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Surgery in Recurrent Ovarian Cancer: The Arbeitsgemeinschaft Gynaekologische Onkologie (AGO) DESKTOP OVAR Trial

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Background: The role of cytoreductive surgery in relapsed ovarian cancer is not clearly defined. Therefore, patient selection remains arbitrary and depends on the center's preference rather than on established selection criteria. The *D*escriptive *E*valuation of preoperative *S*election *KriT*eria for *OP*erability in recurrent *OVAR*ian cancer (DESKTOP OVAR) trial was undertaken to form a hypothesis for a panel of criteria for selecting patients who might benefit from surgery in relapsed ovarian cancer.

Methods: The DESKTOP trial was an exploratory study based on data from a retrospective analysis of hospital records. Twenty-five member institutions of the Arbeitsgemeinschaft Gynaekologische Onkologie Ovarian Committee (AGO OC) and AGO-OVAR boards col-

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lected data on their patients with cytoreductive surgery for relapsed invasive epithelial ovarian cancer performed in 2000–2003.

Results: Two hundred and sixty-seven patients were included. Complete resection was associated with significantly longer survival compared with surgery leaving any postoperative residuals [median 45.2 vs. 19.7 months; hazard ratio (HR) 3.71; 95% confidence interval (CI) 2.27–6.05; $P < .0001$]. Variables associated with complete resection were performance status (PS) [Eastern Cooperative Oncology Group (ECOG) 0 vs. > 0; $P < .001$], International Federation of Gynecology and Obstetrics (FIGO) stage at initial diagnosis (FIGO I/II vs. III/IV, $P = .036$), residual tumor after primary surgery (none vs. present, $P < .001$), and absence of ascites > 500 ml ($P < .001$). A combination of PS, early FIGO stage initially or no residual tumor after first surgery, and absence of ascites could predict complete resection in 79% of patients.

Conclusions: Only complete resection was associated with prolonged survival in recurrent ovarian cancer. The identified criteria panel will be verified in a prospective trial (AGO-DESKTOP II) evaluating whether it will render a useful tool for selecting the right patients for cytoreductive surgery in recurrent ovarian cancer.

Key Words: Ovarian cancer—Ovarian neoplasm—Recurrence—Secondary cytoreductive surgery.

Standard therapy for patients with primary ovarian cancer is cytoreductive surgery (CS) followed by chemotherapy. The diameter of postoperative residual tumor is one of the most important prognostic factors in advanced ovarian cancer.[1,2] The hypotheses for the underlying pathophysiology include: (1) removal of poorly vascularized tumor whereupon pharmacologic sanctuaries are limited, (2) a higher growth fraction in the better-perfused, small residual tumor masses (i.e., removal of tumor in the plateau phase of cell growth), which favors an increased cell kill with cytotoxic therapy, (3) small tumor masses require fewer cycles of chemotherapy, so there is less opportunity for induced drug resistance, and (4) host immunocompetence is enhanced by the removal of large tumor bulk.[3] The role of primary surgery is well accepted although its independent benefit has never been proven in randomized trials, and only retrospective analyses of prospective trials or studies evaluating the role of interval debulking have provided some evidence supporting this concept.[4,5,6]

Why should these hypotheses not be applicable to recurrent ovarian cancer as well? A recently performed review of mainly retrospective analyses has suggested that complete or optimal tumor resection might be beneficial in recurrent ovarian cancer and might have a similar prognostic value as in primary treatment.[7] However, operative therapy plays only a minor role in the treatment of recurrent ovarian cancer in clinical routine. This might be based on one hand on technical complexity of secondary surgery in patients with repetitive abdominal procedures and on the other hand on the lack of conclusive evidence and presence of several unanswered questions regarding cytoreductive surgery in this setting.

Until today, only few publications have focussed on selection criteria for cytoreductive surgery in recurrent ovarian cancer. In 1998, the 2nd International Ovarian Cancer Consensus Conference suggested the following criteria for optimal candidates for secondary CS: (1) disease-free interval > 12 months, (2) response to first-line therapy, (3) potential for complete resection based on preoperative evaluation, (4) good performance status, and (5) younger age.[8] However, this statement was based more on experts' opinions than on valid data. Therefore, members of this expert panel decided to perform this exploratory multicenter trial, the Arbeitsgemeinschaft Gynaekologische Onkologie Ovarian Committee *D*escriptive *E*valuation of preoperative *S*election *K*ri*T*eria for *OP*erability in recurrent *OVAR*ian cancer (AGO DESKTOP OVAR), focussing mainly on two questions: (1) What could be an appropriate surgical endpoint in this setting? Do patients only have a survival benefit from complete tumor resection, or do patients with so-called optimal debulking have a survival benefit, as suggested for primary surgery? (2) How can we select the "right" patients? Therefore, this trial intended to gather evidence to help formulate a hypothesis for selection criteria and predictive factors for successful cytoreductive surgery in recurrent ovarian cancer. The hypothesis of a selection criteria panel is intended to form the basis for a subsequently planned prospective trial (AGO DESKTOP II) evaluating a predictive model for cytoreductive surgery in recurrent ovarian cancer.

MATERIALS AND METHODS

Twenty-five centers from Germany and Switzerland, all members of the AGO Ovarian Committee

(AGO OC) and/or the study-coordinating group of the AGO-OVAR enrolled all patients with recurrent epithelial ovarian cancer who had received cytoreductive surgery for recurrent ovarian cancer between January 2000 and December 2003 in this retrospective trial. Data were extracted from patients' records and documented according to a standardized database. No personal data were collected, and only treating physicians could identify patients. All data were checked for plausibility and completeness by two authors (PH, AdB), and queries were answered by telephone and evaluation of surgical and pathology reports, which had been cleared of personal data beforehand. Patients with nonepithelial ovarian cancer or tumors of low malignant potential were excluded. Operations with symptom-orientated and strictly palliative purposes or surgeries within the context of primary therapy (e.g., second-look or interval operations) were not included. Patient and tumor characteristics, history of prior therapy, diagnostic results before surgery for recurrence, operative procedures, postoperative residual tumor, and postoperative systemic therapy were documented. Patient follow-up data were gathered until the end of 2004. Data were analyzed by descriptive statistics. Frequency counts and percentages were used to describe categorical variables, and median and range were used for continuous variables. Associations between these factors and the probability of favorable surgical outcome and survival were evaluated using Pearson's chi-square test, and the odds ratio (OR) was calculated. Survival curves were generated with the Kaplan–Meier method, and differences were evaluated by the log-rank test and hazard ratio (HR). Multivariate proportional odds models were used to identify factors associated with surgical outcome and survival after adjustment for other factors. OR and HR were calculated with 95% confidence interval (CI). Statistical significance was defined by a P value $< .05$, and both-sided tests were applied. Statistical computing was performed with SAS software, version 8.0.[9]

RESULTS

Twenty-five institutions included 267 patients in whom cytoreductive surgery for recurrent ovarian cancer had been performed within the 3-year observation period. Median follow-up time after cytoreductive surgery for recurrence was 19 months for all patients (95% CI 16.3–22.7). Median age was 60 (range 24–84) years, and 91.9% had a good performance status [Eastern Cooperative Oncology Group (ECOG) 0 or 1]. Sixty-nine percent had advanced disease [International Federation of Gynecology and Obstetrics (FIGO) stage III or IV] at initial diagnosis. For further analysis, postoperative residual tumor was classified as absent (no macroscopic residuals) in patients for whom no information about the size of postoperative residual tumor was available and who had early ovarian cancer stages FIGO I or II initially (15 patients); postoperative residual tumor was classified as "present" in patients without information about surgical results of initial debulking and more advanced disease at diagnosis (37 patients with FIGO III and two with FIGO IV initially).

One hundred and sixty-eight patients (62.9%) had a treatment-free interval (TFI) of 12 months or longer. Some patients had already received salvage therapy for recurrent disease prior to enrollment into this trial: 17.6% had prior cytoreductive surgeries for recurrence, and 31.1% had received more than one prior chemotherapy regimen. Almost all patients had received platinum-based first-line chemotherapy (85.8%). Only a minority presented with signs for peritoneal carcinosis in preoperative diagnostics (21.7%) or ascites estimated as more than 500 ml (13.5%). Further details are listed in Table 1.

Of note, the majority of the patients (73.4%) presented with recurrent disease localized beyond the pelvis. However, a macroscopically complete tumor resection was achieved in 133 patients (49.8%). Further, 69 patients (25.8%) had postoperative tumor diameters of 1–10 mm. A postoperative retreatment with platinum-based chemotherapy was given to 46.8%, 42.7% had received other chemotherapy regimens, and no postoperative chemotherapy was documented for 10.5%.

Surgical Results and Prognostic Factors for Postsurgical Survival

Patients with macroscopically completely resected tumors showed a significantly longer survival compared with patients who had any visible residual tumor (Fig. 1). Median survival was 45.2 and 19.7 months in patients without and with macroscopic residual tumor, respectively (HR 3.71; 95% CI: 2.27–6.05; $P < .0001$). The size of residual tumor did not impact survival in patients not completely debulked. Median survival of patients with a residual tumor and largest diameter of 1–10 mm and > 10 mm was 19.6 and 19.7, respectively (HR .84; 95%CI .51–1.40; $P = .502$).

Patients, disease characteristics, and prior treatment variables (Table 1) were included in a univariate

TABLE 1. *Characteristics of patients, tumor, diagnostics and treatment. Observation time and overall survival are calculated from time of surgery for recurrence*

Parameter		Number	Percent
Age (years)	Median (range)	60	24–84
Performance status: Eastern Cooperative Oncology Group (ECOG)	0	118	53.2
	1	86	38.7
	2	16	7.2
	3	2	.9
	Missing	45	
International Federation of Gynecology and Obstetrics (FIGO) stage at initial diagnosis	I	46	18.0
	II	33	12.9
	III	165	64.7
	IV	11	4.3
	Missing	12	
Residual disease after surgery at primary diagnosis (mm)	0	124	46.4
	1–10	41	15.4
	11–20	16	6.0
	> 20	32	12.0
	Missing	54	
Treatment-free-interval (months)	< 6	36	13.5
	6–12	63	23.6
	> 12	168	62.9
Number of prior chemotherapies	0/1	184	68.9
	> 1	83	31.1
Cytoreductive surgery for prior recurrence	Yes	47	17.6
	No	220	82.4
Clinical symptoms	Yes	106	41.6
	No	149	58.4
	Missing	12	
Cancer antigen (CA)-125 (U/ml)	0–70	100	40.1
	71–350	102	41.0
	> 350	47	18.9
	Missing	18	
Ascites (ml)	< 500	231	86.5
	≥ 500	36	13.5
Peritoneal carcinosis in preoperative diagnostics	Yes	58	21.7
	No	209	78.2
Tumor localization in preoperative diagnostics	Only pelvic	71	26.6
	Others	196	73.4
Intraoperative peritoneal carcinosis	Yes	125	50.0
	No	125	50.0
	Missing	17	
Residual disease after surgery for 2recurrence (mm)	0	133	49.8
	1–10	69	25.8
	11–20	22	8.2
	> 20	43	16.1
Platinum-based chemotherapy after surgery for recurrence	Yes	125	46.8
	No/unknown	142	53.2
Observation time, all patients (months)	Median (95% CI)	19.0	16.3–22.7
Events		84	
Overall survival	Median (95% CI)	29.2	25.2–36.5

CI confidence interval.

analysis of overall survival (Table 2). All factors showing significance in the univariate model were included in a multivariate analysis (Table 3). Only three variables remained, their significance indicating independent impact on survival after surgery for recurrence: complete resection (residual tumor 0 vs. > 0 mm: HR 2.94; 95% CI: 1.68–5.17; $P < .001$), ascites (< 500 vs. ≥500 ml: HR 2.30; 95% CI: 1.31–4.04; $P = .004$), and postoperative chemotherapy (platinum-containing chemotherapy yes vs. no: HR 1.84; 95% CI: 1.13–3.01; $P = .015$).

Variables Associated With Complete Resection

Again, all patients' disease and treatment variables (Table 1) were included in a univariate analysis with respect to operability (complete resection). The following variables were significantly associated with complete resection: performance status ECOG 0 (OR 2.74; 95% CI: 1.66–4.51; $P < .0001$), early FIGO stage at initial diagnosis (OR 2.02; 95% CI: 1.18–3.46; $P = .01$), no residual disease after primary surgery (OR 2.39; 95% CI: 1.46–3.91; $P = .0005$), cancer antigen (CA)-125 less than ten-fold of upper normal limit (OR 3.76; 95% CI: 1.77–7.99; $P = .001$), ascites less than 500 ml (OR 6.11; 95% CI: 2.45–15.23; $P < .001$), recurrent disease limited to the pelvis only (OR 1.96; 95% CI: 1.12–3.41; $P = .017$), and no radiological diagnosis of peritoneal carcinosis (OR 3.34; 95% CI: 1.77–6.31; $P = .0001$) (Table [4]). However, correlation analysis revealed that elevated CA-125, ascites volume, and radiographic diagnosis of peritoneal carcinosis were strongly correlated and did not help to differentiate patient subgroups. Therefore, we limited further analysis to one of these variables and selected ascites volume. An estimation of ascites volume was available in all patients, and stepwise analysis with elimination of one of these three variables showed ascites being the most useful one (data not shown). The remaining factors that showed significant results in the univariate analysis were taken in a multivariate model. The following factors showed an independent and significant impact on the probability to achieve complete resection without macroscopically visible residual tumor: ascites (< 500 ml vs. ≥ 500 ml: OR 5.08; 95% CI: 1.97–13.16; $P < .001$), performance status (ECOG 0 vs. > 0: OR 2.65; 95% CI: 1.56–4.52; $P < .001$), and prior complete debulking (no residual tumor vs. any residual tumor after primary surgery OR 2.46; 95% CI: 1.45–4.20; $P < .001$) or initial diagnosis of early ovarian cancer stages FIGO I/II, alternatively (Table 5).

The three independent factors for complete resection were combined to a predictive score, and backward analysis was applied to the whole population. The score was deemed positive if a patient (1) had a good performance status (ECOG 0), (2) had no residual tumor after initial surgery (or, if unknown,

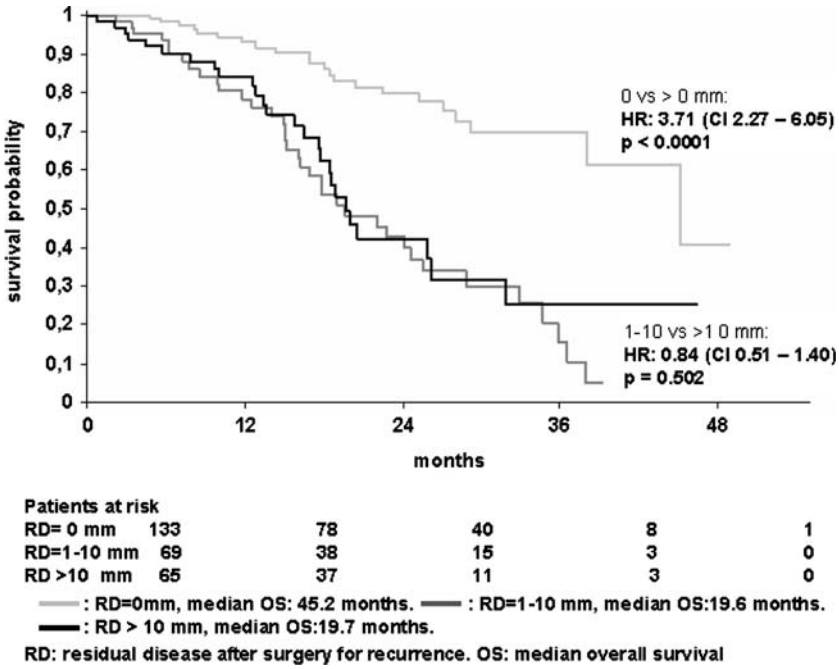

FIG. 1. Influence of residual disease after cytoreductive surgery for recurrence on overall survival.

TABLE 2. *Univariate analysis of prognostic factors for survival. Cancer antigen (CA)-125 was not calculated as prognostic factor because of correlation with ascites. Only significant results are shown*

Parameter		Number	*P* value	OR	95% CI
Eastern Cooperative Oncology Group (ECOG)	0	118		1	
	> 0*	149	.005	1.94	1.13–3.32
International Federation of Gynecology and Obstetrics (FIGO)	I/II	79	.027	1	
	III/IV*	188		1.83	1.00–3.36
Residual disease after primary surgery (mm)	0	124	.005	1	
	> 0	143		2.21	1.29–3.78
Treatment-free-interval (months)	< 6	36	.016	1	
	6–12	63		.92	.50–1.71
	> 12	168		.51**	.29–.90
Ascites (ml)	< 500	231	< .001	1	
	≥ 500	36		4.28	2.06–8.89
Localization of recurrence in preoperative diagnostics	pelvis others*	71	.002	1	
		196		2.53	1.30–4.94
Residual disease after surgery for recurrence (mm)	0	133	< .001	1	
	> 0	134		4.34	2.46–7.68
Platinum-based chemotherapy after surgery for recurrence	Yes	125	.003	1	
	No*	142		1.74	1.00–3.04

OR odds ratio, *CI* confidence interval.
* Missing data were added to this group.
** Hazard ratio.

had FIGO stage I/II disease initially), and (3) had a clinical diagnosis of less than 500 ml ascites. The backward analysis identified 58 patients with a positive score. Forty-six of these patients had a complete resection (positive predictive value 79%). However, by strictly limiting surgery to patients with a positive score, 87 patients (42% of all patients with a negative score) in whom complete resection was achieved despite a negative score (negative predictive value only 58%) would have been left out. Other combinations of variables did not provide better results (data not shown). Therefore, we tried to introduce further variables for patients with a negative preoperative score who still might opt for surgery. We included factors that had shown a significant association with resectability but were only available after at least limited surgical procedures, such as laparoscopy. Macroscopically diagnosed bowel involvement did not show significant impact on resectability, but peritoneal carcinosis diagnosed intraoperatively was

TABLE 3. *Multivariate analysis of prognostic factors for survival*

Parameter	Estimate	Standard error	OR	95% CI	*P* value
Eastern Cooperative Oncology Group (ECOG)	.13	.25	1.15	.70–1.88	.588
Residual disease after primary surgery	.03	.27	.97	.57–1.67	.915
Ascites	.83	.29	2.30	1.31–4.04	.004
Localization of recurrence in preoperative diagnostics in pelvis	.54	.32	1.72	.92–3.20	.090
Residual disease after surgery for recurrence	1.08	.29	2.94	1.68–5.17	< .001
Platinum-based chemotherapy after surgery for recurrence	.61	.25	1.84	1.13–3.01	.015
Treatment-free interval < 6 months vs. 6–12 months	.04	.34	.96	.49–1.86	.897
Treatment-free interval < 6 months vs. > 12 months	.07	.35	.93	.47–1.86	.837

OR odds ratio, *CI* confidence interval.

TABLE 4. *Univariate analysis of factors for achieving complete resection. Only significant results are shown*

		Number	*P* value	OR	95% CI
Eastern Cooperative Oncology Group (ECOG)	0	118	< .0001	1	
	> 0*	149		2.74	1.66–4.51
International Federation of Gynecology and Obstetrics (FIGO)	I/II	79	.01	1	1.18–3.46
	III/IV*	188			
Residual disease after primary surgery (mm)	0	124	.0005	1	
	> 0	143		2.39	1.46–3.91
CA-125**	0–70	100	.001	1	
	71–350	102		1.23	.70–2.15
	> 350	47		3.76	1.77–7.99
Ascites in preoperative diagnostics (ml)	< 500	231	< .001	1	2.45–15.23
	≥ 500	36		6.11	
Localization of recurrence in preoperative diagnostics	Pelvis	71	.017	1	
	Others*	196		1.96	1.12–3.41
Peritoneal carcinosis in preoperative diagnostics**	No*	209	.0001	1	
	Yes	58		3.34	1.77–6.31
Intraoperative peritoneal carcinosis	No	125	< .0001	1	
	Yes	125		6.87	4.00–11.76

* Missing data were added to this group.
** Cancer antigen (CA)-125 and peritoneal carcinosis in preoperative diagnostics not calculated in multivariate analysis because of correlation with ascites.

TABLE 5. *Multivariate analysis of factors for achieving complete resection*

Parameter	Estimate		OR	95% CI	*P* value
Eastern Cooperative Oncology Group (ECOG)	.98	.27	2.65	1.56–4.52	< .001
Residual disease after primary surgery (mm)*	.90	.27	2.46	1.45–4.20	< .001
Ascites	1.63	.48	5.08	1.97–13.16	< .001
Localization of recurrence in preoperative diagnostics	.44	.31	1.55	.85–2.82	.155

OR odds ratio, *CI* confidence interval.
* Alternatively International Federation of Gynecology and Obstetrics (FIGO) stage if residual disease after primary surgery is unknown [hazard ratio (HR) 1.87 (95% CI 1.04–3.37); $P = .036$].

found to separate subgroups in which complete resection was achievable. Complete resection was reported in only 23% of patients with a negative score and peritoneal carcinosis diagnosed intra-operatively. In contrast, patients with a negative predictive score (i.e., one or more items missing) but no peritoneal carcinosis found intraoperatively had macroscopically complete resection in 63%. The hypothesis for the two-step predictive model for resectability of recurrent ovarian cancer is displayed in Fig. 2 and will be evaluated prospectively in AGO-DESKTOP OVAR II.

DISCUSSION

Surgery followed by chemotherapy is the standard approach of treatment for epithelial ovarian cancer. However, this holds true mainly for newly diagnosed ovarian cancer, and the majority of patients with recurrent ovarian cancer are not offered surgery as part of their treatment options. However, this might be appropriate in patients presenting with so-called refractory disease and primary progression or early relapse within a few months after primary treatment. Only few series have reported surgery in these

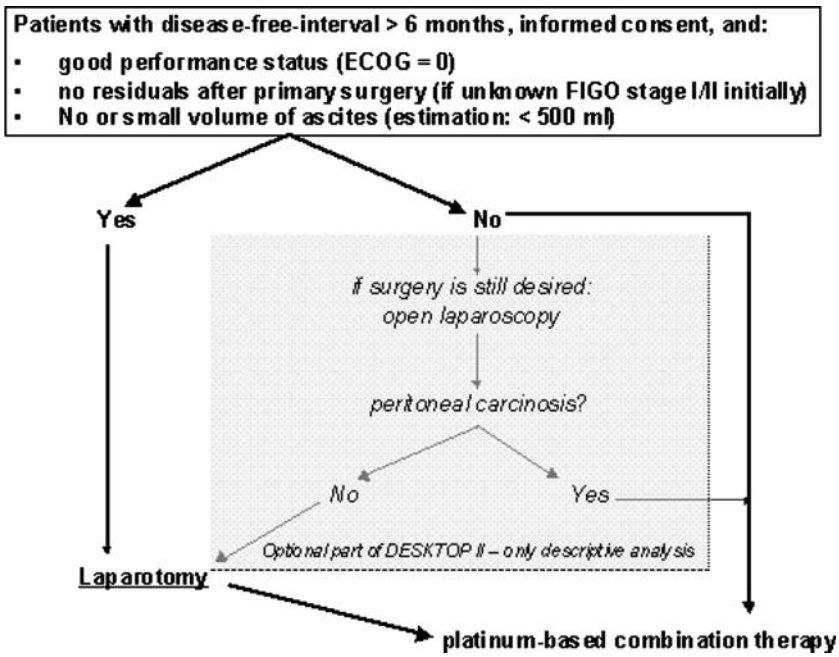

FIG. 2. Design of the Arbeitsgemeinschaft Gynaekologische Onkologie Ovarian Committee *D*escriptive *E*valuation of preoperative *S*election *KriT*eria for *OP*erability in recurrent *OVAR*ian cancer (AGO OVAR DESKTOP II).

patients, with unfavorable results.[10,11] In contrast, patients with considerably longer disease-free intervals are treated according to strategies similar to those of primary treatment. This holds true especially for chemotherapy, and the concept of platinum combination retreatment has been well established.[12–15] However, surgery is carried out less frequently in these patients, and selection criteria for cytoreductive surgery of recurrent ovarian cancer lacks uniform acceptance. The main reasons for this restraint might be twofold: (1) There is no evidence from randomized trials evaluating the role of cytoreductive surgery in this setting, and the only prospectively randomized trial [European Organization for Research and Treatment of Cancer (EORTC) protocol 55963[16]] was aborted prematurely due to low recruitment (personal communication I. Vergote, 2005). (2) The available criteria for selection of patients who might benefit from repetitive cytoreductive surgery are rather vague and had not been validated in clinical routine. A single-institution series reported less than 40% of patients who fulfilled the criteria for cytoreductive surgery in relapsed ovarian cancer as published in the statements of the 2nd International Ovarian Cancer Consensus Conference.[8] Furthermore, macroscopically complete resection could be achieved in only 60% of these patients.[17] Similar series reported complete resection rates ranging from 11% to 81%.[18,19] In most cases, this broad variety of surgical outcome probably does not reflect heterogeneous surgical skills but indicates the relationship between patient selection and outcome.

This study demonstrated that only patients experiencing complete resection might benefit from surgery. To our knowledge, only three other trials on recurrent ovarian cancer surgery including more than 100 patients had been published.[18–20] Our observation confirmed results from Eisenkop et al.,[18] which also showed a survival benefit for completely debulked patients only. In contrast, Zang et al.[19] and Scarabelli et al.[20] claimed a benefit for so-called optimally debulked patients. The latter two series reported remarkably lower complete resection rates (11% and 35%), thus raising again the question about different selection criteria. However, only patients with favorable surgical outcome are those for whom surgery should be offered, and obviously, there is an urgent need to define valid selection criteria that might help to avoid surgery-associated morbidity in patients who will not benefit and withholding surgery from patients who might benefit.

For this purpose, the AGO started a series of trials, of which the present one is the first. The next trial, which has already been started, includes only patients with a disease-free interval of more than 6 months. AGO-DESKTOP included only few patients with shorter intervals. Univariate analysis showed a disease-free interval of less than 6 months being associated with poor outcome. However, the sample size in this subgroup was too small for meaningful

multivariate analysis, indicating one of the limitations of our study. Published series including patients with primary progressive disease after or during primary therapy report a significant role of treatment-free interval, confirming our limited observations.[11,22,23] We could not detect any impact of disease-free interval on outcome in patients with disease-free intervals when comparing 6–12 months with more than 12 months. The published information concerning this aspect is partially contradictory. Some other series report a significant impact of intervals exceeding 12 and up to 36 months[18,24–26] while others could not detect any impact.[27–31]

We identified three variables with independent and significant impact on surgical outcome and created a hypothetical predictive score. These factors were performance status, ascites, and outcome of primary surgery. In the case of 39 patients with initially advanced FIGO stage, we had no information about residual disease after primary surgery. We categorized these patients as having macroscopic residual disease (which is more probable than the opposite). However, the model we used was the ''pessimistic alternative.'' Furthermore, we introduced an alternative model with FIGO stage as variable instead of residual tumor. Results were robust, indicating the same direction and thus confirming our first model. One further limitation might be the preoperative selection bias. Surgery for recurrence is offered only to one third of all patients with relapse.[17] Therefore, this score has to be used cautiously.

Three further authors report a multivariate analysis of variables associated with resectability. Eisenkop et al. reported performance status, no prior salvage chemotherapy, and intraoperatively assessed diameter of tumor lesion as predictive markers.[18] In our series, preoperative chemotherapy was given to only very few patients, thus hampering meaningful analysis. Gronlund et al. evaluated 38 patients and found the number of tumor disease sites being the only factor having an impact on surgical outcome.[32] However, we excluded intraoperative findings from our analysis because we aimed at creating a predictive model for resectability based on clinical criteria that might allow selection of patients who might be offered surgery. Using variables only identifiable during surgery would not help to avoid surgery in patients not having any potential benefit from operation.

In accordance with our findings, Zang et al. reported outcome of primary surgery and ascites being associated with resectability.[33] The variety of variables analyzed and the low numbers of subgroups clearly showed the limitations of this and other trials in this field. In addition, the retrospective methodology might have introduced bias with respect to patient selection. Surgical results might be too optimistic for two reasons (and, therefore, should not be generalized): (1) only dedicated centers participated in this trial, and (2) some patients might be missed in whom the operation was planned as cytoreductive surgery but intraoperative findings changed strategy toward a strictly palliative approach. However, this trial is the largest series ever collected and, despite all limitations, might provide further information and definitively helped to design prospective studies.

In conclusion, this trial was the first step in a series, and its purpose was to define the surgical endpoint for subsequent prospective trials (i.e., complete resection) and create a hypothesis for a predictive score for resectability. This score model is based on performance status, ascites, and outcome of primary surgery/initial FIGO stage. In addition, laparoscopic diagnosis of peritoneal carcinosis might be useful for selecting patients with a negative score but still opting for surgery. In a second step already initiated, AGO DESKTOP II will prospectively evaluate this hypothetical model, and finally, AGO DESKTOP III will consecutively follow as a randomized trial comparing surgery and chemotherapy versus chemotherapy alone in prospectively selected patients.

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