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ORIGINAL ARTICLE

Microlaparoscopy: a new approach to the reassessment of ovarian cancer patients

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Background. The purpose of the work was to determine the feasibility and accuracy of microlaparoscopy as diagnostic method for the reassessment of ovarian cancer patients.
Methods. Eight patients scheduled for second-look laparoscopy who had undergone primary surgery for ovarian cancer followed by 6 cycles of chemotherapy were included in the study. Microlaparoscopy was performed using a 2.8 mm laparoscope followed by conventional 10-mm laparoscopy. Three additional 5-mm ancillary trocars were inserted to perform intra-abdominal biopsies. Pelvic washings were performed in all cases.
Results. Microlaparoscopy was feasible in all cases and as accurate as conventional laparoscopy in seven cases. In one case the procedure was terminated before conventional laparoscopy because of positive biopsies at frozen section examination. There were no intra-operative complications related to microlaparoscopy. The median time from skin incision to the removal of the microlaparoscope was 47 minutes (range 30–70).
Conclusion. Microlaparoscopy seems to be a safe, accurate, minimally invasive method and therefore we suggest its use as primary approach to the reassessment of ovarian cancer patients.

Key words: chemotherapy; ovarian cancer; microlaparoscopy; second-look laparoscopy

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Microlaparoscopes and microinstruments have been increasingly used in minimal invasive endoscopic procedures and in reproductive surgery (1, 2). Risquez et al. (3) reported a successful performance of a variety of interventions such as tubal sterilization, adhesiolysis, and ovarian cystoscopy. Grochmal et al. (4) described the use of office-based microlaparoscopies for the treatment of endometriosis, ectopic pregnancy and intraabdominal adhesions. Recently, the use of microinstruments has also been proposed for appendectomy and urogynecological procedures such as the direct insertion of a 2 mm microlaparoscope through the bladder dome to verify an intact lower urinary system (5, 6). Further, Hibbert et al. reported a number of techniques in which the combined use of the conventional laparoscope and the microlaparoscope has enhanced advanced laparoscopic surgery (7).

The advantage of using microendoscopes over conventional laparoscopes is that many interventions can be less invasive and sometimes accomplished under local anesthesia and analgesia with sedation.

In gynecological oncology, laparoscopic examination of the abdominal cavity is mainly used as second-look procedure (8). Considering that a positive impact on survival has not yet been proved, it is still debated whether it is cost-effective to perform a second-look laparoscopy in ovarian cancer patients (9). Hence, the possibility to evaluate the clinical response to a first line chemotherapy with a minimal invasive procedure would probably be of considerable value.

The purpose of our study was to evaluate the feasibility of microlaparoscopy as second-look procedure in ovarian cancer patients and to com-

pare its accuracy with the traditional 10 mm-laparoscopic technique.

Material and methods

The study population consisted of ovarian cancer patients scheduled to undergo a second-look laparoscopy about 6 months after primary operation. All patients had undergone total abdominal hysterectomy, bilateral salpingo-oophorectomy, omentectomy, appendectomy and selective pelvic and para-aortic lymphadenectomy. All patients received 6 cycles of chemotherapy which consisted of carboplatin (AUC 6) and taxol (175 mg/m^2).The stage of the disease was defined according to the FIGO guidelines. In all cases there was no clinical or radiological evidence of disease recurrence and the CA125 serum level was less than 15 U/ml. Informed consent was obtained from all patients. The study was approved by the Ethical Research Committee of our institution.

The pneumoperitoneum was obtained with a standard Veress needle through an umbilical incision. Access to the abdominal cavity was gained using a 2.8-mm trocar subsequently replaced by the microlaparoscope (Karl Storz, Tuttlingen, Germany) connected to a xenon-light source and a video camera. Two suprapubic 5-mm trocar were then inserted. An additional left hypochondriac 5-mm trocar was inserted to facilitate the biopsy of the right hemidiaphragm undersurface. Pelvic washings were performed in all cases. After all biopsies were obtained, the microlaparoscope was replaced by a traditional 10-mm laparoscope and the abdominal cavity was explored further.

All interventions were performed under general endotracheal anesthesia in a conventional operating room. All procedures were recorded on two separate videotapes according to the type of laparoscope used (microlaparoscope or conventional 10-mm laparoscope). A procedure was considered accurate when adequate visualization and biopsies were obtained from all the following abdominal sites: pelvic cul-de-sac, prevescical peritoneum, infundibulopelvic ligament regions, left and right paracolic gutters, residual infracolic omentum, mesentery of the bowel, and undersurface of right hemidiaphragm.

Additionally, in all areas suspicious lesions, including adhesions, were removed. Biopsies were obtained from the retroperitoneal area when nodal metastases were present at primary surgery. All biopsy specimens were sent for frozen section examination which was performed within 10 minutes from the biopsy. In the presence of positive frozen sections for malignancy the procedure was terminated. Definitive histology was then obtained on all specimens. The procedures were judged by an independent physician with the support of the videotapes.

Results

Eight patients were included in the study. The median age was 53 years (range 45–69). All eight patients had stage III and one had stage IV disease. The clinical characteristics of the study population are presented in Table I. In six cases there was no evidence of residual tumor at microlaparoscopy and the pelvic washings and all biopsies were negative at cytologic and histologic examination. In one case (Case 1) microlaparoscopy demonstrated the presence of 2–3 mm suspicious lesions on the right hemidiaphragm and on the round ligament of the liver which were confirmed at frozen section examination. Therefore, in this case the 10-mm conventional laparoscopy was not performed. Definitive histology and peritoneal cytology were positive for malignancy. In another case (Case 6) there was no macroscopic evidence of malignancy, and all frozen sections were negative, but three positive biopsies (left pelvic adhesion, left pelvic peritoneum, retroperitoneal tissue) and positive peritoneal cytology were found at definitive his-

Table I. Clinical characteristics

Case	Age (years)	Stage	Residual disease* (cm)	Histologic type	Duration of microlaparoscopy (minutes)	No. of biopsies	No. of positive biopsies	Pelvic washing
1	45	IIIc	<1	Serous	30	7	2	Pos
2	69	IIIc	2	Serous	70	12	0	Neg
3	69	IIIc	<1	Serous	70	9	0	Neg
4	68	IIIc	2–5	Serous	45	9	0	Neg
5	46	IIIb	absent	Serous	35	10	0	Neg
6	52	IIIc	<1	Serous	50	13	3	Pos
7	53	IV	1–2	Undifferentiated	30	13	0	Neg
8	58	IIIc	1–2	Serous	50	11	0	Neg

* residual abdominal tumor after primary surgery.

tology. The accuracy of microlaparoscopy was judged as good as that of conventional laparoscopy (seven out of seven cases). There were no intra-operative complications related to either the microlaparoscopy or the 10-mm laparoscopy. The median time from skin incision to the removal of the microlaparoscope was 47 minutes (range 30–70).

Discussion

Although the use of endoscopic procedures for second-look evaluation in patients with ovarian cancer has been described by several authors (10, 11), these have usually been performed using 10–12 mm conventional laparoscopes.

The central observation of the present study is that the use of microlaparoscopy at second-look evaluation in ovarian cancer patients is feasible and accurate as the conventional l0-mm laparoscopy. With the introduction of high-resolution microlaparoscopes with optics performance comparable to that of conventional 10-mm laparoscopes, microlaparoscopy has been shown to be useful in a number of clinical conditions (12). Furthermore, a growing body of evidence suggests that microlaparoscopy has the similar accuracy as conventional laparoscopy (13, 14).

The most important benefit of using the microlaparoscope is that the risk of major complications due to the blind insertion of the umbilical trocar can be minimized. This is of particular importance in gynecological patients who have undergone a previous midline laparotomy and are at definite risk of bowel perforation. Lele & Piver (10) reported a 5.8% rate of major complications at conventional laparoscopy requiring exploratory laparotomy and repair of bowel perforation. Similarly, Berek et al. (11) reported, from a series of 110 laparoscopic examinations in ovarian cancer patients, a 14% incidence of conversion to laparotomy due to intra-operative complications. Although no major intra- and peri-operative complications during microlaparoscope insertion have been reported, it seems reasonable to assume that the risk of bowel injuries at time of microlaparoscope insertion is similar to that present at the time of the Veress needle insertion. Bowel trauma with the microlaparoscope can be managed conservatively, provided that the defect is small and there is no contamination (15).

The use of microinstruments in oncologic patients was described by Childers et al. (16) who used a 1.8-mm diameter optical catheter inserted in an Adair Veress needle for the evaluation of seven patients with intraperitoneal malignancies. These procedures were performed either as diagnostic procedures in patients who had had a previous malignancy (lung, breast and fallopian tube) or as an intra-abdominal evaluation of women in whom there was a clinical or radiologic suspicion of primary intraperitoneal tumors. These authors also performed peritoneal biopsies using 3-mm ancillary trocars. All these operations were performed under local anesthesia with sedation. We used 5-mm ancillary trocars instead of 2–3 mm suprapubic instruments proposed by others (1, 2) because we consider that the use of microinstruments in oncologic patients under general anesthesia does not add any advantage to the procedure with an increased chance of obtaining inadequate biopsies.

The microlaparoscope could be the instrument of choice to initiate the diagnostic second-look laparoscopy in the ovarian cancer patient, but it remains to be proven whether microlaparoscopy and biopsies for the reassessment of ovarian cancer patients are feasible under local anesthesia.

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