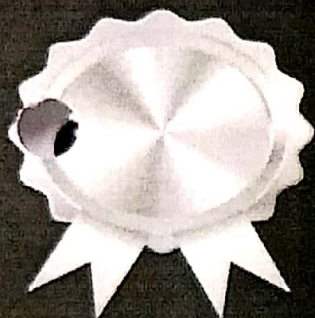




PSG INSTITUTE OF MEDICAL SCIENCES & RESEARCH

Department of Pharmacology

CERTIFICATE OF PARTICIPATION

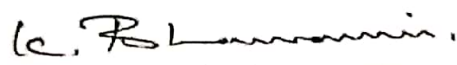
This certificate is awarded to

Dr. PRESENJIT RAUT

for attending the CME on

"MD Pharmacology Postgraduate Perspective of Therapeutic
Drug Committee and Hospital Pharmacy"

held on February 19, 2026 organized by the Department of Pharmacology,
PSG IMS&R.



Dr. K. Bhuvaneswari MD
Prof & Head, Pharmacology, PSG IMS&R



Dr. T M SubbaRao MD
Principal - PSG IMS&R





10th AMBI-CHHATTISGARH STATE CONFERENCE
ON

**"BIOCHEMICAL INSIGHTS OF METABOLIC AND HORMONAL
DISORDERS IN WOMEN"**

Under The Aegis Of
Association Of Medical Biochemist of India (AMBI)

Organized By:-Dept.of Biochemistry
CIMS, Bilaspur(C.G.)

19th Feb 2026

CERTIFICATE

✓
This is to certify that Dr./Mr/Ms KIRAN RATAN BAGALE has participated as a
Deleg[✓]ate/Guest speaker/Chairperson/Judges. The participant has been awarded 2
credit Hours for this CME by Chhattisgarh Medical Council.

DR. RAMANESH MURTHY
DEAN, CIMS

DR. VIBHA V. SAKHARE
STATE REPRESENTATIVE
AMBI

DR. P. K. HODI
ORGANIZING
CHAIRPERSON

DR. MANISH SAHU
ORGANIZING
SECRETARY



10th AMBI-CHHATTISGARH STATE CONFERENCE ON



"BIOCHEMICAL INSIGHTS OF METABOLIC AND HORMONAL
DISORDERS IN WOMEN"

Under The Aegis Of

Association Of Medical Biochemist of India (AMBI)

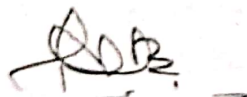
Organized By:-Dept.of Biochemistry

CIMS, Bilaspur(C.G.)

19th Feb 2026

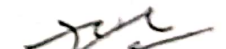
CERTIFICATE

This is to certify that Dr./Mr/Ms VANDANA DEWANGAN has participated as a
Delegate/Guest speaker/Chairperson/Judges. The participant has been awarded 2
credit Hours for this CME by Chhattisgarh Medical Council.


DR. RAMANESH MURTHY
DEAN, CIMS


DR. VIBHA V. SAKHARE
STATE REPRESENTATIVE
AMBI


DR. P.K. KHODIAR
ORGANIZING
CHAIRPERSON


DR. MANISH SAHU
ORGANIZING
SECRETARY



10th AMBI-CHHATTISGARH STATE CONFERENCE
ON



"BIOCHEMICAL INSIGHTS OF METABOLIC AND HORMONAL
DISORDERS IN WOMEN"

Under The Aegis Of
Association Of Medical Biochemist of India (AMBI)

Organized By:-Dept.of Biochemistry

CIMS, Bilaspur(C.G.)

19th Feb 2026

CERTIFICATE

This is to certify that Dr./Mr/Ms KAHKASHAN NAIZ has participated as a
Delegate/Guest speaker/Chairperson/Judges. The participant has been awarded 2
credit Hours for this CME by Chhattisgarh Medical Council.

DR. RAMANESH MURTHY
DEAN.CIMS

DR. VIBHA V. SAKHARE
STATE REPRESENTATIVE
AMBI

DR. P.K. KHODIAR
ORGANIZING
CHAIRPERSON

DR. MANISH SAHU
ORGANIZING
SECRETARY



10th AMBI-CHHATTISGARH STATE CONFERENCE ON

"BIOCHEMICAL INSIGHTS OF METABOLIC AND HORMONAL
DISORDERS IN WOMEN"

Under The Aegis Of
Association Of Medical Biochemist of India (AMBI)

Organized By:-Dept.of Biochemistry
CIMS, Bilaspur(C.G.)

19th Feb 2026

CERTIFICATE

This is to certify that ✓ Dr./Mr/Ms ASHA GUPTA has participated as a
Delegate/Guest speaker/Chairperson/Judges. The participant has been awarded 2
credit Hours for this CME by Chhattisgarh Medical Council.

DR. RAMANESH MURTHY
DEAN, CIMS

DR. VIBHA V. SAKHARE
STATE REPRESENTATIVE
AMBI

DR. P.K. KHODIAR
ORGANIZING
CHAIRPERSON

DR. MANISH SAHU
ORGANIZING
SECRETARY



ACCLMPCON-2026



12th Annual Conference of
Association of Clinical Chemistry & Lab Medicine Practitioners

"Living the Lab Life"

30th, 31st Jan & 1st Feb 2026

Certificate of Participation

This is to certify that

Dr./Mr./Ms. Vandana Dewangan has participated in the 12th Annual Conference of "Association of Clinical Chemistry & Lab Medicine Practitioners" held at King George's Medical University, Uttar Pradesh, Lucknow.

Dr. Kalpana Singh
Organizing Chairperson
ACCLMPCON 2026

Dr. Dilutpal Sharma
Organizing Secretary
ACCLMPCON 2026

Dr. Susruta Sen
President
ACCLMP

Dr. Moushumi Saikia
General Secretary
ACCLMP

Accredited by U.P Medical Council, Lucknow for *09 Credit Hours * vide letter no. 406/26 dated 09/01/2026





CENTRAL ZONE ACBICON 2026

on
"Molecular Insights Driving Clinical Innovation"



under the Aegis of
Association of Clinical Biochemists of India (ACBI)

12th-14th February 2026

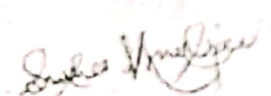
Organized by: Department of Biochemistry, All India Institute of Medical Sciences, Raipur

Certificate of Participation

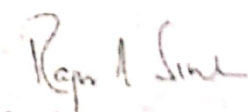
This is to certify that **Dr. Kahkashan Naaz** participated
as a **Speaker** in the CZ ACBICON 2026 held on 13th, 14th Feb 2026 at All India Institute
of Medical Sciences, Raipur.

Topic Oral/ Association of FTO gene(rs9940128) Polymorphism with Lipid profile in patient of type 2 diabetes mellitus

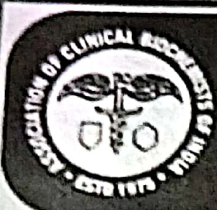
Accredited by C.G Medical Council, Raipur for "10" Credit Hours, vide letter no.CGMC/CME/Gen/2026/516 Dated: 06/02/2026


Dr Sukhes Mukherjee
Central Zone
Representative ACBI


Prof.(Dr.) Rachita Nanda
Organizing Secretary
CZACBICON 26
State Representative ACBI


Prof.(Dr.) Rajiv Ranjan Sinha
General Secretary
ACBI


Prof. (Dr.) Eli Mohapatra
Organizing Chairperson
CZACBICON 26



CENTRAL ZONE ACBICON 2026

on
"Molecular Insights Driving Clinical Innovation"



under the Aegis of
Association of Clinical Biochemists of India (ACBI)

12th-14th February 2026

Organized by: Department of Biochemistry, All India Institute of Medical Sciences, Raipur

Certificate of Participation

This is to certify that DR. SUDAMA RATHORE participated
as a **Chairperson/Delegate/Volunteer** in the **CZ ACBICON 2026** held on 13th, 14th Feb 2026
at All India Institute of Medical Sciences, Raipur.

Accredited by C.G Medical Council, Raipur for "6" Credit Hours, vide letter no.CGMC/CME/Gen/2026/516 Dated: 06/02/2026

Dr Sukhes Mukherjee
Central Zone
Representative ACBI

Prof.(Dr.) Rachita Nanda
Organizing Secretary
CZACBICON 26
State Representative ACBI

Prof.(Dr.) Rajiv Ranjan Sinha
General Secretary
ACBI

Prof. (Dr.) Eli Mohapatra
Organizing Chairperson
CZACBICON 26



CENTRAL ZONE ACBICON 2026

on
"Molecular Insights Driving Clinical Innovation"



under the Aegis of
Association of Clinical Biochemists of India (ACBI)

12th-14th February 2026

Organized by: Department of Biochemistry, All India Institute of Medical Sciences, Raipur

Certificate of Participation

This is to certify that DR. ASHA GUPTA participated
as a **Chairperson/Delegate/Volunteer** in the **CZ ACBICON 2026** held on 13th, 14th Feb 2026
at All India Institute of Medical Sciences, Raipur.

Accredited by C.G Medical Council, Raipur for " 6 " Credit Hours, vide letter no.CGMC/CME/Gen/2026/516 Dated: 06/02/2026

Dr Sukhes Mukherjee
Central Zone
Representative ACBI

Prof.(Dr.) Rachita Nanda
Organizing Secretary
CZACBICON 26
State Representative ACBI

Prof.(Dr.) Rajiv Ranjan Sinha
General Secretary
ACBI

Prof. (Dr.) Eli Mohapatra
Organizing Chairperson
CZACBICON 26



CENTRAL ZONE ACBICON 2026

on

"Molecular Insights Driving Clinical Innovation"



under the Aegis of
Association of Clinical Biochemists of India (ACBI)

12th-14th February 2026

Organized by: Department of Biochemistry, All India Institute of Medical Sciences, Raipur

Certificate of Participation

This is to certify that SWETHA KAMINI.....participated
as a **Chairperson/Delegate/Volunteer** in the **CZ ACBICON 2026** held on 13th, 14th Feb 2026
at All India Institute of Medical Sciences, Raipur.

Accredited by C.G Medical Council, Raipur for "6" Credit Hours, vide letter no.CGMC/CME/Gen/2026/516 Dated:06/02/2026

Dr Sukhes Mukherjee
Central Zone
Representative ACBI

Prof.(Dr.) Rachita Nanda
Organizing Secretary
CZACBICON 26
State Representative ACBI

Prof.(Dr.) Rajiv Ranjan Sinha
General Secretary
ACBI

Prof. (Dr.) Eli Mohapatra
Organizing Chairperson
CZACBICON 26



INSTITUTIONAL ETHICS COMMITTEE

(Reg. No.: EC/21/000189)

Shri Balaji Institute of Medical Science, Raipur



CERTIFICATE OF ETHICAL CLEARANCE

SBIMS/IEC/Certi./168 /2025

Date: 28/12/2025

This is to certify that the following research project has been reviewed and approved by the Institutional Ethics Committee (IEC) of Shri Balaji Institute of Medical Science, Mowa, Raipur in its meeting held on 27.12.2025

Research Project Details

Project Title: "MODIFIED ONE-MINUTE PRECEPTOR (OMP) AS A TEACHING-LEARNING METHOD IN PATHOLOGY: REPLACING THE "PATIENT" WITH A HISTOPATHOLOGY SLIDE".

Principal Investigator: Dr. Ajay Singh Thakur, Professor & HOD, Dept. of Pathology, Shri Balaji Institute of Medical Science, Mowa, Raipur

Co- Investigator: Dr. Jayant Wagh, Professor, Dept. of Paediatrics, Jawaharlal Medical College, Dutta Meghe Institute of Higher Education & Research, Wardha

Level of Study: Faculty

Ethical Considerations

The committee certifies that:

1. The research project has been reviewed according to the ethical standards set by the Institutional Ethics Committee and complies with the relevant national and international ethical guidelines, including those by the Indian Council of Medical Research (ICMR) or equivalent.
2. The project's protocol ensures the protection of participant rights, confidentiality, and informed consent procedures.
3. Any potential risks to participants are minimized and justified by the potential benefits of the study.

The project is subject to ongoing ethical monitoring by the IEC. The investigator is required to report any significant deviations from the approved protocol or adverse events to the committee.

Dr. Kamla Kant Bhoi
Member Secretary
Institutional Ethics Committee (EC/000189)
SBIMS, Mowa, Raipur

Important Notes:

1. Any amendments or changes to the research protocol must be approved by the IEC.
2. This certificate is not transferable to other projects or investigators.

Shri Balaji Hospital Campus, Mowa, Raipur (C.G.) PIN : 492014

☎ 0771-4241000,01,02 ✉ sbmc.raipur@gmail.com, admn.sbimsraipur@gmail.com 🌐 www.shribalajihospital.com, www.shribalajimedicalcollege.com



Review began 02/06/2026
Review ended 02/11/2026
Published 02/14/2026

© Copyright 2026

Pathan et al. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.103612

Diagnostic Utility of Mast Cell Density and Neutrophilic Infiltration for Differentiating Aseptic Loosening From Periprosthetic Joint Infection: A Retrospective Cohort Study

Rameez Ahmedkhan R. Pathan^{1, 2, 5, 4}, Akanksha Wankhade³, Sujata R. Panda⁵, Sandesh Subhash Agrawal^{6, 7, 1, 8}, Shahzad Khan¹

¹ Orthopedics, Shri Balaji Institute of Medical Science, Raipur, IND ² Orthopedics, Hindu Rao Hospital and North Delhi Municipal Corporation (NDMC) Medical College, Delhi, IND ³ Orthopedics, SPARSH Hospital, Bengaluru, IND ⁴ Orthopedics, Manipal Academy of Higher Education, Mangaluru, IND ⁵ Pathology, Shri Balaji Institute of Medical Science, Raipur, IND ⁶ Spine Surgery, Shree Narayana Hospital, Raipur, IND ⁷ Orthopedics, Sri Devaraj Urs Academy of Higher Education and Research, Kolar, IND ⁸ Spine Surgery, Stavva Spine Hospital and Research Institute, Ahmedabad, IND

Corresponding author: Sandesh Subhash Agrawal, precious333@gmail.com

Abstract

Background

Accurate differentiation between periprosthetic joint infection (PJI) and aseptic loosening (AL) is essential for appropriate surgical planning and optimal postoperative outcomes. Although neutrophil infiltration remains the standard histological marker for diagnosing PJI, it has recognized limitations. Mast cells, which play a role in chronic inflammatory responses, may serve as a complementary biomarker. This study evaluated the combined diagnostic utility of Giemsa-stained mast cell density and neutrophil counts in periprosthetic tissue to distinguish PJI from AL.

Methods

This single-center retrospective cohort study included patients who underwent revision arthroplasty between January 2022 and September 2025. PJI was defined according to the 2018 International Consensus Meeting criteria, whereas AL was diagnosed based on negative microbiological cultures and radiographic evidence of loosening. Periprosthetic tissue samples were stained with H&E for neutrophil assessment and Giemsa stain for mast cell identification. Two blinded observers quantified cells across 10 high-power fields (HPFs; 0.237 mm² per field).

Results

A total of 146 revision cases were analyzed, including 48 PJI and 98 AL cases. Median neutrophil counts were significantly higher in the PJI group than in the AL group (26.5 vs. 1.0 cells/HPF; $p < 0.001$). Conversely, median mast cell density was significantly higher in AL (11.0 vs. 3.5 cells/HPF; $p < 0.001$). A neutrophil threshold of ≥ 5 cells/HPF demonstrated 93.8% sensitivity and 91.8% specificity for diagnosing PJI (area under the curve (AUC) = 0.97). A mast cell cutoff of ≥ 7 cells/HPF showed 86.7% sensitivity and 85.4% specificity for diagnosing AL (AUC = 0.91). The combined sequential algorithm achieved an overall diagnostic accuracy of 93.2%.

Conclusions

Giemsa-stained mast cell density is a novel, cost-effective histological marker elevated in AL. When combined with neutrophil counts, it improves diagnostic accuracy and may serve as a practical adjunct in the routine pathological evaluation of revision arthroplasty specimens.

Categories: Pathology, Infectious Disease, Orthopedics

Keywords: aseptic loosening, giemsa stain, histology, mast cells, neutrophils, periprosthetic tissue, prosthetic joint infection

Introduction

Periprosthetic joint infection (PJI) and aseptic loosening (AL) are the two most common causes of failure following total joint arthroplasty and require distinctly different management strategies [1]. PJI typically necessitates prolonged antimicrobial therapy and staged revision procedures, whereas AL is generally treated with single-stage mechanical revision. Accurate differentiation between these entities is therefore critical for appropriate surgical decision-making and optimal patient outcomes [2].

How to cite this article

Pathan R, Wankhade A, Panda S R, et al. (February 14, 2026) Diagnostic Utility of Mast Cell Density and Neutrophilic Infiltration for Differentiating Aseptic Loosening From Periprosthetic Joint Infection: A Retrospective Cohort Study. Cureus 18(2): e103612. DOI 10.7759/cureus.103612



Certificate of completion

We proudly present this certificate to

Anil Kumar Dubey

for successfully completing the e-workshop on

Systematic Reviews and Meta-analyses

held on

24, 25, 31 January 2026 and 1 & 8 February 2026



Dr. Mahendra Singh

*Head, Research &
Training Programs
MentorMost*

Certificate ID
SRMA89WALV2AD