

Clinical Case Report

Dr. Jack Milgate

Digital-driven new patient exams with the Align™ Oral Health Suite.



Dr. Jack Milgate is the leading dentist and owner of Barwon Heads Dental in Victoria, Australia. With over ten years of experience, he's committed to providing top-quality dental care using digital technology.

He's also the co-founder of 3DGuard, a boutique company that designs

and manufacturers mouthguards for athletes in Australia.

Dr. Milgate holds a dental degree and a master's in public dental health from La Trobe University. He is a Key Opinion Leader for Align™ Technology since 2019, and in his free time he enjoys playing tennis and traveling.

Background

An adult male patient presented to my practice for a new patient exam. After obtaining the traditional records such as radiographs and gathering the dental and medical history, I proceeded to scan the patient. In my practice, we scan every new, established, and emergency patient. I also scan after every procedure – which has allowed me to build a wealth of digital records and data to track and monitor my patients' oral health journey in my practice.

While some colleagues may think this practice takes too much of my time and is unnecessary, it only takes

me a couple of minutes to scan both arches in an adult patient. I use these scans to educate prospects and patients about their oral health needs and communicate very easily the treatment plan. This process allows me to help build trust and make new patients comfortable in making the best decision when accepting treatment.

Using the Align™ Oral Health Suite, I started showing the patient exactly what I saw in his mouth during the clinical visual exam. We know many people feel uncomfortable in the dental chair, especially when they

have not met you before. However, scanning is a simple and harmless procedure, and the visualizations generated help these individuals ease into the consultation. I don't have to draw on a piece of paper and explain to them what I've found. Instead, the patient and I look at the screen and identify problematic areas together without having to have convoluted dialogues or point out things inside their mouths. It is a framework that helps patients communicate their needs to me easily, and vice versa.

Case information

GENDER:

Male

AGE:

40 years

CHIEF CONCERN:

The patient presents to my practice for the first time for an oral health assessment.

After scanning the patient, I accessed the Align™ Oral Health Suite, which showed me a wheel with five conditions to choose from to start the consultation. I started with Tooth Health and went around the wheel to finish with the Overview condition.



Tooth Health

This condition highlights three tools: the stone model, the iTero™ NIRI (Near Infra-Red Imaging) technology feature, and the integrated 3D intraoral camera. I dragged the loupe around both arches, thoroughly examining the interproximal areas, looking for potential lesions above the gingival margin. Using these three tools I assessed the state of existing restorations and hard tissues – specifically interproximal carious

lesions and tooth wear. We detected carious lesions in the mesial surface of tooth 2.5 (upper left second premolar) (**Figure 1**), in the distal surface of tooth 3.5 (lower left second premolar), and in the distal surface of tooth 4.5 (lower right second premolar) (**Figure 2**). The upper left lateral incisor (2.2) presents an ill-fitted stained restoration that needs to be replaced (**Figure 3**).

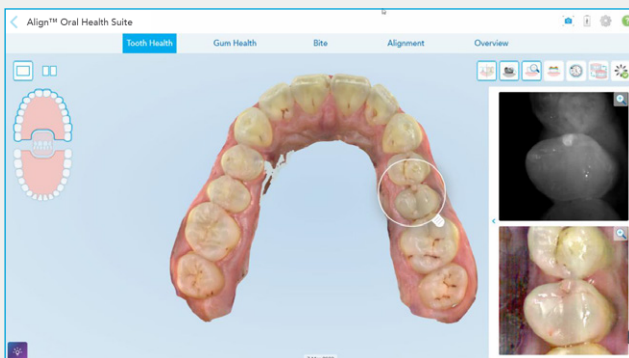


FIGURE 1. A mesial carious lesion was detected in tooth 2.5 (upper left second premolar) with the aid of the iTero™ NIRI technology (Near Infra-Red Imaging).

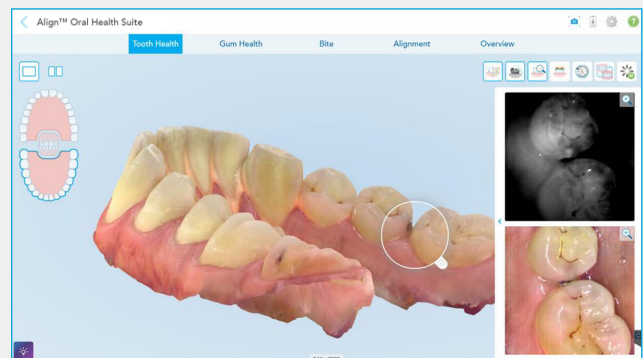


FIGURE 2. A distal carious lesion was identified in the lower right second premolar (4.5). The iTero™ NIRI technology, the integrated 3D intraoral camera, and the angle of the 3D model provide three views to highlight the carious lesion, allowing the patient to understand the need for a restoration.

I activated the stone model to help identify tooth wear in the occlusal and incisal edges in both arches. The images reveal that this patient has mild and moderate wear in both arches and larger occlusal contact areas on the left side. The buccal cusps of the upper premolars and the incisal edges of upper and lower canines and incisors also reveal mild to moderate wear (Figures 4-5).

The integrated 3D intraoral camera helped highlight the stained and deep grooves present in the posterior teeth in both arches, as well as the cingulum

area of the upper anterior segment and explain the importance of improving oral hygiene to prevent future occlusal caries. We also talked about tooth 2.5 (upper left second premolar), which showed a discoloration in the buccal surface of the enamel and even extends to the gingiva (Figure 3).

Looking at the cervical areas and the gingiva, there was no evidence of recession, erosion, abfraction or any other wear. However, we will re-evaluate the lower incisors after the deep cleaning and prophylaxis.

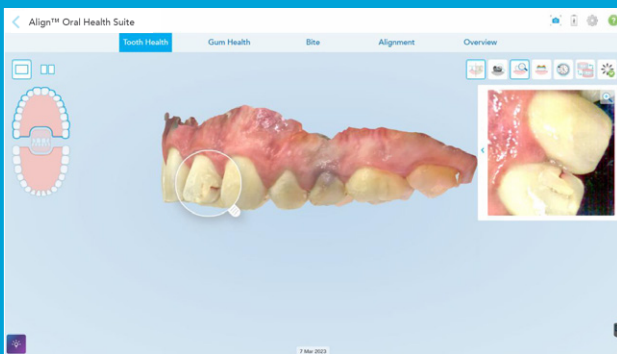


FIGURE 3: Tooth 2.2. (upper left lateral incisor) presents a stained restoration on the buccal surface. The integrated 3D intraoral camera assists in providing a close-up view. Tooth 2.5 presents a discoloration in the cervical area of the buccal surface. The gray stain expands into the gingiva.

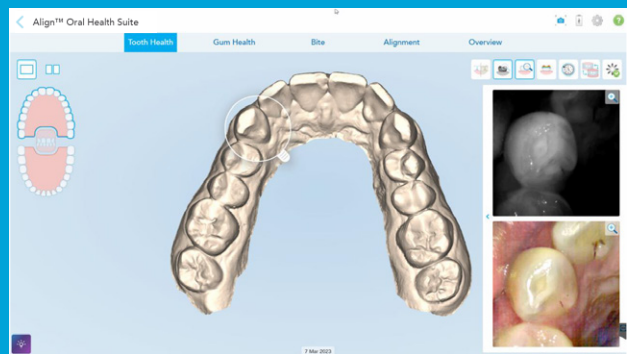


FIGURE 4: The stone model, in combination with the integrated 3D intraoral camera, helps highlight the tooth wear present along the incisal edges of the incisors, canines, and the buccal cusps of the premolars.

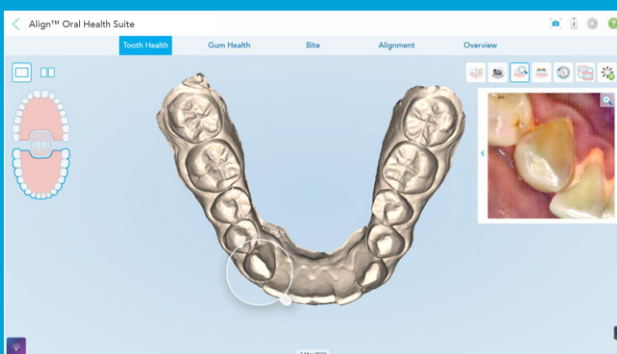


FIGURE 5: Tooth wear is present along the incisal edges of lower incisors, canines, and the buccal cusps of premolars.

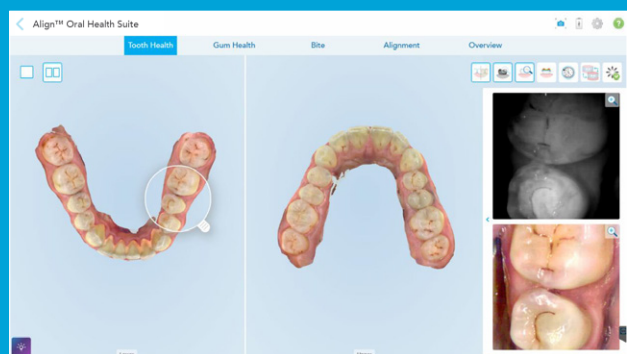


FIGURE 6: The 3D model and the integrated 3D intraoral camera aid in visualizing the deep stained grooves present in most upper and lower molars and premolars, as well as in the palatal surfaces in the cingulum of upper incisors and canines.

Gum Health

We inspected the soft tissue surrounding the teeth, looking for any evidence of dental plaque, calculus, and any signs of bleeding, redness, or changes in the texture. For this step, we used the integrated 3D intraoral camera. I dragged the loupe around to inspect both arches from the buccal and lingual aspects. This patient did not present any signs of active gingivitis or periodontal disease – except in the lower anterior area, where the lingual gingival margins presented substantial deposits of calculus. Tooth 2.5 is discolored, and the gingiva presents a gray aspect and mild inflammation (Figure 3).

Looking at the cervical areas and the gingiva, there is no evidence of recession, erosion, abfraction or any other wear. However, we will pay attention to the lower incisors after the deep cleaning and prophylaxis.

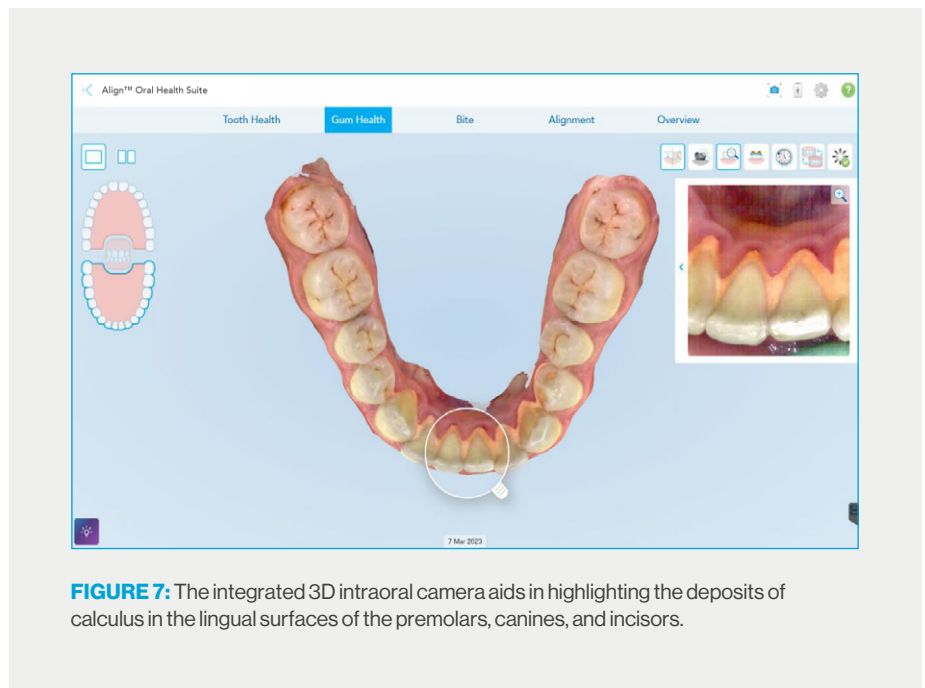


FIGURE 7: The integrated 3D intraoral camera aids in highlighting the deposits of calculus in the lingual surfaces of the premolars, canines, and incisors.

Bite

We used the iTero™ Occlusogram tool to assess the dental relation between the upper and lower teeth. This allows us to understand if the contact points between opposing teeth are ideal in the position in which the clinician recorded the patient's occlusion (maximum intercuspation or centric relation).

In addition, we can assess the occlusion from the sagittal, frontal, and transverse planes (Figure 8).

Scanning every patient at every appointment is helpful. In the case of this patient, when he returns in six months and one year, we have already

established a baseline to compare the evolution of his oral conditions and previous treatments. To compare two data points, we can use the iTero™ TimeLapse technology and the new side-by-side 3D compare function.

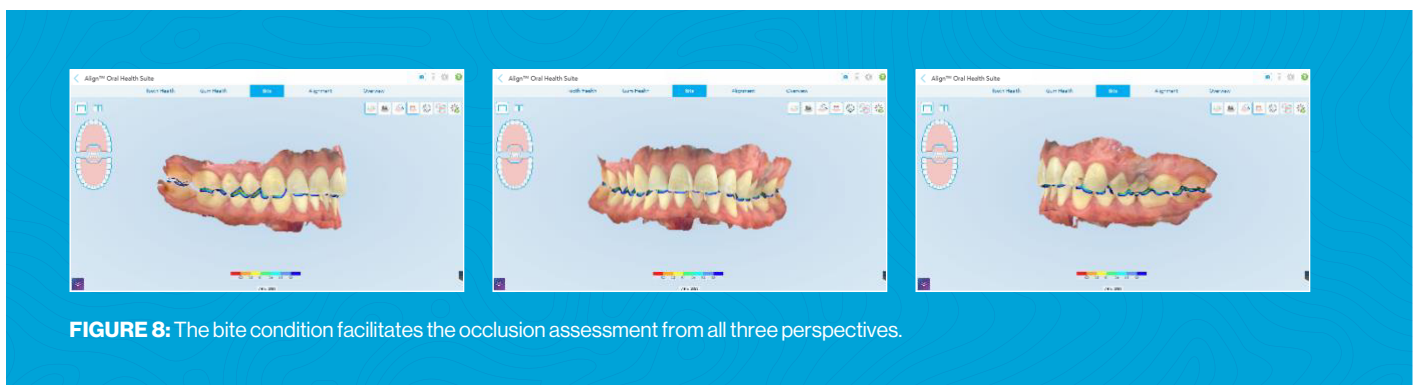


FIGURE 8: The bite condition facilitates the occlusion assessment from all three perspectives.

Alignment

This patient did not present issues with crowding or spacing. However, there were issues with occlusion where proper alignment would protect his teeth and existing restorations from continuous wear. I analyzed the arch form using the iTero™ Occlusogram tool which revealed large contact areas with potential imbalance. The seven-color scale is adjustable and runs from red to blue. Red indicates areas where teeth contact, and we should monitor for heavy contacts. Orthodontic treatment with Invisalign® aligners to protect his teeth and restorations are talking points that emerged from this view (Figure 9).

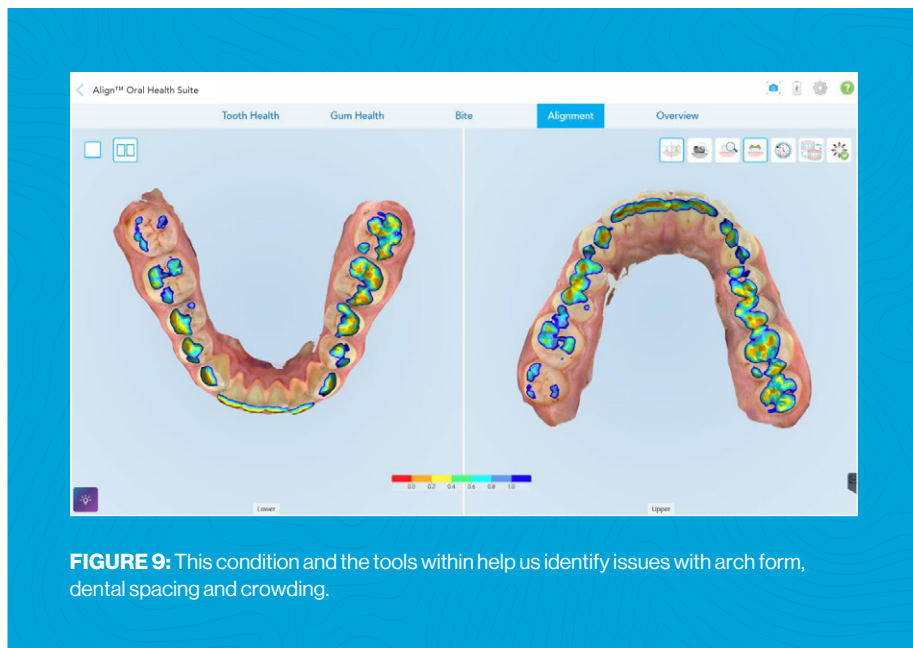


FIGURE 9: This condition and the tools within help us identify issues with arch form, dental spacing and crowding.

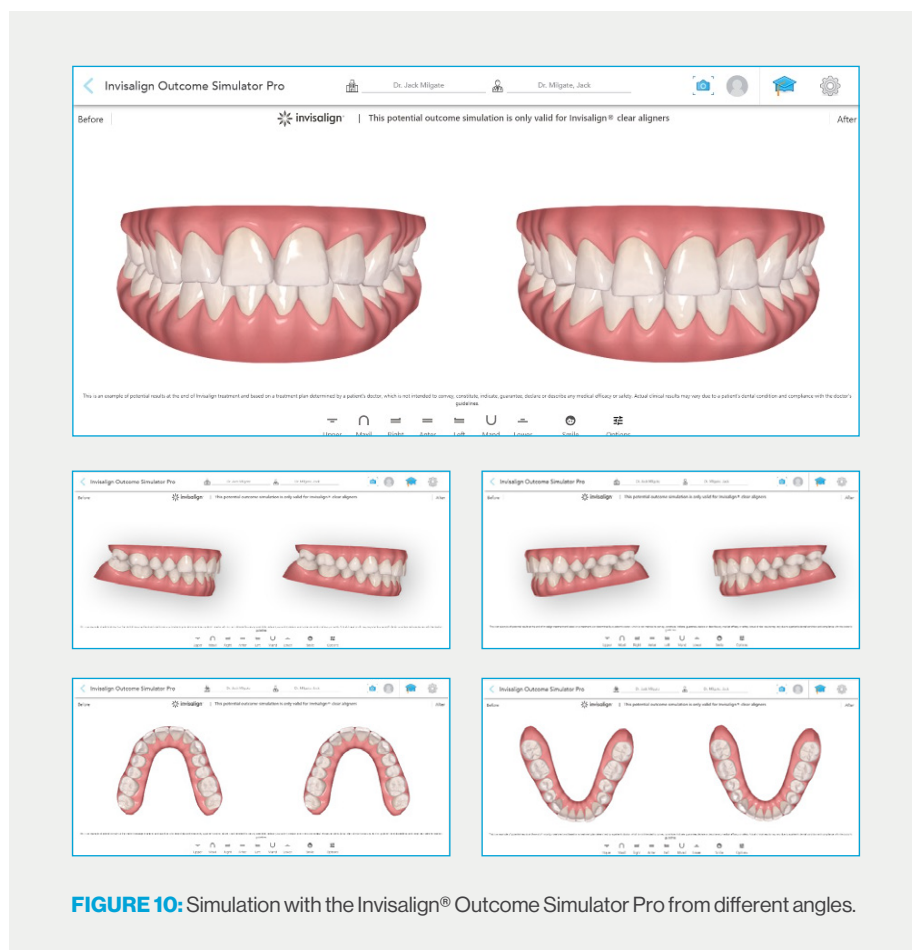


FIGURE 10: Simulation with the Invisalign® Outcome Simulator Pro from different angles.

The arch form in the maxilla and mandible were slightly constricted in the premolar areas. It is easy to point out these findings and have the patient understand why I am recommending certain procedures (Figure 9).

Furthermore, I ran the Invisalign® Outcome Simulator Pro to show how his smile, midline, arch form, and occlusion can be improved with Invisalign® clear aligners treatment (Figure 10).

Overview

This condition allows me to revisit any areas the patient may have questions about. I used the frontal and lateral views to end the consultation with an overall summary (Figure 8). While I was showing the patient all the different conditions and pointing out relevant findings, I captured images with the snapshot tool, which are automatically included in the iTero™ scan report. I share the scan report with my patients so that they have a record of our findings and the reasons to support my treatment plan. This is also a useful tool patients can use to share with spouses, parents, or anyone who is involved in the decision-making process for oral care.

After the consultation, this patient accepted the proposed treatment plan and we proceeded to schedule the next appointments to complete a thorough dental cleaning, restorations, and orthodontic care to address esthetics and function.

Bonus

In my practice, I use the iTero Element™ 5D Plus imaging system for various purposes. I scan every time I prepare a tooth, whether it is for a crown, filling, or implant. This scan allows me to show the patient the work I am doing, it

allows me to see if I have removed the tissue necessary to make it a successful restoration, and it protects me for legal matters. This improves my quality of work, and it also gives the patient confidence in the work I do. It helps with

my reputation, and patients are impressed with the service and spread the word about the quality of my work and the impressive technology my office has.

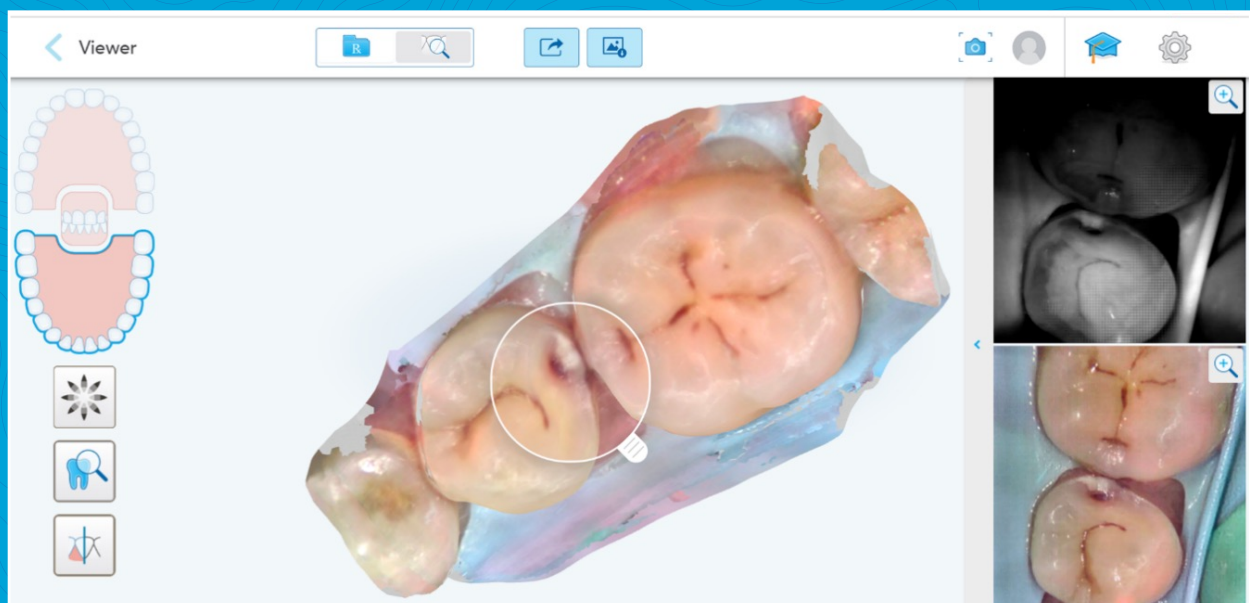


FIGURE 11: Scan from an interproximal composite preparation in tooth 3.5 (lower left second premolar) to demonstrate the width and depth. Doctor further prepared the tooth to remove carious tissue.

The opinions expressed in this clinical report are those of the author and may not reflect those of Align Technology. The author was paid an honorarium by Align Technology in connection with this clinical report.