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Effective Management of Pelvic Lymphocysts by Laparoscopic Marsupialization

Fernando O. Recio, MD, Sharad Ghamande, MD, Ronald E. Hempling, MD, M. Steven Piver, MD

ABSTRACT

Background and Objectives: To evaluate laparoscopic transperitoneal marsupialization of pelvic lymphocysts at the time of laparoscopically directed assessment of response to first-line therapy in a population of patients treated for International Federation of Gynecologists and Obstetricians (FIGO) stage IC-IIC epithelial ovarian cancer.

Methods: Between March 1995 and March 1998, eight patients with FIGO stage IC-IIC serous epithelial ovarian tumors who developed pelvic lymphocysts after primary surgical staging underwent transperitoneal laparoscopically directed marsupialization of lymphocysts at the time of second-look laparoscopy.

Results: The mean age of the patient population was 50 years (range 23–65 years). The mean length of time required for marsupialization was 30 minutes (range 25–35 minutes). No patient required inpatient postoperative care. No intraoperative complications were observed. Computerized axial tomography (CT) scan of the abdomen and pelvis obtained 12 weeks following surgery failed to demonstrate re-accumulation of lymphocysts among any patient in the study population. With a median follow-up of 20 months (range 3-39 months), no patients have demonstrated pelvic lymphocyst recurrence.

Conclusions and Discussion: Laparoscopically directed marsupialization of pelvic lymphocysts is technically feasible, safe and effective. Further study of this technique appears to be warranted.

Key Words: Laparoscopy, Pelvic lymphocyst, Marsupialization.

Division of Gynecologic Oncology, Department of Obstetrics and Gynecology, York Hospital, York, PA, USA (Drs. Recio and Hempling)

Department of Gynecologic Oncology, Roswell Park Cancer Institute, Buffalo, NY, USA (Drs. Ghamande and Piver)

Address reprint request to: Fernando O. Recio, MD, Director, Division of Gynecologic Oncology, Department of Obstetrics and Gynecology, York Hospital, 25 Monument Road, Suite 110, York, PA 17403, USA. Telephone: (717) 851-6120, Fax: (717) 851-6129

INTRODUCTION

Lymphocysts are collections of serous fluid within non-epithelial lined spaces. Surgical transection of the afferent lymphatics during lymphadenectomy resulting in inadequate closure of the lymph channels and continuous drainage of lymphatic fluid lead to lymphocyst formation. Lymphatic fluid clots at a much slower rate than blood, and lymphatic channels do not undergo spasm after transection, thus promoting accumulation of the lymph fluid. Heparin prophylaxis, extensive nodal dissection, previous radiation, infection, diuretics, presence of nodal disease, the use of drains and lack of drains have been previously implicated as predisposing factors.[1] In 1958, Gray and coworkers reported a 16.3% incidence of lymphocyst formation following radical gynecological surgery.[2] A more recent retrospective review of 308 patients who underwent retroperitoneal lymphadenectomy and were followed postoperatively with computerized axial tomography (CT) scans of the abdomen and pelvis described a 20% and 32% incidence of lymphocyst formation in patients with cervix and ovarian cancer, respectively.[3] Most patients, however, present with lower extremity edema, deep venous thrombophlebitis, lower abdominal pain, ureteral obstruction, or bladder irritability.

Although postoperative lymphocyst formation rarely causes symptoms, patients frequently present with a palpable pelvic mass. This finding alerts the clinician to exclude recurrent disease. Recurrences have been reported to arise within lymphocysts developing after gynecologic cancer surgery.[4] Marsupialization of lymphocysts not only is diagnostic but also provides therapeutic relief for those patients who are clinically symptomatic.

Recently, several case reports have demonstrated that laparoscopic marsupialization of pelvic lymphocysts is technically feasible.[5-10] Encouraged by these reports, we prospectively evaluated laparoscopic transperitoneal marsupialization of pelvic lymphocysts at the time of laparoscopically directed assessment of response to first-line therapy in a population of patients treated for International Federation of Gynecologists and Obstetricians (FIGO) stage IC-IIC epithelial ovarian cancer.

Table 1.
Patient Characteristics

Patient	Stage	Age (yrs.)	Lymphocyst Size (cm)	Symptoms	Operating Time (min)	EBLb	Follow-up (months)
1	IC	23	5	Right leg edema	25	Minimal	3
2	IC	29	7	----------	28	Minimal	21
3	IIA	59	6	----------	30	Minimal	23
4	IIB	65	6	----------	33	Minimal	18
5	IIB	63	7	----------	28	Minimal	39
6	IIC	49	9	----------	35	Minimal	19
7	IIC	55	8	----------	30	Minimal	24
8	IIC	57	9	----------	32	Minimal	13

[a] Marsupialization time
[b] Estimated blood loss

MATERIALS AND METHODS

Between March 1995 and March 1998, eight patients with FIGO stage IC-IIC serous epithelial ovarian carcinoma underwent primary surgical staging laparotomy followed by systemic platinum-based chemotherapy. Detection of a pelvic mass clinically and radiographically compatible with a pelvic lymphocyst was diagnosed in each patient at a median of one month (range 1-2 months) **(Figure 1)**. Patient characteristics are outlined in **Table 1**. Seven patients had no symptoms ascribable to lymphocysts, and one patient was symptomatic. All patients were without clinical evidence of disease following first-line therapy. All patients demonstrated complete clinical responses to chemotherapy and were offered laparoscopically directed surgical assessment of response.

Figure 1. CT scan of the pelvis demonstrating a lymphocyst along the right pelvic sidewall (marked by arrows) overlying the external iliac vessels and the right ureter.

Preoperative evaluation included complete blood count, chemistry profile, CA125, evaluation of coagulation parameters, electrocardiogram, chest x-ray and computerized CT evaluation of the abdomen and pelvis. Preoperative bowel preparation consisted of a clear liquid diet for one day prior to surgery and 240 cc of magnesium citrate on the evening prior to surgery. Sequential compression stockings and subcutaneous heparin were prescribed for all patients. A nasogastric tube was placed following the induction of general endotracheal anesthesia.

Figure 2. Laparoscopic view of the blue-domed lymphocyst (marked with arrows).

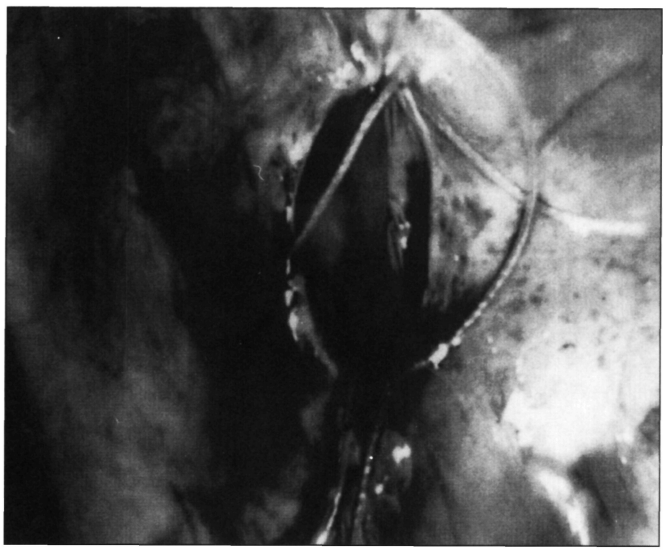

Figure 3. Laparoscopic view after marsupialization of the lymphocyst.

Patients were placed in the modified lithotomy position with both legs below the level of the iliac crest and the legs supported in Allen stirrups. Access to the peritoneal cavity was achieved via an infraumbilical incision employing the technique described by Hasson.[11] Pneumoperitoneum was created and intra-abdominal pressure did not exceed 15 mm of mercury. The pelvic and abdominal contents were evaluated. Under direct visualization, two 5 mm trocars were placed 3 cm medial to each anterior iliac crest. Peritoneal cytology from the pelvis and the paracolic gutters were procured and submitted for permanent cytological evaluation. Scrapings from the undersurface of the diaphragm for cytologic analysis were also obtained. The bowel was evaluated from the ileocecal valve to the ligament of Treitz. Multiple pelvic peritoneal and intra-abdominal peritoneal biopsies were obtained and submitted for analysis.

The laparoscopic marsupialization was carried out last. Metzenbaum scissors with monopolar cautery capability were used to create a 4-5 cm elliptical incision in the peritoneum overlying the lymphocyst. The cyst was identified **(Figure 2)**, and a laparoscopic needle was introduced into the lymphocyst. The lymphocyst was decompressed and the fluid that was aspirated was submitted for permanent cytological evaluation. Then a 4-5 cm elliptical incision was made on the anterior aspect of the cyst, and the cyst wall was excised and submitted for permanent sections. The laparoscope was then advanced into the lymphocyst sac. Adhesions discovered within the lymphocyst were lysed in order to ensure complete drainage. The edges of the cyst wall were then sutured to the adjacent peritoneum with four sutures of 2-0 polyglactin (Vicryl®) **(Figure 3)**.

After hemostasis was ensured, the abdomen was decompressed of intraperitoneal CO_2. All trocars were removed under direct visualization. No complications ascribable to surgery were observed, and no patient in the study population required hospital admission.

RESULTS

Eight patients with FIGO stage IC-IIC serous epithelial ovarian cancer underwent laparoscopically directed transperitoneal marsupialization of pelvic lymphocysts at the time of surgical assessment of response to first-line therapy. The mean age of the patient population was 50 years (range 23-65 years), the mean size of the pelvic lymphocyst in this population was 7 cm (5-9 cm), and the mean operating time for the marsupialization aspect of the procedure was 30 minutes (range 25-35 minutes). Estimated blood loss for the procedure was minimal. No

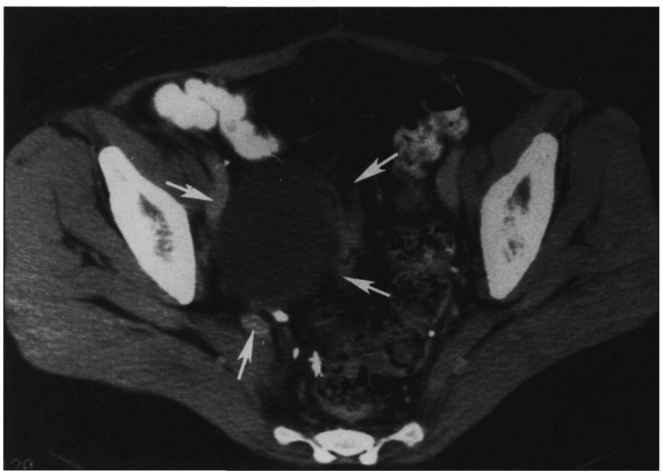

Figure 4. CT scan demonstrating complete resolution 12 weeks after laparoscopic marsupialization of the lymphocyst.

complications attributable to surgery were observed. No patient required hospitalization.

All patients underwent postoperative imaging of the abdomen and pelvis with abdominal and pelvic CT scan examination 12 weeks postoperatively. All patients had no residual pelvic lymphocyst on pelvic and CT scan examination **(Figure 4)**. With a mean follow-up of 20 months (range 3-39 months), no patient has developed recurrence of pelvic lymphocysts. The only symptomatic patient in this series (patient no. 1) had complete resolution of her symptoms postoperatively.

DISCUSSION

Lymphocyst formation is not an uncommon finding following radical pelvic surgery.[12] Pelvic lymphocysts are rarely symptomatic and rarely interfere with the normal function of abdominopelvic viscera. Troublesome, however, is the possibility, albeit rare, of an occult recurrence within a pelvic lymphocyst.

The management of pelvic lymphocysts remains controversial. Among asymptomatic patients, conventional wisdom holds that surgical decompression offers little advantage over observation. However, when symptoms ascribable to pelvic lymphocysts are documentable or when the question of recurrence needs to be addressed, the optimal approach to the management of lymphocysts remains controversial.

Recently, Parra and coworkers compared current treatment modalities for the management of lymphocysts among 313 patients.[5] These researchers, in an extensive review of the literature, describe an unacceptably high recurrence rate when simple aspiration of a lymphocyst is attempted as definitive therapy and point out that repeat attempts at aspiration may be accompanied by serous infectious morbidity.[13,14]

The employment of CT versus sonographically directed percutaneous aspiration appears to be a more successful technique. However, the risk of trauma to adjacent structures and morbidity associated with the maintenance of catheters employed for continuous drainage continue to present substantial risks for complications.[5,13]

Internal marsupialization at the time of laparotomy remains the gold standard for the treatment of lymphocysts. Less than 20% of such patients suffer re-accumulation of lymphatic fluid.[5] This technique, however, is accompanied with the morbidity, higher blood loss, and longer convalescence period associated with laparotomy.

Since the original report by McCullough and coworkers in 1991,[15] there have been several case reports which describe laparoscopically directed internal drainage and marsupialization of lymphocysts.[5-10] Retrospective analyses have demonstrated an apparent decrease in blood loss, length of hospital stay, and time of convalescence among patients treated with a laparoscopic approach compared to those treated by conventional laparotomy.[16] However, a significant difference in recurrence rates following surgical decompression between the two groups was not demonstrable.

While laparoscopically directed drainage of pelvic lymphocysts following radical prostatectomy has been described in a series of six isolated case reports **(Table 2)**, marsupialization of a lymphocyst is described in only one patient, and the use of an omental patch is described in one patient.[8,9] The technique described in the current study has yet to be reported.

Moreover, the population described in this study comprises, to our knowledge, the largest series of patients with pelvic lymphocysts resulting from the treatment of gynecologic malignancy in which laparoscopically directed marsupialization has been reported.

In conclusion, the current study demonstrates that laparoscopically directed marsupialization is technically

Table 2.
Literature Review of Laparoscopic Internal Drainage of Lymphocysts Following Pelvic Lymphadenectomy

Author	Age (yrs.)	Lymphocysts Size (cm)	Symptoms	Operating Time (min)	EBLa (cc)	Hospital Stay (hrs.)	Follow-Up (months)
Waples MJ 1992[7]	69	----------	Right leg edema, No DVT[b]	90 mins.	---	12 hours	----------
Parra RO 1992[5]	67	----------	Right leg edema, No DVT	45 mins.	Minimal	<24 hours	3 weeks
Bardot SF 1992[8]	69	15 cm	Right leg edema, No DVT, failed external drainage	----------	---	36 hours	1 month
	72	5 cm	Right leg edema, No DVT, failed external drainage x3[c]	----------	---	36 hours	1 month
Iselin CE 1994[9]	57	10 cm[d]	Left abdominal pain	----------	---	48 hours	6 months
Gill IS 1995[6]	41 (2 pts)	----------	----	194 mins.	34 cc	48 hours	12.8 months
Fallick ML 1996[10]	56	9.7 cm	None	90 mins.	30 cc	<24 hours	2 months

[a] Estimated blood loss
[b] Deep venous thrombophlebitis
[c] Omentum placed at the edge of the lymphocyst
[d] Cyst wall and peritoneal edges clipped together for marsupialization

feasible and effective in the management of pelvic lymphocysts. Further study of this technique appears to be warranted.

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