

Mandibular incisor alignment over the long term

I read the article entitled “Mandibular incisor alignment in untreated subjects compared with long-term changes after orthodontic treatment with or without retainers” by Ulrike Schütz-Fransson, Rune Lindsten, Kristin Bjerklin, and Lars Bondemark in the February 2019 issue (*Am J Orthod Dentofacial Orthop* 2019;155:234-42). The authors concluded that there is a need of life-long retention for mandibular incisors, and there is no difference between using retainers for a certain period (mean 2.7 ± 1.5 years) and not using them at all for mandibular incisors.

The authors had 3 groups in the study. One used retainers on the mandibular incisors after treatment (64 participants); the second did not use retainers on mandibular incisors after treatment (41 participants); and the third was an untreated group (25 participants). The authors mentioned that the decision to leave orthodontically treated patients without retention on the mandibular incisors was made by the orthodontists who treated the patients in the second group. The orthodontic treatments were performed at the Department of Orthodontics, Institute for Postgraduate Dental Education, Jönköping, Sweden, from 1980 to 1995. I sincerely appreciate the orthodontist who treated the participants of this research, who followed most of the guidelines that prevent relapse.

In any orthodontic center, whether it is an institute or a private practice, it is mandatory that after treating a patient with malocclusion with the use of an orthodontic appliance, some kind of retention appliance has to be given except in very few malocclusions such as anterior crossbite or midline diastema after an “ugly duckling” stage. In this study, the participants were treated at an orthodontics institute where it is expected to follow the orthodontic guidelines strictly. How was it possible for the authors to get a sample of 25 patients who are orthodontically treated and left without retention? Is it ethical to treat malocclusion with the use of orthodontic appliances and still leave the patient without retention on the mandibular incisors? Is there any reference in the literature that an orthodontically treated malocclusion can be left without retention on mandibular incisors? The authors should elaborate on this aspect because it is one of the important aspects regarding the research.

The third group consisted of 25 untreated subjects who were age-matched with the other 2 groups. The authors mentioned that these participants were followed because of infraocclusion of primary molars with

permanent successors or the reversible type of ectopic eruption of maxillary first permanent molars. The authors themselves mentioned that the postponement of a needed orthodontic intervention for 12 years is ethically unacceptable. If that is the case, how did this happen in the institute where there is teaching and learning every day?

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Am J Orthod Dentofacial Orthop 2019;156:3
0889-5406/\$36.00

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<http://dx.doi.org/10.1016/j.ajodo.2019.04.011>

Authors' response

Thank you for your interest in our article. The first question is how we could have had several orthodontically treated patients with no retention wires in the mandible, and if this was ethical, as well as if there are any references in the literature about this.

Some 35 years ago, a supervising orthodontist at the Orthodontics Department in Jönköping was of the opinion that retention wires for the mandibular incisors for some years offered only a temporary retention. His opinion was that on follow-up a number of years later, the effects of the wires had vanished, ie, there was relapse. If you want to retain the lower incisors, the retention must be life-long, with all the risks of negative side-effects.

Today we can state that the orthodontist was right. Sometimes, it can be useful and important that there are persons who dare to challenge established routines and dogmas, and it is precisely these persons who are in the forefront of research and knowledge. Because a cohort with follow-up existed where the patients did not receive any retention for mandibular incisors, it would be unethical not to use this material for research purposes.

There is no reference in the literature on this with long-term follow-up. Our study is the first.

The second question is how we could have a control group of untreated subjects.

We wrote in the Discussion: “Ideally, the study should have included an untreated group of subjects with malocclusions like those of the treated groups. However, the postponement of a needed orthodontic intervention for 12 years is ethically unacceptable.” Therefore, we used as control subjects untreated individuals with only minor malocclusions, who had follow-up registrations, and who had been reported in 2 previous doctoral dissertations. The sentence quoted by the writer, “the

postponement of a needed orthodontic intervention for 12 years is ethically unacceptable," is misunderstood in this case.

The last question is how studies like this can be performed in an institute where there is teaching and learning every day. The institute in Jönköping is well known for its research and qualitative postgraduate education. To reach this level, traditional research must be supplemented by research that does not always follow the old footprints; new views must be rewarded. The large amount of data that is available in the Orthodontics Department in Jönköping with at least 10 years' follow-up of orthodontically treated patients is very valuable. A "clean" control cohort can be difficult to find; therefore, we have to use the second-best material as control, for example, long-term follow-up data that have been used in previous studies and such as what we used in the present study.

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Am J Orthod Dentofacial Orthop 2019;156:3-4
0889-5406/\$36.00

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<http://dx.doi.org/10.1016/j.ajodo.2019.04.010>

Difficulties obtaining matched groups

It was a pleasure to read this recent interesting study about maxillary canine impaction because it has such clinical relevance (Arboleda-Ariza N, Schilling J, Arriola-Guillén LE, Ruíz-Mora GA, Rodríguez-Cárdenas YA, Aliaga-del Castillo A. Maxillary transverse dimensions in subjects with and without impacted canines: a comparative cone-beam computed tomography study. *Am J Orthod Dentofacial Orthop* 2018;154:495-503). Although this condition has low prevalence,^{1,2} it constitutes an important challenge for the clinical practice in orthodontics, and understanding its consequences in the interdental width would help the orthodontist to make a better treatment plan, as explained by the authors.

Over the years, many researchers have concentrated their investigations on identifying etiologic factors responsible for the displacement of the canines, and several theories have been presented to explain this anomaly.^{3,4} In addition, there are investigations that concluded that the dental arch deficit is a local cause,⁵ concluding that patients with impaction of canines present an anterior transversal deficiency of the dental arch.

Other authors reported that the shape of the maxillary arch was narrower in the palatally canine impaction group than the buccally impacted canine group.^{5,6}

In this way, the authors of this recent study concluded that the impacted canine condition affected the intermaxillary width, for which objective they compared "matched groups." However, the pairing of the groups to make them comparable is not achieved by controlling only variables such as the skeletal relationship or vertical growth. The muscular pattern and the facial biotype are very difficult variables to control in a study, but the absence of their control could modify the results of this study. Therefore, a true pairing is difficult to achieve. Although this was a first effort, the authors could have measured the facial biotype, because 2 paired individuals could have Class I malocclusion, be of the same age and sex, and only apparently vary in the canine impaction condition. However, the control subject could be brachyfacial and the person with impacted canine could be dolichofacial and consequently the width of premolars would be greater in the control subject. Therefore, the difference could be affected by the facial biotype and not only by the unilateral or bilateral canine impaction condition, so this point should be recognized by the readers and taken into account for future studies.

It would be very helpful if the authors can give their opinion about these topics. Thank you.

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Am J Orthod Dentofacial Orthop 2019;156:4
0889-5406/\$36.00

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<http://dx.doi.org/10.1016/j.ajodo.2019.04.013>

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