The Quality of the Operative Report for Women With Ovarian Cancer in Ontario

Laurie Elit, MD, MSc, FRCSC,[1] Susan Bondy, PhD,[2,3] Zhongliang Chen, MSc,[3] Calvin Law, MD,[3,4] Lawrence Paszat, MD[3,5,6]

[1]Department of Obstetrics and Gynecology, McMaster University, Hamilton ON

[2]Department of Public Health Sciences, University of Toronto, Toronto ON

[3]Institute for Clinical Evaluative Sciences, Toronto ON

[4]Department of General Surgery, University of Toronto, Toronto ON

[5]Department of Radiation Oncology, University of Toronto, Toronto ON

[6]Department of Health Policy, Management and Evaluation, University of Toronto, Toronto ON

Abstract

Objective: To assess the quality of the operative reports from cases of ovarian cancer surgery in Ontario.

Methods: We undertook a population cohort study including all newly diagnosed ovarian cancer patients treated initially with surgery from January 1996 to December 1998 in Ontario (n = 1341). We abstracted charts from hospitals and cancer centres. All surgical and pathology notes were abstracted into an ACCESS database.

Results: A total of 1341 women had surgery as the first step in management of ovarian cancer. A vertical abdominal incision was used in 87.6% of these cases. Peritoneal cytology was obtained in 87.8% of cases overall, but in only 69.5% of stage 1 cases. A description of the ovaries was provided in 85% of reports, of the uterus in 70%, the diaphragm in 53%, the liver in 69%, the pelvic lymph nodes in 10%, and the para-aortic lymph nodes in 41%. In stage 1 cases, the ovaries were assessed histologically in 89% of cases, the uterus in 80%, the omentum in 69%, the peritoneum in 20%, the appendix in 9%, the pelvic lymph nodes in 10%, and the para-aortic lymph nodes in7%. Frozen section was obtained in half of the stage 1 cases, and the false negative rate for identifying malignancy was 6%. In all, 23% of women received adequate surgical staging for stage 1 disease, and 12% of women with advanced disease had optimal debulking (to less than 1 cm residual disease). There are clear differences between centres with a gynaecologic oncologist on staff and other centres in the adequacy of surgical staging in women with stage 1 disease ($\chi^2 = 60.6$, $P < 0.0001$) and in optimal debulking for advanced disease ($\chi^2 = 39.1$, $P < 0.0001$). In 40% of cases with advanced disease, the amount of residual disease following surgery is not reported.

Conclusion: The current approach of dictating operative notes does not provide sufficient detail in a large number of cases; this affects treatment decisions and limits our ability to assess quality indicators for operative care in ovarian cancer. This problem is pervasive but is more significant in centres without a gynaecologic oncologist.

Key Words: Ovarian cancer, surgery, health services

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Résumé

Objectif : Évaluer la qualité des comptes rendus opératoires dans les cas de chirurgie visant le cancer de l'ovaire en Ontario.

Méthodes : Nous avons entrepris une étude de cohorte en population comprenant toutes les patientes ayant nouvellement reçu un diagnostic de cancer de l'ovaire et qui avaient initialement bénéficié d'un traitement chirurgical, entre janvier 1996 et décembre 1998, en Ontario (N = 1 341). Nous avons résumé les dossiers issus des hôpitaux et des centres anticancéreux. Toutes les notes issues de la chirurgie et de la pathologie ont été résumées dans une base de données ACCESS.

Résultats : Un total de 1 341 femmes ont bénéficié d'une chirurgie à titre de première étape de la prise en charge du cancer de l'ovaire. Une incision abdominale verticale a été utilisée dans 87,6 % de ces cas. Une cytologie péritonéale a été obtenue dans 87,8 % des cas en tout, mais elle l'a été chez seulement 69,5 % des cas de stade 1. Les ovaires ont fait l'objet d'une description dans 85 % des comptes rendus; l'utérus, dans 70 %; les diaphragmes, dans 53 %; le foie, dans 69 %; les ganglions lymphatiques pelviens, dans 10 %; et les ganglions lymphatiques para-aortiques, dans 41 %. Les ovaires ont fait l'objet d'une évaluation histologique dans 89 % des cas de stade 1; l'utérus, dans 80 %; l'épiploon, dans 69 %; le péritoine, dans 20 %; l'appendice, dans 9 %; les ganglions lymphatiques pelviens, dans 10 %; et les ganglions lymphatiques para-aortiques, dans 7 %. Une coupe sous congélation a été obtenue dans la moitié des cas de stade 1 et le taux de faux négatif (en ce qui concerne l'identification de la malignité) a été de 6 %. En tout, 23 % des femmes ont bénéficié d'une stadification par chirurgie adéquate dans le cas de la maladie de stade 1 et 12 % des femmes présentant une maladie de stade avancé ont bénéficié d'une chirurgie de réduction tumorale optimale (jusqu'à moins de 1 cm de maladie résiduelle). Des différences manifestes ont été constatées entre les centres comptant un gynécologue oncologue au sein de leur personnel et les autres centres, en ce qui a trait au caractère adéquat de la stadification par chirurgie chez les femmes présentant une maladie de stade 1 ($\chi^2 = 60,6$, $P < 0,0001$) et au caractère optimal de la chirurgie de réduction tumorale dans les cas de maladie de stade avancé ($\chi^2 = 39,1$, $P < 0,0001$). Dans 40 % des cas présentant

une maladie de stade avancé, la quantité de maladie résiduelle à la suite de la chirurgie n'a pas été signalée.

Conclusion : L'approche actuelle voulant que les notes opératoires soient dictées ne permet pas l'obtention de détails suffisants dans un grand nombre de cas; cela affecte les décisions quant au traitement et limite notre capacité d'évaluer les indicateurs de qualité, pour ce qui est des soins opératoires visant le cancer de l'ovaire. Bien que ce problème soit omniprésent, c'est dans les centres ne disposant pas d'un gynécologue oncologue qu'il est le plus marqué.

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INTRODUCTION

Ovarian cancer is the leading cause of death from gynaecologic cancer. Surgery plays a key role in making decisions about treatment. Six consensus statements or practice guidelines[1–6] have outlined the desired extent of surgery for staging in early disease and optimal debulking in advanced disease. These guidelines were developed by the National Comprehensive Cancer Network (NCCN), the European Organization of Research and Treatment for Cancer (EORTC), the National Institutes of Health (NIH), the Society of Obstetricians and Gynaecologists of Canada (SOGC), and the Society of Gynecologic Oncologists (SGO). The NIH surgical statement is the most widely endorsed guideline in the gynaecologic and gynaecologic oncology communities.[7] It is based on a critical review of the literature, a process of consensus by 25 experts in the field, and consumer feedback.

The guidelines[1–6] recommend a vertical skin incision, sampling of peritoneal fluid for cytology, and palpation and description of the entire abdomen. This is followed by a total abdominal hysterectomy and bilateral salpingo-oophorectomy, which is the approach of choice to remove the pelvic mass. The infracolic omentum is commonly removed to identify the presence of upper abdominal disease. If intra-abdominal disease is found, optimal debulking of tumour to a thickness of 1 cm or less in any one area is recommended. If no intra-abdominal disease is identified, multiple biopsies of peritoneal surfaces and pelvic and para-aortic lymph nodes will determine whether or not microscopic disease is present. When the primary cancer is of mucinous type, an appendectomy should be performed. It is recommended that a gynaecologic oncologist be present at the operation.

The gynaecologic oncologist or medical oncologist makes recommendations for treatment based on the reported extent of disease. In those with presumed stage 1 disease, the oncologist must determine whether or not surgical staging has been carried out adequately. If not, then a decision about immediate re-operation must be made. In patients with advanced disease, the oncologist must determine whether the diseased tissue has been optimally debulked (leaving 1 cm or less of residual disease). If not, then a decision regarding interval debulking surgery must be made, because this is known to extend survival by five months.[8]

In this study, we assessed the quality of the operative reports and the adequacy of surgical staging and debulking in ovarian cancer surgery completed in Ontario between January 1996 and December 1998.

METHODS

We performed a population-based cohort study of all women with newly diagnosed ovarian cancer treated initially with abdominal surgery in Ontario from January 1, 1996, to December 31, 1998. A master dataset was created by record linkage between the Ontario Cancer Registry (OCR), hospital admissions data, data from the Ontario Health Insurance Plan (OHIP), and chart abstraction. The creation of the master dataset is described in detail elsewhere.[9]

A patient was deemed to have had adequate surgery if for stage 1 disease she had peritoneal washings, inspection and palpation of all peritoneal surfaces and the retroperitoneal area, biopsies of any suspected lesions, infracolic omentectomy, and pelvic and para-aortic lymphadenectomy,[10] or if for stage 2, 3, or 4 disease she was optimally debulked to 1cm or less residual disease in any one area. The criteria for adequate surgery in stage 1 disease are in keeping with those described by the EORTC.[10] A patient was deemed as having inadequate surgery if for stage 1 disease she did not have a lymphadenectomy or if for stage 2, 3, or 4 disease she had residual disease of more than 1 cm.

Descriptive statistics were used to outline the frequency with which certain information was provided or missing in the operative record. Chi-square and Fisher exact tests were used to compare proportions.

RESULTS

A total of 1341 women had surgery as the first step in management of ovarian cancer between January 1, 1996, and December 31, 1998.

A vertical lower abdomen incision was the approach used in 87.6% of cases in this cohort. A Pfannenstiel incision was used in 6.0% of cases and laparoscopy in 4.8%. Fluid for cytology assessment, using either ascitic fluid or peritoneal washings, was collected in 87.8% of cases overall and in 69.5% of stage 1 cases.

The surgeon described a thorough exploration of the whole abdominal cavity either in the dictated or handwritten operative note as follows: the ovaries (when present) were described in 85% of cases, the uterus in 70%, the diaphragmatic surfaces in 53%, the bowel in 21% to 51%, the liver in

Table 1. Rates of assessment of the abdominal contents described in the operative report and rates of corresponding documentation of disease

	Assessment of the abdomen by inspection and palpation		Pathologic documentation of disease	
	Total (%)	Stage 1 (%)	Total (%)	Stage 1 (%)
Peritoneum				
Abdominal wall	26.38	24.22	4.91	3.99
Diaphragm	53.15	40.37	5.67	7.54
Paracolic gutter	26.79	29.97	9.66	20.43
Pelvic wall	42.31	36.50	10.36	17.38
Small bowel mesentery	28.53	20.18	7.35	9.48
Bladder peritoneum	39.85	40.67	9.54	16.21
Cul de sac	41.20	35.47	8.33	14.37
Sigmoid mesocolon	18.08	14.98	3.64	4.57
Omentum	83.26	72.26	78.16	68.60
Ascites or peritoneal washings sent			60.81	69.51
Frozen section			37.89	46.86
Bowel				
Stomach	21.61	16.26	1.14	0.61
Small bowel	46.70	38.53	7.99	4.81
Appendix	20.51	25.80	7.07	9.48
Cecum	22.57	22.34	2.21	1.53
Ascending colon	26.77	24.46	0.82	0.31
Transverse colon	37.87	27.83	1.97	0
Descending colon	28.92	25.69	0.30	0
Sigmoid colon	51.90	38.23	12.77	8.59
Other organ				
Gall bladder	22.09	22.85	0.99	1.55
Kidney	27.80	35.08		0
Liver	67.88	65.55	1.01	0.92
Pancreas	12.64	11.31	0.08	0
Spleen	25.40	23.01	1.15	0.92
Lymph nodes				
Para-aortic	40.88	47.71	4.09	7.41
Common iliac	10.87	13.80	4.62	7.95
External Iliac	12.84	15.60		
Internal Iliac	12.01	14.98		
Obturator	12.31	14.07		
Pelvic			5.69	9.82
Groin	7.3	10.40	0.30	0.31
Supraclavicular	5.74	6.12	0.15	0
Gynaecologic organs				
Left ovary	84.33	87.53	81.04	89.38
Left fallopian tube	33.15	35.88	74.78	84.44
Right ovary	85.50	87.31	83.88	92.21
Right fallopian tube	32.68	35.20	75.66	84.11
Uterus	71.13	72.39	69.74	80.21

69%, other organs in 21%, pelvic lymph nodes in 10%, and para-aortic lymph nodes in 41%. The descriptions of the abdominal exploration were no more detailed for patients with stage 1 disease than for patients with advanced disease (Table 1). When there was a difference in detail, the surgeon was less likely to comment on diaphragm, omentum, transverse colon, and sigmoid colon in the stage 1 cases.

In 36.6% of cases in Ontario, a gynaecologic oncologist was the most qualified surgeon in the operating room (Table 2). If surgery had begun without a gynaecologic oncologist present, an oncologist was consulted intraoperatively in only 5% of cases. A general surgeon was consulted in 10.2% of cases, and a urologist was consulted (usually preoperatively to place ureteric stents) in 3% of cases.

The extent of surgery can be confirmed by the tissue sampling described in the operative report and verified in the pathology record (Table 1). In cases with stage 1 ovarian cancer, the rate of gynaecologic organ removal at the first operation was high (ovary 84% to 89% and uterus 80%). Fluid was sent for cytology assessment in 69.5% of cases. Frozen section was requested and obtained in about 50% of the cases; the false negative rate for identifying malignancy on frozen section was 6%. Omentum was the most likely upper abdominal site to be biopsied (68.6% of cases). The rate of peritoneal biopsies ranged from 4.0% to 20.4% of cases. The paracolic gutter was the most common site to be biopsied. Bowel surgery rates were low (from 0.3% for ascending colon biopsy to 9.5% for appendix). The biopsy rate of other organs was low (0.9% for liver or spleen). Of the 92 women with stage 1 mucinous ovarian cancer, 31 underwent appendectomy.

The rates of biopsy of lymph nodes (pelvic nodes 9.8%, common iliac nodes 7.9%, and para-aortic nodes 7.4%) were low. Overall, surgeons were more likely to perform peritoneal biopsies and node sampling in early stage disease than in advanced stage disease. Rates of hysterectomy and salpingo-oophorectomy were higher in early stage disease. Bowel surgery rates were higher in advanced disease. Information about the largest area of residual disease could be found in only 48% of the reports.

In 75% of patients with stage 1 disease and in 38.5% of those with stage 2, 3, or 4 disease, surgery was deemed to be inadequate. When these groups were combined, 49% of women received adequate surgery (as defined by EORTC requirements for stage 1 and by having less than 1 cm of residual disease for stages 2–4) following the first surgical procedure. We found that there was significantly better information from hospitals where there was a gynaecologic oncologist on staff than from those where there was not (Table 3).

Table 2. Discipline of the surgeon who booked the procedure

Primary surgeon	Cases (%)
General surgeon	175 (11.6)
Gynaecologist	740 (49.1)
Gynaecologic oncologist	552 (36.3)
Other	40 (2.6)
Total	1507 (100)

Of patients with stage 1 disease, 14.4% had a second operation for staging and 37.6% were given adjuvant chemotherapy. Of patients with stage 2, 3, and 4 disease with greater than 1 cm residual disease after the first surgery, 0.6% had a second operation (prior to completing chemotherapy) for debulking.

DISCUSSION

We have shown that reporting of the extent of ovarian cancer at the time of initial surgery is not sufficiently clear. Physicians usually comment on the state of the ovaries, but the frequency of reporting on the status of other sites, such as the uterus, is lower. Eighteen percent of patients with stage 1 ovarian cancer had node sampling, thereby confirming that they had adequate surgery. The adequacy of tumour debulking to 1 cm or less of residual disease is uncertain because only 48% of physicians provide information about this.

Efforts to standardize reporting in pathology have been directed towards ensuring that critical information can be obtained consistently and easily from the pathology report. This has improved communication between pathologists, surgeons, and ancillary services, and across institutions.[11,12]

Three methods of reporting have been described for achieving consistency:

Templates are "canned" descriptions that have been shown to assist residents in organizing, recording, and dictating a large volume of information. Critics of this approach feel that it stifles creativity and problem-solving.[11]

Checklists have the benefit of generating reports that consistently incorporate commonly accepted parameters essential for patient management. Checklists tend to provide more complete data than non-standardized operative notes, but critics feel that they create "cookbook medicine."[11]

Synoptic reports are summaries that present key information in tabular form rather than sentences and paragraphs.

Examples of these three formats for reporting are available in the operative notes of various surgical disciplines. Templates for orthopedic surgeons are reported to save

Table 3. Quality of the operative report by the type of hospital

	Surgery					
	Stage 1 ovarian cancer			Stage 2–4 ovarian cancer		
Hospital type	Adequate surgery*	Inadequate surgery*	Undefined*	Adequate surgery*	Inadequate surgery*	Undefined*
Gynaecologic oncologist on staff	48 (36.1%)	72 (54.1%)	13 (9.8%)	65 (13.2%)	230 (46.7%)	198 (40.2%)
Regional cancer centre or teaching hospital	2 (8.0%)	23 (92.0%)	0	12 (16.4%)	21 (28.8%)	40 (54.8%)
Community hospital	8 (4.6%)	154 (89.5%)	10 (5.8%)	42 (9.4%)	138 (31.0%)	265 (59.5%)
Subtotal	58	249	23	119	389	503
Total	330			1011		
Significance	$\chi^2 = 60.6020$ $P < 0.0001$ Fisher exact test: $P < 0.0001$			$\chi^2 = 39.1190$ $P < 0.0001$		

*See text for definitions.

surgeons time spent in dictating, reviewing, and correcting; to save transcription time in word processing and making corrections; and to facilitate billing.[13] Participants in gynaecologic oncology clinical trials are familiar with case report forms and checklists. Olaitin published the checklist used by the South and West Regional Cancer Organization for work in surgery for ovarian cancer.[14] The use of computerized data recording, either in the operating room or immediately thereafter, would further advance the template, checklist, and synoptic report process.[15,16] Edhemovic showed that use of this technology in colorectal surgery is twice as likely to capture the data of interest as dictating the operative note.[16] The operative note fails to document the performed procedure adequately. Although it is unlikely that the missing details correlate with surgery of lesser quality, it is impossible to assess the quality of the surgery without these details. In addition, it is not possible for surgeons to review their own results to improve technique.

This study has several limitations. Because we recorded that a site was reported on only if specific terms (e.g., "spleen") were used, we may have a falsely low level of reporting of findings. Thus, if a surgeon reported that there was "no other tumour in the abdomen," this would be considered lack of information rather than lack of detailed information. Some operative reports may have been lost and redictated some time after the original surgery, and details of the procedure may not have been available. The data abstractors may have missed detail that was present in the text; using text mining would likely have increased the accuracy of gathering all the data elements of interest.[17] However, we feel that these limitations do not account for the lack of information in operative reports outlined in this study.

CONCLUSION

For making treatment decisions in women with ovarian cancer, the current practice in Ontario of dictating an operative note does not provide the detailed information that gynaecologic or medical oncologists require. Operative reports also lack a clear description of the surgical assessment and surgical procedures. It behooves the surgeons who perform these procedures to develop a more accurate reporting method that can be used to improve communication between health care providers and to assess the quality of care delivered to women with ovarian cancer.

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