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ORIGINAL ARTICLE

Management of symptomatic pelvic lymphocyst after radical pelvic or pelvic and paraaortic lymphadenectomy for cervical and endometrial cancer

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Abstract Pelvic and paraaortic lymph node dissection, as part of the staging surgery for cervical and endometrial carcinoma, interrupts the afferent lymphatics. The high acceptance by the community of gyn-oncologists was after finding that laparoscopic lymphadenectomy can be performed in the majority of patients and is associated with low complication rate. Incidence of lymphocele formation and incidence of severe complications associated with lymphocele, such as infection, deep venous thrombosis, or urinary tract occlusion, were retrospectively evaluated in the past years (01.2001–01.2007) after surgery. From January 2001 to January 2007, 226 women underwent surgery including pelvic or pelvic and paraaortic lymphadenectomy for primary gynecological pelvic malignancies, of which 68 (30%) patients had cervical cancer and 158 (60%) patients had endometrial cancer; all of them were retrospectively analyzed. Patients with symptoms such as pain in the pelvic area, lymphedema, or suspicious cyst in the pelvis were sent to our clinic for further evaluation. The identification was made by physical examination and confirmed by US or CT. Twenty three out of 226 (10.2%) patients were diagnosed to have symptomatic pelvic lymphocyst. Additionally, two of the 23 patients had lymphedema, another two patients had lymphocyst infection, one patient had deep venous thrombosis, and one patient had ureteral stenosis. A partial (ventral) resection of the lymphocyst was performed. Median duration of hospital stay was 12.5 days and median duration of drainage was 10 days. Laparoscopic lymphocyst resection and drainage was successful in 22 patients. In one patient, a re-laparoscopy was necessary because of a recurrent lymphocyst formation 6 months after the operation. The laparoscopic lymphocyst resection is a safe and effective procedure and was applied in all 23 patients successfully.

Keywords Lymphocyst · Paraaortic lymphadenectomy · Pelvic lymphadenectomy · Endometrial cancer · Cervical cancer

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Introduction

The laparoscopic pelvic and paraaortic lymphadenectomy opened new perspectives for gynecological oncology. Besides an exact staging of patients with cervical or endometrial cancer, laparoscopic lymphadenectomy allows new therapeutic strategies in patients with gynecological malignancies. Pelvic and paraaortal lymph node dissection, as part of the staging surgery for cervical and endometrial carcinoma, interrupts the afferent lymphatics. The higher acceptance by the community of gyn-oncologists was after finding that laparoscopic lymphadenectomy can be performed in the majority of patients and is associated with a low complication rate.

As with the widely applied technique, the peritoneum is left open in the course of the retroperitoneal dissection, so the lymph drains into the peritoneal cavity. Although the exact mechanism of the formation of pelvic lymphocysts is unknown, it has recently been reported that the long-lasting

presence of a foreign body (drain) within the pelvis may possibly be linked to pelvic lymphocyst formation [1, 2]. The occurrence of pelvic lymphocysts, which can cause leg lymphedema, occlusion of the urinary tract, deep venous thrombosis, and pain, is an important complication following systematic lymphadenectomy for gynecological malignancies [3, 4].

Patients and methods

From January 2001 to January 2007, 226 women underwent surgery including pelvic or pelvic and paraaortic lymphadenectomy for primary gynecologic pelvic malignancies, which includes 68 (30%) patients with cervical cancer TNM stage: 1a2 L1, V1 n=5; 1b1 n=28; 1b2 n=26; 2a n=4; 2b n=5 of the histological type. Squamous cell carcinoma was found in 76.5% and adenocarcinoma was found in 23.5%; the average age was 52 years.

One hundred and fifty eight (60%) patients had endometrial cancer with TNM stage: 1b G2 n=35, 1b G3 n=41, 1c n=48, 2b n=26, 3a n=4, 3b n=4, with an average age of 68 years. None of these patients were having intraperitoneal spread of disease or omental metastasis.

Trachelectomy was performed in 14 patients with early cervical cancer (TNM stage—1a2 n=5, 1b1 n=9) and laparoscopic-assisted radical vaginal hysterectomy Piver II in 54 patients with cervical cancer (n=54). In 128 patients with endometrial cancer and TNM stage: 1b G2 n=35, 1b G3 n=41, 1c n=48, and 3a n=4, laparoscopic-assisted vaginal hysterectomy was performed; and in 30 patients with endometrial cancer and TNM stage: 2b n=26 and 3b n=4, laparoscopic-assisted radical vaginal hysterectomy Piver II was performed.

Eighty four (53.2%) patients with endometrial cancer and eight (11.8%) patients with cervical cancer underwent pelvic and paraaortic lymphadenectomy; 74 four patients with endometrial cancer and 60 patients with cervical cancer had only pelvic lymphadenectomy.

Surgical procedure at the primary oncological operation

Complete pelvic lymphadenectomy was defined as the dissection of common, external, and internal iliac nodes and deep obturator lymph nodes until the iliac blood vessels and obturator nerve were skeletonized. The bowel was pushed toward the upper abdomen, and the peritoneum was incised laterally and continued until the back of the small-bowel mesentery up to the duodenum. The right ureter and ovarian vessels were identified. The vena cava, aorta, and inferior mesenteric artery were identified. The upper limit of the paraaortic dissection was the inferior mesenteric artery. The presacral chain, paracaval chain, and intercavoaortic lymphatic chain were removed. On the left side of the aorta, the left ureter and ovarian vessels were identified and protected. The pelvic and paracolic peritoneum were not closed at the end of the lymphadenectomy. The procedure used for pelvic and paraaortic lymphadenectomy was similar in patients treated for cervical or endometrial cancer.

In addition, parametric lymphadenectomy in patients with cervical cancer was additionally performed, which comprises the removal of all lymphatic tissue of the vascular part of the cardinal ligament including all branches of the internal iliac vessels and the lymph nodes of the lumbosacral fossa. The peritoneum was left open and drained with a retroperitoneal Robinson drain. The entire surgical procedure was performed in a uniform manner by one of the senior surgeons at the Department of Gynecology of the Friedrich-Schiller University in Jena. Five trocars were placed: two 10-mm trocars at the umbilicus and in the left upper abdomen and three 5-mm trocars in the lower abdomen, midline, left, and right side. The drains were removed when the volume of fluid collected was less than 100 ml/day. After removal of the drains, each patient underwent transvaginal pelvic ultrasonography (US) to search for asymptomatic lymphocysts and urinary tract ultrasonography to search for ureteral complications. In case of chylous ascites, the patients were having an adapted diet.

Surgical procedure according to lymphocyst management

Some of these patients were having a lymphocyst of more than 10 cm in diameter (Fig. 1). Laparoscopic lymphocyst resection and drainage was performed in all 23 patients. A partial (ventral) resection of the lymphocyst was performed,

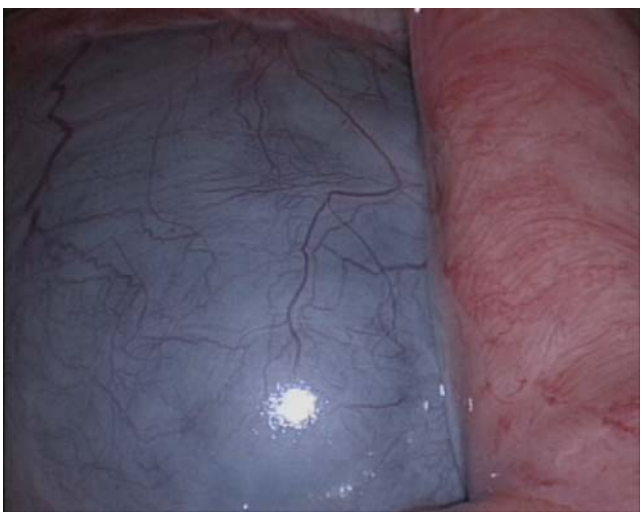

Fig. 1 Pelvic lymphocyst on the left site with 10×15 cm diameter

the iliac vessels were dissected, and the ureter was visualized (Figs. 2 and 3). One retroperitoneal Robinson drain was placed in cul de sac. The ventral part of the lymphocyst and lymphatic fluid were sent to histopathological and cytological analysis.

Median duration of hospital stay was 12.5 days and median duration of drainage was 10 days. Radiotherapy (external radiation therapy and brachytherapy) was applied to all patients with endometrial cancer, and 35 patients with cervical cancer had a combination of radio- and chemotherapy after surgery. The indications for additional radiation therapy in 35 patients with cervical cancer were the following TNM stage: 1b2 n=26, 2a n=4, 2b n=5. All 226 patients who underwent surgery including pelvic or pelvic and paraaortic lymphadenectomy were retrospectively evaluated for the occurrence of lymphocyst, lymphedema, or severe complications associated with lymphocele such as stenosis of the urinary tract, deep venous thrombosis, or infection. Data according to surgery and TNM stage were extracted from the patient files and histopathological report.

All 226 patients were found at follow-up and had a telephone interview. The questionnaire covered questions about presence of symptoms related to the lymphadenectomy.

CT and ultrasound findings of a smooth and thin-walled cavity filled with a water-equivalent fluid, sharply demarcated from its surroundings and without signs of infiltration, were interpreted as lymphocysts.

An abdominal ultrasonogram was performed to check for urinary tract occlusion such as hydronephrosis. A Doppler ultrasonogram and angio-CT was performed to check for deep venous thrombosis if there was a clinical suspicion of thrombosis.

Fig. 2 Lymphocyst after partial (ventral) resection

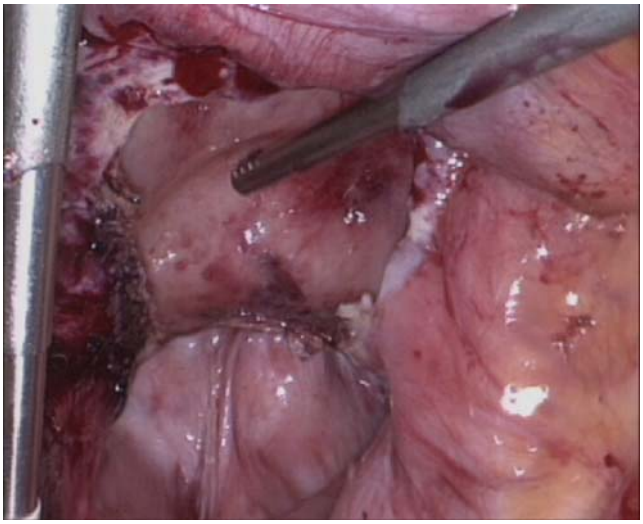

Fig. 3 Site after resection of the lymphocyst

Patient data were recorded using Microsoft Excel (Redmond, WA, USA) and results were reported descriptively.

Results

Twenty three out of 226 (10.2%) patients were diagnosed to have symptomatic pelvic lymphocyst. Additionally, two of the 23 patients had lymphedema, two patients had lymphocyst infection, one patient had deep venous thrombosis caused by a 20-cm lymphocyst, and one patient had ureteral stenosis caused by a 20-cm lymphocyst.

We analyzed whether certain risk factors were associated with the occurrence of the lymphocyst or lymphocyst-associated complications after pelvic and paraaortic lymphadenectomy by comparing various factors in patients with and without complications. The risk factors analyzed were mean age, height, weight, body mass index (BMI), number of dissected lymph nodes, type of hysterectomy, number of retroperitoneal drainage, and postoperative pelvic irradiation.

Mean age, height, weight, and body mass index (BMI) were similar in patients with symptomatic lymphocyst and in patients with no lymphocyst or lymphocyst-associated complications.

Fifteen patients with symptomatic lymphocyst had endometrial cancer; 11 of them underwent only pelvic lymphadenectomy and four of them underwent pelvic and paraaortic lymphadenectomy. The TNM staging was 1b G2 n=11, 1b G3 n=3, 1c n=1. All these patients underwent laparoscopic-assisted vaginal hysterectomy.

Eight patients with symptomatic lymphocyst had cervical cancer; all of them underwent only pelvic lymphadenectomy. The TNM staging was 1a2 n=1, 1b1 n=4, 1b2 n=3. One

patient underwent trachelectomy; the other seven patients underwent laparoscopic-assisted radical vaginal hysterectomy Piver II.

The histologic diagnosis, mean number of lymph nodes removed, mean number of patients with positive nodes, mean number of positive nodes, and number of patients with metastatic paraaortic nodes did not differ significantly between patients; type of hysterectomy and postoperative irradiation were not associated with a high significance of symptomatic lymphocyst or lymphocyst-associated complications in comparison to the patients without symptomatic lymphocyst or lymphocyst-associated complications.

In three patients, the lymphocyst was diagnosed directly (2 weeks) after the operation. In five patients, the lymphocyst was diagnosed in the first two postoperative months during the radiotherapy; in 12 patients, the lymphocyst was diagnosed in an average of 8 months and in three patients in an average of 13 months after surgery. In seven patients, the lymphocyst was on the left pelvis and in 16 patients it was on the right pelvis. In nine patients, the size was less than 10 cm; in eight patients, the size was 10–20 cm; and in six patients, it was more than 20 cm.

Laparoscopic lymphocyst resection and drainage was successful in 22 patients. In one patient, a re-laparoscopy was necessary because of a recurrent lymphocyst 6 months after the operation.

Two patients had fever and high blood infections parameter. In both patients, temperature and blood infections parameter were normalized after the resection of the lymphocyst and antibiotic therapy administration of 14 days.

Clinical lymphedema was seen in two patients. The two patients had both lymphocyst and lymphedema on the same side. After the resection of the lymphocyst, the lymphedema disappeared in both patients.

One patient with ureter occlusion caused by a 20-cm lymphocyst was completely normalized after the resection of the lymphocyst.

One patient developed chylous ascites on day 14 after surgery that required re-laparoscopy with identification of the cisterna chyli and coagulation.

In all 226 patients, no lymphocyst was found on the paraaortic area.

Discussion

The incidence of complications after pelvic lymphadenectomy such as lymphocysts varies from 0.4% to 58% [1–8, 11–17]. This is probably because of the difference in aggressiveness of lymphadenectomy, the application of drain, and the techniques of coagulation in the lymphadenectomy area. In our study, we performed a uniform lymphadenectomy procedure in all 226 patients.

Several retrospective studies demonstrated that closure of the peritoneum after pelvic lymphadenectomy and hysterectomy increased the rate of febrile morbidity and lymphocysts [6, 16]. Other different surgical techniques such as suction drainage or omental flaps such as omental J-flap [2, 6, 12] have been proposed to reduce the incidence or to prevent the occurrence of pelvic lymphadenectomy-related complications.

Still, the incidence of lymphocyst varies from 7.8% to 26.6% [2, 4, 6, 9, 10, 12, 13, 16, 17]. It has been generally considered that, after systematic lymphadenectomy, drainage is necessary to prevent the formation of pelvic lymphocysts [5, 16]. However, a recent study has shown that the damaged peritoneum normally heals without adhesions unless there is infection, ischemia, or foreign bodies [5]. In our study, we always used two drains which are left in the pelvic area "in situ" until the volume of fluid collected was less than 100 ml/day.

The pelvic peritoneum and the peritoneum along the pelvic cavity were left open with drainage to reduce the incidence of lymphocyst formation. After all our findings and results, we conclude that the management of lymphocyst resection described above was safe and effective.

Conflict of interest There is no actual or potential conflict of interest in relation to this article.

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