A DentalMonitoring Case Study

Ensuring clinical control of a complex aligner case through AI-prowered remote monitoring

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Case study overview

Remote orthodontic monitoring powered by artificial intelligence enables me to proactively manage my orthodontic treatments by maintaining a precise overview of progress at every stage, from start to finish, even between office visits. This approach ensures that treatment follows an optimal trajectory, and enables me to be instantly alerted to any undesirable events, so that I can react quickly to avoid complications.

This case study illustrates the benefits of using DentalMonitoring (DM) with a complex aligner treatment (significant distalization, overbite, rotation of lateral incisors) in a patient who was motivated but had limited availability (pregnancy and childbirth during treatment).

Initial situation

Fig.1 - Extraoral and intraoral photos at the start of treatment

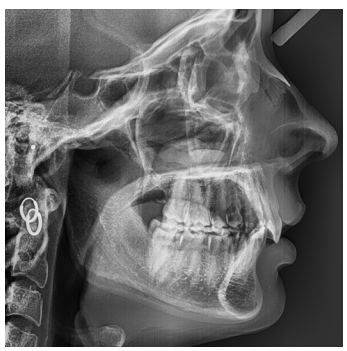

Fig.2 - Profile teleradiography at the start of treatment

Case history

A 35-year-old patient wishing to align her teeth for aesthetic reasons, “rabbit teeth”. Theoretically, it was a surgical case, but the patient categorically refused. However, she was motivated to undergo a long treatment and to wear elastics.

Diagnostics

Skeletal diagnosis

Cl II skeletal , Retromandibular, anterior vertical insufficiency , hypodivergent facial pattern

Diagnostic dento-alvéolaire

Class II, division 2 malocclusion, Total overbite with palatal bite, Superior retroalveolism, Superior endoalveolism Dento-Maxillary disharmony (UR2 rotation)

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Treatment summary

Total number of aligners	53 (phase 1) + 32 (phase 2) = 85
Treatment duration	22 months
Frequency of aligner change	10 days then 7 days then 6 days. The patient was very serious throughout treatment and very assiduous in wearing the elastic bands.
Number of office visits	7 appointments in total. • Aligner fitting 1 + DM • Aligner fitting 2 + attachments + IPR • Aligner number 28 control due to unseat + exclusion of UR2 on DM • Intra-oral scan for refinement on aligner 53 • Fitting the second set of aligners, modification of the attachments. • Verification before end of treatment at aligner 32 • Final: Attachment removal + bonding of retention wires and fitting of retention aligner.
Number of DM scans	90

Final situation

Fig.3 - Intraoral and extraoral photos, end of treatment

Fig.4 - Smile photo, end of treatment

Fig.5 - Profile teleradiography and OPG at the end of treatment

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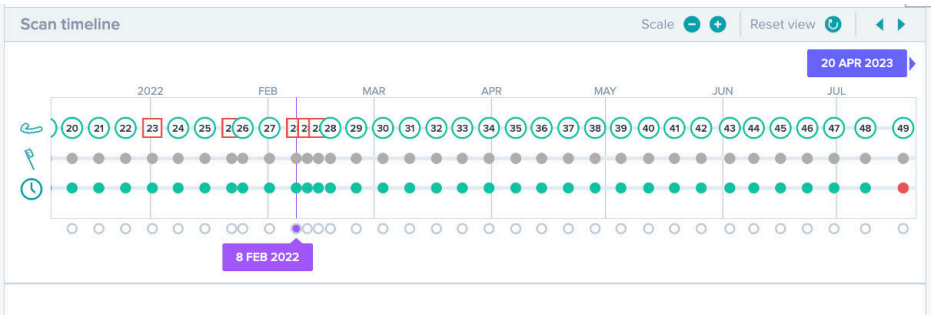
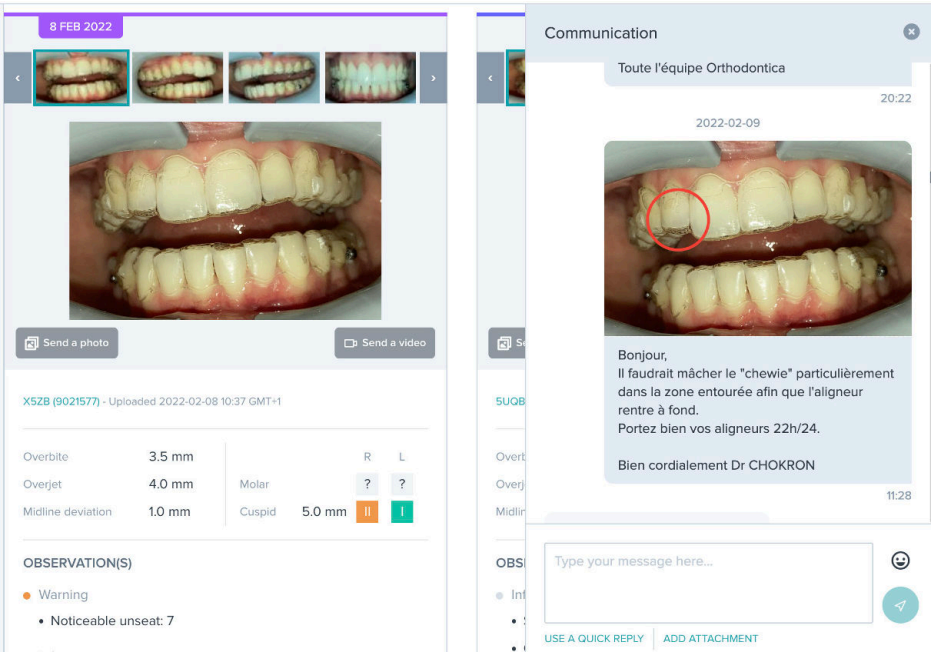
Example of a situation managed remotely via DentalMonitoring





The image above shows the scan of the 27th aligner. DM's AI detected an unseat of the aligner at UR2 and sent us an alert.

Several movements needed to be achieved simultaneously in the anterior sector: Correcting the overbite, establishing torque, and rotating the lateral incisors. We know that this addition of movements frequently leads to fitting issues of the aligners at the level of the lateral incisors. We are therefore not surprised by this alert. **If the unseat remains isolated and moderate,** it does not hinder the efficiency of the rest of the movements, and we want to continue our important distalization movement under the supervision of the other parameters (notably molar and canine class correction).

We therefore decided to "exclude" the tooth (i.e. it will no longer be blocking the change of aligners) and continue the distalization

Fig.6 - Screenshot of the DM dashboard showing the AI detection of an unseat on the UR2 and the message we sent the patient via the DM chat

series while monitoring the UR2 and the rest. A message is also sent to the patient to inform her of the situation and encourage her to use the chewies more frequently on this tooth.

We then finished off the second series and reincluded the UR2 in the monitoring. When the baby arrived during the second series, 32 aligners were given to the patient, and the treatment was monitored every week to check the effectiveness of the elastics and movements.

Conclusion

The remote monitoring of this case enabled me to closely follow the evolution of complex dental movements over 22 months, while maintaining a high level of compliance that could have been compromised by the duration of the treatment and the arrival of the baby, resulting in a satisfactory clinical outcome with just 7 visits.

In this case, DM enabled 90 scans to be taken, analyzed by the AI, and

reviewed by our clinical team. In addition, it offered an open line of communication with the patient to guide her through the entire treatment process, including retention.

This new digital approach to orthodontic treatment gives us greater serenity and confidence in carrying out what are sometimes long and complex treatments while giving patients back their time and comfort.