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REVIEWER'S REPORT

Manuscript No.: IJAR-57838

Title: Comparative Evaluation of Ovarian Reserve After Laparoscopic Surgery for Endometriotic and Non-Endometriotic Ovarian Cysts

Recommendation:
Accept as it is .....
Accept after minor revision.....
Accept after major revision .....YES
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality			√	
Techn. Quality			√	
Clarity		√		
Significance			√	

Reviewer's ID: JPR-094

Detailed Reviewer's Report

Reviewer's Report

Overall Assessment

This prospective observational study evaluates changes in ovarian reserve following laparoscopic cystectomy for various benign ovarian cysts using serum Anti-Müllerian Hormone (AMH) as the primary marker. The study reports a significant decline in AMH levels only among women with endometriotic cysts, while non-endometriotic cysts showed no significant reduction.

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The topic is clinically relevant because preservation of ovarian reserve is an important consideration in reproductive-age women undergoing ovarian surgery. However, the manuscript has several methodological and reporting limitations that reduce its scientific impact and generalizability.

****Recommendation: Major Revision****

Strengths

1. Clinically Relevant Topic

*** Ovarian reserve preservation is an important issue in gynecologic surgery and fertility management.**
*** The study addresses a practical question frequently encountered in reproductive medicine.**

2. Prospective Study Design

*** Prospective data collection improves reliability compared with retrospective analyses.**
*** Preoperative and postoperative hormone measurements provide longitudinal assessment.**

3. Standardized Surgical Technique

*** Procedures were performed using a standardized laparoscopic approach.**
*** Attempt to minimize thermal damage is described.**

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4. Use of AMH as Primary Outcome

*** AMH is currently considered the most reliable biochemical marker of ovarian reserve.**
*** Multiple postoperative time points were assessed.**

5. Histopathological Confirmation

*** Final diagnosis was based on pathology reports rather than imaging alone.**

Weaknesses

Major Weaknesses

1. Very Small Sample Size

*** Total sample size is only 30 patients.**
*** Several subgroups contain extremely small numbers:**

*** Serous cystadenoma (n=2)**
*** Mucinous cystadenoma (n=3)**
*** Follicular cyst (n=3–4)**

*** Statistical comparisons within such small groups are underpowered and unreliable.**

2. Inadequate Comparative Analysis

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*** The stated objective is to compare endometriotic versus non-endometriotic cysts.**

*** However, no direct statistical comparison between groups is presented.**

*** Only within-group preoperative versus postoperative comparisons are performed.**

3. Short Follow-up Duration

*** AMH was evaluated only up to 30 days.**

*** Previous studies suggest ovarian reserve recovery may occur over 3–12 months.**

*** Therefore, long-term conclusions cannot be drawn.**

4. Potential Selection Bias

*** 96.7% of participants were infertile.**

*** Results may not be generalizable to women undergoing cystectomy for other indications.**

5. Absence of Multivariate Analysis

*** Important confounding factors were not adjusted:**

- *** Age**
- *** Bilateral disease**
- *** Cyst size**
- *** Baseline AMH**
- *** Infertility duration**
- *** Surgical complexity**

6. No Assessment of Antral Follicle Count (AFC)

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*** Ovarian reserve assessment relies solely on AMH.**

*** AFC would strengthen conclusions.**

Methodological Concerns

1. Sample Size Justification Incomplete

*** Power calculation is provided but assumptions and effect sizes are insufficiently described.**

2. Statistical Issues

*** Multiple subgroup analyses were conducted without correction for multiple testing.**

*** Risk of Type I error is high.**

3. Inconsistency in Cyst Numbers

*** Methods mention paraovarian cysts.**

*** Results do not report paraovarian cysts.**

*** Clarification is required.**

4. Contradictory Surgical Description

*** Methods state bipolar coagulation was used.**

*** Results mention minimal or no energy source.**

*** Authors should clearly explain the hemostatic method used.**

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Problems in Data Presentation

1. Excessive Standard Deviations

Examples:

*** Dermoid cyst:**

*** AMH = 3.81 ± 3.66 ng/mL**

The standard deviation is almost equal to the mean, indicating substantial variability.

Authors should:

*** Examine outliers.**
*** Report median and interquartile ranges where appropriate.**

2. Missing Confidence Intervals

*** Confidence intervals should accompany effect estimates.**

3. Missing Effect Sizes

*** Percentage decline is only reported for endometriotic cysts.**
*** Effect sizes should be reported for all groups.**

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4. Missing Figures

The manuscript would benefit from:

*** Line graph showing AMH trends.**
*** Comparative bar charts.**
*** Forest plot of AMH changes by cyst type.**

Literature and Novelty Assessment

Strength

*** Literature review is generally current and relevant.**

Weakness

*** Novelty is limited.**

The principal finding:

> Endometriotic cystectomy causes greater reduction in AMH than non-endometriotic cystectomy.

This has already been reported in numerous studies and meta-analyses.

Therefore:

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*** Scientific originality is moderate.**

*** The study mainly provides local confirmatory evidence.**

Significance

Clinical Significance

Moderate

The findings reinforce the need for:

*** Fertility counseling**

*** Ovarian reserve assessment**

*** Fertility-preserving surgical techniques**

for women undergoing endometrioma surgery.

Scientific Significance

Moderate to Low

The study confirms existing evidence rather than generating substantially new knowledge.

Key Points for Authors

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1. Provide direct comparison between endometriotic and non-endometriotic groups.

2. Report cyst size and bilaterality.

3. Include confidence intervals and effect sizes.

4. Clarify statistical methods.

5. Explain discrepancies regarding surgical energy use.

6. Discuss possible selection bias due to predominance of infertile patients.

7. Expand limitations section.

8. Improve reference formatting and completeness.

9. Consider longer follow-up data if available.

10. Add graphical presentation of AMH trends.

Final Recommendation

****Major Revision****

Justification

Although the study addresses an important clinical issue and uses a prospective design, significant methodological limitations—including small sample size, inadequate comparative statistical analysis, short follow-up duration, and limited novelty—must be addressed before the manuscript can be considered for publication. The conclusions are generally supported by the presented data but should be interpreted cautiously due to limited statistical power and generalizability.

Major Revision Justification (Issue and Reason Line-by-Line)

Line No.	Issue Identified	Reason for Major Revision

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Line No.	Issue Identified	Reason for Major Revision
29-33	Claim of "limited comparative data" is insufficiently supported.	Several comparative studies already exist comparing ovarian reserve after endometriotic and non-endometriotic cystectomy. Authors should better justify novelty.
34-36	Research objective states comparison between cyst types.	Actual statistical analysis only evaluates within-group pre- vs post-operative changes; no direct inter-group comparison is performed.
45-50	Inclusion criteria include paraovarian cysts.	No paraovarian cysts are reported in results, creating inconsistency between methodology and findings.
53-59	Surgical technique insufficiently described.	Important variables such as cyst size, duration of surgery, extent of stripping, and exact coagulation settings are not reported, limiting reproducibility.
57-58	Bipolar coagulation used despite known ovarian reserve effects.	Quantification of coagulation use is lacking; potential confounding factor not adequately controlled.
62-64	Primary outcome limited to postoperative day 30.	Ovarian reserve recovery may occur over months; short follow-up weakens conclusions regarding long-term ovarian function.
69-74	Laboratory methods inadequately described.	AMH assay manufacturer, kit details, analytical sensitivity, and inter-assay variability are not reported.
76-78	Sample size calculation insufficiently justified.	Authors do not provide expected standard deviation, effect size assumptions, or calculations for subgroup analyses.
79-85	Statistical plan incomplete.	No adjustment for multiple subgroup comparisons increases risk of false-positive findings.
99-100	Total sample size only 30 patients.	Study is underpowered for meaningful comparisons among several cyst subtypes.
103-105	96.7% participants were infertile.	Creates selection bias and limits generalizability to broader populations undergoing ovarian cystectomy.
107-108	Bilateral ovarian involvement reported.	Bilaterality significantly affects ovarian reserve but was not adjusted for during analysis.
109-112	Extremely small subgroup sizes.	Serous cystadenoma (n=2), mucinous cystadenoma (n=3), follicular cyst (n=3) are too small for reliable statistical conclusions.
117-120	Correlation between infertility and AMH	Statistical methodology for this correlation is not described.

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	reported.	
122-124	Contradiction regarding surgical energy use.	Methods state bipolar coagulation was used, whereas Results state "minimal or no energy source" was used. Clarification required.
127-132	Day-7 AMH analysis underpowered.	Small subgroup numbers limit ability to detect meaningful differences.
128	Dermoid cyst AMH SD (3.66) nearly equals mean (3.81).	Suggests large variability or possible outliers; data distribution should be examined.
138-144	Significant decline reported only in endometriotic cysts.	No direct statistical comparison between endometriotic and non-endometriotic groups to support primary study objective.
138-144	Multiple comparisons performed.	No correction for multiplicity; p=0.038 may lose significance after adjustment.
156-161	Significant FSH decline in mucinous cystadenoma group.	Based on only three patients; finding is unreliable and likely due to insufficient sample size.
172-177	LH analysis underpowered.	Small subgroup numbers prevent meaningful interpretation.
182-184	Strong conclusion regarding ovarian reserve preservation.	Conclusion may overstate findings because follow-up is only 30 days and sample size is small.
190-196	Interpretation attributes decline primarily to cyst pathology.	No multivariable analysis performed to exclude confounding variables such as age, cyst size, bilaterality, or baseline AMH.
208-213	Mechanistic explanations are speculative.	Study did not directly assess cortical tissue loss, thermal injury, or inflammatory markers.
214-216	Delayed AMH decline interpretation.	Requires longer follow-up data before such conclusions can be confidently made.
220-221	Strengths section reasonable.	However, strengths are outweighed by methodological limitations.
221-222	Limitations incompletely discussed.	Important limitations such as lack of AFC assessment, selection bias, and subgroup underpowering are omitted.
224-231	Clinical recommendations provided.	Recommendations may be stronger than warranted based on short-term observational data.
232-233	Authors acknowledge need for larger studies.	This reflects current study limitations and supports need for cautious interpretation.

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Line No.	Issue Identified	Reason for Major Revision
241-243	Reference formatting incomplete.	Journal title and bibliographic information are missing or improperly formatted.
250-252	Reference 6 incomplete.	Citation lacks complete journal information and page details.
264-266	Reference 10 incomplete.	Bibliographic details require correction according to journal guidelines.

Overall Major Revision Justification

The manuscript addresses a clinically important topic and employs a prospective design; however, several substantial methodological and reporting deficiencies require correction before publication. The primary concerns include inadequate sample size, extremely small subgroup analyses, absence of direct statistical comparison between endometriotic and non-endometriotic cysts despite this being the stated objective, short follow-up duration (30 days), insufficient control of confounding variables, incomplete methodological descriptions, and reference formatting errors. Additionally, some conclusions appear stronger than the data support. These issues affect the validity, interpretability, and generalizability of the findings and therefore warrant **Major Revision** rather than acceptance in its current form.

Recommended Decision: Major Revision