

# Orthodontists' and laypersons' perception of mandibular asymmetries

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## Abstract

**Objective:** To analyze orthodontists' and laypersons' perceptions of facial asymmetries caused by mandibular changes. **Methods:** The faces of two patients, a man and a woman, were photographed in natural head position, and additional photographs were produced with progressive mandibular shifts of 2, 4 and 6 mm from maximum habitual intercuspation (MHI). Intraclass correlation coefficients (ICC) and weighted kappa coefficients were used to test method reproducibility. The differences in scores for mandibular positions between orthodontists and laypersons were examined using Friedman analysis. All statistical analyses were performed at 95% confidence interval. **Results:** Orthodontists only perceived shifts greater than 4 mm from MHI position ( $p < 0.05$ ), and laypersons had similar results when analyzing the woman's photographs. However, when examining the man's photographs, laypersons did not perceive any change in relation to MHI ( $p > 0.05$ ). Although median scores assigned by orthodontists were, in general, lower than those of laypersons, this difference was only significant for the 6-mm shift in both patients. **Conclusions:** Orthodontists and laypersons evaluated mandibular asymmetries differently. Orthodontists tended to be more critical when asymmetries were more severe. The evaluation of facial asymmetries also varied according to what patient was being examined, particularly among lay examiners.

**Keywords:** Facial asymmetries. Mandible. Perception. Orthodontics.

## Editor's abstract

Nowadays, one of the main motivations for individual seeking orthodontic treatment is the improvement of facial esthetics. Due to the sub-

jective aspects of facial esthetic, there must be a consensus between the orthodontist and patient, so that they can achieve common goals during the course of orthodontic treatment.

**How to cite this article:** Silva NCF, Aquino ERB, Mello KCFR, Mattos JNR, Orthodontists' and laypersons' perception of mandibular asymmetries. Dental Press J Orthod. 2011 July-Aug;16(4):38-40.

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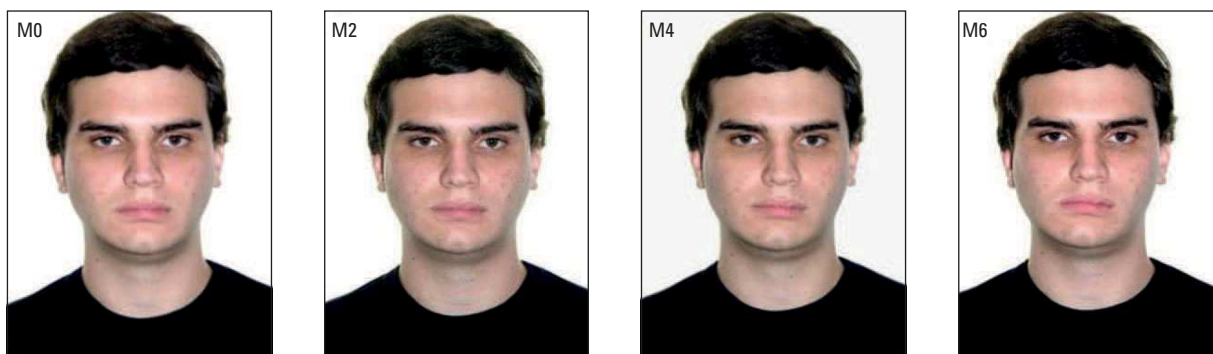


FIGURE 1 - Photographs of the male patient in MHI (M0) and with shifts of 2 mm (M2), 4 mm (M4) and 6 mm (M6).

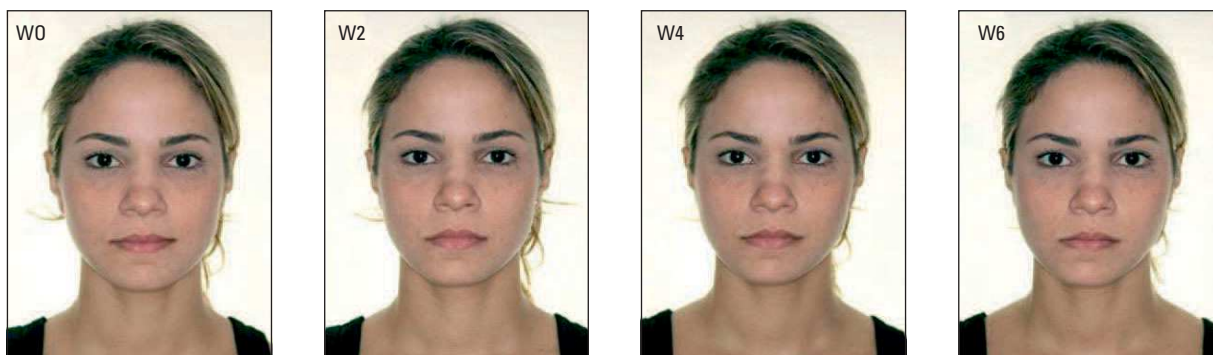


FIGURE 2 - Photographs of the female patient in MHI (W0) and with shifts of 2 mm (W2), 4 mm (W4) and 6 mm (W6).

The authors' proposal for this study was to evaluate the ability of orthodontists and laypersons in the perception of facial asymmetry as well as quantify how many millimeters of deviation, this asymmetry becomes noticeable for these groups.

Four photographs of two patients with normal occlusion, a male and a female (Figs 2 and 3) were obtained. The first was taken in maximum habitual intercuspation (MHI) and the others with mandibular shifts of 2, 4 and 6 mm. To simulate the facial asymmetry, mandible was manipulated to change occlusion at progressive 2-mm lateral shifts from the original position up to 6 mm using checkbite records obtained with #7 wafer wax and a ruler. Photographs were printed and, then, examined by 30 orthodontists and 30 laypersons. Photographs were evaluated randomly, and the examiners were previously told to assign scores from 0 to 10 according to their perception of facial harmony.

Results showed that, when evaluating the female's face, the scores assigned were higher than in MHI and decreased as the face became more asymmetrical. These findings, however, were not observed for the evaluation of the male's photographs. For this patient the scores assigned by both groups of examiners were similar for the photographs in MHI and with 2-mm shifts, but decreased progressively as the mandibular shifts increased (4 mm and 6 mm) when evaluated by orthodontists, and were not statistically different when evaluated by laypersons. Thus, orthodontists and laypersons evaluated mandibular asymmetries differently, and orthodontists tended to be more critical when asymmetries were more severe. The evaluation of facial asymmetries also varies according to the patient examined, either man or woman, particularly among lay examiners.

## Questions to the authors

### 1) What reason could you give to the fact of observing a greater ability to perceive changes in facial females?

This perception may not be linked to the sex of the subject being evaluated, but will probably be due to other morphological characteristics of the patient used in this study, such as the thickness of the lips and others. This factor may have contributed to a more noticeable asymmetry. In addition, approximately 60% of evaluators (orthodontists and laypersons) were female, which may have led to be more critical when evaluating an individual of the same sex. These inferences, however, require scientific proof.

### 2) According to the statement in the results section (With regard to the laypersons, they were not able to notice differences in any of the shifts for the male patient...), I ask: In male patient asymmetries of up to 6 mm should be corrected?

We believe that each patient must be evaluated individually, taking into account not only esthetics, but also the function. We should consider mainly the self-perception or complaint of the patient. In this study, laypersons were unable to notice differences for the male patient, however, what can be perceived in a patient with certain characteristics cannot be applied in another. What we can say is that, in some cases, this asymmetry is only perceived by orthodontists, going unnoticed for most of the laypersons. Studies examining the esthetic perception have the great virtue of showing that the orthodontist may perceive esthetics differently of the patient's perception. In the past we treated our patients as if the treatment had to satisfy only ourselves. On the "esthetic" point of view, the patient's opinion seems to be the most important factor because he is the one who will have to deal with that facial esthetics. As health pro-

fessionals, we should focus our attention to the functional aspect, seeking to reconcile it to our patient's esthetical expectations. However, we must know that this is not always possible.

### 3) You have set as a limiting factor of this study, the fact that the asymmetry was evaluated only in the mandible, since in cases of a real asymmetry, usually occurs the commitment of muscle tissue. The manipulation with a specific software would be able to eliminate this limiting factor?

We would add the involvement of the maxilla, which is common in cases of mandibular asymmetry. To examine the face so that we can simultaneously assess the involvement of muscle and maxilla would be ideal, but what is observed in the literature is that in some cases, the computer programs used to manipulate digital images fail to predict surgical outcomes. Thus, we cannot say that the attempted manipulation of the muscles in images would be trusted by those that occur in patients with asymmetrical facial growth. In the future, with the development of programs using three-dimensional images, we believe that we can reduce the errors inherent in this type of evaluation. However, its elimination seems to be a utopia. Of course, to accept this limitation does not preclude its use, since many important clinical information could be obtained through them.

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