



Clinician's Corner

The importance of evaluating the transverse cant of the occlusal plane in intraoral photographs

Cléber Bidegain Pereira^{a,*}, Roberto Justus^b, Arnaldo Pinzan^c,
Sílvia Helena Vieira Bastos^d, Sergio Lúcio Lopes^e^a Editor-in-Chief, Journal of the Brazilian Academy of Dentistry, Uruguaiiana, Brazil^b Research Director, Department of Graduate Orthodontics, Intercontinental University, Mexico City, Mexico^c Associate Professor, University of São Paulo, Brazil^d Researcher, Brazilian Academy of Pathophysiology Skull, oro Cervical, São Paulo, Brazil^e Department of Oral Diagnosis and Surgery, São José dos Campos Dental School, São Paulo State University, São Paulo, Brazil

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ABSTRACT

Background: Some investigators argue that the occlusal plane (OP) should be positioned horizontally in intraoral photographs. The actual OP, however, may feature nonhorizontal inclinations. This study aimed to determine whether nonhorizontal OP inclinations in the transverse direction, which tend to compromise esthetics, may lead to misdiagnosis.

Results: Nonhorizontal OP inclinations, especially those in the transverse direction, may lead to misdiagnosis.

Conclusions: To circumvent this problem the authors suggest that intraoral photographs be taken encompassing the patient's eyes. By applying this method, the interpupillary line serves as both a reference and a means of evaluating transversal OP.

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1. Introduction

Some studies recommend that intraoral photographs be exhibited with the occlusal plane (OP) parallel to the horizontal frame of the image, and centered, as shown in Figure 1 [1–3]. This recommendation, that is, to show the OP horizontally, constitutes an attempt to avoid presenting photos with different inclinations and looking unrealistic, as shown in Figure 2, a clinical case mounted by the Center for Orthodontic Records.

A clinical case in which the photographs were artificially mounted horizontally (Fig. 3), as recommended in the literature, compromised a proper diagnosis because the patient's OP showed significant inclinations, as depicted in Figure 4.

Figure 5 exhibits a frontal view intraoral photograph of a patient with the OP in a horizontal position and centered, as recommended in the literature. However, a physical examination of this patient, using the interpupillary line as reference, revealed a 2.5° transverse inclination in the OP, as shown in Figure 6.

After evaluating computed tomography scans, Accorsi et al. [4] concluded that the OP should be perpendicular to the true vertical plane.

Many patient faces present with OP inclinations. When these occur, it is crucial that they be recognized and taken into account in establishing an accurate diagnosis and a correct treatment plan. A nonhorizontal OP position—be it posteroanterior or transverse—may compromise the dynamic occlusal function. This article focuses exclusively on transverse PO inclinations, which, in addition to affecting the physiology of mastication, may also affect a patient's facial esthetics [5–7].

Kokich et al. [8] found that dentists could perceive an OP transverse cant with a 1-mm discrepancy, whereas laypersons could perceive only discrepancies of 3 mm or larger. Those investigators concluded that general practitioners and orthodontists, in that order, are supposed to draw a patient's attention to any noticeable discrepancies, and then allow the patient to determine for his- or herself the overall esthetic significance of each discrepancy.

The authors of the present study have observed clinically that patients who had not previously perceived the presence of a transverse occlusal cant often become acutely aware of it once it has been pointed out, by either someone who has a keener sense of

* Corresponding author: Street 13 de Maio, 1893 – 11, Uruguaiiana, RGS CEP 97501-538, Brazil.

E-mail address: cleber@cleber.com.br (C.B. Pereira).



Fig. 1. Intraoral photographs taken according to the recommendation of placing the OP in a horizontal position and centered on the image.



Fig. 2. Clinical case mounted with unreal inclinations, as proven clinically. This set of images not only shows unreal inclinations but also discloses a disproportion between the 3 image sizes.

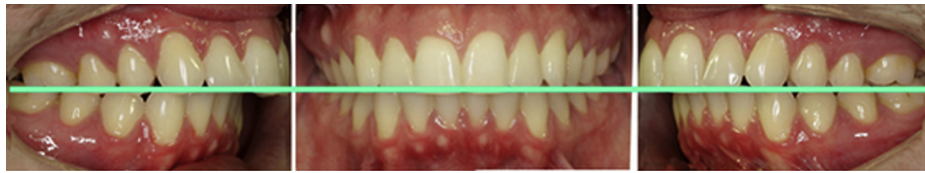


Fig. 3. Photographs mounted with OP positioned horizontally.



Fig. 4. Sometimes a true OP inclination can be altogether different from one artificially oriented horizontally, as in this case.

observation or by a dentist. Thus, it is imperative that the true cant of the OP be evaluated, studied, documented and treated, if so indicated. This assertion was endorsed unanimously during the symposium Imaging in Orthodontics and Orthopedics, organized by the Brazilian Academy of Dentistry [9].

Historically, dentistry has adopted the anthropologic concept that cranial observations, descriptions, and measurements should use the Frankfort plane as a horizontal reference line [10,11]. However, in the case of frontal view facial photographs, the interpupillary line may be used instead of the Frankfort plane as the true horizontal reference. Internationally, many boards of orthodontics acknowledge that the interpupillary line should be parallel to the Frankfort plane [3,12,13] and is an anatomically reliable reference line that can be conveniently measured and traced in the clinical setting in a way that the Frankfort plane cannot.



Fig. 5. Traditional view with the OP positioned horizontally and centered on the image.

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