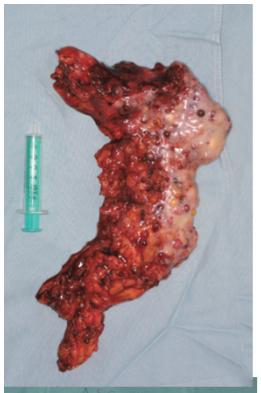
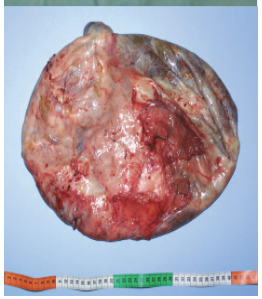


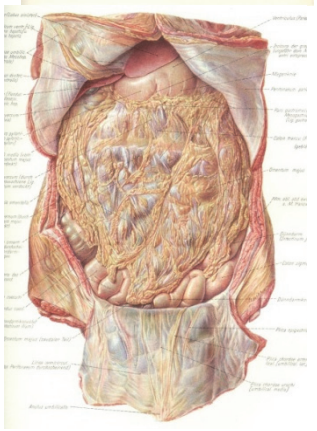


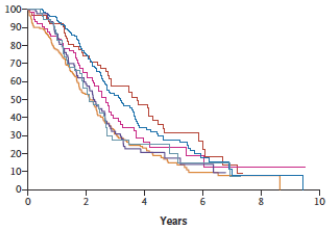

# Cytoreductive Surgery in Ovarian Cancer

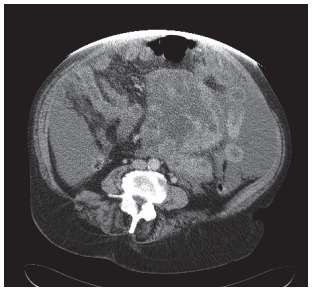
## Evidence | Pitfalls

*karl.tamussino@medunigraz.at*

UFK GYN GRAZ





# Disclosures

- Trip support KT
  - Covidien, Roche
- Departmental

*J. Obstet. Gynaec. Brit. Cwlth.*
Nov. 1968. Vol. 75. pp. 1155–1160.

# A RADICAL OPERATION FOR FIXED OVARIAN TUMOURS

BY

C. N. HUDSON,* M.Chir., F.R.C.S., M.R.C.O.G., *Senior Lecturer*
*Departments of Obstetrics and Gynaecology, University of Ibadan, Nigeria, and St. Bartholomew's Hospital, London*

MALIGNANT disease of the ovary in Britain accounts for over 3,000 deaths per annum which is almost as many as the combined total due to carcinoma of cervix and corpus uteri together (Registrar-General, 1966). Too often the disease presents with ascites and widespread peritoneal metastases and the only surgery possible is removal of the main tumour masses and omentum. When the disease is confined to one or both ovaries with an intact capsule, the prognosis may not be unfavourable (Alment, 1963). This paper is concerned with an intermediate group of cases between these two extremes, in which there is local extension within the pelvis and the tumour is usually fixed to the peritoneal surface of nearby structures. Present surgical removal is too often a crude digital mobilization of the tumour with hysterectomy and removal of both ovaries. It is not surprising that the results are poor even with radiation and chemotherapy. This must particularly apply when macroscopic growth is left behind. Even in such cases, the tumour may remain confined to the pelvis for a very long time, so that an aggressive approach will occasionally result in a prolonged survival (Howkins, 1968).

More radical surgery for ovarian cancer consisting of various forms of exenteration has been tried (Brunschwigg, 1954) but these procedures are mutilating and have such mortality and morbidity that they cannot often be justified. Posterior exenteration is the least severe, being the same operation as is performed for primary malignant or intractable inflammatory disease of the rectum. Posterior exenteration may, therefore, have a limited place in the treatment of carcinoma of the ovary, particularly following radiotherapy when restorative surgery to the bowel is not feasible (Way, 1968). There is, however, a natural prejudice against performing colostomy for a disease not primarily affecting the bowel and possibly with no intestinal symptoms.

The purpose of this paper is to describe an operative approach which will enable an ovarian tumour fixed in the pelvis to be removed intact with the whole of the peritoneum from surrounding structures still attached. This will usually involve the peritoneum of the pouch of Douglas and if necessary part of the wall of the rectum or even a short segment of rectum. The defect resulting from this can be closed by repair or anastomosis so that diversion of faeces is not necessary. So often ovarian tumours are fixed on the deep aspect in the pelvis and standard methods of mobilization disrupt the tumour from its bed or, worse, tear through growth. A tumour which is only adherent to the back of the broad ligament or uterus may be removed undisturbed by the technique of retrograde hysterectomy described by Dellepiane (1967). This retrograde hysterectomy alone, however, does not allow the intact removal of a tumour adherent to the posterior part of the pouch of Douglas.

## THE OPERATION

Previous clinical and radiological examination must as far as possible have excluded extra-abdominal spread.

A generous vertical incision is required as the operation begins above the pelvic brim, particularly if the tumour is fixed to the anterior abdominal wall. The peritoneal cavity must be explored for evidence of spread outside the pelvis, other than by direct extension. Early involvement of the omentum does not preclude

* Present position — Resident Assistant Physician Accoucheur, St. Bartholomew's Hospital.



1968

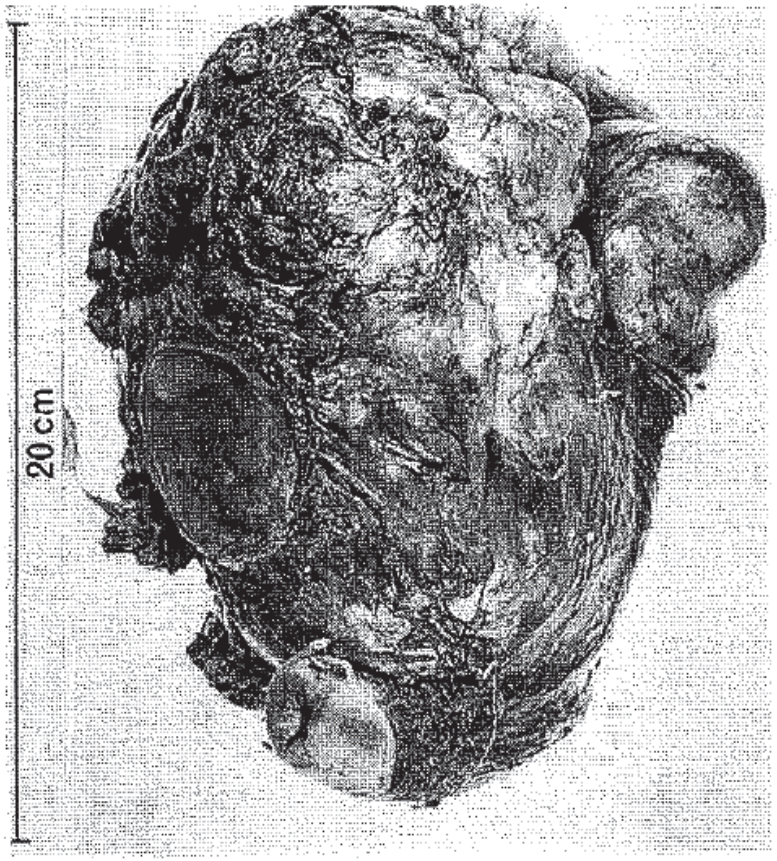



FIG. 3
Operation specimen, anterolateral view, showing attached rectus abdominis muscle, bladder dome and small uterus beneath. The dense adhesions proved to be of inflammatory origin.

# Surgical Resection of Tumor Bulk in the Primary Treatment of Ovarian Carcinoma [1]

C. Thomas Griffiths [2]

**SUMMARY—The effect of tumor bulk resection on survival was studied in 102 patients with stages II and III ovarian cancer. A multiple linear regression equation provided both simultaneous control of multiple confounding variables and an assessment of these variables as independent predictors of survival. The most important factors were the histologic grade of the tumor and the size of the largest residual tumor mass after operation. Survival time was uniformly poor if the diameter of the largest residual tumor mass exceeded 1.5 cm irrespective of total tumor volume (mean=12.7 months, SE=1.6 mo). Survival time was inversely proportional to residual mass size under 1.6 cm, and surgery improved survival relative to reduction in mass size below this limit. Extensive resections of tumor bulk with failure to remove all masses greater than 1.5 cm in diameter did not influence survival. Surgery provides optimum benefit when all gross tumor can be excised safely.—Natl Cancer Inst Monogr 42: 101–104, 1975.**

## METHODS

From January 1960 through June 1973, 102 patients with stages II and III invasive epithelial carcinomas of the ovary had primary treatment at the Boston Hospital for Women (table 1). Survival times in months were computed from the date of diagnosis to death from any cause or to the 10-year mark. The date of diagnosis was the date of primary laparotomy in every instance. Three patients who died postoperatively are included. Six patients, 2 in each stage listed, are alive and well at 10 or more years. Fifteen patients have been living without disease from 20 to 108 months. An estimated survival time for each of these was obtained by plotting the median survival time from their current survival point onward on an actuarial survival curve of all patients.

A major deterrent to an accurate assessment of treatment modalities is the multiplicity of prognostic factors in ovarian

TABLE 2.— *Survival, by diameter of largest residual mass*

| Size (cm) | Number of patients | MST (mo) |
|---|---|---|
| 0 | 29 | 39 |
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| 0.6–1.5 | 16 | 18 |
| >1.5 | 29 | 11 |

*Griffiths. NCI Monogr 1975*

# Cytoreductive Surgery in Ovarian Carcinoma: Feasibility and Morbidity

*A. PETER M. HEINTZ, MD, NEVILLE F. HACKER, MD, JONATHAN S. BEREK, MD, THANNE P. ROSE, MPH, ALAN K. MUNOZ, MD, AND LEO D. LAGASSE, MD*

**Between 1974 and 1984, 70 patients underwent primary cytoreductive surgery for ovarian carcinoma at the University of California at Los Angeles. During the period of January 1974 to December 1978, optimal cytoreduction was achieved in 56.4% of the patients. With increased experience, this figure improved to 87.1% in the period of January 1979 to December 1983. The most common morbidity associated with the procedure was fever and prolonged ileus. Bowel resection was required in 20% of the patients and was not associated with increased morbidity. More liberal use of the end-to-end anastomosis stapling device facilitated low colon reanastomosis without colostomy, which contributed to the improved patient acceptance.** ***(Obstet Gynecol 67:783, 1986)***

were less than 1.5 cm in diameter before the start of chemotherapy. Such patients were considered to have undergone optimal cytoreduction.

The authors' previously reported data,[4] and that of van Lindert et al,[11] suggest that patients with residual masses 5 mm or less have a far better survival than those with larger masses, including the group with masses ranging from 5 to 15 mm. Although they strived to achieve minimal residual disease status (ie, residual masses 5 mm or less), the authors considered 1.5 cm nodules optimal for the purpose of this analysis to allow comparison with previous reports. Although the relationship between small residual disease and

GYNECOLOGIC ONCOLOGY 40, 103–106 (1991)

# Patterns of Pelvic and Paraaortic Lymph Node Involvement in Ovarian Cancer

ERICH BURGHARDT, M.D., FRANK GIRARDI, M.D., MANFRED LAHOUSEN, M.D., KARL TAMUSSINO, M.D., AND HARO STETTNER, PH.D.*

*Department of Obstetrics and Gynecology, University of Graz, Graz, and *Institute of Mathematics, University of Klagenfurt, Klagenfurt, Austria*

**TABLE 2**

**Pelvic and Paraaortic Node Involvement According to Stage in 105 Patients Undergoing Pelvic and Paraaortic Lymphadenectomy for Ovarian Cancer**

| Stage | Number of patients | + Pelvic + Paraaortic | + Pelvic − Paraaortic | − Pelvic + Paraaortic | − Pelvic − Paraaortic |
|---|---|---|---|---|---|
| I | 20 | 1 (5%) | 2 (10%) | 0 | 17 (85%) |
| II | 7 | 3 (43%) | 1 (14%) | 1 (14%) | 2 (29%) |
| III | 67 | 34 (51%) | 9 (13%) | 9 (13%) | 15 (22%) |
| IV | 11 | 8 (73%) | 1 (9%) | 0 | 2 (18%) |
| Total | 105 | 46 (44%) | 13 (12%) | 10 (9%) | 36 (35%) |

Available online at www.sciencedirect.com
ScienceDirect
Gynecologic Oncology 111 (2008) S51–S55
Gynecologic Oncology
www.elsevier.com/locate/ygyno

# Upper abdominal surgical procedures: Liver mobilization and diaphragm peritonectomy/resection, splenectomy, and distal pancreatectomy

Siobhan M. Kehoe, Eric L. Eisenhauer, Dennis S. Chi *

*Gynecology Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY, USA*

Available online at www.sciencedirect.com
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Gynecologic Oncology 94 (2004) 655–660
Gynecologic Oncology
www.elsevier.com/locate/ygyno

# Diaphragm resection for ovarian cancer: technique and short-term complications

William Cliby*, Sean Dowdy, Simone S. Feitoza, Bobbie S. Gostout, Karl C. Podratz

*Gynecologic Surgery, Mayo Clinic, Rochester, MN, 55905 United States*

DOI: 10.1111/j.1471-0528.2011.03197.x
www.bjog.org

# Upper abdominal cytoreduction and thoracoscopy for advanced epithelial ovarian cancer: unanswered questions and the impact on treatment

AC Fleury,[a] CL Kushnir,[a] RL Giuntoli II, [a] NM Spirtos[b]

[a] Johns Hopkins Medical Institutions, Baltimore, MD, USA [b] Women's Cancer Center of Nevada, Las Vegas, NV, USA
*Correspondence:* Dr A Fleury, Johns Hopkins Medical Institutions, 600 N. Wolfe Street, Phipps 281, Baltimore, MD 21287, USA.
Email aimeefleury@yahoo.com

*Accepted 18 September 2011. Published Online 15 November 2011.*

# 49-jährige Patientin

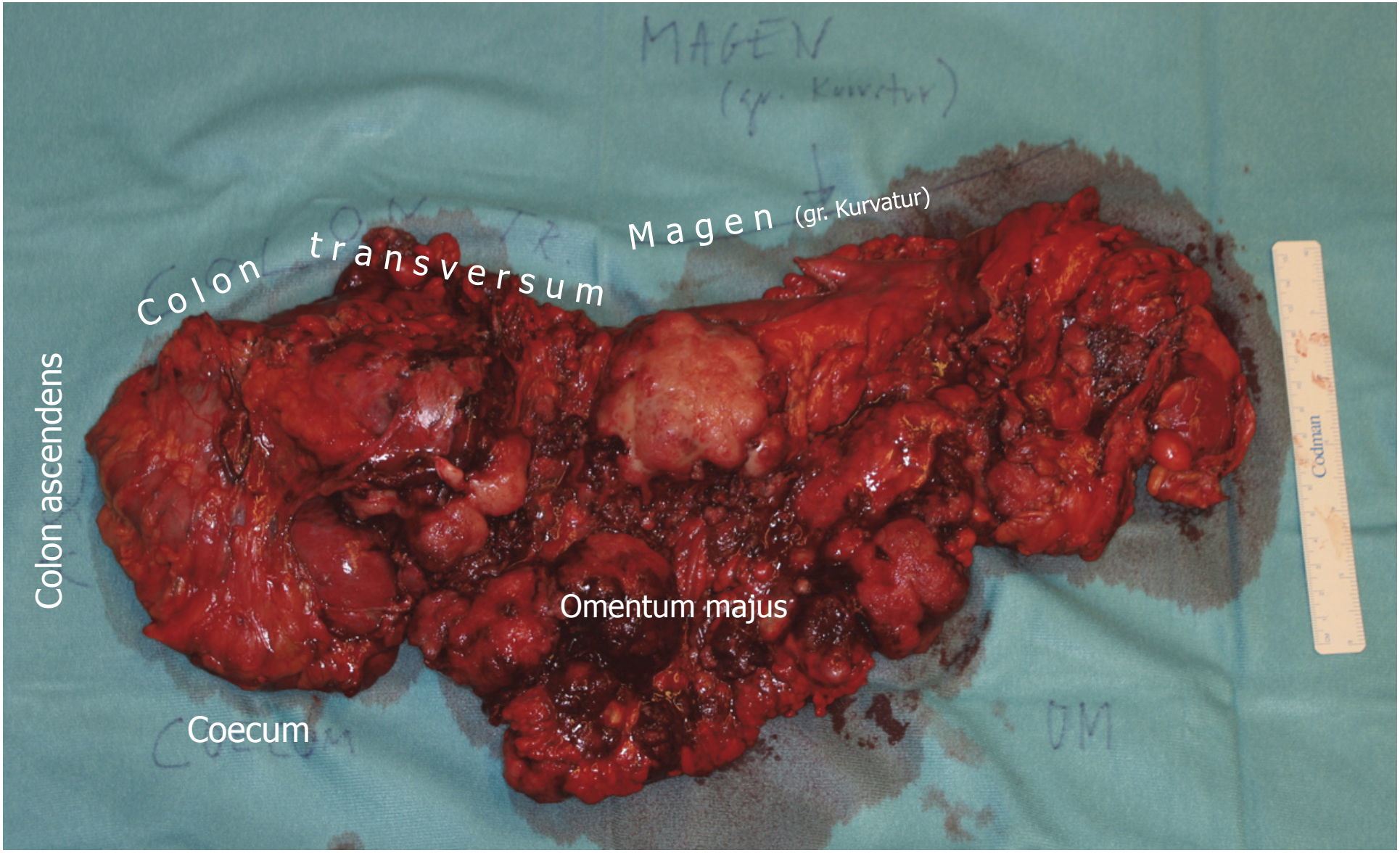
- Ovarialkarzinom III/IV

→Colektomie + Omentektomie + Resektion der gr. Magenkurvatur *en bloc*

→Hysterektomie + Adnexektomie + Rektosigmoid Resektion *en bloc*

→ Ileorektostomie

→ RO


MAGEN
(gr. Kurvatur)
Colon transversum
Magen (gr. Kurvatur)
Colon ascendens
Omentum majus
Coecum
Codman

# Survival Effect of Maximal Cytoreductive Surgery for Advanced Ovarian Carcinoma During the Platinum Era: A Meta-Analysis

By Robert E. Bristow, Rafael S. Tomacruz, Deborah K. Armstrong, Edward L. Trimble, and F.J. Montz

***Purpose:*** To evaluate the relative effect of percent maximal cytoreductive surgery and other prognostic variables on survival among cohorts of patients with advanced-stage ovarian carcinoma treated with platinum-based chemotherapy.

***Materials and Methods:*** Eighty-one cohorts of patients with stage III or IV ovarian carcinoma (6,885 patients) were identified from articles in MEDLINE (1989 through 1998). Linear regression models, with weighted correlation calculations, were used to assess the effects on log median survival time of the proportion of each cohort undergoing maximal cytoreduction, dose-intensity of the platinum compound administered, proportion of patients with stage IV disease, median age, and year of publication.

***Results:*** There was a statistically significant positive correlation between percent maximal cytoreduction and log median survival time, and this correlation remained significant after controlling for all other variables ($P < .001$). Each 10% increase in maximal cytoreduction was associated with a 5.5% increase in median survival time. When actuarial survival was estimated, cohorts with ≤ 25% maximal cytoreduction had a mean weighted median survival time of 22.7 months, whereas cohorts with more than 75% maximal cytoreduction had a mean weighted median survival time of 33.9 months—an increase of 50%. The relationship between platinum dose-intensity and log median survival time was not statistically significant.

***Conclusion:*** During the platinum era, maximal cytoreduction was one of the most powerful determinants of cohort survival among patients with stage III or IV ovarian carcinoma. Consistent referral of patients with apparent advanced ovarian cancer to expert centers for primary surgery may be the best means currently available for improving overall survival.

*J Clin Oncol 20:1248-1259.* *© 2002 by American Society of Clinical Oncology.*

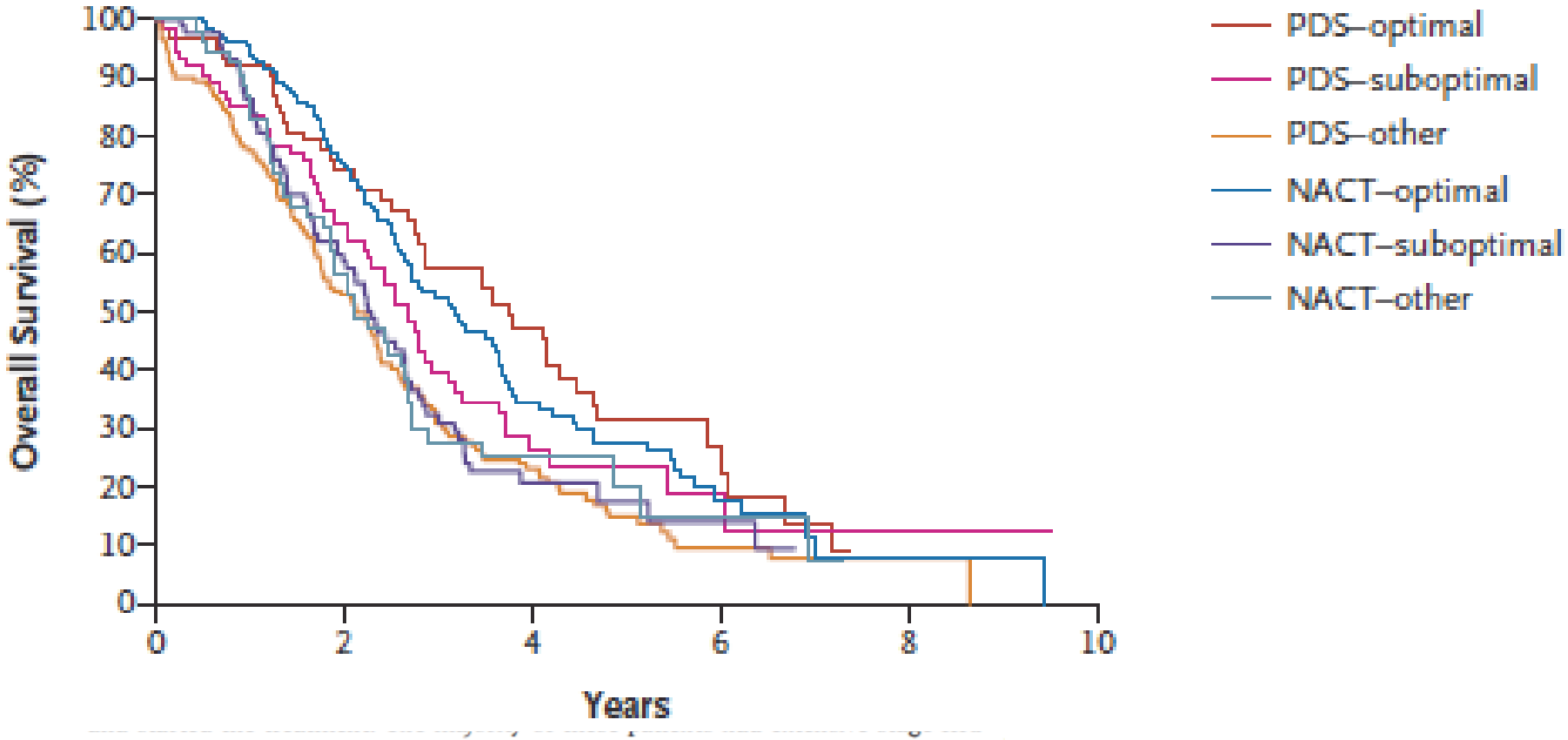
The NEW ENGLAND JOURNAL of MEDICINE

N ENGL J MED 363;10 NEJM.ORG SEPTEMBER 2, 2010

ORIGINAL ARTICLE

# Neoadjuvant Chemotherapy or Primary Surgery in Stage IIIC or IV Ovarian Cancer

Ignace Vergote, M.D., Ph.D., Claes G. Tropé, M.D., Ph.D.,



# Evidence | Pitfalls

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- Undertreatment
- Overtreatment
- Morbidity
- Mortality

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# Neoadjuvant Chemotherapy or Primary Surgery in Stage IIIC or IV Ovarian Cancer

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| | |
|---|---|
| No residual disease per country — no. (%)[&] | |
| Belgium | 39 (62.9) |
| The Netherlands | 2 ( 3.9) |
| Norway | 3 ( 8.1) |
| Italy | 1 ( 6.3) |
| Spain | 3 (10.0) |
| United Kingdom | 5 (10.2) |
| Canada | 4 (11.1) |

# Overtreatment?

GYNECOLOGIC ONCOLOGY 40, 103–106 (1991)

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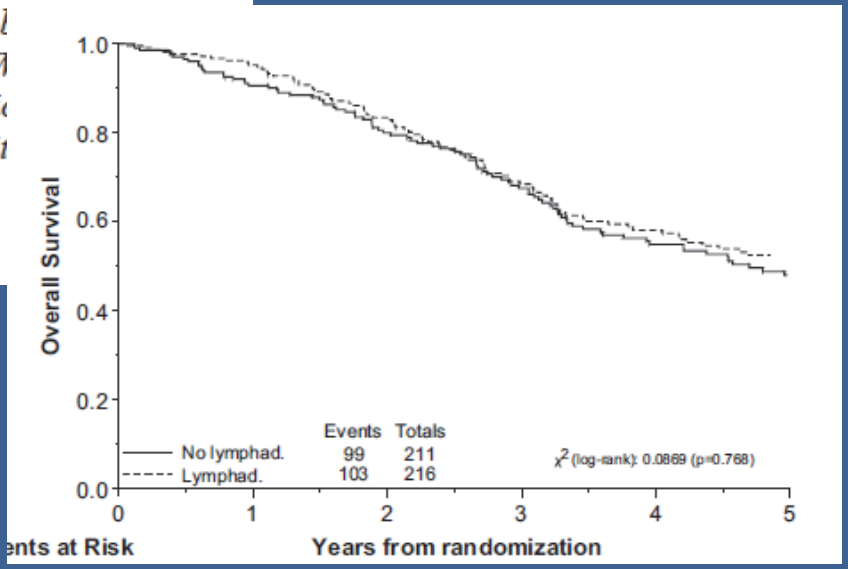
*Department of Obstetrics and Gynecology, University of Graz, Graz, and *Institute of Mathematics, University of Klagenfurt, Klagenfurt, Austria*

# ARTICLES

## Systematic Aortic and Pelvic Lymphadenectomy Versus Resection of Bulky Nodes Only in Optimally Debulked Advanced Ovarian Cancer: A Randomized Clinical Trial

*Pierluigi Benedetti Panici, Angelo Maggioni, Neville Hacker, Fal*
*Sven Ackermann, Elio Campagnutta, Karl Tamussino, Raimund W*
*Pellegrino, Stefano Greggi, Roberto Angioli, Natalina Manci, Gi*
*Scambia, Tiziana Dell'Anna, Roldano Fossati, Irene Floriani, Rit*
*Roberto Grassi, Giuseppe Favalli, Francesco Raspagliesi, Diana*
*Luca Martella, Costantino Mangioni*

Journal of the National Cancer Institute, Vol. 97, No. 8, April 20, 2005



# Evidence | Pitfalls

- Undertreatment
- Overtreatment
- Morbidity
- Mortality

# 75a, st.p. DVT, transferred late afternoon because of large abdominal/ovarian tumor

- Next morning, collapses and dies

→ Cause of death?

→ Autopsy

  – PAE, advanced ovarian cancer

→ Some patients are sick before we operate

Gynecologic Oncology 120 (2011) 23–28

Contents lists available at ScienceDirect

Gynecologic Oncology

journal homepage: www.elsevier.com/locate/ygyno

# Identification of patient groups at highest risk from traditional approach to ovarian cancer treatment

Giovanni D. Aletti [a], Eric L. Eisenhauer [c], Antonio Santillan [d], Allison Axtell [b], Giacomo Aletti [e], Christine Holschneider [b], Dennis S. Chi [c], Robert E. Bristow [d], William A. Cliby [a,*]

[a] Department of Gynecologic Surgery, Mayo Clinic, Rochester, MN, USA
[b] Department of Obstetrics and Gynecology, Olive View-UCLA Medical Center, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA
[c] Department of Surgery, Gynecology Service, Memorial Sloan-Kettering Cancer Center, New York, NY, USA
[d] The Kelly Gynecologic Oncology Service, Department of Gynecology and Obstetrics, The Sidney Kimmel Comprehensive Cancer Center, The Johns Hopkins Medical Institutions, Baltimore, MD, USA
[e] Department of Mathematics and Statistics, University of Milan, Milan, Italy

(1) High tumor dissemination (HTD) or stage IV,
(2) Poor performance status (ASA ≥ 3) or nutritional status (preoperative albumin levels < 3.0 g/dL),
(3) Age ≥ 75 years.

The median overall survival for this group was only 17 months. In addition the morbidity from a primary surgical effort was very high. Depending on extent of surgery the rate of major morbidity ranged from 63.6% (high SCS) to 33.3% (low SCS). Seven patients in this group died within 3 months from surgery, with a corresponding 3 month mortality rate of 18.4%. These patients were not able to start chemotherapy. Uniquely, in this group, low RD was no longer associated with a survival benefit (Fig. 3A) (p = N.S.), nor was there a measurable benefit to performing more aggressive surgical procedures in this high risk group (Fig. 3B) (p = N.S.).

## Surgical Resection of Tumor Bulk in the Primary Treatment of Ovarian Carcinoma [1]

C. Thomas Griffiths [2]

**SUMMARY—The effect of tumor bulk resection on survival was studied in 102 patients with stages II and III ovarian cancer. A multiple linear regression equation provided both simultaneous control of multiple confounding variables and an assessment of these variables as independent predictors of survival. The most important factors were the histologic grade of the tumor and the size of the largest residual tumor mass after operation. Survival time was uniformly poor if the diameter of the largest residual tumor mass exceeded 1.5 cm irrespective of total tumor volume (mean=12.7 months, SE=1.6 mo). Survival time was inversely proportional to residual mass size under 1.6 cm, and surgery improved survival relative to reduction in mass size below this limit. Extensive resections of tumor bulk with failure to remove all masses greater than 1.5 cm in diameter did not influence survival. Surgery provides optimum benefit when all gross tumor can be excised safely.—Natl Cancer Inst Monogr 42: 101–104, 1975.**

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*Griffiths. NCI Monogr 1975*

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**Table 5.** Morbidity in the Optimal and Suboptimal Groups Associated With Cytoreductive Surgery in the Periods 1974–1979 and 1979–1983

| Morbidity | 1974–1978 ($N$ = 39) | | | | 1979–1983 ($N$ = 31) | | | | Total ($N$ = 70) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal $N$ | Suboptimal $N$ | Total $N$ | Total % | Optimal $N$ | Suboptimal $N$ | Total $N$ | Total % | $N$ | % |
| Serious morbidity | | | | | | | | | | |
| Bleeding requiring relaparotomy | 0 | 1 | 1 | 2.6 | 0 | 0 | 0 | 0.0 | 1 | 1.4 |
| Pneumonia | 3 | 2 | 5 | 12.8 | 3 | 0 | 3 | 9.7 | 8 | 11.4 |
| Cardiac failure | 3 | 2 | 5 | 12.8 | 0 | 0 | 0 | 0.0 | 5 | 7.1 |
| Dehiscence of the wound | 2 | 0 | 2 | 5.1 | 0 | 0 | 0 | 0.0 | 2 | 2.9 |
| Death | 0 | 2 | 2 | 5.1 | 0 | 0 | 0 | 0.0 | 2 | 2.9 |
| Minor morbidity | | | | | | | | | | |
| Fever | 4 | 6 | 10 | 25.6 | 2 | 0 | 2 | 6.5 | 2 | 17.1 |
| Infection | 0 | 2 | 2 | 5.1 | 2 | 0 | 2 | 6.5 | 4 | 5.7 |
| Prolonged ileus | 1 | 3 | 4 | 10.2 | 8 | 0 | 8 | 25.8 | 12 | 17.1 |
| Prolonged nausea and vomiting | 0 | 1 | 1 | 2.6 | 0 | 0 | 0 | 0.0 | 3 | 4.3 |
| Respiratory support for 48 hours | 0 | 1 | 1 | 2.6 | 0 | 0 | 0 | 0.0 | 1 | 1.4 |

Gynecologic Oncology 80, 79–84 (2001)
doi:10.1006/gyno.2000.6037, available online at http://www.idealibrary.com on IDEAL®

# Gastrointestinal Surgery in Patients with Ovarian Cancer[1]

Karl F. Tamussino, M.D.,* Peter C. Lim, M.D.,* Maurice J. Webb, M.D.,*[,2]
Raymond A. Lee, M.D.,* and Timothy G. Lesnick, M.S.†

*Division of Gynecologic Surgery and †Section of Biostatistics, Mayo Clinic and Mayo Foundation, Rochester, Minnesota 55905

Received June 14, 2000; published online December 5, 2000

*Objectives.* **The objectives were to assess indications for and outcome and morbidity of gastrointestinal surgery in patients with ovarian cancer.**

*Methods.* **We reviewed 364 patients with ovarian cancer who underwent a total of 491 operations including a gastrointestinal procedure over a 10-year period. The 491 operations comprised 180 primary surgical procedures (37%), 44 second-look laparotomies (9%), and 267 procedures for recurrence or palliation (54%).**

TABLE 4
**Postoperative Hospital Course and Complications (491 Operations in 364 Patients)**

| | Overall ($n$ = 491) | Primary surgery ($n$ = 180) | SLL ($n$ = 44) | Surgery for recurrence or palliation ($n$ = 267) | $P$ |
|---|---|---|---|---|---|
| Perioperative blood transfusion, No. (%) | 389 (79) | 153 (85) | 27 (61) | 209 (78) | 0.001 |
| No. of units transfused, median (range)[a] | 3 (1–43) | 3 (1–20) | 2 (1–8) | 3 (1–43) | NS |
| Postoperative parenteral nutrition, No. (%) | 100 (20) | 33 (18) | 1 (2.3) | 66 (25) | NS |
| Flatus passed, mean No. of postoperative days | 6.5 ± 2.2 | 6.5 ± 2.2 | 6.1 ± 1.8 | 6.6 ± 2.2 | NS |
| GI tube placed once removed, No. (%) | 15 (3.1) | 7 (3.9) | 0 | 8 (3.0) | NS |
| Complications, No. (%) | | | | | |
| Febrile morbidity | 140 (29) | 51 (28) | 11 (25) | 78 (29) | NS |
| Respiratory infection | 6 (1.2) | 4 (2.2) | 0 | 2 (0.7) | NS |
| UTI | 25 (5.1) | 11 (6.1) | 1 (2.3) | 13 (4.9) | NS |
| Wound infection | 24 (4.9) | 11 (6.1) | 0 | 13 (4.9) | NS |
| DVT | 6 (1.2) | 3 (1.7) | 0 | 3 (1.1) | NS |
| PE | 3 (0.6) | 1 (0.6) | 0 | 2 (0.7) | NS |
| CVA | 5 (1.0) | 0 | 0 | 5 (1.9) | 0.04 |
| Metabolic disorder | 16 (3.3) | 6 (3.3) | 1 (2.3) | 9 (3.4) | NS |
| Myocardial infarction | 3 (0.6) | 1 (0.6) | 0 | 2 (0.7) | NS |
| Other cardiac disorder | 11 (2.2) | 6 (3.3) | 0 | 5 (1.9) | NS |
| Abscess needing laparotomy | 2 (0.4) | 1 (0.6) | 0 | 1 (0.4) | NS |
| Anastomotic leak needing laparotomy | 2 (0.4) | 1 (0.6) | 0 | 1 (0.4) | NS |
| Intestinal fistula | 8 (1.6) | 2 (1.1) | 0 | 6 (2.2) | NS |
| Ileus >7 days | 105 (21) | 37 (21) | 4 (9.1) | 64 (24) | 0.05 |
| BO requiring laparotomy | 2 (0.4) | 1 (0.6) | 0 | 1 (0.4) | NS |
| Urinary tract fistula | 1 (0.2) | 0 | 0 | 1 (0.4) | NS |
| Lymphocyst | 3 (0.6) | 1 (0.6) | 0 | 2 (0.7) | NS |
| Return to operating room within 30 days | 20 (4.1) | 9 (5.0) | 0 | 11 (4.1) | NS |
| Death <30 days postoperative | 19 (3.9) | 7 (3.9) | 0 | 12 (4.5) | NS |
| Other | 31 (6.3) | 13 (7.2) | 1 (2.3) | 17 (6.4) | NS |
| Postoperative stay, mean, days | 11 | 11 | 9 | 11 | 0.01 |

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Gynecologic Oncology 111 (2008) S51–S55
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# Upper abdominal surgical procedures: Liver mobilization and diaphragm peritonectomy/resection, splenectomy, and distal pancreatectomy

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# Diaphragm resection for ovarian cancer: technique and short-term complications

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*difficile* colitis and sepsis. Late in the hospital course, she developed new radiographic signs of a gastro-pleural fistula (postoperative day 23). She ultimately died from sepsis. Autopsy revealed a large subgastric, retropancreatic necrotic abscess cavity involving the soft tissues and muscles of the left upper quadrant. It is unlikely that diaphragm resection

**Table 3.** Morbidity and mortality

| Complication | Positive thoracoscopy | Negative thoracoscopy |
|---|---|---|
| Pneumonia | 1/27 (3.7%) | 1/48 (2.1%) |
| Gastrointestinal fistula | 1/27 (3.7%) | 2/48 (4.2%) |
| Pancreatic leak | 0/27 (0%) | 1/48 (2.1%) |
| Chylous ascites | 0/27 (0%) | 1/48 (2.1%) |
| Urinary tract fistula | 0/27 (0%) | 1/48 (2.1%) |
| Pulmonary embolism | 1/27 (3.7%) | 1/48 (2.1%) |
| Pleural effusion requiring drainage | 19/27 (70.4%) | 33/48 (68.8%) |
| Abscess | 3/27 (11.1%) | 4/48 (8.3%) |
| Re-admission | 3/27 (11.1%) | 5/48 (10.4%) |
| Postoperative death | 1/27 (3.7%) | 2/48 (4.2%) |

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# Upper abdominal cytoreduction and thoracoscopy for advanced epithelial ovarian cancer: unanswered questions and the impact on treatment

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ORIGINAL ARTICLE

# Neoadjuvant Chemotherapy or Primary Surgery in Stage IIIC or IV Ovarian Cancer

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Frédéric Amant, M.D., Ph.D., Gunnar B. Kristensen, M.D., Ph.D.,

| | |
|---|---|
| No residual disease per country – no. (%)[&] | |
| Belgium | 39 (62.9) |
| The Netherlands | 2 ( 3.9) |
| Norway | 3 ( 8.1) |
| Italy | 1 ( 6.3) |
| Spain | 3 (10.0) |
| United Kingdom | 5 (10.2) |
| Canada | 4 (11.1) |

plementary Appendix. Postoperative death (defined as death <28 days after surgery) occurred in 2.5% of patients in the primary-surgery group

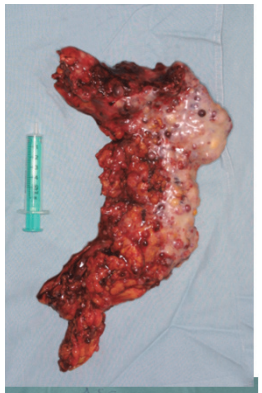
# Evidence | Pitfalls

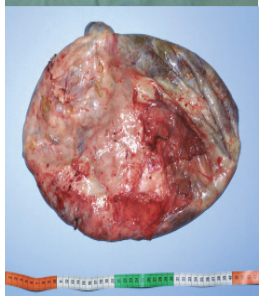
- R0

- Undertreatment
- Overtreatment
- Morbidity
- Mortality

→Frailty scores, performance status, ASA

→ Clinical judgement






# Cytoreductive Surgery in Ovarian Cancer

## Evidence | Pitfalls

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