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DIFFICULTY IN DIAGNOSING INTERPROXIMAL CARIES USING RADIOGRAPHS WITH ORTHODONTIC APPLIANCE

The presence of a fixed orthodontic appliance makes maintaining oral hygiene, particularly through flossing, difficult. The accumulation of food in the interproximal space causes interproximal caries. These lesions are difficult to diagnose, requiring auxiliary resources to detect them. Periapical radiographs are the preferred method to assess the presence of interproximal caries; however, the presence of an orthodontic appliance complicates this task. Unfortunately, the literature offers no evidence regarding whether or not orthodontic appliances impede the diagnosis of caries. Recently, two Turkish researchers published a study¹ that aimed to investigate the influence of orthodontic materials on the assessment of proximal caries using periapical radiography. Forty non-cavitated and restoration-free human premolars and molars, ranging from healthy teeth to teeth with varying

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degrees of caries lesions, were incorporated into silicon blocks. Periapical radiographs (Fig. 1) were fused from two orthodontic materials (three brackets and two arches). After conducting the study, the authors concluded that the combination of metal brackets and stainless steel arches impedes the diagnosis of interproximal caries using periapical radiography. The authors recommend removing the arches during radiographic imaging, to improve the detection of caries.

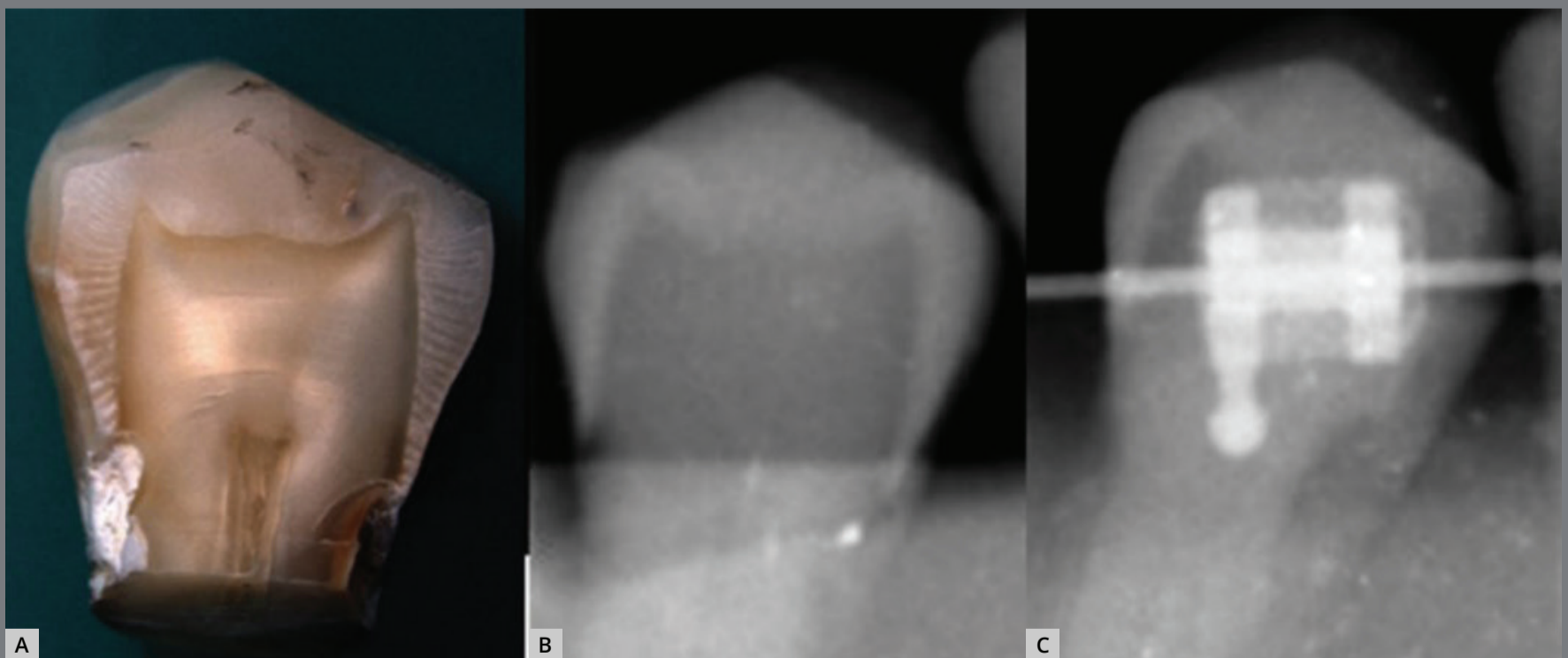


Figure 1: Images of the premolar tooth: **A)** histological image obtained using a microscope, **B)** periapical radiographic image, **C)** periapical radiographic image of the tooth with bracket and stainless steel wire. Source: Isman et al.¹, 2020.

OBESITY AND INCREASED FACIAL GROWTH: IS THERE A RELATIONSHIP?

Obesity has become a global public health epidemic, affecting people of all races, sexes, and ages. The adverse health effects of obesity, including heart disease, respiratory dysfunction, and diabetes, are well reported. Childhood obesity is also associated with decreased growth hormone secretion and the early onset of puberty and pubertal growth spurts. Thus, it is logical to ask whether childhood obesity influences facial and mandibular size and shape. To answer this question, American researchers developed a study² where they retrospectively reviewed the pretreatment records of 181 patients. Patients' body mass index (BMI) was calculated, and twenty-two reference points on their lateral cephalometric radiographs were analyzed (Fig 2). The reference data set was analyzed as a whole (facial shape), and a subset of reference points was used to study the mandibular shape alone. The authors found that most of their results did not support a relationship between high BMI and facial shape. However, larger facial skeleton sizes were found in the sample in children with high BMI, providing provisional evidence that childhood obesity can accelerate facial growth.

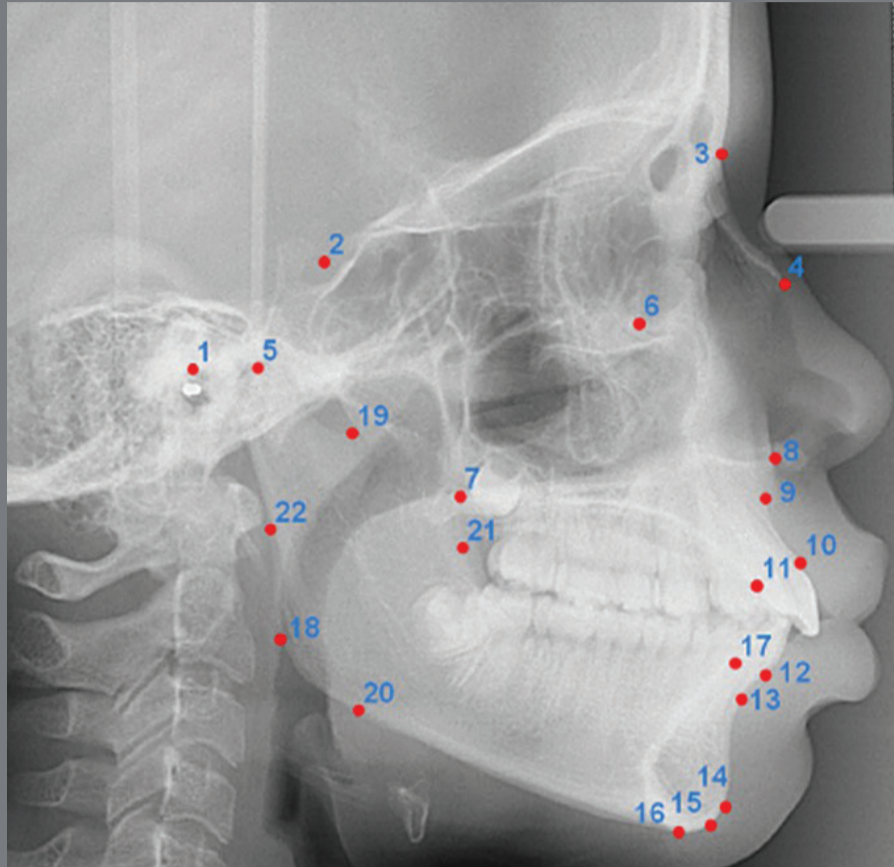


Figure 2: Cephalometric reference points used in the study. Source: Gordon et al.², 2021.

SMARTPHONE APPS HELP IMPROVE ORAL HYGIENE IN ORTHODONTIC PATIENTS

Obtaining proper oral hygiene when using a fixed orthodontic appliance is difficult. Thus, innovative oral health promotion programs must be developed to help improve patients' oral health. Although studies have evaluated the impact of using smartphone applications to motivate orthodontic patients to clean their teeth correctly, there is no consensus on the efficacy of these applications. In response, Indian researchers carried out a systematic review of the literature³ to evaluate the effectiveness of smartphone applications in improving the oral hygiene of patients undergoing fixed orthodontic treatment.

The authors conducted a systematic search in the PUBMED/MEDLINE, CINAHL, EMBASE, COCHRANE, PROQUEST, Google Scholar, and Web of Science databases. This method yielded 154 studies after removing duplicates. Based on the eligibility criteria, only five studies were included in the data extraction phase. The results revealed that smartphone apps have a significant short-term effect on improving oral hygiene when measured by the plaque and gingival indices, as the mean plaque index and the gingival index significantly decreased in three of the five studies.

MUSIC AT 432HZ FREQUENCY IS EFFECTIVE IN REDUCING ANXIETY IN DENTAL PATIENTS

The general population rates receiving dental care as one of the five most feared scenarios. Music therapy has been used as a non-pharmacological method to control anxiety before dental treatment due to its action on the sympathetic nervous system, where it reduces adrenergic activity and neuromuscular activation, thereby reducing patient anxiety. According to the International Organization for Standardization (ISO), the pitch pattern established for the musical note A is 440 Hz. Tones at a tuning frequency of 440 Hz can be uncomfortable, irritating, and unpleasant, while tone intervals at the tuning frequency of 432 Hz are peaceful, pleasant, and harmonious. Brazilian researchers, in partnership with Chilean

researchers, developed a study⁴ to determine how these frequencies impacted patients' anxiety before dental treatment. To this end, they conducted a randomized clinical trial with 42 patients with moderate anxiety levels. Patients were divided into three groups: those who listened to music for 15 minutes at 432 Hz (n = 15) or 440 Hz (n = 15) and a control group without music (n = 12). The CORAH Dental Anxiety Scale and salivary cortisol levels, estimated by the solid-phase enzyme-linked immunosorbent assay (ELISA), were measured and compared before and after the musical intervention for all groups. The results of the study revealed that listening to music significantly decreased levels of clinical anxiety. The authors also noted that the 432 Hz frequency effectively reduced salivary cortisol levels before tooth extraction.

THE PRESENCE OF MALOCCLUSION AFFECTS THE VOICE

Speech, the production of sounds through the interactions of the articulator and phonetic systems, is the most common form of communication. Speech production involves four processes: breathing, phonation, resonance, and articulation. In the articulation phase, speech sounds are produced by dynamic movements of the tongue, lips, and teeth. Thus, the presence of malocclusion could, hypothetically, alter speech.

To test this hypothesis, Turkish researchers developed a study⁵ that evaluated the acoustic properties of the sound /s/ in individuals with different types of malocclusion. In this study, 60 patients were divided into three groups based on malocclusion (Class I, II, and III). Then, cephalometric tracings were obtained from cephalometric radiographs. The sound /s/ was isolated for analysis, and the authors concluded that the sound /s/ was affected by malocclusion due to changes in the joint site. The authors suggested referring patients with Class III malocclusion in the initial period to help them produce an acoustically ideal sound.

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