

To extract or not to extract: A diagnostic decision, not a marketing decision

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Evidence-based treatment is certainly the direction that modern orthodontics should be taking. But unfortunately much orthodontic research evidence is being ignored because of profit considerations, ease of treatment, and marketing efforts. Too frequently, we allow the orthodontic companies and their spokespeople to dictate our appliances, treatment plans, and biomechanics. It is bad enough when statements such as “full dentition yields a full smile, a better profile and, for most people, better midface support” appear in advertising claims. It is worse when they are published without supporting evidence beyond selected case reports,¹ and it completely undermines evidence-based orthodontics. Is this supposed to mean that nonextraction treatment is always better than extractions, more stable, and healthier for the periodontal tissues, and improves the profile and facial appearance? Let’s examine those claims from an evidence-based perspective.

Facial appearance is always a consideration when planning orthodontic treatment. Many factors affect it, including genetic makeup, environmental influences, and cultural background.² How extractions vs arch expansion affects facial appearance is a major concern for orthodontists. Does extraction therapy result in poor facial appearance? Does nonextraction treatment result in a prettier face?

Recently, Işıksal et al³ compared smile esthetics of extraction and nonextraction patients and a control group. This research is timely because some practitioners believe that extractions result in large buccal corridors that are detrimental to the smile. In that study, the smiles were evaluated by 10 orthodontists, 10 plastic surgeons, 10 general dentists, 10 artists, and 10 patients. They concluded that there was no difference in

attractiveness between extraction and nonextraction patients, and that the extraction group actually had wider arches than the nonextraction group. The result of this study agrees with the studies of Johnson and Smith⁴ and Gianelly,⁵ who also concluded that there is no difference in smile esthetics when extraction and nonextraction patients are compared.

For enhanced facial appearance and smile esthetics, orthodontists should consider the vertical position of the maxillary and mandibular teeth in relation to the gingivae and the lips. Simply placing brackets and a superelastic archwire that expands the arches does not take into account the vertical position of the teeth and could very well cant either arch. Knowledge of biomechanics, including intrusion or extrusion of the teeth as appropriate, are necessary if the goals are to enhance smile esthetics, improve the smile arc, and control the vertical, transverse, and anteroposterior positions of the teeth.

How extraction vs nonextraction therapy affects the profile also is a concern. Extraction therapy is sometimes believed to be detrimental to the profile. This is important because, if a patient has proclined incisors or proclined incisors with crowding, it would be virtually impossible to improve the anteroposterior position of the teeth and the patient’s profile without extractions. Bowman and Johnston⁶ investigated the profile changes in extraction and nonextraction patients when assessed by laypersons and dentists. It was concluded that extraction had a positive effect on the profile of patients with some combination of crowded and proclined teeth, whereas nonextraction therapy had a detrimental effect on the profile. Erdinc et al⁷ evaluated and compared the long-term soft-tissue profile changes in patients treated with extraction of maxillary premolars and found no long-term differences in the soft-tissue profiles of the 2 groups. Even in Class II Division 1 patients treated with extraction of the first premolars (camouflage), it was reported that minimal change occurred in the position of the upper lip.⁸ Why are claims to the contrary accepted when the evidence contradicts them?

A third topic in the extraction vs nonextraction debate is the periodontal status of the teeth after

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orthodontic treatment. How does proclining the mandibular incisors during treatment affect the periodontal status? Yared et al⁹ found that proclining the mandibular incisors more than 95° with decreased gingival thickness of less than .5 mm increased the severity and the amount of recession. This is a significant disadvantage for nonextraction patients with crowded mandibular incisors.^{10,11}

The fourth topic of concern in the extraction vs nonextraction debate is the stability of the teeth after orthodontic treatment. With marketing claims for self-ligating brackets that include unsupported arch development concepts and self-serving criticism of other approaches, we have begun to ignore the stability of routinely expanded dental arches that led to the extraction era of the 1950s and 1960s. When the mandibular arch is crowded, the clinician should consider instability over the long term after orthodontic treatment. It now is claimed that expansion of the mandibular arch is stable if the maxillary arch is expanded, but no evidence supports this. Volumes have been written on mandibular expansion. Convincing data from postretention studies demonstrated that the original arch form should not be changed much and that expanded canines will return to pretreatment dimensions.¹²⁻¹⁴ Excessive expansion, in short, carries a well-known risk of unstable results in addition to periodontal concerns.

With this evidence available, why should “diagnosis for nonextraction” have any credibility? For the best treatment outcomes, some patients need nonextraction treatment, some need extractions, and a key goal of diagnosis is gathering data on which to base this decision, not on which bracket to use. A diagnostic workup to help rationalize a foregone conclusion contributes nothing to rational treatment planning.

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