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Lymph Node Sampling in Patients with Epithelial Ovarian Carcinoma

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Lymph node sampling is part of the FIGO staging of patients with ovarian carcinoma and is usually part of a meticulous second look operation. We analyzed the primary lymph node status of patients and compared this to the lymph node status at second look operation. From 3/86–3/91, 97 patients with epithelial ovarian tumors were treated at this institution. Seventy-one of the 97 patients (73.2%) had lymph node sampling at primary surgery. Thirty of the 71 patients had positive lymph nodes (42.2%) and 41 patients were lymph node negative (57.8%). Of the initial 97 patients, 58 were eligible for second look operation (59.8%), and 48 of these patients had lymph nodes sampled at second look operation. Nine of the 48 patients had positive lymph nodes (18.7%) and 39 had negative lymph nodes at second look operation (81.3%). Of the patients with negative lymph nodes at primary surgery, 25 patients had second look operation and 24 of these patients had lymph node sampling at second look operation. All patients with negative lymph nodes at primary surgery had negative lymph nodes at second look operation. Of the 30 patients with positive lymph nodes at primary surgery, 12 underwent second look operation. Four patients had persistent positive lymph nodes and 8 patients had negative lymph nodes. Our data suggest that patients with negative lymph nodes at primary surgery are unlikely to have positive lymph nodes at second look operation. Therefore, we believe that lymph node sampling under these circumstances is unnecessary.

INTRODUCTION

The incidence of ovarian cancer in the United States increases with age to about 50 cases per 100,000 women per year and approximately 20,000 new cases are reported annually. Currently less than 30% of primary tumors are confined to the ovaries at the time of diagnosis [1].

Lymph node (LN) sampling has not been performed routinely in patients with ovarian carcinoma. It is currently part of the International Federation of Gynecology and Obstetrics (FIGO) surgical staging of patients with ovarian carcinoma [2]. An increasing number of patients should be having para-aortic and pelvic LN sampling at the time of their initial surgical staging and prior to initiation of chemotherapy. The patterns of LN involvement, incidence, and prognostic significance in ovarian carcinoma have been reported [3–8]. Despite its controversy, second look operation (SLO) remains the only reliable method for detection of small volume or microscopic disease [9–12].

The role of LN sampling at the time of SLO has not been established. There are no data in the current literature which address the LN status at both primary and secondary surgery. We evaluated all patients with epithelial ovarian carcinoma and compared their LN status at initial surgery with their LN status at SLO.

MATERIALS AND METHODS

A retrospective review of the medical records of all patients admitted to the Gynecologic Oncology service at the Albert Einstein College of Medicine/Montefiore Medical Center with ovarian carcinoma from March 1986 through March 1991 was performed. Only patients who had initial surgical procedures at this institution were included. Patients with epithelial carcinomas were included and those with ovarian carcinomas of low malignant potential were excluded. The pathology was reviewed prior to enrollment in chemotherapy protocols. The operative report, pathology reports, and the protocol/chemotherapy records were reviewed. All patients received systemic platinum plus cyclophosphamide chemotherapy.

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TABLE 1
Stage

	No.	%
Stage I	7	7.2
Stage II	5	5.2
Stage III	77	79.4
Stage IV	8	8.2

TABLE 3
Lymph Node Status at Initial Surgery

		Pelvic LN		
		–	+	Total
Para-aortic LN	–	41	13	54
	+	9	8	17
	Total	50	21	71

Following six cycles of chemotherapy the disease status was determined by clinical examination, chest X ray, CT scan, or MRI of the abdomen and pelvis and the relevant tumor markers including CA125, CA19-9, and CEA. All eligible patients were encouraged to have SLO. Patients who were clinically without evidence of disease underwent SLO using the standard surgical procedure previously described [13–16]. The surgery and FIGO staging was performed by the gynecologic oncology team and the SLO was performed by the same team that performed the initial surgery. LN sampling included removal of all palpable LN and LN greater than 2 cm, or in the absence of clinically obvious disease, pelvic and para-aortic LN were sampled. Palpable or enlarged LN were submitted for frozen section and routine histological evaluation. If the LN was positive on frozen section, no further LN sampling was performed, unless there were nodes >2 cm. These grossly involved nodal metastases were then removed as part of the cytoreductive surgery. The para-aortic node dissection was performed from the bifurcation of the aorta to the reflection of the duodenum or to the origin of the renal arteries. Pelvic LN sampling included removal of lymphatic and fatty tissue from the external iliac, internal iliac, and obturator vessels. Multiple serial pathological sections were cut on all LN submitted to detect microscopic metastases. Hemaclips were used for hemostasis and the retroperitoneal area was not closed and was not drained.

RESULTS

Ninety-seven patients were evaluated. The mean age was 61 years (range, 16–79 years). The stage and histopathology of these patients can be seen in Tables 1 and 2. The majority of the patients (87.6%) presented with Stage III or IV disease. The breakdown of the histopathology was 62.9% serous, 11.3% mucinous, and 18.5% endometrioid carcinomas. Six patients had clear cell tumors and 1 patient had a malignant Brenner tumor. Seventy-one of the 97 (73.2%) patients had LN sampled at initial surgery. Thirty of the 71 patients (42.2%) had positive LN. Forty-one of the 71 patients (57.8%) had negative LN. Fifty-eight of the 97 initial patients underwent SLO (59.8%). Of the 58 patients who had SLO, 48 patients (82.7%) had LN sampled at second surgery. Nine of the 48 patients (18.7%) had positive LN, and 39 of the 48 patients (81.3%) had negative LN.

In comparing the LN status at primary surgery and SLO, of the 39 patients who had negative LN at SLO, 25 had negative LN at primary surgery (64.1%). No patient with negative LN at the initial surgery had positive LN at SLO. Five patients who had positive LN at SLO had no LN sampled at the initial surgery. All these patients had Stage III or IV disease, and maximal cytoreduction was technically impossible.

Of the 30 patients LN positive at primary surgery, 12 had SLO (40%). Four of these 12 patients were LN positive at primary surgery and at SLO. Eight of the 12 patients were LN positive at primary surgery and LN negative at SLO. The distribution of LN at primary surgery can be seen in Table 3. The total number of LN sampled at initial surgery and at SLO was evaluated in all patients. At initial surgery, the median was 15 (range, 2–29) LN sampled. A median of 10 (range, 1–23) LN were sampled at SLO and there was no significant difference between the groups (χ^2).

TABLE 2
Histopathology

	No.	%
Serous	61	62.9
Mucinous	11	11.3
Endometrioid	18	18.5
Clear cell	6	6.2
Brenner	1	1.1

DISCUSSION

The role of second look surgery in the management of patients with ovarian carcinoma remains undefined. Its role and impact on overall prognosis remains controversial and is not the objective of this study. Phibbs *et al.* reported an analysis of sites of persistent disease at SLO. They reported a patient with a positive LN as a persistent site, however, LN had not been sampled at initial surgery, so no correlation could be made [17].

The role of LN sampling at SLO has not been estab-

lished or reported. Pelvic and para-aortic LN sampling adds time and possible morbidity to an already extended diagnostic procedure in patients who have had previous surgery, and often previous LN sampling or lymphadenectomy, and chemotherapy. Retroperitoneal dissection under these circumstances becomes technically more difficult, especially if extensive LN sampling has been previously performed. The morbidity from the procedure is likely to increase even in the most experienced and expert hands. The adequacy of the LN sampling or lymphadenectomy remains undefined. Where to sample and how much to resect remain an issue which has not been resolved in the literature for the gynecologic malignancies. The site and number of LN sampled varies from patient to patient and from surgeon to surgeon, so that standardization of the procedure remains extremely difficult. Variations in body size (obesity), tumor biology, length of the procedure, technical difficulty, hemorrhage, training, and other factors influence intraoperative decisions regarding LN sampling. Our patients had both pelvic and para-aortic LN sampling. Chen and others reported a significant difference in the incidence of pelvic and para-aortic LN in patients with ovarian cancer. They found that para-aortic nodes were positive in 37.7% of patients and pelvic nodes were positive in 14.8% of patients [3]. Burghardt *et al.* found a 62% overall incidence of positive LN with increasing incidence with advancing stage of disease [4]. We found a similar distribution of positive pelvic and para-aortic LN in this group of patients. Thirteen of 30 patients (43.3%) had positive pelvic LN, 9 of 30 patients (30%) had positive para-aortic LN, and 8 of 30 (26.7%) had both pelvic and para-aortic LN positive. This data suggest that both pelvic and para-aortic LN need to be sampled at the initial surgical procedure.

Patients with negative LN at primary surgery did not have positive LN at SLO. Alternatively, patients with positive LN at primary surgery may have positive or negative LN at SLO. Our data suggest that patients with negative LN at primary surgery are unlikely to have positive LN at SLO. Therefore, we believe that LN sampling at SLO in patients with negative LN at primary surgery is unnecessary.

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