Is an in-person exam really required for teledentistry?

Here is a review of what the clinical studies indicate.

Teleorthodontic treatment with clear aligners is clinically effective in the correction of maxillary and mandibular incisor alignment problems.¹

This systematic review identified a substantial amount of scientific literature in the relatively new area of teledentistry. There is a consistent trend supporting the efficacy and effectiveness of teledentistry. Teledentistry seems to be a promising path for access to care in rural and urban settings.²

Teledentistry has the potential to be part of a paradigm shift in healthcare delivery that can play a key role in mitigating barriers and improving health for populations with traditionally poor access to dental care and oral health services. The Association of State and Territorial Dental Directors supports the development of teledentistry as an approach to enhance the delivery of efficient and cost-effective oral health care, allowing providers to overcome traditional barriers to care faced by underserved communities.³

Teledentistry could be comparable to face-to-face for oral screening. Identification of oral diseases, referrals, and teleconsultations are possible and valid.⁴

[The] use of monitoring software can be reliable for making clinical decisions.⁵

We can conclude that apical root resorption during and after the orthodontic treatment with clear aligners is not unavoidable. But both incidence and severity of ARR are lower after clear aligner therapy compared with ARR results with fixed orthodontic treatment.⁶

Remote diagnosis using transmitted photographic images of dentition (teledentistry) may be an alternative to visual inspection. Three studies found image analysis to be superior to visual inspection.⁷

Clear aligners showed improved periodontal status indices when compared to fixed orthodontics. Our results showed increases in supragingival plaque, higher number of probing depths greater

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¹ Marc B. Ackerman, Teleorthodontic treatment with clear aligners: An analysis of outcome in treatment supervised by general practitioners versus orthodontic specialists, Journal of Dental Research and Reports, 2019, Vol. 2 1-4.
³ ASTDD, Teledentistry: How Technology Can Facilitate Access To Care, March 2019.
than 3mm, higher number of bleeding sites on probing, and a higher amount of gingival recession in the subject treated with fixed orthodontics.⁸

Clinical factors are detectable from electronically transferred clinical photographs only, particularly, since the use of full records has not been shown to make large differences to clinical decision making. Clinician agreement, for screening and accepting orthodontic referrals based on clinical photographs, is comparable to that previously reported for other clinical decision making (such as in-person exam).⁹

For most dental applications, the store-and-forward method provides excellent results without excessive costs. [T]he purpose of the study was to test the validity of diagnoses made in the absence of modern dental facilities. Mobile phone teledentistry offers acceptable reliability for the initial diagnosis.¹⁰

Outcomes for treatment of mild malocclusions in adolescents (teenagers) showed equivalent effectiveness of clear aligners compared to fixed appliances, with significantly improved results for clear aligner treatment in terms of tooth alignment, occlusal relations, and overjet.¹¹

Teledentistry had excellent sensitivity (93.8%) and specificity (94.2%) for diagnosing dental pathologies [when compared to] using face-to-face examination as a gold standard. Teledentistry was not associated with any serious adverse events, and the acceptability rate (95.3%) among residents and their families was excellent. Teledentistry has excellent accuracy for diagnosing dental pathologies, and good accuracy for assessing the rehabilitation of dental prostheses and chewing ability.¹²

Teledentistry is a valid system for positively identifying appropriate new patient orthodontic referrals.¹³

There is a consistent trend in the literature supporting the validity and reliability of teledentistry applications in comparison to non-telemedicine alternatives. A growing body of evidence supporting the efficacy of teledentistry is provided by some of the studies on paediatric dentistry, oral medicine, orthodontics and periodontics. The majority of the research in these areas reported that teledentistry had similar or better outcomes than the conventional alternative.¹⁴

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⁸ Mark Jones, Comparison of Periodontium among Subjects Treater with Clear Aligners and Conventional Orthodontics, Creighton University (2020).
¹⁰ Mohammad Alshaya, Reliability of mobile phone teledentistry in dental diagnosis and treatment planning in mixed dentition, Journal of Teledentistry and Telecare 26(3) · August 2018.
¹¹ Borda et al, Outcome assessment of orthodontic clear aligner vs fixed appliance treatment in a teenage population with mild malocclusions, The EH Angle Education and Research Foundation, 2020
¹² Queryoux, Alain et al., Accuracy of Teledentistry for Diagnosing Dental Pathology Using Direct Examination as a Gold Standard: Results of the Tel-e-dent Study of Older Adults Living in Nursing Homes, Journal of the American Medical Directors Association, Volume 18, Issue 6, 528 – 532.
¹⁴ Mohamed Estai, A systematic review of the research evidence for the benefits of teledentistry, Journal of Teledentistry and Telecare, 24(3):147-156 · April 2018