

CASE STUDY

Beyond X-Rays: How InnerView® Reveals Hidden Structural Issues Before Symptoms Appear

One scan revealed instability no other tool had detected—changing the plan and protecting the implant



HOWARD GOLAN, DDS

Welcome to the New Standard in Diagnostics

At Perimetrics, we believe that better diagnostics lead to better outcomes. From implants to natural teeth, the earlier you can detect subtle changes in stability, the more confidently you can treat—and the longer your work will last.

This case study collection was created to showcase real clinical examples where Quantitative Percussion Diagnostics (QPD) changed the course of treatment, revealed hidden risks, and helped clinicians take proactive steps before failure occurred.

Whether you're looking to improve patient care, reduce costly complications, or enhance your diagnostic confidence, InnerView delivers the insights traditional tools often miss—non-invasively and in just seconds.



Explore what's possible when you can see beneath the surface.



Patient Case: Undiagnosed Structural Defects Identified with InnerView

** The information in this case study pertains to future capabilities, currently under clinical evaluation - not yet FDA cleared.*

Case Study Snapshot



PATIENT:

63 year old with bite and cold sensitivity, multiple crowns and restorations.



HISTORY:

Teeth #2, #4, #5 with existing full-coverage restorations



VISIT TYPE:

Diagnostic exam following inconclusive X-rays.



TECHNOLOGY USED:

InnerView Quantitative Percussion Diagnostics



FINDINGS:

Hidden structural instability in #5 undetectable on X-rays; high mobility/NFE in #4 and #5.



OUTCOME:

Early detection; reinforced cores and new restorations; stabilized both teeth and prevented future failure.

*Note: NFE (Normalized Functional Energy) is a proprietary metric used by InnerView to quantify micromobility in teeth and implants — one of the earliest indicators of potential structural risk.

Patient Case: Undiagnosed Structural Defects Identified with InnerView

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The Challenge

A 63-year-old patient reported bite and cold sensitivity in the upper right quadrant. Traditional diagnostic tools (X-rays, CBCT, percussion, cold testing) were inconclusive, leaving uncertainty around the true source of the symptoms.

Initial Clinical Findings

Traditional Diagnostic Methods & Limitations

The patient presented with generalized hypersensitivity, making cold testing unreliable. Standard diagnostic tools provided inconclusive results:

- X-rays & CBCT: Tooth #2 showed signs of periapical pathology (PAP)
- Recurrent decay distal margin of tooth #4 crown.
- Percussion Test: Negative response when tapping with a mouth mirror.
- Tooth Sleuth Test: Positive for Tooth #4 in the central groove, but no clear diagnosis for other teeth.
- Restorations: Teeth #3, #4, and #5 had full-coverage restorations, making visual assessment difficult.
- Grinding & Clenching: Patient exhibited occlusal wear that could contribute to symptoms.

Planned Treatment Based on Traditional Diagnostics

- Tooth #4 was treatment planned for a new crown and core buildup due to radiographic decay.
- Tooth #2 was scheduled for a root canal treatment (RCT), post, and crown.
- Tooth #5 appeared clinically and radiographically normal.



The InnerView Examination Process

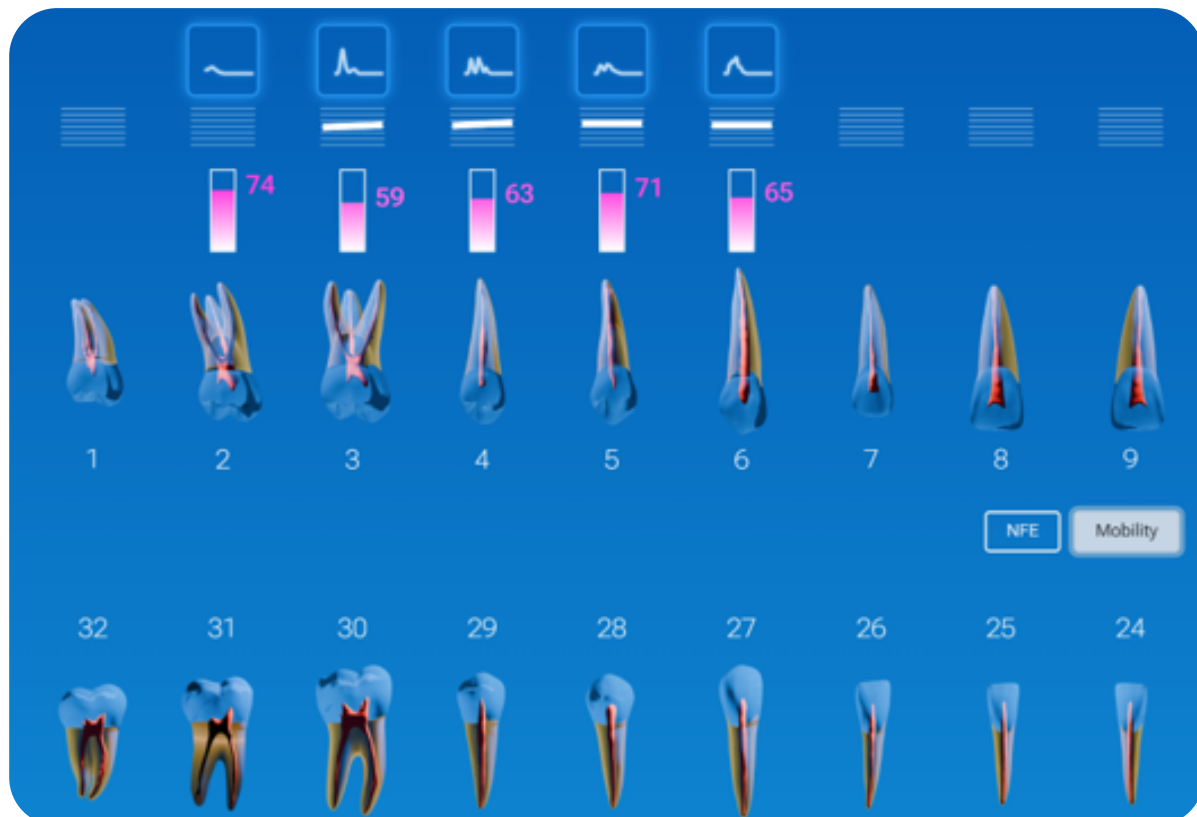
Unlike traditional diagnostics, InnerView® provides quantifiable data on tooth structural integrity and implant stability. The handpiece delivers four percussive taps to the tooth or an implant at any stage, and measures the energy return to detect:

- Mobility in the overall tooth structure (enamel, dentin, cementum, PDL).
- Defects in restorations and substructures that are undetectable by X-rays or visual inspection.
- Early signs of failure before symptoms appear.

Solution - What InnerView Revealed

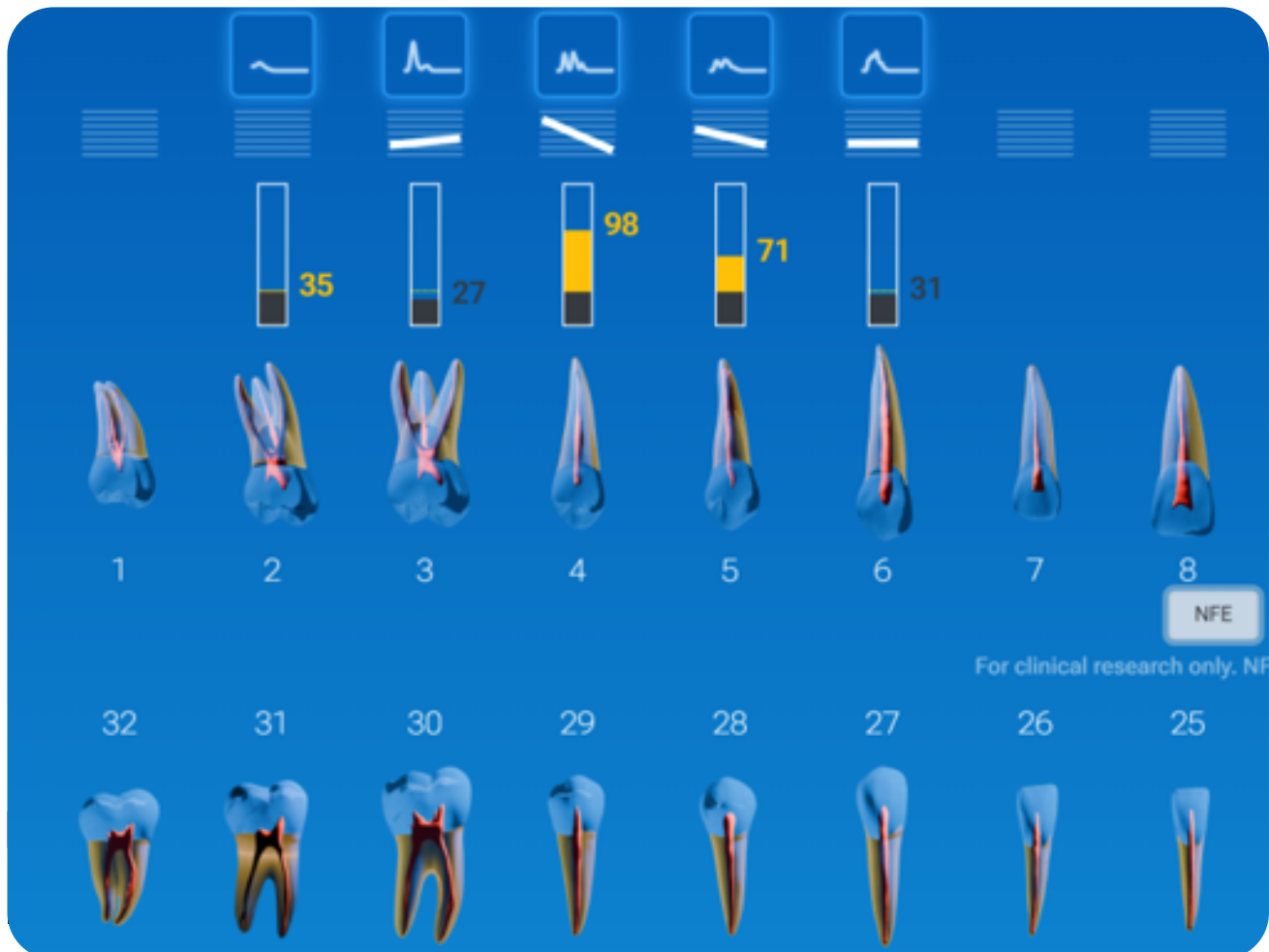
The clinician performed an InnerView scan on teeth #2–6 to gain objective mobility data. Unlike traditional methods, InnerView provided quantifiable insight into structural integrity.

- Tooth #4 – High measurement values confirmed the planned crown replacement was necessary.
- Tooth #5 – Unexpected structural instability was detected, despite appearing normal on X-rays and clinical exam.
- Clinical Impact – InnerView identified hidden defects that conventional diagnostics would have missed, prompting a more cautious and proactive treatment approach.



Mobility

Displayed you see the Mobility numbers of teeth 2-6. Mobility is on a scale of 0 to 100, preferred values in the mid range to high 70s. The higher the reading, the more micromobility.



Normal Fit Error (NFE)

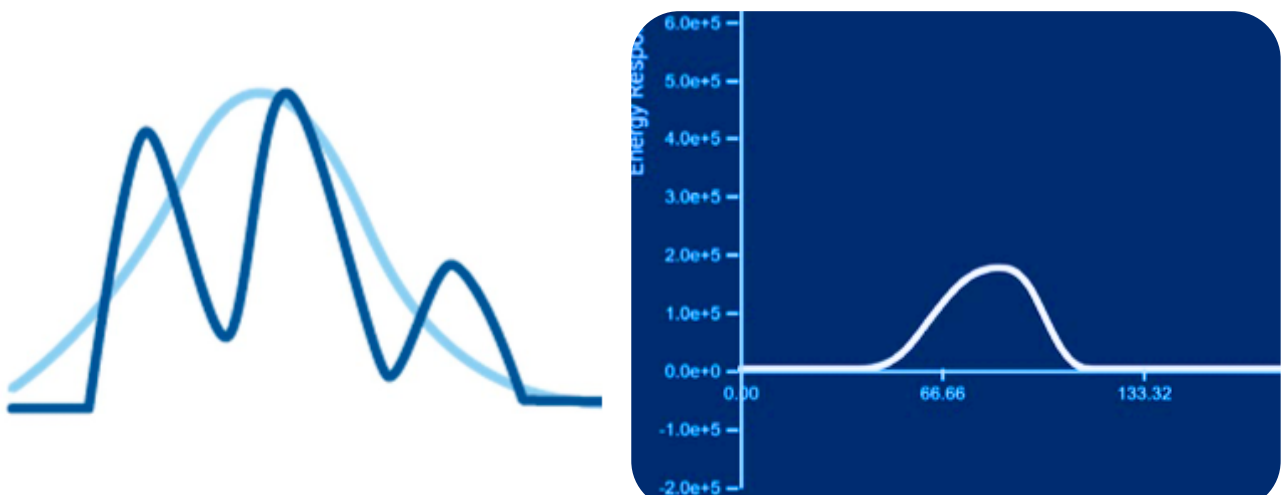
This image shows the InnerView app displaying NFE on teeth 2-6 tested prior to dental work. You can see high NFE numbers for teeth numbers 4 and 5. The NFE scale is from 0 (associated with an intact structure of structural abnormality) to 150 (indicating localized micro-movement).

Energy Return Graphs: Confirming Structural Instability

An undamaged tooth or implant is indicated by an energy return graph (ERG) with a normal bell-shaped curve. If the shape, such as is seen in this image for tooth #4, there is a need for further clinical evaluation to determine the underlying cause.



This data – although currently under development and not yet FDA cleared – indicates micromovement within the tooth system, suggesting hidden structural defects. These findings prompted a more cautious approach to the restoration, ensuring that additional structural issues could be addressed once the existing crown was removed.



Here you see, in light blue, a gaussian curve, representing an un-damaged tooth. Second, you also see the actual Energy Return Graph (ERG) of the damaged tooth, in dark blue. When the two images are compared, the area of the ERG that does not match up is turned into the NFE value, which helps identify structural instability.

While Tooth #4 was already scheduled for crown replacement, Tooth #5 had shown no signs of structural issues in X-rays or traditional exams. However, InnerView's readings indicated localized mobility within the tooth structure that had been previously unnoticed.

Had InnerView not identified these early signs, Tooth #5 could have remained untreated until symptoms developed at a point of greater tooth damage —potentially leading to pain, fractures, or complete restoration failure.

Tooth #4: Verifying Structural Integrity Post-Crown Removal

- The crown was removed as originally planned, but the tooth visually appeared intact.
- Due to InnerView's findings, the core was carefully assessed and reinforced to prevent future complications.
- The patient was informed beforehand that a core buildup would be necessary based on the ERG results.
- Unexpected fracturing of the all-ceramic restoration occurred immediately upon bur penetration.



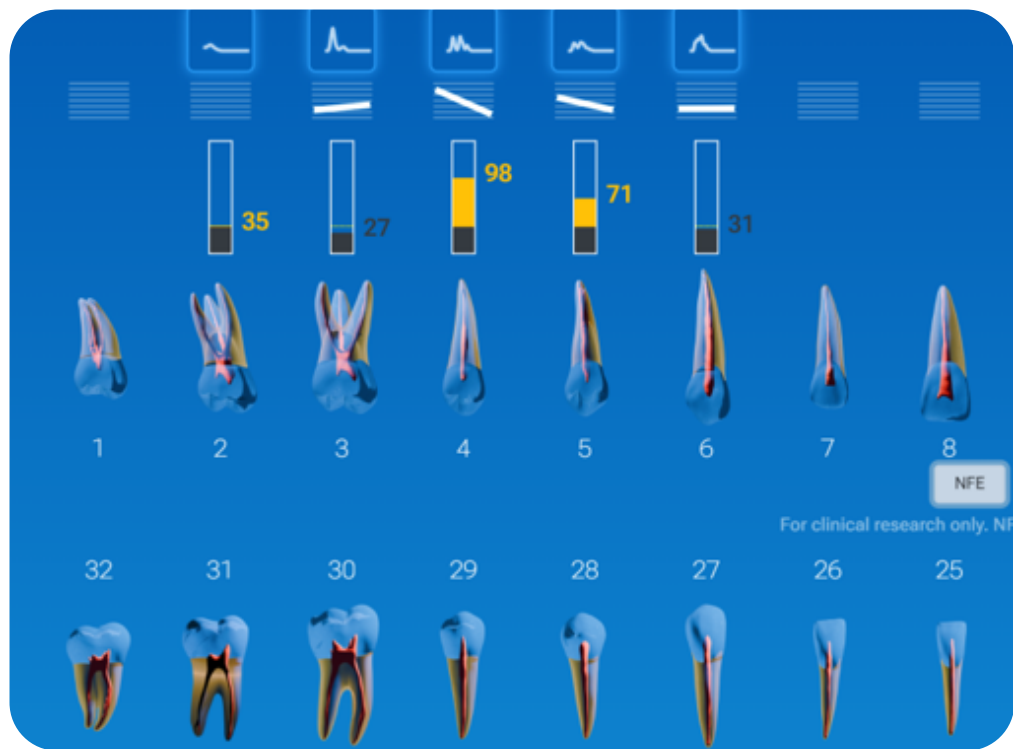
- Typically, an intact ceramic crown takes time to cut through, but instant breakage indicated a pre-existing defect—precisely what InnerView had detected.
- Upon further examination, the core buildup was found to be loose, confirming InnerView’s structural mobility reading.
- The existing core was removed and replaced with a new bonded core, ensuring longterm stability.



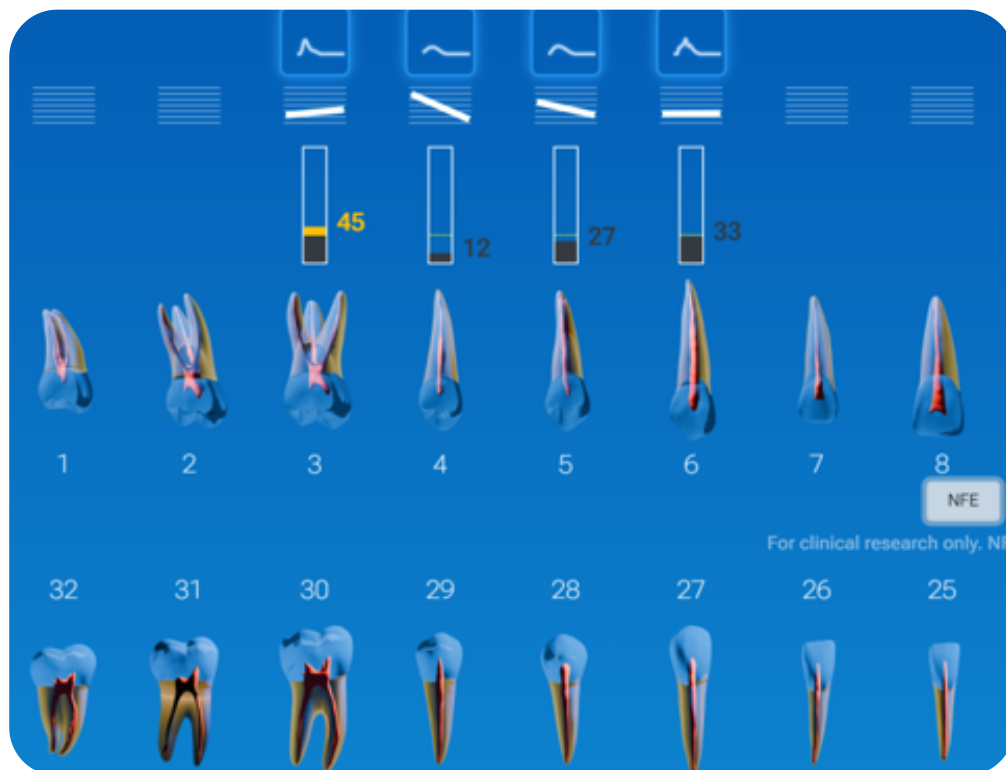
Following treatment, a new InnerView scan was conducted to assess whether the structural integrity had improved. The results were conclusive:

- Tooth #4’s mobility readings significantly decreased, confirming the new restoration had stabilized the tooth.
- Tooth #5, which had shown hidden mobility, now demonstrated structural integrity post-core replacement.
- Provisional restorations were placed and the teeth were tested at the completion of the appointment
- Later, new restorations were properly sealed and reinforced, preventing future failures.

These results validated InnerView’s role in identifying issues that traditional exams had missed, ensuring proactive treatment rather than reactive repair.



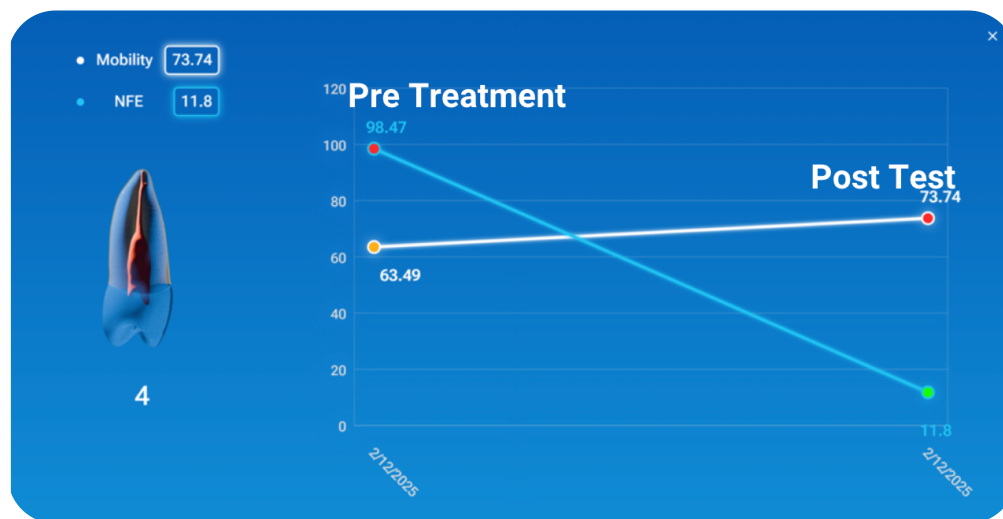
Pre Treatment NFE



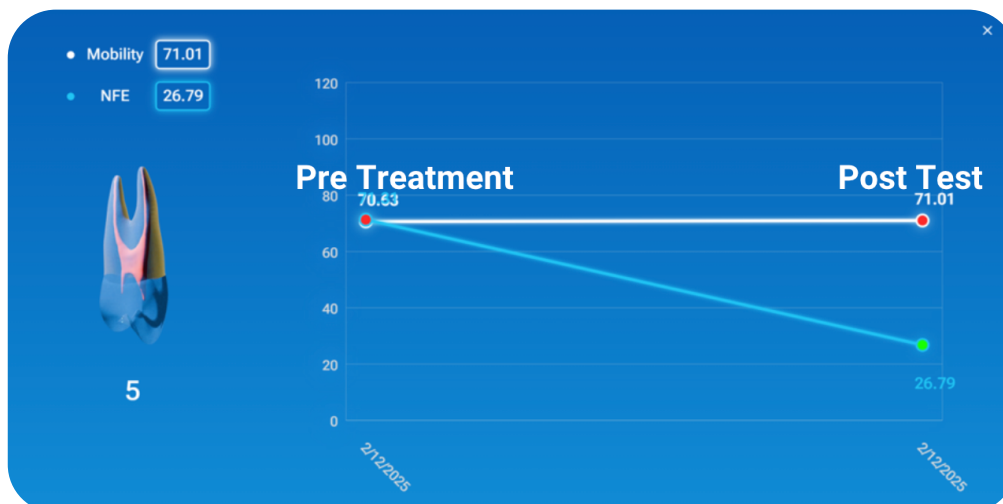
Post Treatment NFE

Pre- and Post-Treatment Comparison: Tracking Mobility & Structural Integrity

Displayed is a clear example of improved results in NFE, blue lines, for both #4 and #5.



Tooth #4 – Post-Treatment Mobility and NFE Results



Tooth #5 – Post-Treatment Mobility and NFE Results

The Future of Dental Diagnostics

Without InnerView, Tooth #5 would have remained untreated, leading to:

- Delayed intervention until severe symptoms developed
- Potential restoration failure or fracture
- Additional cost & discomfort for the patient

InnerView enables clinicians to:

- Identify early-stage structural defects before symptoms appear
- Make more informed, data-driven treatment decisions
- Monitor trends in tooth and implant stability over time

ABOUT THE AUTHOR

Howard Golan, DDS

Dr. Howard Golan has been practicing at Golan Family Dentistry since 1998, when he joined his father in their family-owned practice.

He earned his dental degree from the University of Michigan School of Dentistry and completed a general practice residency at North Shore University Hospital (NSUH) in New York. He went on to complete a two-year Implant Surgery and Advanced Prosthetic Fellowship at NSUH.

A Mastership-certified member of the World Clinical Laser Institute since 2004, Dr. Golan incorporates laser technology into his procedures whenever possible and lectures on laser-assisted dentistry across the U.S. and Canada.

He is the co-founder of the Center for Laser Education and a faculty member with the World Clinical Laser Institute. He also leads the Laser Assisted Dentistry program at NSUH, where he supervises clinical training for dental residents.

Dr. Golan is a graduate of the Alleman-Deliperi Center for Biomimetic Dentistry and is passionate about delivering tooth-conserving care. He also holds a law degree from Concord Law School and is a member of the California Bar.



The Future of Dental Diagnostics

This case demonstrates how InnerView uncovered structural issues missed by traditional diagnostics—enabling earlier intervention, better treatment planning, and stronger long-term outcomes.

With InnerView, clinicians can:

- ✓ Detect early-stage instability before symptoms appear
- ✓ Make more informed, data-driven treatment decisions
- ✓ Monitor trends in tooth and implant stability over time

Want to learn more about how InnerView can transform your practice? [Book a 10 minute demo today!](#)



[BOOK A DEMO](#)

See InnerView in action—scan to book a demo!!

