REVIEWER'S REPORT

Manuscript No.: IJAR- 50428   Date: 25/02/2025

Title: *"Mastoid Process: Morphometric Parameters with Correlation to Side and Gender"*

Recommendation:

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

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

Reviewer Name: Dr. S. K. Nath   **Date:** 26/02/2025

Reviewer's Comment for Publication:

A well-structured forensic study confirming sex-related differences in the mastoid process. Findings align with global research, strengthening anthropological applications. Future studies should expand sample size, apply advanced statistics, and explore medical implications.

Reviewer's Comment / Report

This study analyzes morphometric variations of the mastoid process in human skulls and examines its correlation with sex and side-based differences. Conducted at Pt. B.D. Sharma PGIMS, Rohtak, the study evaluates 120 dried skulls (80 male, 40 female) using vernier calipers to measure key mastoid parameters.

Strengths of the Study

1. Forensic and Anthropological Relevance: The study contributes to forensic anthropology, aiding in sex determination from skeletal remains. Morphometric analysis of the mastoid process is a non-invasive and reliable technique in medico-legal cases.

2. Well-Defined Methodology: Sample selection criteria (excluding damaged skulls) enhance data reliability. Morphometric parameters (mastoid length, breadth, and distances between anatomical landmarks) are clearly described. Use of vernier calipers ensures precise measurements.

3. Comprehensive Data Presentation: Tables & statistical analyses show gender-based differences, supporting the hypothesis. Figures illustrate measurement techniques, improving clarity. Statistical significance (p-values) strengthens conclusions.

4. Consistency with Previous Studies: Findings align with global research, reinforcing validity. Comparison with Asian, Indian, and Brazilian populations adds cross-population insights.

5. Strong Conclusion: The study confirms that mastoid parameters are larger in males than females, aiding forensic applications.

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Areas for Improvement

1. Limited Sample Size & Geographic Scope: Only 120 skulls were studied, with an imbalanced male-to-female ratio (80:40). A larger, more diverse sample across different age groups and ethnicities would enhance generalizability.

2. Lack of Advanced Statistical Tests: The study uses basic statistical significance (p-values) but does not apply: Discriminant function analysis (DFA) – a common tool for forensic sex determination. Regression models to predict sex with mastoid parameters.

3. Minimal Discussion on Side Differences: While male-female variations are well-analyzed, right-left differences lack depth. The study should explain why no significant side differences were found.

4. Formatting and Language Issues: Some typographical and grammatical errors reduce readability. Example: *"It was concluded in our study that the mean mastoid parameters were more in male skulls than female skulls."*
A clearer statement: *"Our study concludes that mean mastoid parameters are significantly larger in male skulls than female skulls."*

5. Lack of Clinical/Medical Implications: While useful for forensics, the study does not explore medical applications (e.g., mastoid development in diseases or cranial surgeries).

Suggestions for Improvement

1. **Increase Sample Size & Diversity**: Include more skulls with an equal male-female ratio. Study multiple ethnic groups to check for geographic variation.

2. **Apply Advanced Statistical Methods**: Use Discriminant Function Analysis (DFA) to improve accuracy in sex determination. Conduct regression analysis to determine which mastoid parameter best predicts sex.

3. **Expand the Discussion on Side-Based Differences**: Investigate why right-left asymmetry was insignificant. Compare findings with bilateral asymmetry studies in anthropology.

4. **Improve Language and Formatting**: Proofread for grammar issues. Standardize figure captions and tables for consistency.

5. **Explore Clinical and Surgical Implications**: Discuss the mastoid process in medical cases (e.g., mastoiditis, ear surgeries, and cranial reconstruction).