

RESEARCH / ANALYTICS ADDENDUM

Patient name: De-identified

DOB: 1957-xx-xx

Sex: Female

Age at study: 68 years

Study date: 2026-xx-xx

Modality: Radiographs

Regions / projections:

- **Right hand/wrist:** hand AP, oblique and lateral views; wrist AP and oblique views.
- **Left hand/wrist:** hand AP, oblique and lateral views; wrist AP and oblique views.
- **Right foot/ankle:** foot AP and oblique views; lateral foot/ankle view; ankle AP/mortise-type view.
- **Left foot/ankle:** foot AP and oblique views; lateral foot/ankle view; ankle AP/mortise-type view.
- **Bilateral knees:** standing AP, standing PA flexion/tunnel and lateral views.

Comparison: None available. Baseline examination.

Dataset classification: Single-date, multi-region peripheral radiographic baseline study.

CONFIDENCE SCALE

Confidence	Definition
High	Definite radiographic finding
Moderate	Probable finding or finding partially limited by remodeling/overlap
Low	Possible finding insufficient for definitive classification
Not assessable	Required comparison, modality or formal measurement is unavailable

A. STRUCTURAL PHENOTYPE SUMMARY

Structural domain	Status	Distribution	Burden	Confidence
Interphalangeal osteoarthritis	Present; dominant hand pattern	Bilateral DIP, PIP and thumb IP joints	Moderate to advanced in multiple joints	High
Central erosive-remodeling component	Probable	Multiple bilateral interphalangeal joints, greatest in DIP distribution	Multifocal	Moderate
Thumb-base osteoarthritis	Present	Bilateral first CMC and triscaphe articulations	Moderate	High
Rheumatoid-type marginal erosive pattern	Not demonstrated	MCPs, wrists/carpus and MTPs assessed	No definite target erosions identified	High
Fixed MCP ulnar deviation/subluxation pattern	Not demonstrated	Bilateral hands	Absent	High
Destructive wrist/carpal arthropathy	Not demonstrated	Bilateral radiocarpal/intercarpal compartments	Absent	High
Forefoot degenerative change	Present	Bilateral first MTP joints, right slightly greater than left	Mild	High
Hallux valgus	Present	Bilateral, right slightly greater than left	Mild	High
Fifth metatarsal head remodeling	Present	Bilateral	Mild bunionette-type remodeling	Moderate
Forefoot inflammatory-type erosions	Not demonstrated	Bilateral MTP joints	Absent definite erosive pattern	Moderate
Midfoot degenerative change	Present	Bilateral	Minimal	Moderate
Calcaneal enthesopathic change	Present	Bilateral plantar and posterior calcaneal insertions	Mild	High

Structural domain	Status	Distribution	Burden	Confidence
Knee osteoarthritis	Present	Bilateral medial compartment predominant; minimal patellofemoral involvement	Mild	High
Reduced mineralization appearance	Present	Visualized osseous structures	Generalized qualitative finding	Moderate
Distal arterial calcifications	Present	Bilateral distal lower extremities	Visible bilateral vascular calcification	High
Acute osseous abnormality	Not identified	Submitted regions	None demonstrated	High

B. QUANTITATIVE RADIOLOGIC MEASURES

B1. Hands and Wrists

Compartment	Right	Left	Morphologic classification	Confidence
DIP joints	Multifocal JSN and osteophytes; probable central erosive-remodeling changes; greatest burden in index/middle distribution	Multifocal JSN and osteophytes; probable central erosive-remodeling changes	Degenerative / erosive-remodeling OA-type	High; Moderate for erosive-remodeling component
PIP joints	Multifocal degenerative narrowing and osteophytes with probable irregular remodeling in selected joints	Multifocal degenerative narrowing and osteophytes with probable irregular remodeling, including small-finger distribution	Degenerative / erosive-remodeling OA-type	High; Moderate for erosive-remodeling component
Thumb IP joints	Degenerative narrowing and osteophyte formation	Degenerative narrowing and osteophyte formation	Degenerative	High
MCP joints	Joint spaces largely maintained; no definite marginal erosions; no fixed ulnar deviation/subluxation	Joint spaces largely maintained; no definite marginal erosions; no fixed ulnar deviation/subluxation	No established inflammatory-destructive pattern	High
First CMC joints	Moderate narrowing, sclerosis and osteophytes	Moderate narrowing, sclerosis and osteophytes	Degenerative	High
Triscaphe articulations	Mild to moderate degenerative narrowing/sclerosis	Mild to moderate degenerative narrowing/sclerosis	Degenerative	High
Radiocarpal joints	No convincing destructive narrowing or inflammatory-type erosion	No convincing destructive narrowing or inflammatory-type erosion	No established destructive inflammatory pattern	High
Intercarpal / midcarpal joints	No carpal collapse or definite erosive destruction	No carpal collapse or definite erosive destruction	No established destructive inflammatory pattern	High
Distal ulna / ulnar styloid	No definite erosion	No definite erosion	Negative inflammatory erosion screen	High

B2. Hand/Wrist Semiquantitative Burden Matrix

Ordinal burden scale: **0 = absent; 1 = mild; 2 = moderate; 3 = marked.**

Domain	Right	Left	Bilateral assessment
Interphalangeal OA burden	3	3	Marked multifocal bilateral distribution
Probable central erosive-remodeling burden	2	2	Bilateral multifocal component
First CMC/triscaphe OA burden	2	2	Moderate symmetric burden
MCP inflammatory-type burden	0	0	No definite marginal erosive or deforming pattern
Wrist/carpal inflammatory-type burden	0	0	No definite destructive inflammatory pattern
Ulnar styloid erosive burden	0	0	No definite erosions

B3. Feet and Ankles

Compartment	Right	Left	Morphologic classification	Confidence
First MTP joint	Mild to moderate OA with mild JSN, small osteophytes and medial bunion-type remodeling	Mild OA with mild JSN, small osteophytes and medial bunion-type remodeling	Degenerative	High
Hallux alignment	Mild hallux valgus	Mild hallux valgus	Mechanical/deformity-related	High
MTP 2-4 joints	Preserved to minimally narrowed; no definite marginal erosions	Preserved to minimally narrowed; no definite marginal erosions	No established inflammatory-destructive pattern	High
Fifth metatarsal head / fifth MTP region	Mild bunionette-type remodeling; no definite marginal erosion	Mild bunionette-type remodeling; no definite marginal erosion	Mechanical remodeling	Moderate
Lesser toe IP joints	Mild degenerative/flexion changes	Mild degenerative/flexion changes	Degenerative/mechanical	Moderate
Midfoot articulations	Minimal degenerative change	Minimal degenerative change	Degenerative	Moderate
Low-arch configuration	Mild	Mild	Mechanical alignment feature	Moderate
Tibiotalar mortise	Preserved; no definite erosions or significant narrowing	Preserved; no definite erosions or significant narrowing	Structurally preserved	High
Calcaneal insertions	Small plantar and minimal posterior enthesophytes	Small plantar and minimal posterior enthesophytes	Enthesopathic	High

B4. Foot/Ankle Semiquantitative Burden Matrix

Domain	Right	Left	Bilateral assessment
First MTP OA burden	2	1	Mild right-predominant asymmetry
Hallux valgus burden	1	1	Mild bilateral deformity
Definite MTP marginal erosions	0	0	No definite inflammatory-type erosions
Fifth metatarsal head mechanical remodeling	1	1	Mild bilateral bunionette-type remodeling
Midfoot degenerative burden	1	1	Minimal bilateral change
Ankle structural burden	0	0	Mortises preserved
Calcaneal enthesopathic burden	1	1	Mild symmetric insertional change

B5. Knees

Compartment / feature	Right knee	Left knee	Symmetry	Confidence
Medial tibiofemoral JSN	Grade 1	Grade 1	Symmetric	High
Lateral tibiofemoral JSN	Grade 0	Grade 0	Symmetric	High
Patellofemoral degenerative burden	Grade 0-1	Grade 0-1	Symmetric	Moderate
Marginal osteophytes	Grade 1	Grade 1	Symmetric	High
Subchondral sclerosis	Minimal	Minimal	Symmetric	Moderate
Definite erosions	0	0	Symmetric absence	High
Chondrocalcinosis	0	0	Symmetric absence	High
Large joint effusion	Not identified	Not identified	Symmetric absence	Moderate
Substantial varus/valgus malalignment	Not demonstrated	Not demonstrated	Near symmetric	Moderate
Estimated Kellgren-Lawrence grade	2	2	Symmetric mild OA	Moderate
Estimated Ahlbäck grade	0	0	No advanced joint-space loss	High

C. SCORING-SYSTEM STATUS

Scoring domain	Applicability	Output status	Interpretation
Rheumatoid-type hand/wrist/foot erosion and JSN assessment	Target anatomic regions included	Formal aggregate score not issued; definite inflammatory-type marginal erosion count: 0	No convincing radiographic evidence of established rheumatoid-type erosive structural damage
Interphalangeal erosive-remodeling burden	Morphologically applicable	Multifocal bilateral disease documented; formal aggregate score not issued	Pattern favors erosive-remodeling osteoarthritis
Knee OA grading	Applicable	Estimated KL grade 2 bilaterally; estimated Ahlbäck grade 0 bilaterally	Mild symmetric knee OA
First MTP OA burden	Applicable descriptively	Mild to mild-moderate degenerative burden, right greater than left	Mild forefoot OA
Hallux valgus angular measurements	Potentially applicable	Not calculated	Qualitative mild bilateral hallux valgus retained
Longitudinal structural scoring	Not applicable	Not computable	No prior imaging supplied

Scoring Integrity Statement

The dominant hand abnormalities are centered in the interphalangeal and thumb-base compartments with osteophyte-associated degenerative and probable central erosive-remodeling morphology. These changes are not classified as rheumatoid-type marginal erosive damage in the absence of corresponding imaging features.

D. PATTERN-SEPARATION MATRIX

Feature evaluated	Result	Inflammatory structural signal	Degenerative / erosive-remodeling signal	Confidence
MCP marginal erosions	Not identified	Negative	N/A	High
MCP destructive narrowing	Not identified	Negative	N/A	High
Fixed MCP ulnar deviation/subluxation	Not demonstrated	Negative	N/A	High
Ulnar styloid erosion	Not identified	Negative	N/A	High
Destructive carpal narrowing/collapse	Not demonstrated	Negative	N/A	High
MTP marginal erosions	Not identified	Negative	N/A	Moderate
DIP/PIP predominant JSN with osteophytes	Present bilaterally	Not characteristic of RA-type marginal erosive damage	Positive	High
Central/irregular interphalangeal remodeling	Probable in multiple joints	Not characteristic of marginal RA erosions	Positive	Moderate
First CMC/trisaphe OA	Present bilaterally	Negative	Positive	High
First MTP OA	Present bilaterally, right greater than left	Negative	Positive	High
Knee OA	Present bilaterally	Negative	Positive	High
Calcaneal enthesophytes	Mild bilateral	Nonspecific	Enthesopathic/mechanical signal	High

Composite Pattern Classification

Category	Result
Dominant radiographic pattern	Bilateral multifocal interphalangeal osteoarthritis with probable erosive-remodeling component and bilateral thumb-base/trisaphe OA
Established rheumatoid-type structural damage	Not demonstrated radiographically
Forefoot inflammatory erosive pattern	Not demonstrated
Mechanical/degenerative forefoot pattern	Mild bilateral, right slightly greater than left

Category	Result
Enthesopathic pattern	Mild bilateral calcaneal insertional change
Radiographic assessment of active synovitis	Not assessable on plain radiographs

E. SYMMETRY AND LATERALITY ANALYSIS

Ordinal burden scale: **0 = absent; 1 = mild; 2 = moderate; 3 = marked.**

Structural feature	Right burden	Left burden	Raw asymmetry delta	Direction	Confidence
Interphalangeal OA burden	3	3	0	Symmetric	High
Probable interphalangeal erosive-remodeling burden	2	2	0	Symmetric	Moderate
First CMC/trisaphe OA burden	2	2	0	Symmetric	High
MCP inflammatory-type structural burden	0	0	0	None	High
Wrist/carpal inflammatory-type structural burden	0	0	0	None	High
First MTP OA burden	2	1	+1	Right greater than left	High
Fifth metatarsal head remodeling	1	1	0	Symmetric	Moderate
Midfoot degenerative burden	1	1	0	Symmetric	Moderate
Tibiotalar structural burden	0	0	0	None	High
Calcaneal enthesopathic burden	1	1	0	Symmetric	High
Knee OA burden	1	1	0	Symmetric	High

Symmetry Summary

Domain	Result
Overall distribution	Predominantly bilateral and symmetric
Greatest side-to-side difference	First MTP degenerative burden, right greater than left
Hand erosive-remodeling distribution	Bilateral without meaningful side dominance
Definite inflammatory marginal erosion distribution	Symmetric absence in assessed target compartments
Normalized symmetry index	Not calculated

F. LONGITUDINAL AND TEMPORAL METRICS

Metric	Status
Baseline structural map	Established
Prior matching radiographs	Not available
Study interval	Not applicable
Change in erosions	Not computable
Change in joint-space narrowing	Not computable
Change in osteophyte burden	Not computable
Change in sclerosis	Not computable
Change in alignment	Not computable
Change in ankylosis	Not computable
Change in knee OA grade	Not computable
Structural drift analysis	Not computable
Stability classification	Not computable
Treatment-response trajectory	Not computable
Focal progression assessment	Not applicable without prior comparison

Temporal status: Baseline-only examination. No progression, stability or regression assignment is made.

G. AGE-ADJUSTED AND BONE-QUALITY ASSESSMENT

Analytic field	Result / status
Age at study	68 years
Qualitative radiographic mineralization signal	Generalized reduced mineralization appearance
Age-normalized mineralization index	Not calculated
Age-normalized interphalangeal OA burden	Not calculated
Age-normalized erosive-remodeling deviation	Not calculated
Age-adjusted symmetry index	Not calculated
Fracture on submitted radiographs	Not identified

Bone-quality interpretation: Reduced mineralization is recorded as a qualitative radiographic finding. Quantitative age-normalized or densitometric classification cannot be assigned from the available radiographs alone.

H. DENSITOMETRIC AND CROSS-MODAL CORRELATION STATUS

Field	Status
Densitometric study available	No
Bone-density measurements available	No
T-score / Z-score available	No
Radiograph-densitometry concordance	Not computable
Bone-density trajectory	Not computable
Mineralization-fracture correlation	Not computable
Quantitative bone-quality composite metric	Not computed

I. COMPOSITE STRUCTURAL METRICS

Composite domain	Classification	Basis	Confidence
Dominant structural phenotype	Degenerative / erosive-remodeling peripheral arthropathy	Bilateral DIP/PIP/thumb IP and first CMC/triscape morphology	High
Definite inflammatory structural damage class	Not established radiographically	No definite marginal erosions, destructive wrist disease, fixed MCP subluxation or MTP erosions	High
Forefoot degenerative class	Mild, right slightly greater than left	Mild hallux valgus and first MTP OA	High
Knee degenerative class	Mild symmetric	Medial compartment predominant and minimal patellofemoral OA	High
Enthesopathic class	Mild symmetric	Small bilateral plantar/posterior calcaneal enthesophytes	High
Mineralization signal class	Qualitatively reduced	Generalized reduced mineralization appearance	Moderate
Vascular calcification signal	Present bilaterally	Distal lower-extremity arterial calcifications	High
Acute destructive concern class	Negative	No acute fracture or aggressive osseous destruction	High
Numeric stability index	Not computed	Requires longitudinal/calibrated inputs	Not assessable
Numeric damage trajectory index	Not computed	Requires longitudinal inputs	Not assessable
Structural trajectory class	Not computable	Baseline-only study	Not assessable

J. QUALITY AND RELIABILITY SUMMARY

Parameter	Result
Regions assessed	Bilateral hands/wrists, feet/ankles and knees
Laterality confidence	High
Region coverage confidence	High
Projection adequacy	Adequate for structural assessment
Structural descriptor completeness	Completed for abnormalities identified in submitted regions
Inflammatory versus degenerative separation	Completed
Formal aggregate rheumatoid damage score	Not issued
Formal interphalangeal erosive-OA aggregate score	Not issued
Formal human adjudication dataset	Not provided
Agreement/concordance metric	Not computable without independent physician-scored reference data

K. MIMIC-CONTROL AND SAFETY MATRIX

Pattern / safety consideration	Radiographic status	Confidence
Rheumatoid-type marginal erosive arthropathy	Not demonstrated	High
Psoriatic-type proliferative erosive pattern	Not demonstrated	High
Classic gout-type punched-out erosions	Not demonstrated	High
Chondrocalcinosis / CPPD-type signal	Not demonstrated in submitted wrists or knees	High
Erosive-remodeling hand OA pattern	Favored	Moderate
Advanced destructive forefoot arthropathy	Not demonstrated	High
Destructive infectious-type joint pattern	Not demonstrated	High
Aggressive osseous lesion	Not demonstrated	High
Acute fracture	Not demonstrated	High
Distal arterial calcifications	Present bilaterally	High

EXPLORATORY ANALYTICS EXTENSION

L. PROTOTYPE STRUCTURAL METRICS

Exploratory metric	Result / status
Structural stability curve	Not computable; no prior imaging
Longitudinal drift map	Not computable; no prior imaging
Damage trajectory classification	Not computable; no serial imaging
Treatment-linked response classification	Not computable; no serial treatment-linked imaging
Phenotype-consistency classification	Degenerative/erosive-remodeling hand phenotype favored; inflammatory-destructive radiographic phenotype not established

M. EXTENDED BONE-QUALITY ANALYTICS

Exploratory field	Result / status
Qualitative mineralization flag	Positive: generalized reduced mineralization appearance
Quantitative mineralization vector	Not computed
Densitometric fusion pathway	Not available; densitometric study not provided
Fracture susceptibility metric	Not computed

Exploratory field	Result / status
Bone-quality trajectory	Not computable
Numeric uncertainty index	Not computed

N. MECHANICAL LOAD AND DEGENERATIVE DISTRIBUTION ANALYSIS

Region	Mechanical / load-related structural signal	Burden	Confidence
Bilateral interphalangeal joints	OA distribution with probable erosive-remodeling component	Moderate to advanced by involved joint	High / Moderate for erosive-remodeling component
Bilateral thumb bases	First CMC/triscaphe degenerative arthropathy	Moderate	High
Right first MTP	Hallux valgus-associated degenerative remodeling	Mild-moderate	High
Left first MTP	Hallux valgus-associated degenerative remodeling	Mild	High
Bilateral fifth metatarsal heads	Bunionette-type mechanical remodeling	Mild	Moderate
Bilateral midfeet	Minimal degenerative loading pattern	Minimal	Moderate
Bilateral knees	Medial compartment predominant load-associated osteoarthritis	Mild	High
Formal biomechanical load-vector calculation	Not performed	N/A	Not assessable

O. ADVANCED SYMMETRY MAP

Exploratory symmetry domain	Result
Interphalangeal degenerative burden	Strong bilateral symmetry
Probable erosive-remodeling interphalangeal burden	Bilateral; no meaningful side predominance established
Thumb-base OA burden	Bilateral symmetric moderate burden
Rheumatoid-type marginal erosive burden	Symmetric absence of definite findings
Forefoot degenerative burden	Mild right-dominant first MTP asymmetry
Knee degenerative burden	Symmetric mild involvement
Enthesopathic burden	Symmetric mild calcaneal involvement
Higher-order normalized asymmetry index	Not computed

P. VASCULAR STRUCTURAL SIGNAL

Field	Result / status
Visible vascular calcifications	Present
Distribution	Bilateral distal lower extremity arterial calcifications
Qualitative burden	Visible bilateral peripheral vascular calcification signal
Formal vascular calcification score	Not computed
Arthropathy-score interaction	Not applied; documented separately as an incidental imaging-visible finding

Q. QUANTITATIVE MISSINGNESS REGISTRY

Unavailable or non-computed element	Reason	Effect on current interpretation
Formal aggregate rheumatoid damage score	No convincing radiographic RA-type erosive targets; adjudicated scoring pass not performed	Does not alter absence of definite rheumatoid-type marginal erosive damage

Unavailable or non-computed element	Reason	Effect on current interpretation
Formal erosive-OA composite score	Dedicated validated joint-level scoring pass not performed	Morphologic classification remains supported
Numeric hallux valgus/ intermetatarsal angles	Formal angular measurement not performed	Mild qualitative hallux valgus remains supported
Age-normalized burden values	Calibrated reference computation not performed	Qualitative structural interpretation unchanged
Densitometric metrics	Densitometric study not provided	Mineralization remains qualitative only
Longitudinal stability metrics	No prior imaging provided	Examination remains baseline only
Treatment-response metrics	No serial treatment-linked imaging provided	Not applicable
Agreement/concordance index	No independent physician-scored reference dataset provided	Not applicable until adjudication
Formal vascular calcification score	Dedicated vascular scoring not performed	Visible calcifications remain documented

RESEARCH SYNTHESIS

Baseline multi-region radiographs demonstrate a dominant pattern of **bilateral multifocal interphalangeal osteoarthritis with probable central erosive-remodeling component**, together with **moderate bilateral first CMC/triscaphe osteoarthritis**. The submitted hands, wrists and feet show **no convincing radiographic evidence of established rheumatoid-type marginal erosive arthropathy**, including no definite MCP marginal erosions, destructive radiocarpal/intercarpal change, carpal collapse, fixed MCP ulnar subluxation pattern, ulnar styloid erosions or definite MTP marginal erosions. Additional findings include **mild bilateral hallux valgus with mild first MTP osteoarthritis, right slightly greater than left; minimal bilateral midfoot degenerative change; mild bilateral calcaneal enthesopathic change; and mild symmetric knee osteoarthritis**. Generalized reduced mineralization appearance and bilateral distal lower-extremity arterial calcifications are present. Longitudinal change, densitometric correlation, normalized composite indices and agreement metrics are not computable from the available baseline radiographs alone.