymphadenectomy means pelvic lymphadenectomy considered in early invasive cervical cancer. From the early 1970s onwards, however, not only the indications for lymphadenectomy have been broadened to include the endometrial and ovarian carcinoma, but also the limits of the lymphadenectomy were extended to encompass the para-aortic lymph nodes to varying degrees. Currently, there has been adequate evidence supporting the idea that laparoscopic techniques provide advantages compared with the traditional laparotomy approach. In our experiences, since the year 1999 we have performed laparoscopic oncologic surgery with safety, minimal morbidity, a shorter hospitalization, and adequate information of the lymph node status.

Cervical cancer

Laparoscopic surgery has been used for the treatment of early cervical cancer. It has also been used for evaluation of the extent of the disease either in advanced or recurrent stage.

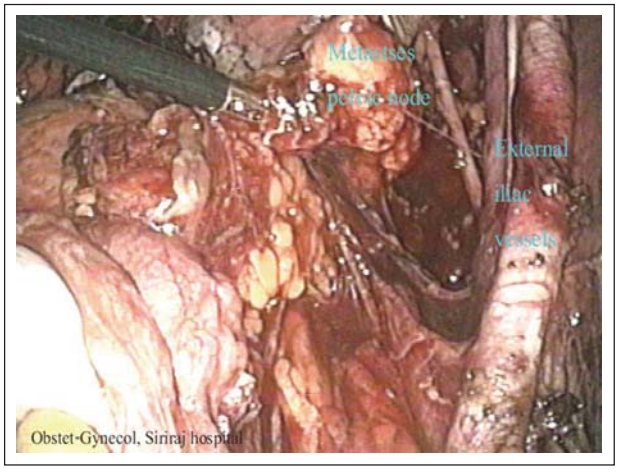

Fig 1. Metastatic right pelvic node

Early cervical cancer

Cervical cancer stage Ia_1 can be easily treated as benign disease with laparoscopically assisted vaginal hysterectomy (LAVH) as well as total abdominal hysterectomy of traditional open surgery. Whereas, cervical cancer stage Ia_2 - IIa can be treated with laparoscopic pelvic lymphadenectomy with laparoscopic assisted vaginal radical hysterectomy (LAVRH), a modified version of Schauta vaginal radical hysterectomy, or complete laparoscopic radical hysterectomy (LRH) and bilateral pelvic lymphadenectomy. Para-aortic lymphadenectomy will be performed in case of pelvic node metastasis (Fig 1).

Once both the parametriums are prepared (Fig 2), laparoscopic radical hysterectomy (LRH) and the LAVRH are different. For LRH, the laparoscope is used to expose the ureters, to transect the cardinal ligaments in halfway, to mobilize the bladder floor by dividing the vesicouterine ligaments, and to mobilize the ventral wall of the rectum by dividing the recto-uterine ligaments. For LAVRH, once the uterine arteries and cardinal ligaments are transected, the operation continues via the vaginal route. From our early experiences, we preferred LAVRH to LRH. However, since 2005 only LRH has been performed at our institute. The main reason has been due to more experiences in laparoscopic gynecologic oncology.

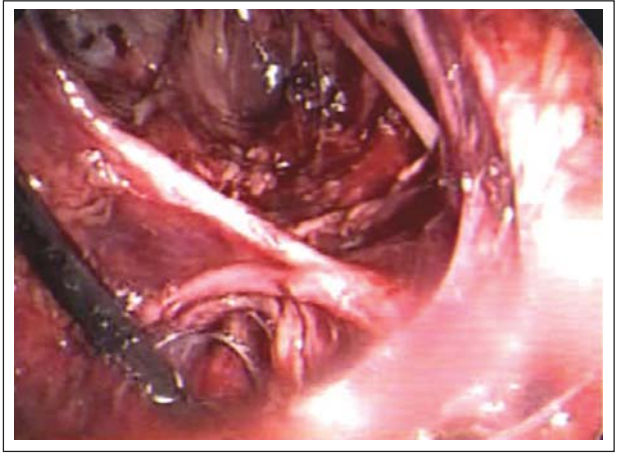

Fig 2. Uterine artery and cardinal ligament lying between the right paravesical fossa and pararectal fossa.

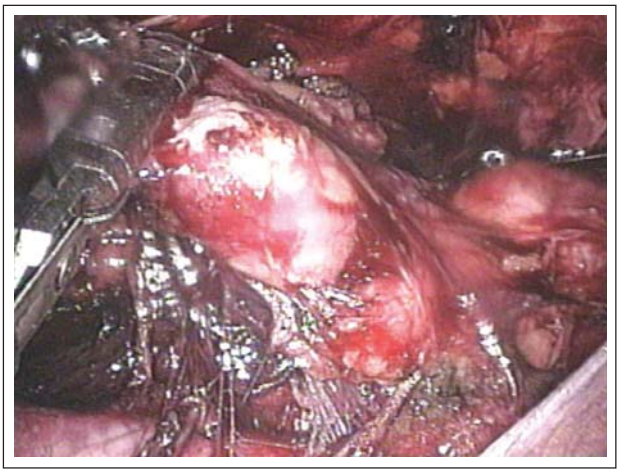

Fig 3. Metastatic paraaortic nodes.

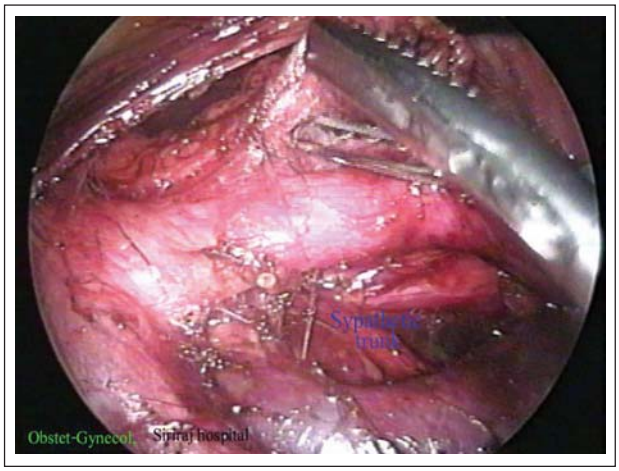

Fig 4. Left para-aortic lymphadenectomy.

Cervical cancer stage Ia_2 or Ib_1 in patients with fertility preservation, laparoscopic lymphadenectomy and radical vaginal trachelectomy offers curative intent while preserving the uterus.[1]

Advanced cervical cancer

The common laparoscopic approaches for patients with advanced cervical cancer include pre-treatment laparoscopic evaluation and pre-irradiation laparoscopic ovarian transposition. Laparoscopic evaluation is a common procedure in developed countries for pretreatment staging as numerous reports show understaging in locally advanced stages (clinical stage Ib2-III) is very frequent, reaching up to 23% in stage IIb and near 40% in stage IIIb.[2] Patients with advanced cervical cancer are usually managed by pelvic radiation alone. However, if para-aortic node involvement (Fig 3) is found by pretreatment laparo-scopic evaluation, these patients must perhaps be treated with whole abdominal irradiation plus concurrent chemo-radiation to improve their survival rates. The surgical steps of pretreatment surgical staging are: (1) peritoneal washings for cytology; (2) whole abdominal cavity exploration with biopsy of suspicious areas; (3) exploration of the vesicocervical and rectovaginal septum with a biopsy of suspicious areas; (4) bilateral pelvic lymphadenectomies and para-aortic lymphadenectomies (Fig 4).

Pre-irradiation laparoscopic ovarian transposition is useful to prevent ovarian failure when the ovaries are included either in or near the irradiation field. Mobilization of the ovaries as far away as possible from irradiation field helps to eliminate or reduce their radiation dose and improve their likelihood of survival.

Recurrent cervical cancer

About 50% of patients with recurrent cervical cancer who underwent exploration for an exenterative procedure did not receive the benefit of the operation because of the existence of contraindications discovered during the laparotomy. The most common contraindications are peritoneal involvement or metastases, positive nodes, or pelvic wall involvement, all of which can be diagnosed laparoscopically.[3]

Endometrial cancer

Currently, the common indications for laparoscopic surgery in patients with endometrial cancer are early endometrial cancer, surgical staging after unexpected endometrial cancer in a hysterectomy specimen, and recurrent endometrial cancer.

Early endometrial cancer

Laparoscopic assisted surgical staging (LASS), including lymphadenectomy, plays a major role in treatment of patients with early endometrial cancer. A preliminary study concluded that there was no statically significant difference in the recurrence rate compared to the traditional approach.[4] In the author's opinion, this technique is associated with great benefits such as significantly fewer complications, shorter hospitalizations, and less overall hospital charges than patients who underwent laparotomy. So far, LASS is appropriate in all patients with endometrial cancer. However, individual experience is still being a main factor.

Surgical staging after unexpected endometrial cancer

Laparoscopy is useful for completion of disease treatment and for surgical staging in patients found to have an unexpected endometrial cancer after a hysterectomy performed for other reasons.

Recurrent endometrial cancer

As with recurrent cervical cancer, laparoscopic evaluation was beneficial before exenteration for recurrent endometrial cancer.

Ovarian cancer

Laparoscopy should be considered in patients with suspected benign adnexal mass because the possibility of malignancy at laparoscopy in patients with a preoperative diagnosis of benign adnexal mass, based on pelvic examination, imaging techniques, and benign-appearing during laparoscopy, has been reported to be 0.3 %.[5] Generally, laparoscopic surgery may be applied for ovarian cancer in cases of early ovarian cancer, second-look laparoscopy and interval debulking.

Early ovarian cancer

Much has been discussed on the potentially deleterious effects of accidental rupture and spillage of a malignant ovarian cyst. The evidence from reports with multivariate analysis indicates that rupture of stage I lesions is not an independent prognostic factor and does not adversely affect the prognosis and tumor grade remains the most importance prognostic factor for patients with

stage I.[6,7] The detrimental effects, if any, of accidental cyst rupture may apply to a small number of patients with epithelial ovarian cancer stage I grade 1, who, only for that reason, may be administered adjuvant therapy.

Second- look laparoscopy

Laparoscopic second-look procedures have provided histological information similar to second-look laparotomies at a reduced cost and with major patient benefits.

Interval debulking

Interval dedulking has advantages, compared to primary reductive surgery. It is associated with reduced morbidity, and patients with disease unresponsive to neoadjuvant chemotherapy avoid an extensive initial operation. Laparoscopy for tissue diagnosis in advance ovarian cancer should be considered before initiation of chemotherapy. However, it must be followed-up immediately by chemotherapy to prevent implantation at the trocar site after laparoscopy.

Vulva and vaginal cancer

The incidence of positive pelvic nodes in patients with positive groin nodes is approximately 30%. In patient with positive groin nodes, laparoscopy has a role to determine the status of the pelvic nodes, to remove nodal metastases, to perform para-aortic lymphadenectomy in the presence of positive pelvic nodes and to customize the irradiation field.

CONCLUSION

Laparoscopic surgery is useful for evaluation and treatment of selected gynecologic cancers and provides major benefits to patients. Results must be interpreted cautiously, depending on the laparoscopic expertise of the authors. Unfortunately, many gynecologic oncologists have not developed their laparoscopic skills due to lack of opportunity and also support to establish a team, increase frustration in the learning process, lack of well-performed studies, and standardization of the laparoscopic techniques, as well as a possible increased incidence of complications when laparoscopy is first tried. Although there are no major prospective comparison studies available, ongoing prospective clinical trials will help to answer many of the questions regarding its safety and efficacy. In the author's opinion, laparoscopy in gynecologic oncology is associated with great benefits for well selected cases by experienced hands.

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