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TITLE: Minimally Invasive Surgery for Advanced Ovarian Cancer: A Pilot Randomized Trial

PRINCIPAL INVESTIGATOR: Alexander Melamed

CONTRACTING ORGANIZATION: Massachusetts General Hospital, Boston, MA

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None

14. ABSTRACT

The use of neoadjuvant chemotherapy (NACT) for advanced ovarian cancer has become the most common approach for the treatment of advanced ovarian cancer. Among patients who receive NACT, it may be possible to reduce the morbidity of cytoreductive surgery by performing the operation using a minimally invasive technique. This project seeks to develop a model that can preoperatively identify patients who will require only surgical maneuvers that can be routinely performed laparoscopically to achieve an optimal cytoreduction after NACT, and to conduct a pilot randomized clinical trial that will assess the feasibility of completing a definitive randomized non-inferiority trial comparing disease-free survival between minimally invasive and open interval cytoreductive surgery. In in this first annual report, we report that we have completed enrollment in the pilot randomized trial and made substantial progress toward developing the proposed prediction model.

15. SUBJECT TERMS
Ovarian cancer, laparoscopic surgery

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
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1. **INTRODUCTION:** *Narrative that briefly (one paragraph) describes the subject, purpose and scope of the research.*

The use of neoadjuvant chemotherapy (NACT) for advanced ovarian cancer has become the most common approach for the treatment of advanced ovarian cancer and it may be possible to reduce the morbidity of cytoreductive surgery by performing the operation using a minimally invasive technique. This project seeks to advance understanding of the safety and effectiveness of minimally invasive surgery in this setting.

2. **KEYWORDS:** *Provide a brief list of keywords (limit to 20 words).*

Ovarian cancer, minimally invasive surgery

3. **ACCOMPLISHMENTS:** *The PI is reminded that the recipient organization is required to obtain prior written approval from the awarding agency grants official whenever there are significant changes in the project or its direction.*

What were the major goals of the project?
List the major goals of the project as stated in the approved SOW. If the application listed milestones/target dates for important activities or phases of the project, identify these dates and show actual completion dates or the percentage of completion.

The major goals for this project include career development and sustainment, the development and validation of a predictive model that identifies patients who may be candidates for minimally invasive cytoreductive surgery after NACT for stage IIIC or IV ovarian cancer, completion of a pilot trial comparing the efficacy of minimally invasive versus open interval cytoreductive surgery for advanced ovarian cancer, and evaluation of health-related quality of life outcomes in this trial. The specific activities, associated timelines, completion dates, and percentage of completion are tabulated below.

Career Sustainment Activities	**Timeline**	**Completion Date / % Complete**
1. Course work	Months	
Statistical Horizons Machine Learning Course	1-6	May 2023
Statistical Horizons Machine Learning for Estimating Causal Effects	1-6	Scheduled for Nov 2003
JHU Coursera Design and Interpretation of Clinical Trials	6-12	July 2023
Adaptive Enrichment Clinical Trial design	6-12	August 2023
2. SGO and ASCO Clinical Trial Curricula		
ASCO Fundamentals of Clinical Trials Course, including the following lectures: -Clinical Research Methodologies -Ethical Issues Relating to Clinical Trials -Exemplary Clinical Trial Sites -How to Build a Successful Research Team -Informed Consent for Clinical Trials	1-6	July 2023

-Management of Clinical Trial Data -Phase I, II, & III Research Studies -Promoting Clinical Trials Regulatory and Legal Issues in Clinical Trials -Statistical Considerations in Oncology Trials		
SGO Clinical trials curriculum - SGO provides curriculum for emerging clinical trialists at each meeting	7, 19, 31, 43	25%
3. Ovarian Cancer Academy Activities		
Monthly webinar	1-48	25%
In person meeting	11, 23, 35, 47	25%
4. Mentor meetings		
Weekly meeting with Dr. Robert Coleman	1-48	25%
Weekly meeting with Other Mentor	1-48	25%
Weekly meeting with Dr. J. Alejandro Rauh-Hain	1-48	25%

Specific Aim 1: To develop and validate a predictive model that identifies patients who may be candidates for minimally invasive cytoreductive surgery after NACT for stage IIIC or IV ovarian cancer.	**Timeline**	**Completion Date / % Complete**
1. Approvals	Months	
Apply for approval from NCCN Ovarian Cancer Outcome Database	1	November 2022
Apply for approval/exemption from Harvard IRB	1	November 2022
Submit IRB and any other required documentation to HRPO	1	Exempt (not human research)
Obtain approval from HRPO	2-3	April 2023
Milestone(s) Achieved		
HPRO and IRB approval	3	April 2023
2. Model development and validation		
Data management	3-6	25%
Development of logistic regression model	7-9	Delayed
Development of SuperLearner model	7-12	Delayed
Model validation	12-15	
Milestone(s) Achieved		
Model complete and validated	15	
3. Dissemination		
Manuscript writing	15-18	
Milestone(s) Achieved		
Conference abstract submission	18	
Manuscript submission	18	

Aim 2: To complete a pilot trial assessing feasibility of a phase III randomized trial comparing the efficacy of minimally invasive versus open interval cytoreductive surgery for advanced ovarian cancer. **Aim 3: To compare the health-related quality of life between patients with advanced ovarian cancer undergoing interval cytoreduction via minimally invasive surgery versus laparotomy**	**Timeline**	**Completion Date / % Complete**

1. Approvals	Months	
Submit all required regarding aim 1 to HPRO	1	
Obtain HPRO approval	1-3	April 2023
2. Enrollment, follow-up		
Enrollment of patients	3-6	January 2023
Data quality monitoring	3-18	60%
Interim evaluation of enrollment and crossover rates	3	Occurred prior to beginning of contract
Milestone(s) Achieved		
All patients enrolled (100)	6	January 2023
Follow-up complete	18	60%
5. Analysis and dissemination		
Data cleaning	6-18	60%
Analysis of co-primary endpoints (enrollment rate and crossover rate)	6-7	February 2023
Analysis of immediate secondary endpoints: complications, residual disease status, surgical morbidity) (aim 1)	7-12	80%
Analysis of quality of life endpoints (aim 2) and 6-month PFS (aim 1)	18-24	
Manuscript writing	24-33	
Milestone(s) Achieved		
Go/no-go for phase III enrollment	7	February 2023
Submission of abstracts	24-30	
Manuscripts submission	30-36	

What was accomplished under these goals?

For this reporting period describe: 1) major activities; 2) specific objectives; 3) significant results or key outcomes, including major findings, developments, or conclusions (both positive and negative); and/or 4) other achievements. Include a discussion of stated goals not met. Description shall include pertinent data and graphs in sufficient detail to explain any significant results achieved. A succinct description of the methodology used shall be provided. As the project progresses to completion, the emphasis in reporting in this section should shift from reporting activities to reporting accomplishments.

Career Sustainment

Career sustainment is a major goal of the Ovarian Cancer Academy Early Career Development Award. Major activities to support this goal included engaging in didactic course work, participating in ovarian academy activities, and meeting regularly with my mentoring team. These activities were undertaken to develop expertise in novel research methods, cement important relationships with leaders in ovarian cancer research, and to advance my academic career. Significant steps in developing my career include promotion to Associate Professor and submission of an R01 grant as a co-primary investigator.

Aim 1: To develop and validate a predictive model that identifies patients who may be candidates for minimally invasive cytoreductive surgery after NACT for stage IIIC or IV ovarian cancer.
Activities conducted in support of this goal include both didactic and research activities. The relevant didactic activity includes completion of course work on machine learning models. Research activities include obtaining access to the NCCN ovarian cancer database, as well as identifying additional sources of data for model building and validation. Results of this work are pending.

Aims 2 & 3: To complete a pilot trial assessing feasibility of a phase III randomized trial comparing the efficacy of minimally invasive versus open interval cytoreductive surgery for advanced ovarian cancer and to compare the health-related quality if life.
Activities conducted in support of this goal include both didactic and research activities. Didactic activities include course work on clinical trial design and conduct. Research activities include completion of enrollment in the proposed pilot trial (Figure 1) , analysis of the primary trial end point, and follow up for secondary endpoints including quality of life data collection.

We have analyzed the feasibility endpoints and demonstrated feasibility of the phase 3 study, which is currently enrolling patients.

We found that from September 2020 through February 2023, 100 patients with advanced epithelial ovarian cancer were randomized to open (51) or minimally invasive surgery (49). The enrollment rate (estimated using LOWESS regression, Figure 1) reached 6 patients per month by the end of the pilot phase. The mean age of enrolled patients was 62 years, and 67% had stage IIIC disease. Six patients randomized to MIS (13%; 95% CI 5-25%) underwent conversion to open surgery. Surgeons achieved complete gross resection in 87% (95% CI 74-95%) and 83% (95% CI 69-82%) of patients assigned to MIS and open (p=0.6). There were three intraoperative complications in the MIS group and three in the open group. Two patients (4.1%) in the MIS group experienced grade 4-5 adverse events following surgery.

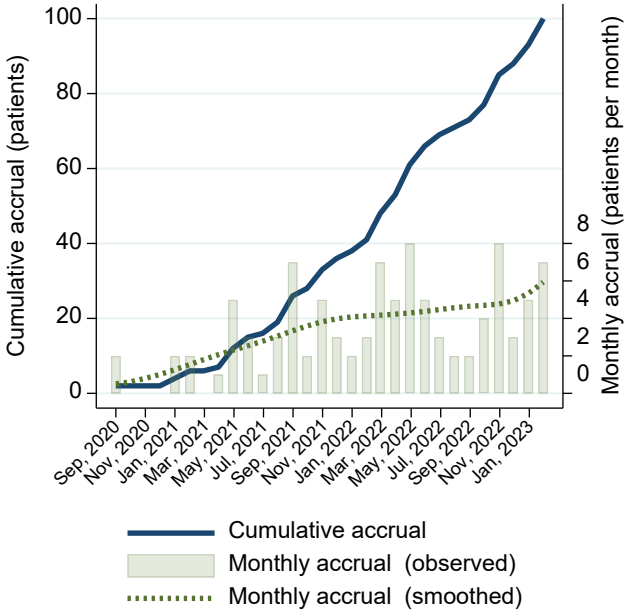

Figure 1. Accrual of pilot trial. Cumulative accrual (solid line) and monthly accrual (bars) are plotted. A local polynomial regression was used to estimate smoothed monthly accrual rate (dashed line).

We submitted the feasibility results described above as an abstract for the International Gynecologic Cancer Society Annual Meeting, where it was accepted for an oral presentation.

What opportunities for training and professional development has the project provided?
If the project was not intended to provide training and professional development opportunities or there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe opportunities for training and professional development provided to anyone who worked on the project or anyone who was involved in the activities supported by the project. "Training" activities are those in which individuals with advanced professional skills and experience assist others in attaining greater proficiency. Training activities may include, for example, courses or one-on-one work with a mentor. "Professional development" activities result in increased knowledge or skill in one's area of expertise and may include workshops, conferences, seminars, study groups, and individual study. Include participation in conferences, workshops, and seminars not listed under major activities.

Career sustainment is a major goal of the Ovarian Cancer Academy Early Career Development Award. Major activities to support this goal included engaging in didactic course work, participating in ovarian academy activities, and meeting regularly with my mentoring team. These activities were undertaken to develop expertise in novel research methods, cement important relationships with leaders in ovarian cancer research, and to advance my academic career. Significant steps in developing my career include promotion to Associate Professor and submission of an R01 grant as a co-primary investigator.

How were the results disseminated to communities of interest?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe how the results were disseminated to communities of interest. Include any outreach activities that were undertaken to reach members of communities who are not usually aware of these project activities, for the purpose of enhancing public understanding and increasing interest in learning and careers in science, technology, and the humanities.

Findings from this project were presented at the September webinar of Ovarian Cancer Academy, and as an oral presentation at the European Society for Gynecologic Oncology meeting in Istanbul in September of 2023 (appendix 1).

What do you plan to do during the next reporting period to accomplish the goals?
If this is the final report, state "Nothing to Report."

Describe briefly what you plan to do during the next reporting period to accomplish the goals and objectives.

During the next reporting period we plan to publish the manuscript describing the primary end points of the pilot trial. We will also collect and analyze quality of life data from this trial. We will develop and validate the model described in aim 1. Dr. Melamed will continue to participate in all career sustainment activities described in the proposal.

4. **IMPACT:** D*escribe distinctive contributions, major accomplishments, innovations, successes, or any change in practice or behavior that has come about as a result of the project relative to:*

What was the impact on the development of the principal discipline(s) of the project?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe how findings, results, techniques that were developed or extended, or other products from the project made an impact or are likely to make an impact on the base of knowledge, theory, and research in the principal disciplinary field(s) of the project. Summarize using language that an intelligent lay audience can understand (Scientific American style).

This pilot study demonstrates that it is possible to complete a definitive study of keyhole surgery for advanced ovarian cancer. This is a major step forward in the field, because surgery for advanced ovarian cancer has traditionally been complete a large incision that is difficult to recover from. While some doctors have moved forward and are already using keyhole surgery for advanced ovarian cancer, it is vital to perform a randomized trial to confirm the safety of this approach. Our study is the first step in completing such a trial.

What was the impact on other disciplines?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe how the findings, results, or techniques that were developed or improved, or other products from the project made an impact or are likely to make an impact on other disciplines.

Our study can be used a blue prints in other areas of surgical oncology which laparoscopic surgery is being adopted.

What was the impact on technology transfer?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe ways in which the project made an impact, or is likely to make an impact, on commercial technology or public use, including:

- *transfer of results to entities in government or industry;*
- *instances where the research has led to the initiation of a start-up company; or*
- *adoption of new practices.*

Nothing to report.

What was the impact on society beyond science and technology?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe how results from the project made an impact, or are likely to make an impact, beyond the bounds of science, engineering, and the academic world on areas such as:

- *improving public knowledge, attitudes, skills, and abilities;*
- *changing behavior, practices, decision making, policies (including regulatory policies), or social actions; or*
- *improving social, economic, civic, or environmental conditions.*

The results of this study will help to define the standard of care in the treatment of advanced ovarian cancer.

5. CHANGES/PROBLEMS: *The PD/PI is reminded that the recipient organization is required to obtain prior written approval from the awarding agency grants official whenever there are significant changes in the project or its direction. If not previously reported in writing, provide the following additional information or state, "Nothing to Report," if applicable:*

Changes in approach and reasons for change
Describe any changes in approach during the reporting period and reasons for these changes. Remember that significant changes in objectives and scope require prior approval of the agency.

In addition to utilizing NCCN data to develop a model for determining candidacy for minimally invasive interval cytoreduction we are collaborating with Fondazione Policlinico Universitario A. Gemelli to use their clinical data to develop such a model. Fondazione Policlinico Universitario A. Gemelli was an early adopter of minimally invasive surgery for the evaluation and resection of advanced ovarian cancer, and their clinical database is extremely valuable.

Actual or anticipated problems or delays and actions or plans to resolve them
Describe problems or delays encountered during the reporting period and actions or plans to resolve them.

There was a delay in accessing the NCCN data which has been resolved.

Changes that had a significant impact on expenditures
Describe changes during the reporting period that may have had a significant impact on expenditures, for example, delays in hiring staff or favorable developments that enable meeting objectives at less cost than anticipated.

Nothing to report.

Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents
Describe significant deviations, unexpected outcomes, or changes in approved protocols for the use or care of human subjects, vertebrate animals, biohazards, and/or select agents during the

reporting period. If required, were these changes approved by the applicable institution committee (or equivalent) and reported to the agency? Also specify the applicable Institutional Review Board/Institutional Animal Care and Use Committee approval dates.

Significant changes in use or care of human subjects

Nothing to report.

Significant changes in use or care of vertebrate animals

Nothing to report.

Significant changes in use of biohazards and/or select agents

Nothing to report.

6. **PRODUCTS:** *List any products resulting from the project during the reporting period. If there is nothing to report under a particular item, state "Nothing to Report."*

- **Publications, conference papers, and presentations**
  Report only the major publication(s) resulting from the work under this award.

  Journal publications. *List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Identify for each publication: Author(s); title; journal; volume: year; page numbers; status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).*

  Nothing to report.

  Books or other non-periodical, one-time publications. *Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a one-time conference or in the report of a one-time study, commission, or the like. Identify for each one-time publication: author(s); title; editor; title of collection, if applicable; bibliographic information; year; type of publication (e.g., book, thesis or dissertation); status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).*

  Nothing to report.
  Other publications, conference papers and presentations. *Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication as noted above. List presentations made during the last year (international, national, local societies, military meetings, etc.). Use an asterisk (*) if presentation produced a manuscript.*

Rauh-Hain JA, **Melamed A**, Pareja, et al. Laparoscopic cytoreduction after neoadjuvant chemotherapy (LANCE): feasibility phase of a randomized trial. Presented at the ESGO 2023 Cogress. Istanbul, Turkey, September 2023. Abstract in *nternational Journal of Gynecological Cancer* 33(Suppl 3):A16-A16. DOI:10.1136/ijgc-2023-ESGO.23 (appendix 1)

- **Website(s) or other Internet site(s)**
  List the URL for any Internet site(s) that disseminates the results of the research activities. A short description of each site should be provided. It is not necessary to include the publications already specified above in this section.

  Nothing to report.

- **Technologies or techniques**
  Identify technologies or techniques that resulted from the research activities. Describe the technologies or techniques were shared.

  Nothing to report.

- **Inventions, patent applications, and/or licenses**
  Identify inventions, patent applications with date, and/or licenses that have resulted from the research. Submission of this information as part of an interim research performance progress report is not a substitute for any other invention reporting required under the terms and conditions of an award.

  Nothing to report.

- **Other Products**
  Identify any other reportable outcomes that were developed under this project. Reportable outcomes are defined as a research result that is or relates to a product, scientific advance, or research tool that makes a meaningful contribution toward the understanding, prevention, diagnosis, prognosis, treatment and /or rehabilitation of a disease, injury or condition, or to improve the quality of life. Examples include:
  - *data or databases;*
  - *physical collections;*
  - *audio or video products;*
  - *software;*
  - *models;*
  - *educational aids or curricula;*
  - *instruments or equipment;*
  - *research material (e.g., Germplasm; cell lines, DNA probes, animal models);*
  - *clinical interventions;*

- *new business creation; and*
- *other.*

Nothing to report.

7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What individuals have worked on the project?
Provide the following information for: (1) PDs/PIs; and (2) each person who has worked at least one person month per year on the project during the reporting period, regardless of the source of compensation (a person month equals approximately 160 hours of effort). If information is unchanged from a previous submission, provide the name only and indicate "no change".

Example:

Name: *Mary Smith*
Project Role: *Graduate Student*
Researcher Identifier (e.g. ORCID ID): *1234567*
Nearest person month worked: *5*

Contribution to Project: *Ms. Smith has performed work in the area of combined error-control and constrained coding.*
Funding Support: *The Ford Foundation (Complete only if the funding support is provided from other than this award.)*

Name: Alexander Melamed
Project Role: Project PI
Researcher Identifier (e.g. ORCID ID): 0000-0002-0654-0863
Nearest person month worked: 3
Contribution to Project: Dr. Melamed has participated in career development and sustainment activities, submitted protocols to regulatory agencies and secured access to de-identified research. Dr. Melamed served on the LANCE trial management committee, analyzed clinical data, and authored abstracts and draft publications.

Name: J. Alejandro Rauh-Hain
Project Role: Overall PI of LANCE trial
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 1
Contribution to Project: Dr. Rauh-Hain has met with me regularly and overseen regulatory effort to begin funding this work at MD Anderson. Dr. Rauh-Hain over sees the collection of follow up data from the pilot trial at MD Anderson.

Name: Siguo Li

Project Role: Data analyst
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 1.5
Contribution to Project: Ms. Li is a data analyst working on all aspect of this project.

Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

If the active support has changed for the PD/PI(s) or senior/key personnel, then describe what the change has been. Changes may occur, for example, if a previously active grant has closed and/or if a previously pending grant is now active. Annotate this information so it is clear what has changed from the previous submission. Submission of other support information is not necessary for pending changes or for changes in the level of effort for active support reported previously. The awarding agency may require prior written approval if a change in active other support significantly impacts the effort on the project that is the subject of the project report.

Nothing to report.

What other organizations were involved as partners?
If there is nothing significant to report during this reporting period, state "Nothing to Report."

Describe partner organizations – academic institutions, other nonprofits, industrial or commercial firms, state or local governments, schools or school systems, or other organizations (foreign or domestic) – that were involved with the project. Partner organizations may have provided financial or in-kind support, supplied facilities or equipment, collaborated in the research, exchanged personnel, or otherwise contributed.

Provide the following information for each partnership:
Organization Name:
Location of Organization: (if foreign location list country)
Partner's contribution to the project (identify one or more)

- *Financial support;*
- *In-kind support (e.g., partner makes software, computers, equipment, etc., available to project staff);*
- *Facilities (e.g., project staff use the partner's facilities for project activities);*
- *Collaboration (e.g., partner's staff work with project staff on the project);*
- *Personnel exchanges (e.g., project staff and/or partner's staff use each other's facilities, work at each other's site); and*
- *Other.*

Several organizations are collaborating on this project:
MD Anderson Cancer Center, Houston (data collection and management, patient enrollment), Hospital Generalde Medellín , Medellin, Colombia (patient enrollment); Sylvester Comprehensive Cancer Center, University of Miami, Miller School of Medicine, Miami (patient enrollment); Duke University, Durham, (patient enrollment); Dana Farber Cancer Center, Boston, (patient enrollment); University of Bologna, Bologna, Italy (patient enrollment); Cleveland Clinic, Cleveland, (patient enrollment); Princess Margaret Cancer Center, Toronto, Canada (patient enrollment); Amsterdam University Medical Center, Amsterdam, Netherlands (patient enrollment); Texas Oncology, Houston, (trial management committee participation); Methodist Hospital, Houston, USA (patient enrollment); Fondazione Policlinico A. Gemelli, Rome, Italy (patient enrollment)

8. SPECIAL REPORTING REQUIREMENTS

COLLABORATIVE AWARDS: *For collaborative awards, independent reports are required from BOTH the Initiating Principal Investigator (PI) and the Collaborating/Partnering PI. A duplicative report is acceptable; however, tasks shall be clearly marked with the responsible PI and research site. A report shall be submitted to* ***https://ebrap.org/eBRAP/public/index.htm*** *for each unique award.*

QUAD CHARTS: *If applicable, the Quad Chart (available on https://www.usamraa.army.mil/Pages/Resources.aspx) should be updated and submitted with attachments.*

9. APPENDICES:

Attach all appendices that contain information that supplements, clarifies or supports the text. Examples include original copies of journal articles, reprints of manuscripts and abstracts, a curriculum vitae, patent applications, study questionnaires, and surveys, etc.

Appendix 1: Abstract reprint from ESGO 2023 Congress.

detected. Myelodysplastic syndrome/acute myeloid leukemia (MDS/AML) was reported in 14/367 patients (3.8%; 10 [7.4%] gBRCAm, 4 [1.7%] non-gBRCAm) who received niraparib versus 3/179 (1.7%; 2 [3.1%] gBRCAm, 1 [0.9%] non-gBRCAm) placebo patients. There was no evidence suggesting that toxicity, including hematologic events, MDS/AML, or cardiovascular events, contributed to the OS results.

Conclusion After reducing missing data, we provide an updated, exploratory, analysis of NOVA long-term follow-up data. NOVA was not powered to show an OS difference between arms, although the OS hazard ratio numerically favored niraparib in the gBRCAm cohort. No new safety signals were observed with long-term follow-up.

Abstract #161 Table 1 Final OS for the gBRCAm and non-gBRCAm cohorts and by HRD subgroup in the non-gBRCAm cohort.

	Niraparib	Placebo
OS results by study cohort		
g*BRCA*m cohort (n=203)	(n=138)	(n=65)
Median OS (95% CI), months	40.9 (34.9–52.9)	38.1 (27.6–47.3)
Hazard ratio (95% CI)	0.85 (0.61–1.20)	
Non-g*BRCA*m cohort (n=350)	(n=234)	(n=116)
Median OS (95% CI), months	31.0 (27.8–35.6)	34.8 (27.9–41.4)
Hazard ratio (95% CI)	1.06 (0.81–1.37)	
Non-g*BRCA*m OS subgroup analysis		
HRd (n=162)	(n=106)	(n=56)
Median OS (95% CI), months	35.6 (28.3–43.4)	41.4 (33.9–57.6)
Hazard ratio (95% CI)	1.29 (0.85–1.95)	
HRp (n=134)	(n=92)	(n=42)
Median OS (95% CI), months	27.9 (22.6–32.8)	27.9 (19.2–44.0)
Hazard ratio (95% CI)	0.93 (0.61–1.41)	
HRnd (n=54)	(n=36)	(n=18)
Median OS (95% CI), months	29.8 (23.6–35.7)	20.2 (13.9–37.8)
Hazard ratio (95% CI)	0.62 (0.29–1.36)	

g*BRCA*m, germline breast cancer gene mutant; HRd, homologous recombination-deficient; HRnd, homologous recombination not determined; HRp, homologous recombination-proficient; OS, overall survival.

Disclosures This study was sponsored by GSK, Waltham, MA, USA.

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#236 LAPAROSCOPIC CYTOREDUCTION AFTER NEOADJUVANT CHEMOTHERAPY (LANCE): FEASIBILITY PHASE OF A RANDOMIZED TRIAL

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Introduction/Background In patients who respond to neoadjuvant chemotherapy (NACT) for advanced-stage epithelial ovarian cancer (EOC), minimally invasive surgery (MIS) may reduce the morbidity of surgery. Studies evaluating oncologic outcomes of minimally invasive interval cytoreductive surgery are largely retrospective.

Methodology LANCE is a prospective, multicenter, international, randomized trial evaluating whether MIS is non-inferior to laparotomy in terms of disease-free survival, among patients with stage IIIC and IV EOC with normalization of CA125 after 3–4 cycles of NACT. The planned 100 patients were enrolled in a lead-in phase to assess the feasibility of the trial with respect to cross-over among those assigned to MIS, complete gross resection, and recruitment. Patients were randomized (1:1) to undergo open or MIS (laparoscopic or robotic) surgery. Surgeons applied maximal effort to resect all visible tumor, conversion to open surgery was performed when necessary to attain complete resection.

Abstract #236 Table 1 Demographic and clinical characteristics (n = 100)

	OPEN (n = 51)		Minimally Invasive (n = 49)	
Characteristic	**N**	**%**	**N**	**%**
Age (Years)				
Mean (SD)	63 (10.2)		61.4 (9.5)	
Ethnicity				
Hispanic or Latino	14	29.1	18	36.7
Not Hispanic or Latino	34	70.8	31	63.3
Missing or unknown	1		0	
Race				
White or Caucasian	46	90.2	44	89.8
Black or African American	3	5.9	0	0
Asian	1	1.9	3	6.1
Other	1	1.9	2	4.1
Disease primary site				
Ovary	40	78.4	43	87.8
Fallopian tube	2	3.9	0	0
Peritoneum	9	17.6	6	12.2
BRCA status				
Negative	25	75.8	25	73.5
BRCA1	5	15.1	3	8.8
BRCA2	3	9.1	6	17.6
Unknown/Missing	18		15	
Stage				
IIIC	34	66.7	33	67.3
IV	17	33.3	16	32.6
HIPEC				
No	37	78.7	39	81.2
Yes	10	21.3	9	18.7
Missing or unknown	4		1	
Residual disease				
R0	39	83	42	87.5
< 5mm	3	6.4	3	6.2
>5 - 10 mm	3	6.4	3	6.2
> 1cm	2	4.3	0	0
Missing or unknown	4		1	
Intraoperative Complication				
No Complications	44	93.6	45	93.7
EBL > 2000 ml	0	0	1	2.1
Vascular Injury	0	0	1	2.1
Organ Injury	3	6.4	1	2.1
Missing or unknown	4		1	

Results From September 2020-February 2023, 100 patients were randomized (51 open, 49 MIS). The mean age was 62 years, 67% had stage IIIC, and 54% received 3 cycles of NACT. Six patients randomized to MIS (12.2%;95%CI: 4.6–24.8%) underwent conversion to open surgery. Surgeons achieved complete gross resection in 87.5% (95%CI: 74.8–95.3%) and 83% (95%CI: 69.2–92.4%) of patients assigned to MIS and open (p=0.6). There were three (6.3%) intraoperative complications in the MIS group and three (6.4%) in the open group. Two patients (4.1%) in the MIS group experienced grade 4–5 adverse events following surgery.

Conclusion Evaluation of MIS interval cytoreductive surgery is feasible, enrollment is ongoing in a definitive trial.