

World Journal of *Clinical Cases*

World J Clin Cases 2022 April 26; 10(12): 3639-3968



Contents

Thrice Monthly Volume 10 Number 12 April 26, 2022

EVIDENCE REVIEW

- 3639** Tilt and decentration with various intraocular lenses: A narrative review
Chen XY, Wang YC, Zhao TY, Wang ZZ, Wang W

REVIEW

- 3647** Role of zonula occludens in gastrointestinal and liver cancers
Ram AK, Vairappan B

MINIREVIEWS

- 3662** Pathophysiological mechanisms of hepatic stellate cells activation in liver fibrosis
Garbuzenko DV

ORIGINAL ARTICLE

Retrospective Cohort Study

- 3677** Predictors of unfavorable outcome at 90 days in basilar artery occlusion patients
Chiu YC, Yang JL, Wang WC, Huang HY, Chen WL, Yen PS, Tseng YL, Chen HH, Tsai ST

Retrospective Study

- 3686** Role of multidetector computed tomography in patients with acute infectious colitis
Yu SJ, Heo JH, Choi EJ, Kim JH, Lee HS, Kim SY, Lim JH
- 3698** Efficacy and prognostic factors of neoadjuvant chemotherapy for triple-negative breast cancer
Ding F, Chen RY, Hou J, Guo J, Dong TY
- 3709** Relationship between subgroups of central and lateral lymph node metastasis in clinically node-negative papillary thyroid carcinoma
Zhou J, Li DX, Gao H, Su XL
- 3720** Nomogram to predict postoperative complications in elderly with total hip replacement
Tan XJ, Gu XX, Ge FM, Li ZY, Zhang LQ
- 3729** Flap failure prediction in microvascular tissue reconstruction using machine learning algorithms
Shi YC, Li J, Li SJ, Li ZP, Zhang HJ, Wu ZY, Wu ZY

Observational Study

- 3739** Surgery in platinum-resistant recurrent epithelial ovarian carcinoma
Zhao LQ, Gao W, Zhang P, Zhang YL, Fang CY, Shou HF

- 3754** Anorectal dysfunction in patients with mid-low rectal cancer after surgery: A pilot study with three-dimensional high-resolution manometry

Pi YN, Xiao Y, Wang ZF, Lin GL, Qiu HZ, Fang XC

Randomized Controlled Trial

- 3764** Effect of wrist-ankle acupuncture on propofol dosage during painless colonoscopy: A randomized controlled prospective study

He T, Liu C, Lu ZX, Kong LL, Li Y, Xu Z, Dong YJ, Hao W

META-ANALYSIS

- 3773** Melatonin intervention to prevent delirium in hospitalized patients: A meta-analysis

You W, Fan XY, Lei C, Nie CC, Chen Y, Wang XL

- 3787** Risk factors for hospital readmissions in pneumonia patients: A systematic review and meta-analysis

Fang YY, Ni JC, Wang Y, Yu JH, Fu LL

CASE REPORT

- 3801** Anti-programmed death 1 antibody in the treatment of coexistent *Mycobacterium fortuitum* and lung cancer: A case report

Zhang CC, Chen P

- 3808** Acute pancreatitis-induced thrombotic thrombocytopenic purpura: A case report

Wang CH, Jin HF, Liu WG, Guo Y, Liu Z

- 3814** Successful management of life-threatening aortoesophageal fistula: A case report and review of the literature

Zhong XQ, Li GX

- 3822** Isolated coagulopathy without classic CRAB symptoms as the initial manifestation of multiple myeloma: A case report

Zhang Y, Xu F, Wen JJ, Shi L, Zhou QL

- 3828** Evaluation of intracoronary function after reduction of ventricular rate by esmolol in severe stenotic myocardial bridge: A case report

Sun LJ, Yan DG, Huang SW

- 3834** Pediatric living donor liver transplantation using liver allograft after *ex vivo* backtable resection of hemangioma: A case report

Li SX, Tang HN, Lv GY, Chen X

- 3842** Kimura's disease in soft palate with clinical and histopathological presentation: A case report

Li W

- 3849** Combined targeted therapy and immunotherapy in anaplastic thyroid carcinoma with distant metastasis: A case report

Ma DX, Ding XP, Zhang C, Shi P

- 3856** Successful multimodality treatment of metastatic gallbladder cancer: A case report and review of literature
Zhang B, Li S, Liu ZY, Peiris KGK, Song LF, Liu MC, Luo P, Shang D, Bi W
- 3866** Ischemic colitis after receiving the second dose of a COVID-19 inactivated vaccine: A case report
Cui MH, Hou XL, Liu JY
- 3872** Cryoballoon pulmonary vein isolation and left atrial appendage occlusion prior to atrial septal defect closure: A case report
Wu YC, Wang MX, Chen GC, Ruan ZB, Zhang QQ
- 3879** Surgical treatment for a combined anterior cruciate ligament and posterior cruciate ligament avulsion fracture: A case report
Yoshida K, Hakozaiki M, Kobayashi H, Kimura M, Konno S
- 3886** Successful robot-assisted partial nephrectomy for giant renal hilum angiomyolipoma through the retroperitoneal approach: A case report
Luo SH, Zeng QS, Chen JX, Huang B, Wang ZR, Li WJ, Yang Y, Chen LW
- 3893** Cryptococcal antigen testing of lung tissue homogenate improves pulmonary cryptococcosis diagnosis: Two case reports
Wang WY, Zheng YL, Jiang LB
- 3899** Combined use of extracorporeal membrane oxygenation with interventional surgery for acute pancreatitis with pulmonary embolism: A case report
Yan LL, Jin XX, Yan XD, Peng JB, Li ZY, He BL
- 3907** Dynamic navigation system-guided trans-inferior alveolar nerve implant placement in the atrophic posterior mandible: A case report
Chen LW, Zhao XE, Yan Q, Xia HB, Sun Q
- 3916** Anti-glomerular basement membrane disease with IgA nephropathy: A case report
Guo C, Ye M, Li S, Zhu TT, Rao XR
- 3923** Amniotic membrane transplantation in a patient with impending perforated corneal ulcer caused by *Streptococcus mitis*: A case report and review of literature
Hsiao FC, Meir YJJ, Yeh LK, Tan HY, Hsiao CH, Ma DHK, Wu WC, Chen HC
- 3930** Steroid for Autoimmune pancreatitis complicating by gastric varices: A case report
Hao NB, Li X, Hu WW, Zhang D, Xie J, Wang XL, Li CZ
- 3936** Antithrombotic treatment strategy for patients with coronary artery ectasia and acute myocardial infarction: A case report
Liu RF, Gao XY, Liang SW, Zhao HQ
- 3944** Mesh plug erosion into the small intestine after inguinal hernia repair: A case report
Xie TH, Wang Q, Ha SN, Cheng SJ, Niu Z, Ren XX, Sun Q, Jin XS
- 3951** Recurrence of infectious mononucleosis in adults after remission for 3 years: A case report
Zhang XY, Teng QB

- 3959** Vertical direction impaction of kissing molars: A case report

Wen C, Jiang R, Zhang ZQ, Lei B, Yan YZ, Zhong YQ, Tang L

LETTER TO THE EDITOR

- 3966** Comment on “Outcomes of different minimally invasive surgical treatments for vertebral compression fractures: An observational study”

Ma L, Luo ZW, Sun YY

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Potluri Leela Ravishankar, MDS, Professor, Department of Periodontics, SRM Kattankulathur Dental College and Hospital, SRM University, Chennai 603203, Tamil Nadu, India. plrs6@yahoo.com

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2021 Edition of Journal Citation Reports® cites the 2020 impact factor (IF) for WJCC as 1.337; IF without journal self cites: 1.301; 5-year IF: 1.742; Journal Citation Indicator: 0.33; Ranking: 119 among 169 journals in medicine, general and internal; and Quartile category: Q3. The WJCC's CiteScore for 2020 is 0.8 and Scopus CiteScore rank 2020: General Medicine is 493/793.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Ying-Yi Yuan*, Production Department Director: *Xu Guo*, Editorial Office Director: *Jin-Lei Wang*.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Ja Hyeon Ku

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

April 26, 2022

COPYRIGHT

© 2022 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>

Observational Study

Surgery in platinum-resistant recurrent epithelial ovarian carcinoma

Ling-Qin Zhao, Wen Gao, Ping Zhang, Ying-Li Zhang, Chen-Yan Fang, Hua-Feng Shou

Specialty type: Surgery

Provenance and peer review:

Unsolicited article; externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B
Grade C (Good): C
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: Gupta S, United States; Paholpak P, Thailand

Received: October 1, 2021

Peer-review started: October 1, 2021

First decision: December 10, 2021

Revised: December 24, 2021

Accepted: March 6, 2022

Article in press: March 6, 2022

Published online: April 26, 2022



Ling-Qin Zhao, Wen Gao, Ping Zhang, Ying-Li Zhang, Chen-Yan Fang, Department of Gynecologic Oncology, The Cancer Hospital of the University of Chinese Academy of Sciences (Zhejiang Cancer Hospital), Institute of Basic Medicine and Cancer (IBMC), Chinese Academy of Sciences, Hangzhou 310022, Zhejiang Province, China

Hua-Feng Shou, Department of Gynecology, Zhejiang Provincial People's Hospital, People's Hospital of Hangzhou Medical College, Hangzhou 310014, Zhejiang Province, China

Corresponding author: Hua-Feng Shou, MD, Department of Gynecology, Zhejiang Provincial People's Hospital, People's Hospital of Hangzhou Medical College, No. 158 Shangtang Road, Xiacheng District, Hangzhou 310014, Zhejiang Province, China. shouhuafeng@hmc.edu.cn

Abstract

BACKGROUND

Ovarian cancer is one of the three most common malignant tumors of the female reproductive tract and ranks first in terms of mortality among gynecological tumors. Epithelial ovarian carcinoma (EOC) is the most common ovarian malignancy, accounting for 90% of all primary ovarian tumors. The clinical value of cytoreductive surgery in patients with platinum-resistant recurrent EOC remains largely unclear.

AIM

To evaluate the feasibility of secondary cytoreductive surgery for treating platinum-resistant recurrent EOC.

METHODS

This was a retrospective study of the clinical data of patients with platinum-resistant EOC admitted to the Cancer Hospital of the University of Chinese Academy of Sciences between September 2012 and June 2018. Patient baseline data were obtained from clinical records. Routine follow-up of disease progression was performed as follows. CA125 assessment and physical examination were performed every 3 wk during treatment, including gynecological examination. Imaging assessment was carried out every 12 wk by B-mode ultrasound, computed tomography, or magnetic resonance imaging. The primary outcome was progression-free survival (PFS). Secondary outcomes included overall survival (OS), chemotherapy-free interval (CFI), and complications. Follow-up ended on April 15, 2019.

RESULTS

A total of 38 patients were included. R0 resection was achieved in 25 (65.8%)

patients and R1/2 in 13 (34.2%). Twenty-five (65.8%) patients required organ resection. Nine (23.7%) patients had operative complications, 36 (94.7%) received chemotherapy, and five (13.2%) had targeted therapy. Median PFS and OS were 10 (95%CI: 8.27-11.73) months and 28 (95%CI: 12.75-43.25) months, respectively; median CFI was 9 (95%CI: 8.06-9.94) months. R0 resection and postoperative chemotherapy significantly prolonged PFS and OS (all $P < 0.05$), and R0 resection also significantly prolonged CFI ($P < 0.05$). Grade ≥ 3 complications were observed, including rectovaginal fistula ($n = 1$), intestinal and urinary fistulas ($n = 1$), and renal failure-associated death ($n = 1$). Except for the patient who died after surgery, all other patients with complications were successfully managed. Two patients developed intestinal obstruction and showed improvement after conservative treatment.

CONCLUSION

Secondary cytoreductive surgery is feasible for treating platinum-resistant recurrent EOC. These findings provide important references for the selection of clinical therapeutic regimens.

Key Words: Carcinoma; Ovarian epithelial; Cisplatin; Drug resistance; Neoplasm; Surgical treatment

©The Author(s) 2022. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: This retrospective study examined 38 patients with platinum-resistant epithelial ovarian carcinoma (EOC). R0 resection was achieved in 25 (65.8%) and R1/2 in 13 (34.2%). Twenty-five (65.8%) patients required organ resection. Nine (23.7%) patients had operative complications, 36 (94.7%) received chemotherapy, and five (13.2%) had targeted therapy. Median progression-free survival (PFS) and overall survival (OS) were 10 and 28 mo, respectively; median chemotherapy-free interval (CFI) was 9 mo. R0 resection and postoperative chemotherapy significantly prolonged PFS and OS, and R0 resection also significantly prolonged CFI. Overall, these findings indicated secondary cytoreductive surgery is feasible for the treatment of platinum-resistant recurrent EOC.

Citation: Zhao LQ, Gao W, Zhang P, Zhang YL, Fang CY, Shou HF. Surgery in platinum-resistant recurrent epithelial ovarian carcinoma. *World J Clin Cases* 2022; 10(12): 3739-3753

URL: <https://www.wjgnet.com/2307-8960/full/v10/i12/3739.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v10.i12.3739>

INTRODUCTION

Ovarian cancer is one of the three most common malignant tumors of the female reproductive tract and ranks first in terms of mortality among gynecological tumors[1]. Worldwide, there are more than 200000 new cases each year, *i.e.*, approximately 6.6 per 100000 women[2]. In China, ovarian cancer incidence is 5.3 per 100000[3]. Epithelial ovarian carcinoma (EOC) is the most common ovarian malignancy, accounting for 90% of all primary ovarian tumors[4]. With advances in surgical treatments and the development of chemotherapeutic drugs and targeted therapies (*e.g.*, PARP inhibitors), the prognosis of EOC patients has been greatly improved; however, five-year survival remains very low, predominantly due to cancer cell resistance to chemotherapy. The overall five-year survival rate of EOC patients in the United States is about 49%, but only 17% in cases with advanced disease[5-7]. The latest Chinese survey in 2014 showed an average five-year survival rate for ovarian cancer of 38.9%[3,8].

The response rate obtained after platinum-based chemotherapy is about 80% in the adjuvant setting but is reduced to approximately 20% in recurrent EOC[4,9,10]. In addition, newly available PARP inhibitors improve the prognosis of patients with platinum-sensitive EOC but show low efficacy in platinum-resistant EOC[11,12]. Thus, improving the management of platinum-resistant ovarian cancer is extremely important in improving patient prognosis. The main treatment goals in recurrent EOC include symptom relief, improved quality of life, and prolonged survival. According to the latest NCCN guidelines for recurrent EOC, alternative treatments for platinum-resistant recurrent EOC patients mainly include “participation in clinical trials, supportive care, chemotherapeutic regimens (non-platinum monotherapy), or observation (category 2B)”[10]. For the treatment of cisplatin-resistant recurrent EOC, the traditional main approach is administering non-platinum chemotherapeutic drugs with or without bevacizumab, but its efficacy is poor, with an increase in progression-free survival of only about 3 mo[13,14]. Other chemotherapeutic drugs show objective response rates of 19%-27%[10]. In patients with platinum-resistant EOC, median overall survival (OS) is approximately 1 year[10,15].

For platinum non-resistant patients, the NCCN guidelines suggest that secondary cytoreductive surgery could be considered[10]. However, in patients with platinum-resistant recurrent EOC, further studies are needed to verify the feasibility of cytoreductive surgery in prolonging survival. Indeed, the value of cytoreductive surgery in such patients remains controversial[16,17]. Nevertheless, recent studies suggested a survival benefit in selected patients, especially those with minimal residual disease after surgery[17-24]. This finding was also supported by a meta-analysis[25].

Therefore, the objective of this study was to evaluate the feasibility of secondary cytoreductive surgery for the treatment of platinum-resistant recurrent EOC. The results could provide a promising option for improving the prognosis of such patients.

MATERIALS AND METHODS

Study design and patients

It was a retrospective study of the clinical data of patients with platinum-resistant EOC admitted to the Department of Gynecologic Oncology, Cancer Hospital of the University of Chinese Academy of Sciences (Zhejiang, China) between September 2012 and June 2018. The present study was approved by the Medical Ethics Committee of Zhejiang Cancer Hospital. The study has obtained informed consent for all individual participants that appear in this manuscript.

Inclusion criteria were: (1) Pathologically confirmed recurrent EOC, defined as clinical relapse with objective radiological disease progression based on the modified RECIST version 1.1[26], with or without previous chemotherapy[10]; (2) Platinum-resistant recurrent EOC, *i.e.*, failure to control condition after chemotherapy with platinum drugs or recurrence within 6 mo after discontinuation of chemotherapy (drug resistance after the initial administration of platinum drugs was defined as primary drug resistance; otherwise, secondary drug resistance was considered)[10,27]; (3) Cytoreductive surgery for recurrent EOC in our hospital; and (4) Complete medical records. Exclusion criteria were: (1) Concurrent malignant tumor; or (2) 5-year history of another primary malignant tumor, except for carcinoma *in situ*.

Cytoreductive surgery and other treatments

The patient underwent maximum cytoreductive surgery, and multiple organs were removed if necessary. Postoperative chemotherapy was administered. All surgeries were completed by the same team consisting of chief physicians with > 20 years of experience. There is no standard surgical procedure for secondary surgery in recurrent ovarian cancer. Therefore, the operation depended on the involved organs. Recurrence locations (*e.g.*, abdominopelvic cavity) were examined, with or without organ resection; most importantly, the presence or absence of residual lesions was recorded.

The chemotherapeutic regimen was platinum combined with liposomal doxorubicin, paclitaxel, gemcitabine, docetaxel, or etoposide, as suggested by the NCCN guidelines that were current at the time of patient treatment (*i.e.*, the 2012-2018 NCCN guidelines).

Follow-up

Follow-up ended on April 15, 2019, and was performed routinely at the outpatient clinic or by telephone. All data were extracted from medical charts. Routine follow-up of disease progression was performed as follows. CA125 assessment and physical examination were performed every 3 wk during treatment, including gynecological examination. Imaging assessment was carried out every 12 wk by B-mode ultrasound, computed tomography (CT), or magnetic resonance imaging (MRI). At the end of treatment, comprehensive reexamination, including CA125 detection, gynecological examination, and imaging, was performed. Imaging was performed to assess disease progression and recurrence, recurrence sites, lesion location, presence or absence of ascites, *etc.* Given that ovarian cancer recurrence may occur in the abdominopelvic cavity, chest, brain, and other locations, imaging examinations were performed for all these suspicious locations, mainly by B-mode ultrasound, but also by CT, MRI, and positron emission tomography. After treatment, follow-up was performed every 3 mo within 2 years and every 6 mo after that. CA125 detection, gynecological examination, and imaging were performed in post-treatment follow-ups. Progression-free survival (PFS) was determined as the time between the cytoreductive surgery and objective radiological disease progression based on the modified RECIST 1.1 [26] or death. OS was determined as the time from the cytoreductive surgery to death.

Data collection

Patient baseline data were obtained from clinical records, including age, pathological type (high-grade serous carcinoma, endometrioid carcinoma, clear cell carcinoma, mucinous carcinoma, and mixed type), pathological classification (highly, moderately, and poorly differentiated), previous surgery (residual lesions of the first surgery, International federation of gynecology and obstetrics (FIGO) staging, and the number of previous surgeries), previous chemotherapy (neoadjuvant chemotherapy or not, the total number of previous chemotherapies, and remission time conferred by chemotherapy before drug-

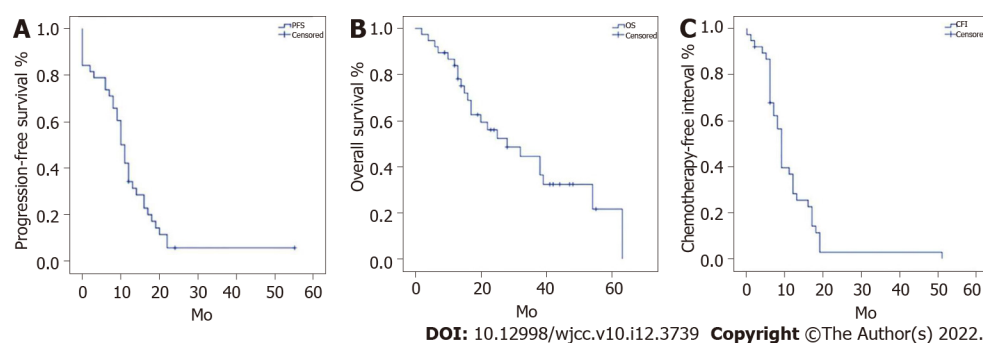


Figure 1 Survival curves. A: Progression-free survival (PFS); B: Overall survival (OS); C: Chemotherapy-free interval (CFI) after secondary surgery for platinum-resistant recurrent epithelial ovarian carcinoma. Median PFS was 10 (95%CI: 8.27-11.73) months. Median OS was 28 (95%CI: 12.75-43.25) months. Median CFI was 9 (95%CI: 8.06-9.94) months.

resistance necessitating surgery), and type of drug resistance (primary or secondary platinum resistance). In addition, relevant surgical data were also documented, including the time from disease onset to this surgery, preoperative Eastern collaborative oncology group (ECOG) score, location of recurrent lesions, and surgical resection outcome (R0, no macroscopic residual lesion; R1, residual lesion ≤ 1 cm; R2, > 1 cm), intraoperative organ resection or not, intraoperative bleeding amount, perioperative complications, total number of postoperative chemotherapies, postoperative administration of targeted drugs or not, and postoperative hospital stay.

Outcomes

The primary outcome was PFS. Secondary outcomes included: (1) Postoperative OS; (2) chemotherapy-free interval (CFI) after surgery and first-line chemotherapy; and (3) perioperative complications, including their severity levels (severity classification of surgical complications of the MSKCC[28]) and treatment conditions.

At least two senior gynecological oncologists assessed postoperative progression. In case of disagreement, the department conducted discussions until consensus. At each follow-up reexamination, comprehensive assessments were performed: CA125 Level determination, gynecological examination, and imaging.

Statistical analysis

All statistical analyses were carried out with SPSS 22.0 (IBM Corp., Armonk, NY, United States). Continuous data with normal distribution were presented as mean $\pm$ SD, and those with skewed distribution as median (range). Categorical data were presented as frequency (percentage). Univariable Cox regression analysis was performed for PFS, OS, and CFI. Kaplan-Meier curves were plotted and analyzed by the log-rank test. Multivariable models were unstable because of the small sample size, and such analyses could not be performed in a reliable manner. Two-sided $P < 0.05$ was considered statistically significant.

RESULTS

Patient characteristics

A total of 38 patients were included. Their characteristics are presented in Table 1. The resection type at the initial surgery was R0 in 20 (52.6%) patients, R1 in 10 (26.3%), and R2 in 8 (21.1%). Among these patients, 16 (42.1%) had recurrence within 3 mo of the initial treatment, and 22 (57.9%) between 3 and 6 mo. Twenty-seven (71.1%) patients had secondary platinum resistance, while 11 (28.9%) had primary resistance.

Characteristics of secondary cytoreductive surgeries

Table 2 presents the characteristics of cytoreductive surgeries. Most patients (33/38, 86.8%) had an ECOG of 0-1. The recurrent lesions were in the pelvic cavity in 7 (18.4%) patients, in the abdominopelvic cavity in 16 (42.1%), and in the abdominopelvic cavity and retroperitoneum in 15 (39.5%). R0 resection was achieved in 25 (65.8%) patients and R1/2 in 13 (34.2%). Twenty-five (65.8%) cases required organ resection. Nine (23.7%) patients showed operative complications, 36 (94.7%) underwent chemotherapy, and five (13.2%) received targeted therapy. Most patients (24/38, 63.2%) were hospitalized for ≤ 10 d.

Table 1 Patient baseline characteristics

Characteristic	Patients (n = 38)
Age, n (%)	
< 50 yrs	18 (47.4)
≥ 50 yrs	20 (52.6)
Pathological type, n (%)	
High-grade serous carcinoma	26 (68.4)
Endometrioid carcinoma	5 (13.2)
Clear cell carcinoma	5 (13.2)
Mucinous carcinoma	1 (2.6)
Mixed type	1 (2.6)
Pathological classification, n (%)	
Highly differentiated	3 (7.9)
Moderately differentiated	3 (7.9)
Poorly differentiated	32 (84.2)
Number of previous surgery, n (%)	
0	1 (2.6)
1	32 (84.2)
2	4 (10.6)
3	1 (2.6)
Number of previous chemotherapy lines, n (%)	
1	24 (63.1)
2	8 (21.1)
≥ 3	6 (15.8)
FIGO staging of the first surgery, n (%)	
I	2 (5.3)
II	12 (31.5)
III	22 (57.9)
IV	2 (5.3)
Residual lesions of the first surgery, n (%)	
R0	20 (52.6)
R1	10 (26.3)
R2	8 (21.1)
Neoadjuvant chemotherapy, n (%)	9 (23.7)
Remission time of chemotherapy before this secondary surgery, n (%)	
≤ 3 mo	16 (42.1)
3-6 mo	22 (57.9)
Type of platinum resistance, n (%)	
Secondary	27 (71.1)
Primary	11 (28.9)

FIGO: International federation of gynecology and obstetrics.

Table 2 Data of secondary surgery for platinum-resistant recurrent epithelial ovarian carcinoma

Characteristic	Patients (n = 38)
Preoperative ECOG score, n (%)	
0-1	33 (86.8)
2	5 (13.2)
Location of recurrent lesions, n (%)	
Pelvic cavity	7 (18.4)
Abdominopelvic cavity	16 (42.1)
Pelvic/abdominal cavity + retroperitoneal	15 (39.5)
Residual lesions of the secondary surgery, n (%)	
R0	25 (65.8)
R1-R2	13 (34.2)
Intraoperative organ resection, n (%)	
No	13 (34.2)
Yes	25 (65.8)
Bleeding amount (mL), n (%)	
≤ 400	20 (52.6)
401-800	12 (31.6)
> 801	6 (15.8)
Perioperative complications, n (%)	
No	29 (76.3)
Yes	9 (23.7)
Postoperative chemotherapy, n (%)	
No	2 (5.3)
Yes	36 (94.7)
Postoperative use of targeted drugs, n (%)	
No	33 (86.8)
Yes	5 (13.2)
Postoperative hospital stay, n (%)	
≤ 10 d	24 (63.2)
11-20 d	12 (31.6)
> 20 d	2 (5.2)

ECOG: Eastern collaborative oncology group.

PFS, OS, and CFI

Figure 1 displays PFS, OS, and CFI in the 38 patients. Median PFS and OS were 10 (95%CI: 8.27-11.73) months and 28 (95%CI: 12.75-43.25) months, respectively; median CFI was 9 (95%CI: 8.06-9.94) months.

Associations of various factors with treatment outcome

The results of Cox univariable analysis are shown in **Table 3**. Macroscopic residual lesions (HR = 3.29; 95%CI: 1.511-7.162; $P = 0.003$), intraoperative bleeding > 800 mL (HR = 2.862; 95%CI: 1.048-7.813; $P = 0.04$), and no postoperative chemotherapy (HR = 5.027; 95%CI: 1.061-23.828; $P = 0.042$) were associated with PFS. Pathological mixed type (HR = 11.285; 95%CI: 1.157-110.099; $P = 0.037$), macroscopic residual lesions (HR = 2.65; 95%CI: 1.115-6.298; $P = 0.027$), and no postoperative chemotherapy (HR = 57.66; 95%CI: 5.099-651.995; $P = 0.001$) were associated with OS. Pathological type of endometrioid carcinoma (HR = 0.32; 95%CI: 0.107-0.956; $P = 0.041$) and macroscopic residual lesions (HR = 2.777; 95%CI: 1.108-4.679; $P = 0.025$) were associated with CFI.

Table 3 Univariable Cox regression analysis of various outcomes

Characteristics	PFS			OS			CFI		
	HR	95%CI	P value	HR	95%CI	P value	HR	95%CI	P value
Age									
< 50 yrs	0.929	(0.469, 1.839)	0.832	0.684	(0.276, 1.694)	0.412	1.06	(0.538, 2.092)	0.866
≥ 50 yrs	Reference			Reference			Reference		
Pathological type									
High-grade serous carcinoma	Reference			Reference			Reference		
Endometrioid carcinoma	0.523	(0.178, 1.543)	0.241	0.697	(0.199, 2.439)	0.572	0.32	(0.107, 0.956)	0.041
Clear cell carcinoma	1.107	(0.417, 2.942)	0.838	0.788	(0.224, 2.769)	0.71	0.991	(0.368, 2.67)	0.985
Mucinous carcinoma	0.491	(0.065, 3.706)	0.491	1.957	(0.249, 15.399)	0.524	0.238	(0.031, 1.849)	0.17
Mixed type	6.929	(0.803, 59.809)	0.078	11.285	(1.157, 110.099)	0.037	2.559	(0.327, 20.016)	0.371
Pathological classification									
Highly differentiated	0.822	(0.249, 2.713)	0.748	1.427	(0.413, 4.931)	0.574	0.644	(0.193, 2.154)	0.475
Moderately differentiated	0.583	(0.137, 2.474)	0.464	0.878	(0.198, 3.881)	0.863	0.348	(0.082, 1.477)	0.152
Poorly differentiated	Reference			Reference			Reference		
Number of previous surgery									
0	3.676	(0.464, 29.112)	0.218	6.505	(0.755, 56.05)	0.088	8.71	(0.969, 78.245)	0.053
1	Reference			Reference			Reference		
2	0.807	(0.276, 2.358)	0.696	0.961	(0.223, 4.151)	0.958	1.02	(0.351, 2.964)	0.97
3	0.922	(0.124, 6.864)	0.937	/	/	/	1.251	(0.167, 9.374)	0.827
Number of previous chemotherapy lines									
1	Reference			Reference			Reference		
2	0.639	(0.272, 1.504)	0.305	0.573	(0.165, 1.987)	0.381	0.974	(0.426, 2.229)	0.951
≥ 3	0.81	(0.307, 2.142)	0.672	1.863	(0.592, 5.865)	0.288	1.182	(0.476, 2.935)	0.719
FIGO staging of the first surgery									
I	1.507	(0.345, 6.58)	0.586	1.634	(0.358, 7.466)	0.526	2.678	(0.577, 12.437)	0.209
II	0.752	(0.352, 1.606)	0.462	1.244	(0.512, 3.027)	0.63	0.672	(0.319, 1.415)	0.295
III	Reference			Reference			Reference		
IV	0.419	(0.097, 1.819)	0.246	/	/	/	0.525	(0.12, 2.285)	0.39
Residual lesions of the first surgery									
R0	Reference			Reference			Reference		
R1	1.122	(0.505, 2.49)	0.778	0.936	(0.355, 2.469)	0.894	1.059	(0.484, 2.32)	0.885
R2	1.071	(0.461, 2.489)	0.874	0.422	(0.119, 1.511)	0.181	1.055	(0.454, 2.489)	0.9

					1.492)			2.456)	
Neoadjuvant chemotherapy	0.629	(0.278, 1.423)	0.266	1.081	(0.394, 2.965)	0.879	0.717	(0.329, 1.56)	0.401
Remission time of chemotherapy before this secondary surgery									
≤ 3 mo	1.338	(0.68, 2.631)	0.399	0.767	(0.322, 1.827)	0.549	1.022	(0.519, 2.014)	0.95
3-6 mo	Reference			Reference			Reference		
Type of platinum resistance									
Secondary	Reference			Reference			Reference		
Primary	0.982	(0.471, 2.048)	0.962	0.843	(0.281, 2.529)	0.761	1.354	(0.647, 2.833)	0.421
Preoperative ECOG score									
0-1	Reference			Reference			Reference		
2	0.643	(0.226, 1.830)	0.408	0.654	(0.184, 2.323)	0.511	0.575	(0.221, 1.497)	0.257
Location of recurrent lesions									
Pelvic cavity	0.799	(0.305, 2.091)	0.648	0.981	(0.314, 3.062)	0.973	0.661	(0.239, 1.827)	0.425
Abdominopelvic cavity	Reference			Reference			Reference		
Pelvic/abdominal cavity + retroperitoneal	0.818	(0.391, 1.711)	0.594	0.728	(0.279, 1.9)	0.516	0.867	(0.422, 1.78)	0.697
Residual lesions of this secondary surgery									
R0	Reference			Reference			Reference		
R1-R2	3.29	(1.511, 7.162)	0.003	2.65	(1.115, 6.298)	0.027	2.777	(1.108, 4.679)	0.025
Intraoperative organ resection	1.251	(0.616, 2.542)	0.536	1.19	(0.485, 2.921)	0.705	1.586	(0.772, 3.257)	0.21
Bleeding amount									
≤ 400 mL	Reference			Reference			Reference		
401-800 mL	0.668	(0.309, 1.444)	0.305	0.634	(0.222, 1.807)	0.393	0.963	(0.459, 2.021)	0.92
> 800 mL	2.862	(1.048, 7.813)	0.04	2.422	(0.83, 7.072)	0.106	1.601	(0.623, 4.111)	0.328
Perioperative complications	0.669	(0.289, 1.548)	0.348	1.355	(0.527, 3.478)	0.528	0.713	(0.307, 1.656)	0.432
Postoperative chemotherapy									
No	5.027	(1.061, 23.828)	0.042	57.66	(5.099, 651.995)	0.001	/	/	/
Yes	Reference			Reference			/	/	/
Postoperative use of targeted drugs	0.518	(0.178, 1.504)	0.226	0.436	(0.101, 1.887)	0.267	0.745	(0.277, 2.003)	0.56
Postoperative hospital stay									
≤ 10 d	Reference			Reference			Reference		
11-20 d	1.212	(0.573, 2.567)	0.615	2.411	(0.963, 6.037)	0.06	1.104	(0.524, 2.328)	0.795
> 20 d	1.911	(0.44, 8.308)	0.388	3.98	(0.853, 18.563)	0.079	3.246	(0.695, 15.154)	0.134

OS: Overall survival; PFS: Progression-free survival; CFI: Chemotherapy-free interval; HR: Hazard ratio; CI: Confidence interval; FIGO: International

Subgroup analyses

Subgroup analyses of important clinical indicators were performed based on the above univariate analysis (Figures 2-4). PFS in patients with R0 resection was significantly longer than that of the R1/2 resection group [12 (8.83, 15.17) *vs* 8 (2.27, 13.73) months; $P = 0.001$]. PFS was significantly longer in patients receiving postoperative chemotherapy than in those without postsurgical chemotherapy [11 (9.33, 12.67) *vs* 2 mo; $P = 0.018$] (Figure 2). OS was significantly prolonged in patients with R0 resection compared with those with R1/2 resection [39 (15.36, 62.64) *vs* 15 (8.71, 21.29) months; $P = 0.021$]. OS was significantly longer in patients administered postoperative chemotherapy than those without postoperative chemotherapy [32 (17.68, 46.32) *vs* 2 mo; $P < 0.001$] (Figure 3). CFI in patients with R0 resection was significantly prolonged than that of the R1/2 resection group [9 (6.22, 11.78) *vs* 6 (2.48, 9.52) months; $P = 0.013$]. Taken together, these results indicated that R0 resection and postoperative chemotherapy could significantly prolong PFS and OS, while R0 resection also significantly increased the CFI.

Complications

Grade ≥ 3 complications were observed, including rectovaginal fistula ($n = 1$), intestinal and urinary fistulas ($n = 1$), and renal failure-associated death ($n = 1$). Except for the patient who died after surgery, all other patients with complications were successfully managed. Two patients developed intestinal obstruction and showed improvement after conservative treatment. One patient with an intestinal fistula was relieved after ileostomy. One patient with an intestinal fistula complicated with a ureteral fistula showed improvement after ileal fistulation and ureteral stent placement under cystoscopy. One patient developed abdominal hemorrhage and was relieved after another surgery. Two patients with effusion of the spleen fossa and pelvic abscess were relieved by ultrasound-guided puncture drainage of the effusion and anti-inflammatory treatment. One patient developed renal dysfunction and electrolyte imbalance and showed improvement after medical treatment.

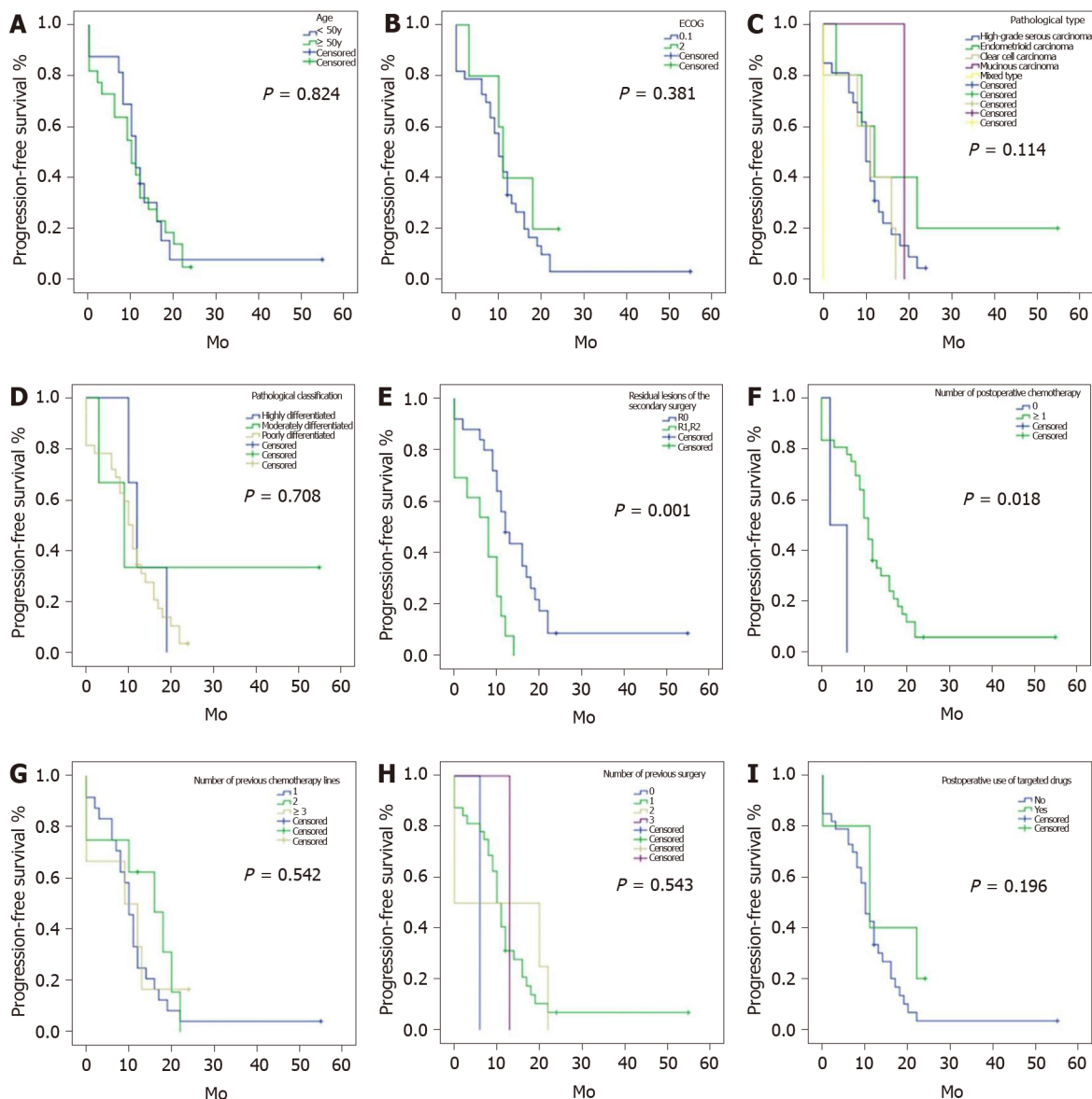
DISCUSSION

There are few treatment options for platinum-resistant recurrent EOC[10], and the available treatments have unsatisfactory efficacy, resulting in a poor prognosis. Cytoreductive surgery for advanced gynecologic tumors could be a good option[17,19-24], but controversies remain about its clinical value [16,17]. Therefore, this study aimed to evaluate the feasibility of secondary cytoreductive surgery for treating platinum-resistant recurrent EOC. The results suggested that R0 resection and postoperative chemotherapy could significantly prolong PFS and OS, while R0 resection also significantly prolonged the CFI. Therefore, secondary cytoreductive surgery is feasible for treating platinum-resistant recurrent EOC. This study provides references for the selection of clinical therapeutic regimens.

As shown above, median PFS post-cytoreductive surgery was 10 mo, and median OS was 28 mo; a median CFI of 9 mo was recorded. Different studies have reported variable outcomes after surgery for recurrent EOC. Nevertheless, complicating the analysis of available results, many reports were not specifically focused on platinum-resistant EOC, and the obtained OS values were significantly longer than those described in the present study. Therefore, caution must be taken when comparing the shorter survival observed in this study with the literature. The current treatment option for platinum-resistant EOC is usually chemotherapy. Because there was no control group in the current study, no data were available for a chemotherapy group. Available data indicate that the effect of chemotherapy on platinum-resistant EOC is poor. Considering that the OS of patients with platinum-resistant EOC is about 1 year[10,15], an OS of 28 mo found in the present study could be seen as promising, despite the lack of a control group. This 28-mo median OS is shorter than that observed for EOC in general (without distinction on platinum resistance), 32-67 mo[17,19,21,23,24,29]. Additional multicenter studies could be carried out to examine those factors.

Another parameter that could influence survival is chemotherapy compliance, which can be indicated by the number of chemotherapy cycles. Generally, 6 cycles of chemotherapy are needed after recurrence [10]. However, given that patients with recurrent ovarian cancer usually undergo multiple lines of chemotherapy, chemotherapy tolerance can be reduced, and 4-6 cycles could be considered to indicate good compliance. In addition, treatment costs can limit the number of chemotherapy cycles.

In platinum-sensitive EOC, Canaz *et al*[30] reported that ascites and R0 resection are associated with longer PFS. In addition, Schorge *et al*[21] demonstrated that residual lesion < 5 mm, and < 5 sites of disease relapse are associated with improved OS. Furthermore, Salani *et al*[19] showed that disease-to-recurrence interval < 18 mo, 1-2 recurrent sites, and R0 resection are associated with improved survival. Moreover, Eisenkop *et al*[23] showed that a long disease-free interval after the primary treatment, R0 resection, salvage chemotherapy, and recurrent lesions < 10 cm are associated with improved survival.

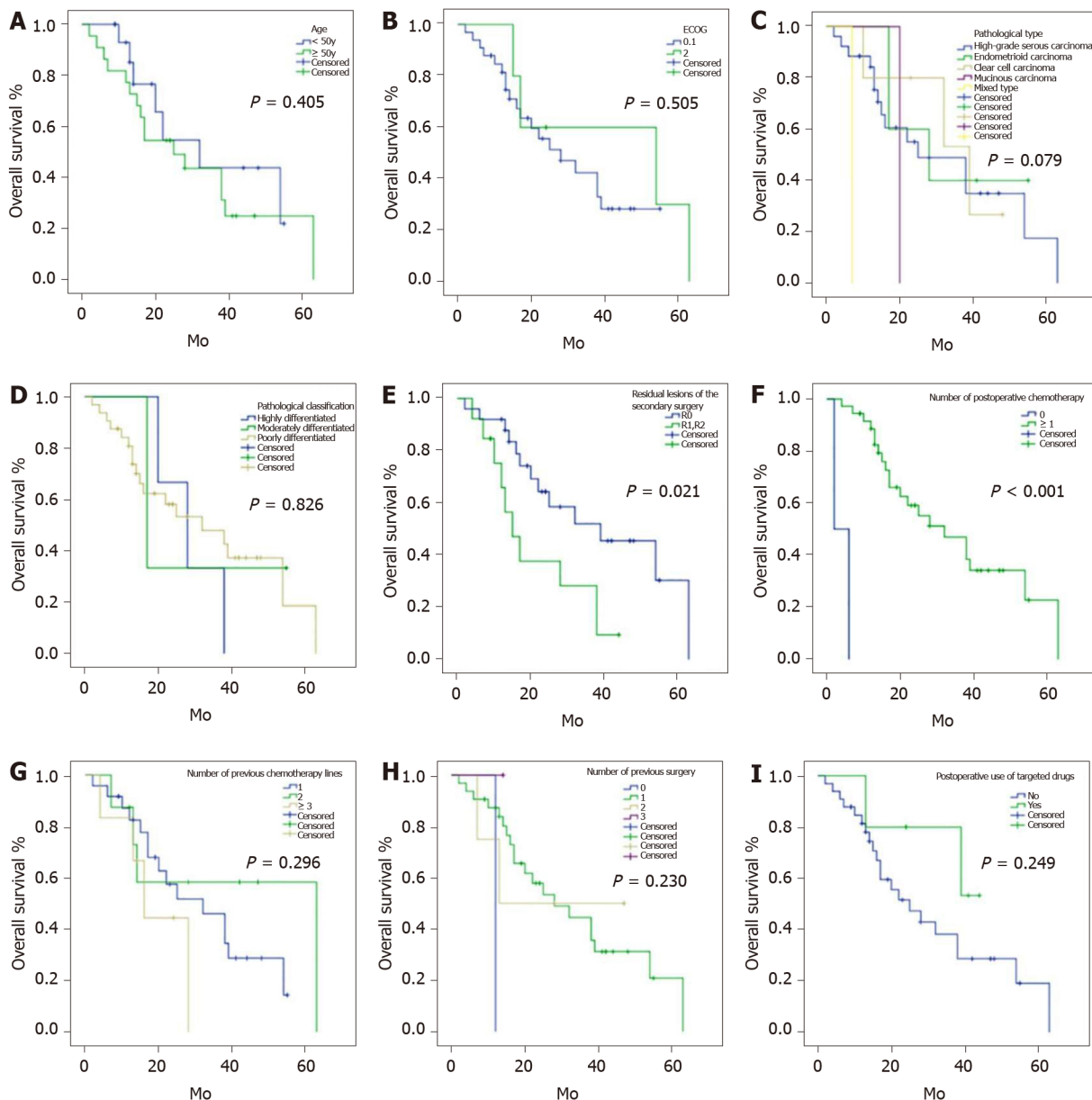


DOI: 10.12998/wjcc.v10.i12.3739 Copyright ©The Author(s) 2022.

Figure 2 Kaplan-Meier survival curves for subgroup analysis of progression-free survival. The absence of residual lesions after cytoreductive surgery ($P = 0.001$) and postoperative chemotherapy ($P = 0.018$) were associated with improved progression-free survival. A: Age ($P = 0.824$); B: Eastern collaborative oncology group score ($P = 0.381$); C: Pathological type ($P = 0.114$); D: Tumor differentiation ($P = 0.708$); E: Absence of residual lesions after cytoreductive surgery ($P = 0.001$); F: Postoperative chemotherapy ($P = 0.018$); G: Number of chemotherapy lines ($P = 0.542$); H: The number of previous surgeries ($P = 0.543$); I: Targeted drugs ($P = 0.196$). ECOG: Eastern collaborative oncology group.

Besides, Onda *et al*[24] showed that R0 resection, disease-free interval > 12 mo, no liver metastasis, solitary lesion, and lesion < 6 cm are associated with improved survival. Shih *et al*[22] highlighted that maximum cytoreductive efforts should be made in patients with recurrent EOC. On the other hand, in platinum-resistant EOC, ascites and tumor size kinetics during chemotherapy appear to be the two most influential factors associated with OS[10]. Optimal tumor debulking improves patient prognosis in patients with platinum resistance after neoadjuvant chemotherapy[31]. In the present study, R0 resection and postoperative chemotherapy were associated with longer PFS and OS, while R0 resection also significantly prolonged the CFI. Taken together, these results indicate that R0 resection is a critical factor for the success of salvage cytoreduction therapy in patients with platinum-resistant recurrent EOC. The above results suggested that in case of satisfactory effects achieved by cytoreductive surgery for platinum-resistant EOC, the patients would benefit from the surgery regardless of previous FIGO stage, pathological type, neoadjuvant chemotherapy, the number of chemotherapy lines, and the type of drug resistance. Furthermore, studies reported that the management of malignant ascites and malignant bowel obstruction could by itself improve survival in patients with treatment-resistant disease[32-36]. Such supportive and palliative treatments could also play a role in survival.

Surgical complications in platinum-resistant recurrent EOC cases undergoing secondary cytoreductive surgery also influence the postoperative quality of life and survival. Therefore, the safety of the



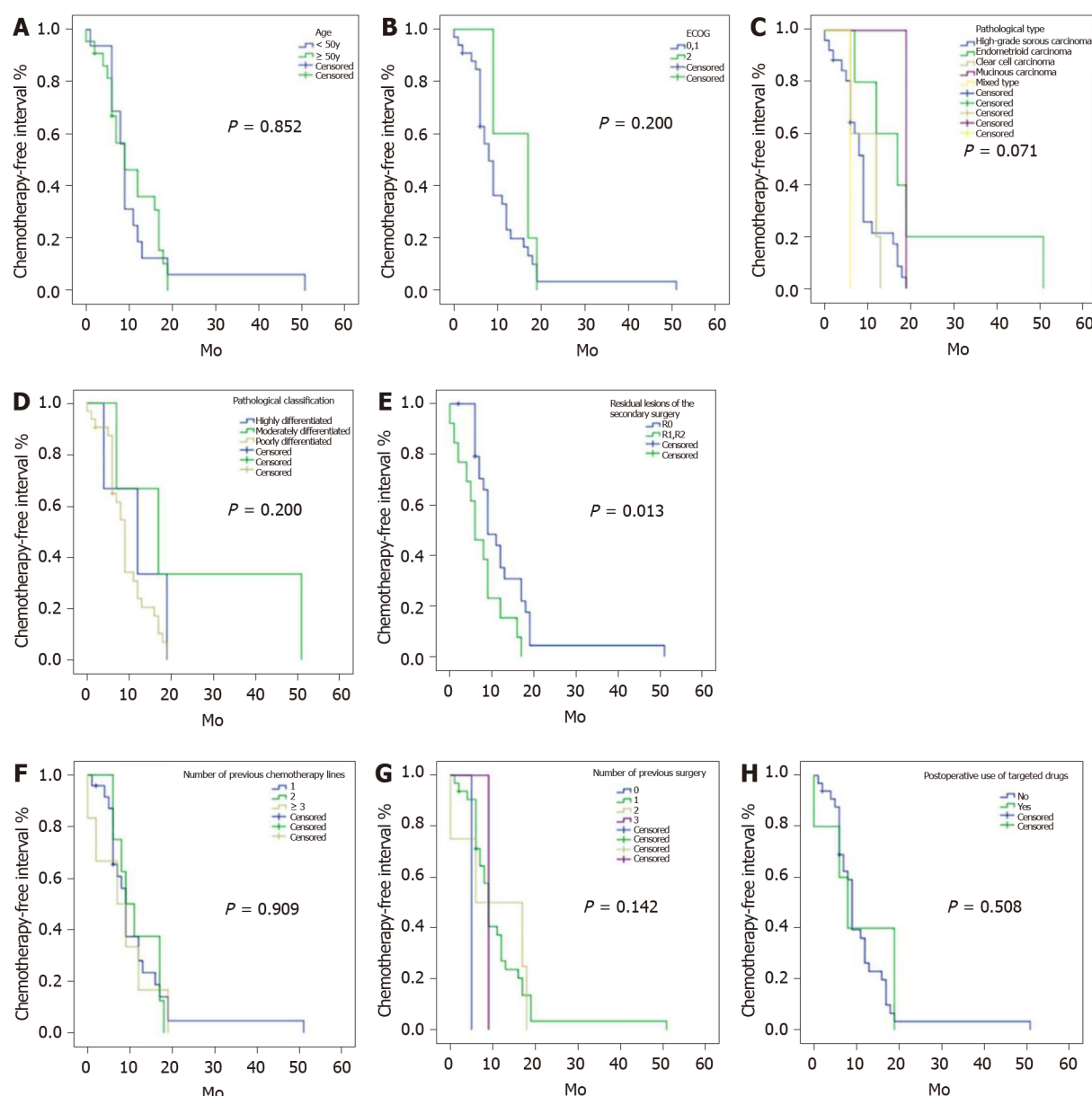
DOI: 10.12998/wjcc.v10.i12.3739 Copyright ©The Author(s) 2022.

Figure 3 Kaplan-Meier survival curves for subgroup analysis of overall survival. The absence of residual lesions after cytoreductive surgery ($P = 0.021$) and postoperative chemotherapy ($P < 0.001$) were associated with improved overall survival. A: Age ($P = 0.405$); B: Eastern collaborative oncology group score ($P = 0.505$); C: Pathological type ($P = 0.079$); D: Tumor differentiation ($P = 0.826$); E: Absence of residual lesions after cytoreductive surgery ($P = 0.021$); F: Postoperative chemotherapy ($P < 0.001$); G: the number of chemotherapy lines ($P = 0.296$); H: The number of previous surgeries ($P = 0.230$); I: Targeted drugs ($P = 0.249$). ECOG: Eastern collaborative oncology group.

surgical treatment, the resectability of the recurrent lesions, and the incidence of perioperative complications are important indicators of treatment safety and feasibility. In the present study, the complication rate was 24%, which corroborates previous studies[17,19-24].

The present study examined CFI, but this outcome has some limitations. Indeed, some patients with poor chemotherapy tolerance or insensitivity to chemotherapy could show long CFI but a short OS. On the other hand, a short CFI could be associated with a long OS because of previous treatments. Nevertheless, the CFI may reflect the patient's quality of life[37]. In some patients with platinum-resistant ovarian cancer, post-chemotherapy CFI was prolonged by secondary cytoreductive surgery. In addition, for some patients with elevated CA125 amounts but no evidence of disease in clinical and imaging examinations, the CFI could be prolonged, thereby keeping possibly effective options once symptoms occur.

This study was a retrospective case series, and the absence of a control group was the main limitation. There were few patients with platinum-resistant recurrent EOC in our center, and many had incomplete chemotherapy data because they returned to their local hospitals after the first chemotherapy cycles. This study did not have a control group. Therefore, additional large prospective, multicenter,



DOI: 10.12998/wjcc.v10.i12.3739 Copyright ©The Author(s) 2022.

Figure 4 Kaplan-Meier survival curves for subgroup analysis of chemotherapy-free interval. The absence of residual lesions after cytoreductive surgery ($P = 0.013$) was associated with improved chemotherapy-free interval. A: Age ($P = 0.852$); B: Eastern collaborative oncology group score ($P = 0.200$); C: Pathological type ($P = 0.071$); D: Tumor differentiation ($P = 0.200$); E: Residual lesions after cytoreductive surgery ($P = 0.013$); F: Number of chemotherapy lines ($P = 0.909$); G: The number of previous surgeries ($P = 0.142$); H: Targeted drugs ($P = 0.508$). ECOG: Eastern collaborative oncology group.

randomized clinical trials are needed to provide further high-level evidence.

CONCLUSION

In patients with platinum-resistant recurrent EOC, secondary cytoreductive surgery could significantly improve PFS, OS, and CFI in case of no macroscopic residual lesions. Postoperative chemotherapy could further improve PFS and OS. Therefore, secondary cytoreductive surgery has certain clinical feasibility, providing a potential treatment option for these patients.

ARTICLE HIGHLIGHTS

Research background

Ovarian cancer is one of the three most common malignant tumors of the female reproductive tract and

ranks first in terms of mortality among gynecological tumors. Epithelial ovarian carcinoma (EOC) is the most common ovarian malignancy, accounting for 90% of all primary ovarian tumors.

Research motivation

The clinical value of cytoreductive surgery in patients with platinum-resistant recurrent EOC remains largely unclear.

Research objectives

This study aimed to evaluate the feasibility of secondary cytoreductive surgery to treat platinum-resistant recurrent EOC.

Research methods

It was a retrospective study of the clinical data of patients with platinum-resistant EOC admitted to the Cancer Hospital of the University of Chinese Academy of Sciences between September 2012 and June 2018.

Research results

R0 resection and postoperative chemotherapy significantly prolonged progression-free survival and overall survival (all $P < 0.05$), and R0 resection also significantly prolonged chemotherapy-free interval ($P < 0.05$).

Research conclusions

Secondary cytoreductive surgery is feasible for the treatment of platinum-resistant recurrent EOC.

Research perspectives

The findings provide important references for the selection of clinical therapeutic regimens.

ACKNOWLEDGEMENTS

The authors acknowledge help from Prof. Ping Zhang and Prof. Fei-Jiang Yu.

FOOTNOTES

Author contributions: Zhao LQ and Gao W contributed to conceptualization, data curation, and writing - review & editing; CY Fang, Zhang P contributed to formal analysis and methodology; Zhao LQ, Gao W, YL Zhang, and Shou HF contributed to writing - original draft; Zhao LQ and Gao W contributed equally to this work; all authors read and approved the final manuscript.

Supported by the Medical Science Project of Zhejiang Province, No. 2018KY027.

Institutional review board statement: The research adhered to the principles of the Declaration of Helsinki and Title 45, United States. Code of Federal Regulations, Part 46, Protection of Human Subjects. The present study was approved by the Medical Ethics Committee of Zhejiang Cancer Hospital. The study has obtained informed consent for all individual participants that appear in this manuscript.

Informed consent statement: All study participants, or their legal guardian, provided informed written consent prior to study enrollment.

Conflict-of-interest statement: The authors of this work have nothing to disclose.

Data sharing statement: Technical appendix, statistical code, and dataset available from the corresponding author at shouhuafeng@hmc.edu.cn.

STROBE statement: The authors have read the STROBE Statement—a checklist of items, and the manuscript was prepared and revised according to the STROBE Statement—a checklist of items.

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: China

ORCID number: Ling-Qin Zhao 0000-0001-7029-2887; Wen Gao 0000-0002-8518-5299; Ping Zhang 0000-0002-1707-2866; Ying-Li Zhang 0000-0003-2002-6083; Chen-Yan Fang 0000-0001-5383-1797; Hua-Feng Shou 0000-0002-4664-2733.

S-Editor: Liu JH

L-Editor: A

P-Editor: Liu JH

REFERENCES

- 1 **Mallen AR**, Townsend MK, Tworoger SS. Risk Factors for Ovarian Carcinoma. *Hematol Oncol Clin North Am* 2018; **32**: 891-902 [PMID: 30390763 DOI: 10.1016/j.hoc.2018.07.002]
- 2 **Bray F**, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018; **68**: 394-424 [PMID: 30207593 DOI: 10.3322/caac.21492]
- 3 **Jiang X**, Tang H, Chen T. Epidemiology of gynecologic cancers in China. *J Gynecol Oncol* 2018; **29**: e7 [PMID: 29185265 DOI: 10.3802/jgo.2018.29.e7]
- 4 **Ledermann JA**, Raja FA, Fotopoulou C, Gonzalez-Martin A, Colombo N, Sessa C; ESMO Guidelines Working Group. Newly diagnosed and relapsed epithelial ovarian carcinoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol* 2013; **24** Suppl 6: vi24-vi32 [PMID: 24078660 DOI: 10.1093/annonc/mdt333]
- 5 **Baldwin LA**, Huang B, Miller RW, Tucker T, Goodrich ST, Podzielinski I, DeSimone CP, Ueland FR, van Nagell JR, Seamon LG. Ten-year relative survival for epithelial ovarian cancer. *Obstet Gynecol* 2012; **120**: 612-618 [PMID: 22914471 DOI: 10.1097/AOG.0b013e318264f794]
- 6 **Birch JM**, Pang D, Alston RD, Rowan S, Geraci M, Moran A, Eden TO. Survival from cancer in teenagers and young adults in England, 1979-2003. *Br J Cancer* 2008; **99**: 830-835 [PMID: 18728673 DOI: 10.1038/sj.bjc.6604460]
- 7 **Chan JK**, Cheung MK, Husain A, Teng NN, West D, Whitemore AS, Berek JS, Osann K. Patterns and progress in ovarian cancer over 14 years. *Obstet Gynecol* 2006; **108**: 521-528 [PMID: 16946210 DOI: 10.1097/01.AOG.0000231680.58221.a7]
- 8 **Zeng H**, Zheng R, Guo Y, Zhang S, Zou X, Wang N, Zhang L, Tang J, Chen J, Wei K, Huang S, Wang J, Yu L, Zhao D, Song G, Shen Y, Yang X, Gu X, Jin F, Li Q, Li Y, Ge H, Zhu F, Dong J, Guo G, Wu M, Du L, Sun X, He Y, Coleman MP, Baade P, Chen W, Yu XQ. Cancer survival in China, 2003-2005: a population-based study. *Int J Cancer* 2015; **136**: 1921-1930 [PMID: 25242378 DOI: 10.1002/ijc.29227]
- 9 **Lawrie TA**, Winter-Roach BA, Heus P, Kitchener HC. Adjuvant (post-surgery) chemotherapy for early stage epithelial ovarian cancer. *Cochrane Database Syst Rev* 2015; CD004706 [PMID: 26676202 DOI: 10.1002/14651858.CD004706.pub5]
- 10 **Sostelly A**, Mercier F. Tumor Size and Overall Survival in Patients With Platinum-Resistant Ovarian Cancer Treated With Chemotherapy and Bevacizumab. *Clin Med Insights Oncol* 2019; **13**: 1179554919852071 [PMID: 31191068 DOI: 10.1177/1179554919852071]
- 11 **Mittica G**, Ghisoni E, Giannone G, Genta S, Aglietta M, Sapino A, Valabrega G. PARP Inhibitors in Ovarian Cancer. *Recent Pat Anticancer Drug Discov* 2018; **13**: 392-410 [PMID: 29512470 DOI: 10.2174/1574892813666180305165256]
- 12 **Franzese E**, Centonze S, Diana A, Carlino F, Guerrera LP, Di Napoli M, De Vita F, Pignata S, Ciardiello F, Orditura M. PARP inhibitors in ovarian cancer. *Cancer Treat Rev* 2019; **73**: 1-9 [PMID: 30543930 DOI: 10.1016/j.ctrv.2018.12.002]
- 13 **Pignata S**, Lorusso D, Scambia G, Sambataro D, Tamberi S, Cinieri S, Mosconi AM, Orditura M, Brandes AA, Arcangeli V, Panici PB, Pisano C, Cecere SC, Di Napoli M, Raspagliesi F, Maltese G, Salutati V, Ricci C, Daniele G, Piccirillo MC, Di Maio M, Gallo C, Perrone F; MITO 11 investigators. Pazopanib plus weekly paclitaxel versus weekly paclitaxel alone for platinum-resistant or platinum-refractory advanced ovarian cancer (MITO 11): a randomised, open-label, phase 2 trial. *Lancet Oncol* 2015; **16**: 561-568 [PMID: 25882986 DOI: 10.1016/S1470-2045(15)70115-4]
- 14 **Elit L**, Hirte H. Palliative systemic therapy for women with recurrent epithelial ovarian cancer: current options. *Oncol Targets Ther* 2013; **6**: 107-118 [PMID: 23459506 DOI: 10.2147/OTT.S30238]
- 15 **Ethier JL**, Wang L, Oza AM, Lheureux S. Survival outcomes in patients with platinum-resistant (PL-R) ovarian cancer (OC): The Princess Margaret Cancer Centre (PM) experience. *J Clin Oncol* 2017; **35**: e17049 [DOI: 10.1200/jco.2017.35.15_suppl.e17049]
- 16 **Lorusso D**, Mancini M, Di Rocco R, Fontanelli R, Raspagliesi F. The role of secondary surgery in recurrent ovarian cancer. *Int J Surg Oncol* 2012; **2012**: 613980 [PMID: 22919475 DOI: 10.1155/2012/613980]
- 17 **Schorge JO**, Garrett LA, Goodman A. Cytoreductive surgery for advanced ovarian cancer: quo vadis? *Oncology (Williston Park)* 2011; **25**: 928-934 [PMID: 22010391]
- 18 **Gockley A**, Melamed A, Cronin A, Bookman MA, Burger RA, Cristae MC, Griggs JJ, Mantia-Smaldone G, Matulonis UA, Meyer LA, Niland J, O'Malley DM, Wright AA. Outcomes of secondary cytoreductive surgery for patients with platinum-sensitive recurrent ovarian cancer. *Am J Obstet Gynecol* 2019; **221**: 625.e1-625.e14 [PMID: 31207237 DOI: 10.1016/j.ajog.2019.06.009]
- 19 **Salani R**, Santillan A, Zahurak ML, Giuntoli RL 2nd, Gardner GJ, Armstrong DK, Bristow RE. Secondary cytoreductive surgery for localized, recurrent epithelial ovarian cancer: analysis of prognostic factors and survival outcome. *Cancer* 2007; **109**: 685-691 [PMID: 17219441 DOI: 10.1002/cncr.22447]
- 20 **Harter P**, Heitz F, Mahner S, Hilpert F, du Bois A. Surgical intervention in relapsed ovarian cancer is beneficial: pro. *Ann Oncol* 2013; **24** Suppl 10: x33-x34 [PMID: 24265400 DOI: 10.1093/annonc/mdt466]
- 21 **Schorge JO**, Wingo SN, Bhore R, Heffernan TP, Lea JS. Secondary cytoreductive surgery for recurrent platinum-sensitive ovarian cancer. *Int J Gynaecol Obstet* 2010; **108**: 123-127 [PMID: 19892337 DOI: 10.1016/j.ijgo.2009.08.034]

- 22 **Shih KK**, Chi DS. Maximal cytoreductive effort in epithelial ovarian cancer surgery. *J Gynecol Oncol* 2010; **21**: 75-80 [PMID: 20613895 DOI: 10.3802/jgo.2010.21.2.75]
- 23 **Eisenkop SM**, Friedman RL, Spirtos NM. The role of secondary cytoreductive surgery in the treatment of patients with recurrent epithelial ovarian carcinoma. *Cancer* 2000; **88**: 144-153 [PMID: 10618617 DOI: 10.1002/(sici)1097-0142(20000101)88:1<144::aid-cnrcr20>3.3.co;2-o]
- 24 **Onda T**, Yoshikawa H, Yasugi T, Yamada M, Matsumoto K, Taketani Y. Secondary cytoreductive surgery for recurrent epithelial ovarian carcinoma: proposal for patients selection. *Br J Cancer* 2005; **92**: 1026-1032 [PMID: 15770211 DOI: 10.1038/sj.bjc.6602466]
- 25 **Bristow RE**, Puri I, Chi DS. Cytoreductive surgery for recurrent ovarian cancer: a meta-analysis. *Gynecol Oncol* 2009; **112**: 265-274 [PMID: 18937969 DOI: 10.1016/j.ygyno.2008.08.033]
- 26 **Eisenhauer EA**, Therasse P, Bogaerts J, Schwartz LH, Sargent D, Ford R, Dancey J, Arbuck S, Gwyther S, Mooney M, Rubinstein L, Shankar L, Dodd L, Kaplan R, Lacombe D, Verweij J. New response evaluation criteria in solid tumours: revised RECIST guideline (version 1.1). *Eur J Cancer* 2009; **45**: 228-247 [PMID: 19097774 DOI: 10.1016/j.ejca.2008.10.026]
- 27 **Petrillo M**, Pedone Anchora L, Tortorella L, Fanfani F, Gallotta V, Pacciani M, Scambia G, Fagotti A. Secondary cytoreductive surgery in patients with isolated platinum-resistant recurrent ovarian cancer: a retrospective analysis. *Gynecol Oncol* 2014; **134**: 257-261 [PMID: 24910451 DOI: 10.1016/j.ygyno.2014.05.029]
- 28 **Strong VE**, Selby LV, Sovel M, Disa JJ, Hoskins W, Dematteo R, Scardino P, Jaques DP. Development and assessment of Memorial Sloan Kettering Cancer Center's Surgical Secondary Events grading system. *Ann Surg Oncol* 2015; **22**: 1061-1067 [PMID: 25319579 DOI: 10.1245/s10434-014-4141-4]
- 29 **Musella A**, Marchetti C, Palaia I, Perniola G, Giorgini M, Lecce F, Vertechy L, Iadarola R, De Felice F, Monti M, Muzii L, Angioli R, Panici PB. Secondary Cytoreduction in Platinum-Resistant Recurrent Ovarian Cancer: A Single-Institution Experience. *Ann Surg Oncol* 2015; **22**: 4211-4216 [PMID: 25801357 DOI: 10.1245/s10434-015-4523-2]
- 30 **Canaz E**, Grabowski JP, Richter R, Braicu EI, Chekerov R, Sehoul J. Survival and prognostic factors in patients with recurrent low-grade epithelial ovarian cancer: An analysis of five prospective phase II/III trials of NOGGO metadata base. *Gynecol Oncol* 2019; **154**: 539-546 [PMID: 31230821 DOI: 10.1016/j.ygyno.2019.06.014]
- 31 **Le T**, Fought W, Hopkins L, Fung-Kee-Fung M. Can surgical debulking reverse platinum resistance in patients with metastatic epithelial ovarian cancer? *J Obstet Gynaecol Can* 2009; **31**: 42-47 [PMID: 19208282 DOI: 10.1016/s1701-2163(16)34052-x]
- 32 **Courtney A**, Nemcek AA Jr, Rosenberg S, Tutton S, Darcy M, Gordon G. Prospective evaluation of the PleurX catheter when used to treat recurrent ascites associated with malignancy. *J Vasc Interv Radiol* 2008; **19**: 1723-1731 [PMID: 18951041 DOI: 10.1016/j.jvir.2008.09.002]
- 33 **Brooks RA**, Herzog TJ. Long-term semi-permanent catheter use for the palliation of malignant ascites. *Gynecol Oncol* 2006; **101**: 360-362 [PMID: 16499957 DOI: 10.1016/j.ygyno.2005.12.043]
- 34 **Iyengar TD**, Herzog TJ. Management of symptomatic ascites in recurrent ovarian cancer patients using an intra-abdominal semi-permanent catheter. *Am J Hosp Palliat Care* 2002; **19**: 35-38 [PMID: 12171424 DOI: 10.1177/104990910201900108]
- 35 **Roeland E**, von Gunten CF. Current concepts in malignant bowel obstruction management. *Curr Oncol Rep* 2009; **11**: 298-303 [PMID: 19508835 DOI: 10.1007/s11912-009-0042-2]
- 36 **Baron TH**. Interventional palliative strategies for malignant bowel obstruction. *Curr Oncol Rep* 2009; **11**: 293-297 [PMID: 19508834 DOI: 10.1007/s11912-009-0041-3]
- 37 **Prigerson HG**, Bao Y, Shah MA, Paulk ME, LeBlanc TW, Schneider BJ, Garrido MM, Reid MC, Berlin DA, Adelson KB, Neugut AI, Maciejewski PK. Chemotherapy Use, Performance Status, and Quality of Life at the End of Life. *JAMA Oncol* 2015; **1**: 778-784 [PMID: 26203912 DOI: 10.1001/jamaoncol.2015.2378]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

