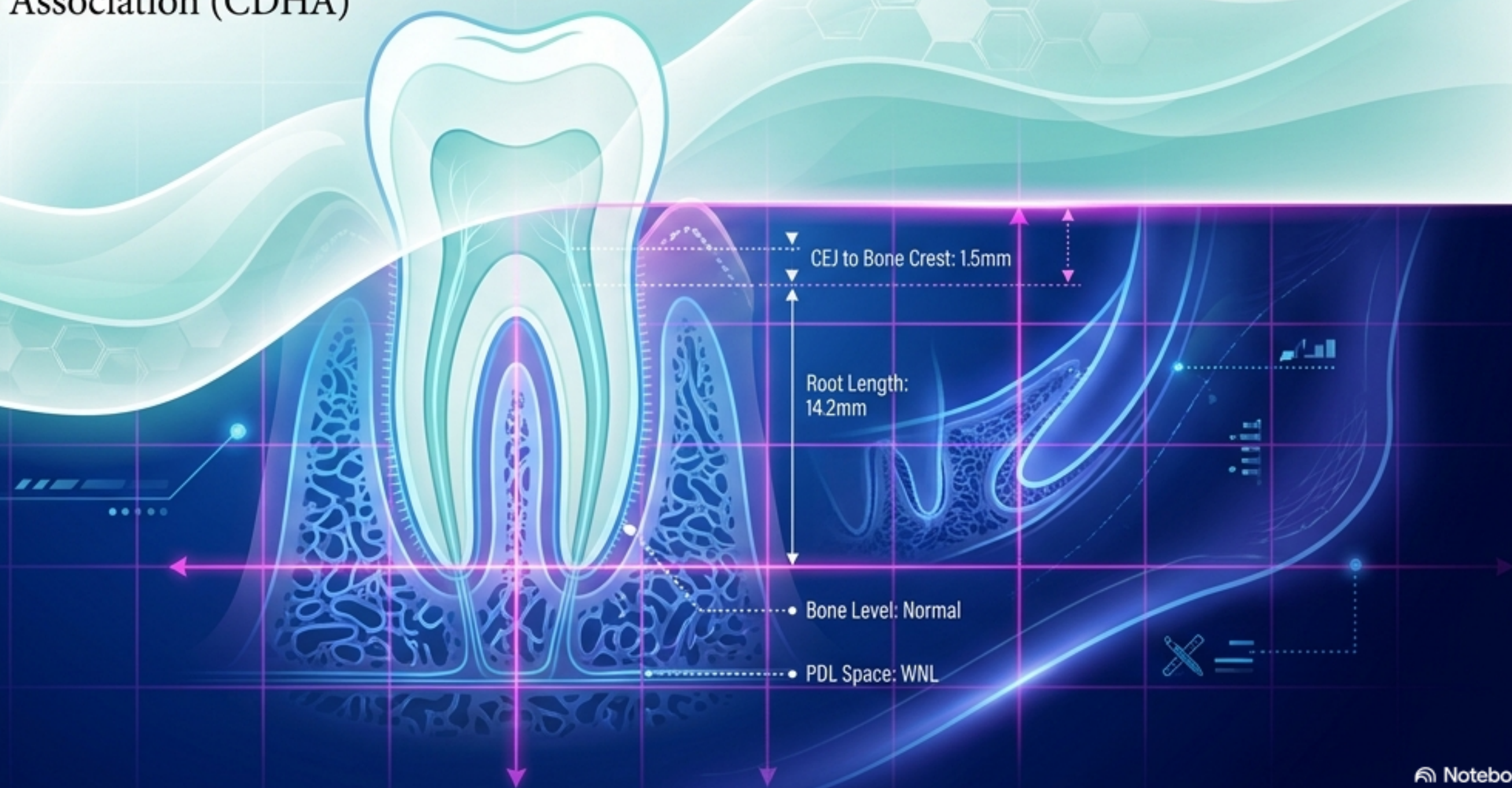


The Standard of Care: Intraoral Radiographs in Periodontal Assessment

A Position Paper & Systematic Review from the
Canadian Dental Hygienists Association (CDHA)





The Official Position of the CDHA

Dental hygienists must prioritize using intraoral radiographs to ensure comprehensive, individualized care. Standards of practice should integrate radiographic assessments into routine protocols to detect subgingival findings that clinical exams alone may miss.

Future policy must align scope of practice across all Canadian jurisdictions to authorize dental hygienists to utilize these essential radiographic tools.

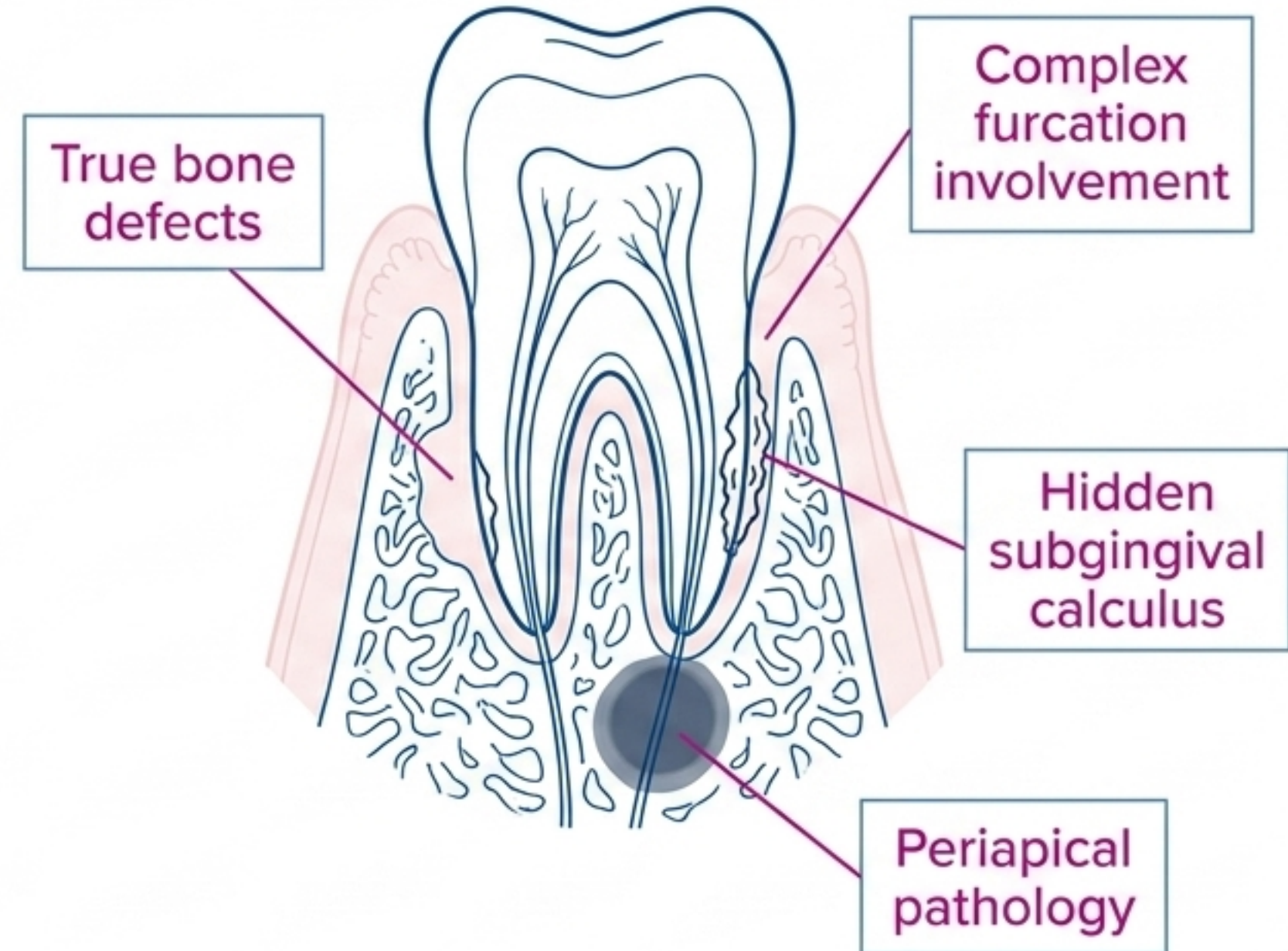
Above the Surface



What clinical probing captures:

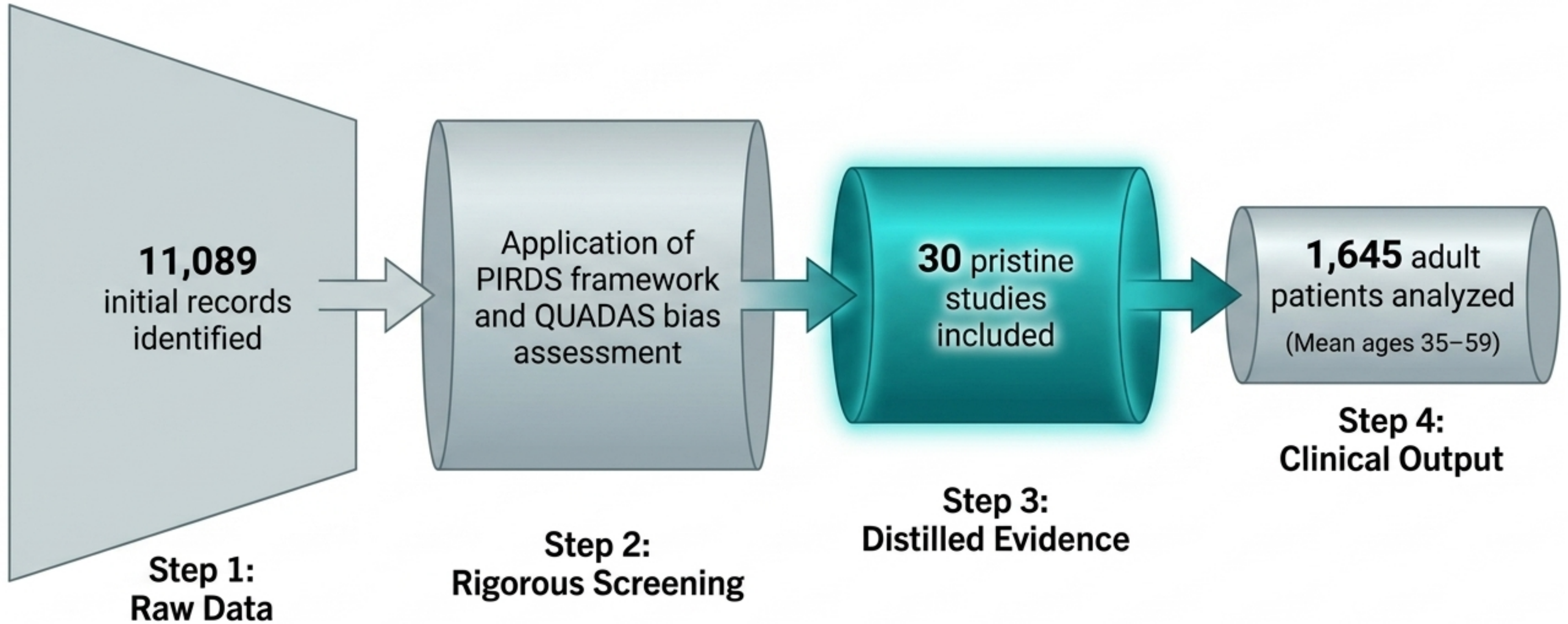
- Clinical Attachment Level (CAL)
- Pocket depth mapping
- Bleeding on probing

Beneath the Surface



Clinical attachment loss remains the diagnostic yardstick, but tactile exams alone **cannot form a complete** periodontal diagnosis.

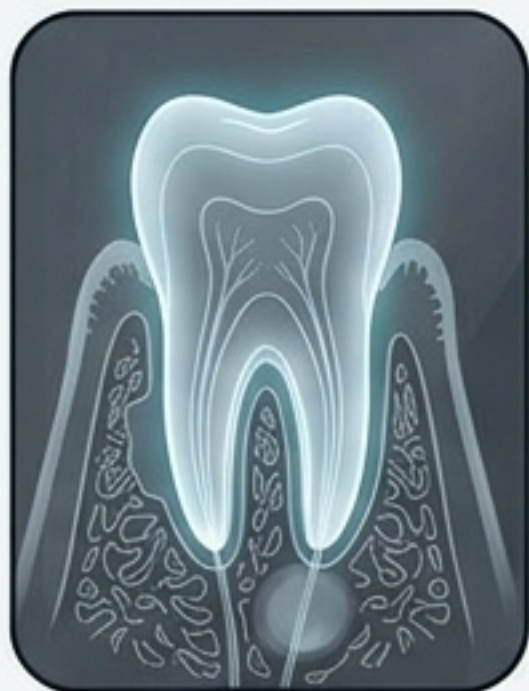
The Evidence Engine



This represents the most current, comprehensive evaluation of intraoral imaging compared directly to clinical and surgical reference standards.

The Intraoral Diagnostic Toolkit

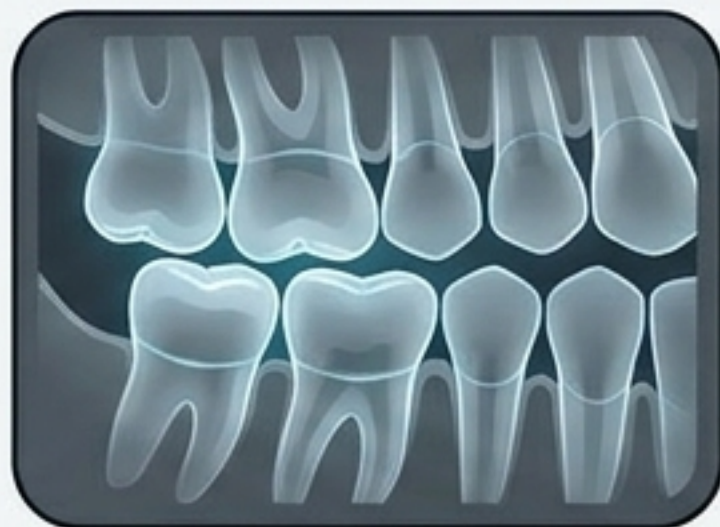
Periapicals (PA)



Studied in 25/30 papers

Optimal for viewing the entire tooth structure, root morphology, and periapical pathology.

Horizontal Bitewings



Studied in 10/30 papers

The standard for detecting interproximal caries and early marginal bone loss.

Vertical Bitewings



The Underutilized Standard

Superior visualization of interproximal bone loss in moderate/advanced cases. Offers better accuracy in detecting furcation involvement than horizontal bitewings.

Proven Diagnostic Accuracy

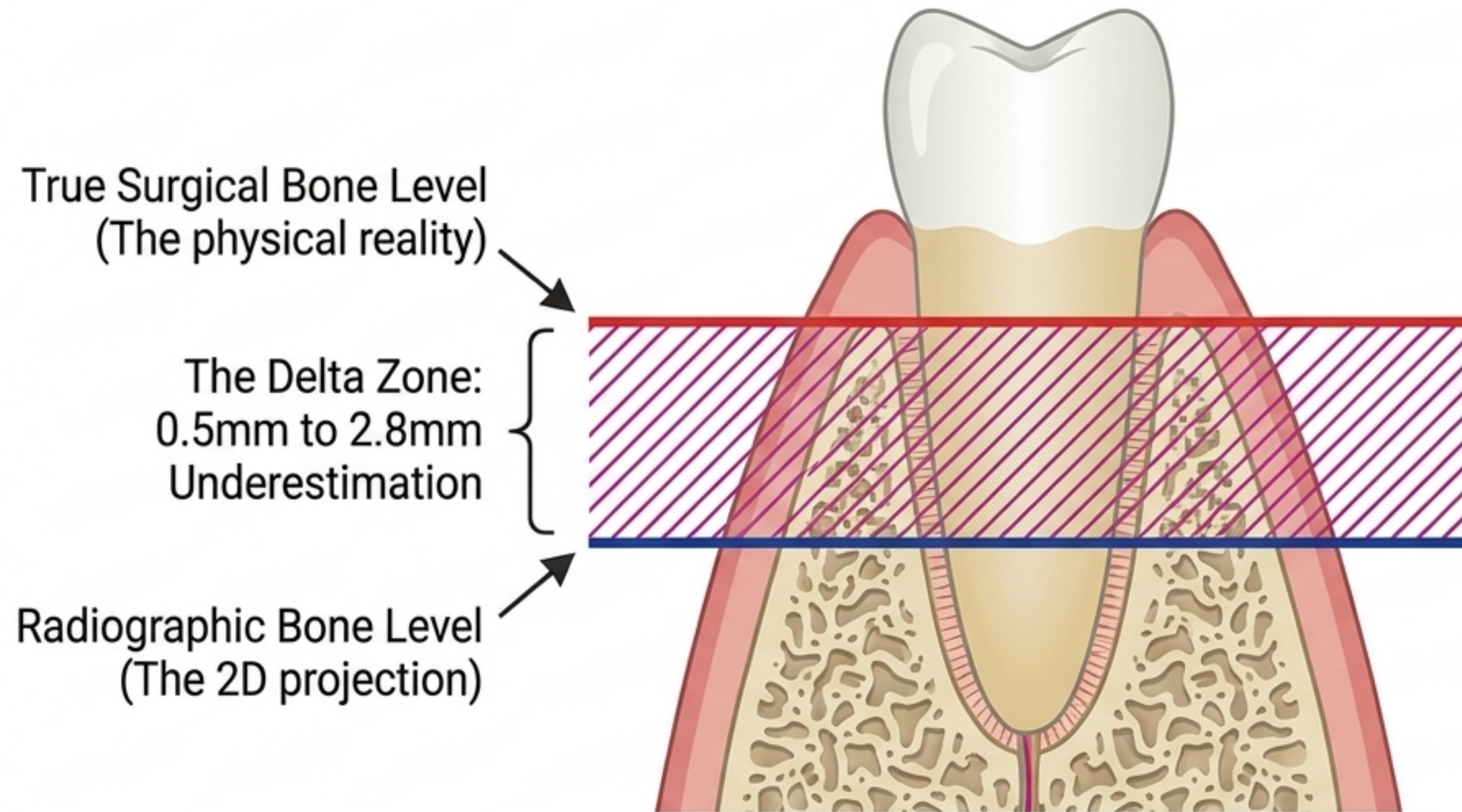


60% – 90% Sensitivity

Across the evaluated studies, intraoral radiographs demonstrated moderate to high sensitivity compared to direct surgical measurement (flap surgery) or clinical attachment level (CAL) measurements.

Clinical Translation: Periapical and bitewing radiographs consistently and successfully identify true positive cases of alveolar bone loss, solidifying their role as an indispensable diagnostic adjunct.

The Underestimation Phenomenon



Why does this happen?

2D compression of 3D structures, the high density of overlying cortical tissues, and minor variations in acquisition angulation systematically obscure the true marginal bone crest.

Clinical Rule: Radiographs consistently underestimate true bone loss. If bone loss is visible radiographically, the clinical reality is almost always more severe.

Clinical Dashboard

Scenario 1: Suspected Periodontitis



Moderate Sensitivity

($r = 0.59$ to 0.66) compared to direct intrasurgical measurements.



Moderate Association

($r = 0.50$ to 0.67) compared to standard CAL probing

Key Finding: Mandibular central incisors demonstrated the highest association with actual bone loss, though outcomes are highly dependent on precise imaging technique.

Clinical Dashboard

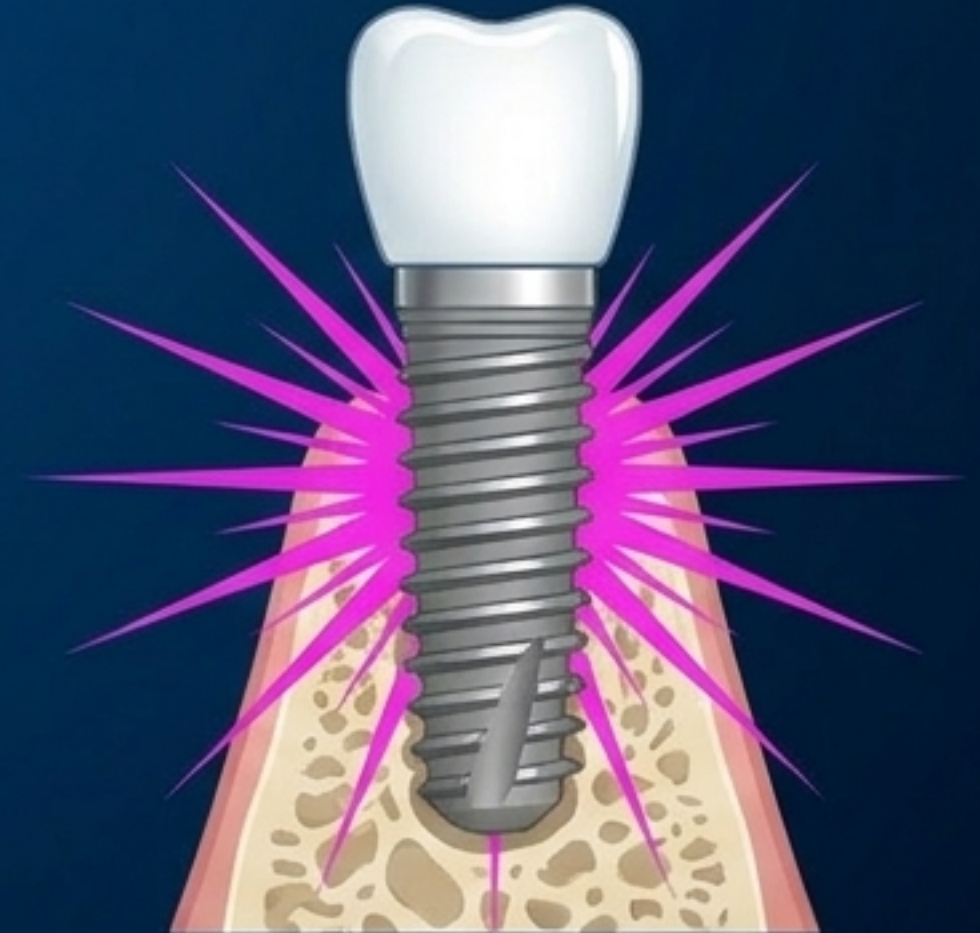
Scenario 2: Suspected Peri-Implantitis



High Sensitivity
(0.80) in detecting positive cases.



Weak/Moderate Association
($r = 0.34$ to 0.65) compared to clinical probing.



The Artifact Caveat: Underestimation of bone loss reaches up to 2.7mm around implants. High-density titanium causes demineralization masking and severe imaging artifacts, obscuring marginal bone levels.

2D images remain essential but must be heavily triangulated with tactile probing around implants.

Clinical Dashboard

Scenario 3: Periodontal Therapy & Follow-Up



Pre-Therapy



Post-Therapy Healing

Association Metric:

Weak to moderate association ($r = 0.26$ to 0.56) compared to clinical attachment level measurements during post-therapy healing.

The Predictive Indicator

The Crestal Lamina Dura

The presence of an intact radiographic crestal lamina dura serves as a remarkably strong predictor of clinical periodontitis disease stability (Odds Ratio = 2.6).

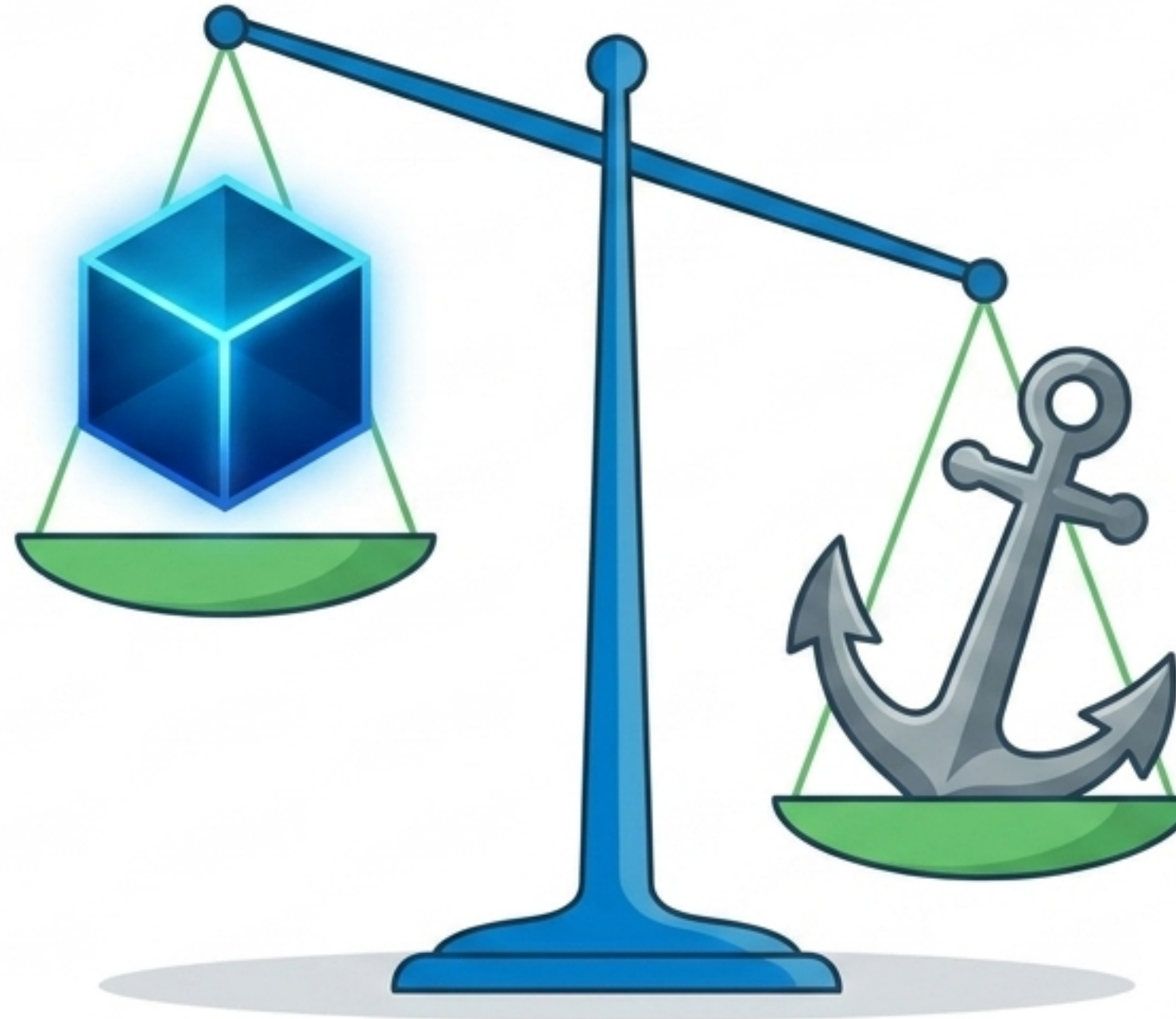
The Modality Showdown: Selecting the Standard

Diagnostic Dimension	Intraoral (PA/Bitewing)	CBCT (Advanced 3D)	Panoramic (Extraoral)
Accuracy & Sensitivity	High (0.59)	High (0.62)	Low
Bone Loss Underestimation	13% Underestimation	Minimal Underestimation	24% Underestimation
Superimposition & Distortion	Low (with parallel tech)	None (True 3D)	High Distortion
Radiation Dose & Cost	Extremely Low	Prohibitively High	Low
CDHA Recommendation	Primary Standard of Care	Adjunct for Complex Cases	Not Recommended for Primary Dx

The Verdict on Advanced Imaging (CBCT)

The Technological Appeal

True 3D mapping, high resolution, and zero structural distortion.
Matches intraoral accuracy.

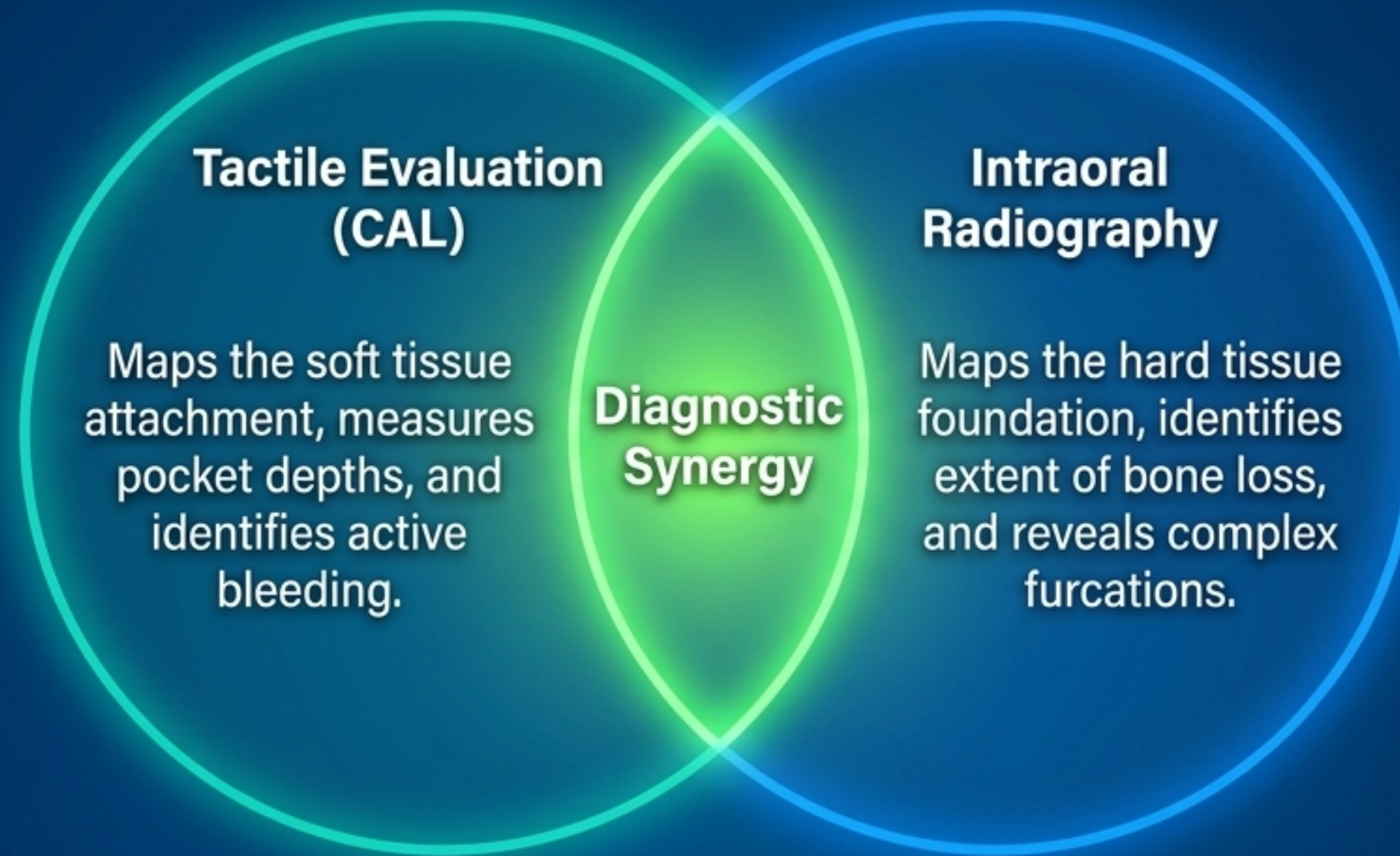


The Clinical Reality

- ⚠ Significantly higher ionizing radiation exposure.
- ⚠ Severe beam-hardening artifacts around implants and dense bone.
- ⚠ Prohibitive cost and limited accessibility for routine monitoring.

Guideline Takeaway: Advanced 3D imaging is reserved strictly for complex, selected scenarios, never for routine periodontal diagnosis. Intraoral radiography remains the undisputed frontline tool.

The Complete Periodontal Diagnosis



Because radiographs inherently underestimate true bone loss (by up to 2.8mm), they cannot stand alone. Because probes cannot physically map complex 3D hard-tissue destruction, tactile exams cannot stand alone. The true standard of care exists only in their **intersection**.

Clinical Best Practices & Application



Individualize the Prescription

Base imaging frequency strictly on patient history, clinical signs, and ADA guidelines—never default to generic, rigid calendar intervals.



Mandate the Parallelizing Technique

Minimize distortion and magnification. The parallelizing technique is absolutely required for the accurate measurement of crestal bone levels.



Leverage Vertical Bitewings

Transition from horizontal to vertical bitewings for any patient with known or suspected moderate-to-advanced alveolar bone loss to capture complete defect morphology.

The Policy Discrepancy in Canada

The Canadian Autonomy Spectrum



Relying on external prescribers in restricted provinces delays assessment, fragments patient care, and actively prevents hygienists from executing the proven, evidence-based standard of care.

Empowering the Dental Hygiene Profession

For Clinicians: Adopt the Standard

Integrate intraoral radiographic evaluation into every individualized periodontal care plan. Rely unyieldingly on the synergy between tactile probing and radiographic evidence to formulate complete diagnoses.

For Policymakers: Align the Scope

Eradicate the regulatory discrepancy. Expand the scope of practice nationally to grant all Canadian dental hygienists the autonomous authority to prescribe the radiographic tools necessary for their work.

Safe, effective, and complete patient care requires full diagnostic autonomy.

Access the Complete Evidence



Scan to read the full CDHA Position Paper and
Systematic Review on Intraoral Radiographs.

Research developed in partnership with the CDHA Steering Committee and the University of Alberta
(Mike Petryk School of Dentistry, Geoffrey & Robyn Sperber Health Sciences Library).