

# Customized Bracket Positioning with Level Marginal Ridges

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Several landmarks have been proposed for determining the positions of preadjusted brackets. Andrews chose the center of the clinical crown<sup>1</sup>; McLaughlin and Bennett calculated bracket heights statistically to produce their Bracket Placement Chart.<sup>2</sup> None of these meth-

ods, however, accounts for individual patient variations in cusp heights.

Proper bracket positioning should help level the marginal ridges at the beginning of treatment.<sup>3-8</sup> Flattening the occlusal plane makes it easier to identify any posterior prematurities,

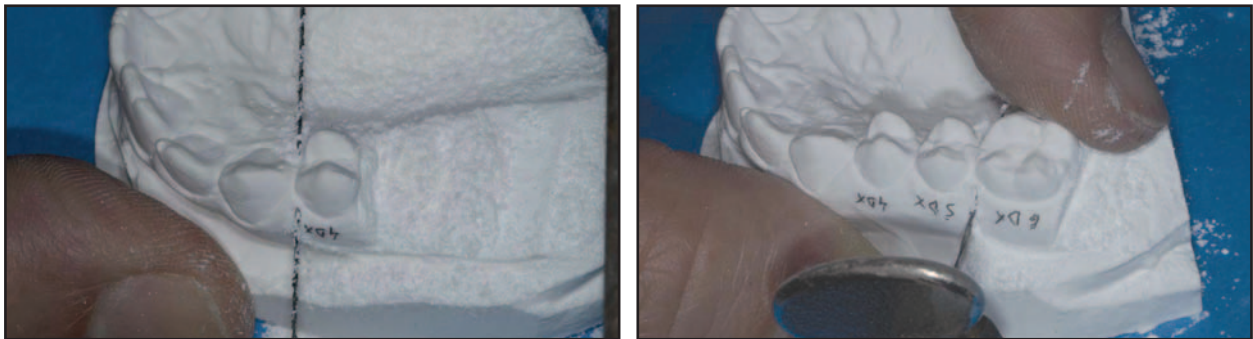


Fig. 1 Molars and premolars sectioned off working cast.

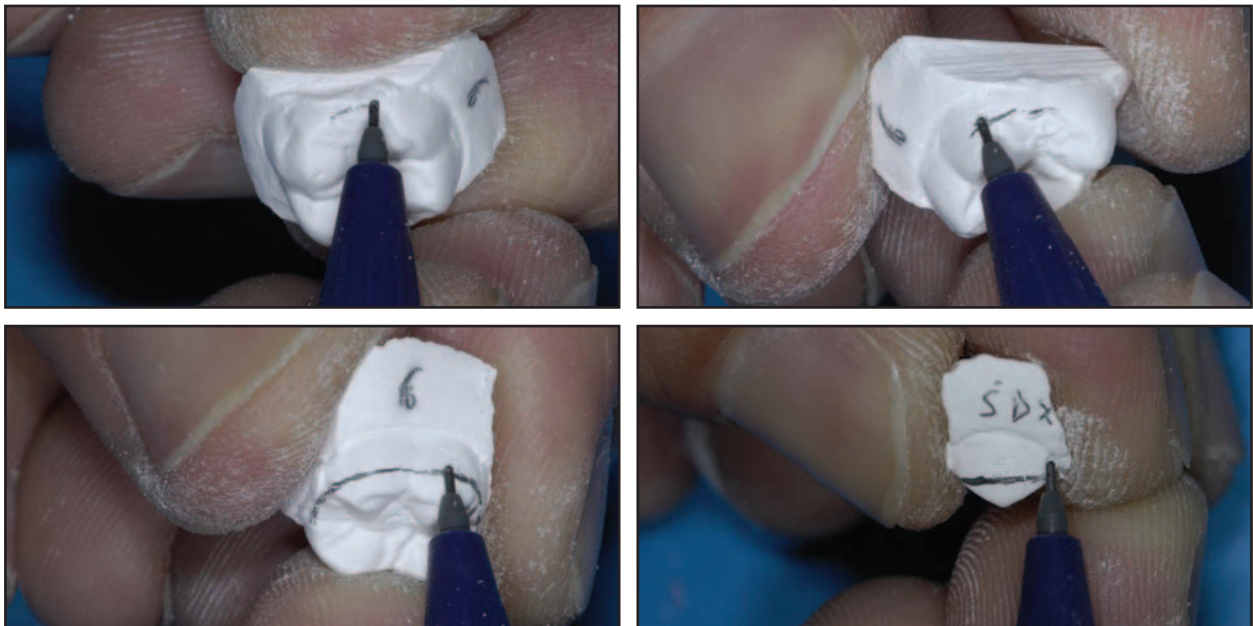


Fig. 2 Ridge plane (Rp) traced on each tooth by connecting mesial and distal marginal ridges.

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so that the higher cusps can be ground down or the lower ones built up. We have developed a simple, reproducible method of indirect bracket positioning based on level marginal ridges.

### Procedure

After taking impressions and pouring plaster casts, section off the molars and premolars (Fig. 1). Trace the ridge plane (Rp) on each of these teeth by connecting the mesial and distal marginal ridges on the facial surface, or on the lingual surface if using lingual brackets (Fig. 2). Make a setup with level marginal ridges to ensure that these individual ridge planes are

correctly aligned (Fig. 3).

Select the tooth with the shortest clinical crown—usually the first or second premolar—as a guide tooth. Make sure that the bracket will be at least 1mm from the gingival margin of this tooth to avoid periodontal problems, and that the opposing mandibular bracket will not prematurely contact the maxillary buccal cusp. Mark the location of the bracket slot (X) on this tooth, then measure the distance between X and Rp (Fig. 4). Use this same value, X-Rp, to measure the slot height gingivally from Rp on each posterior tooth (Fig. 5). The distance between X and the cusp tip is the bracket height.

Anterior bracket heights are determined by



Fig. 3 Setup cast used to ensure that ridge planes are level.

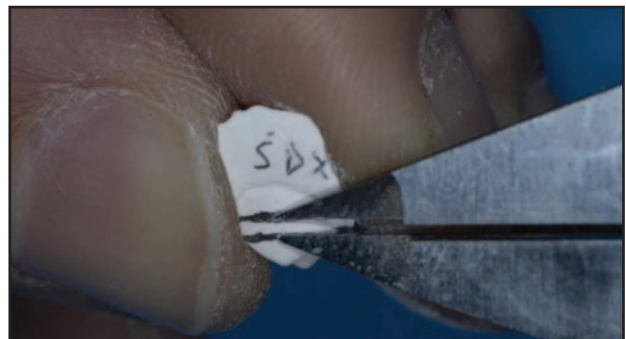
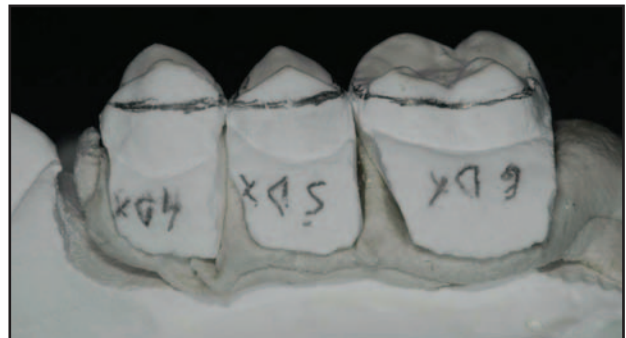


Fig. 4 Distance between bracket slot position (X) and Rp measured on guide tooth.

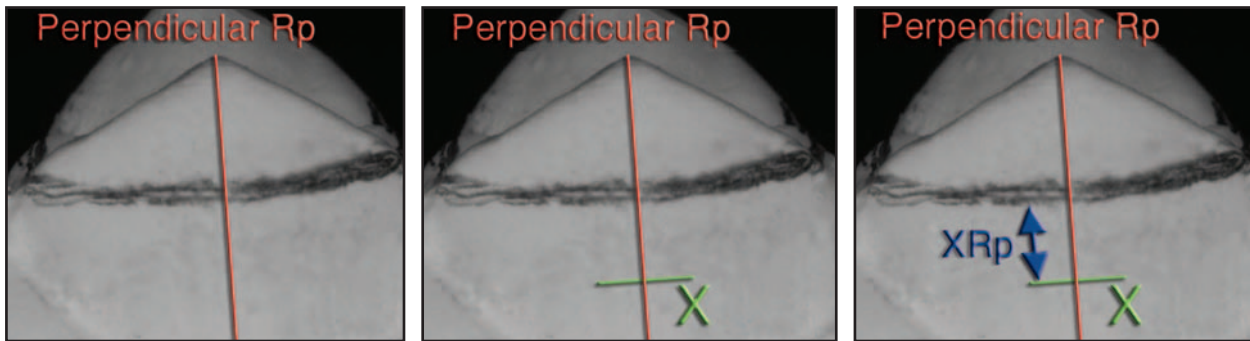


Fig. 5 X-Rp measurement repeated on remaining posterior teeth to establish bracket heights.

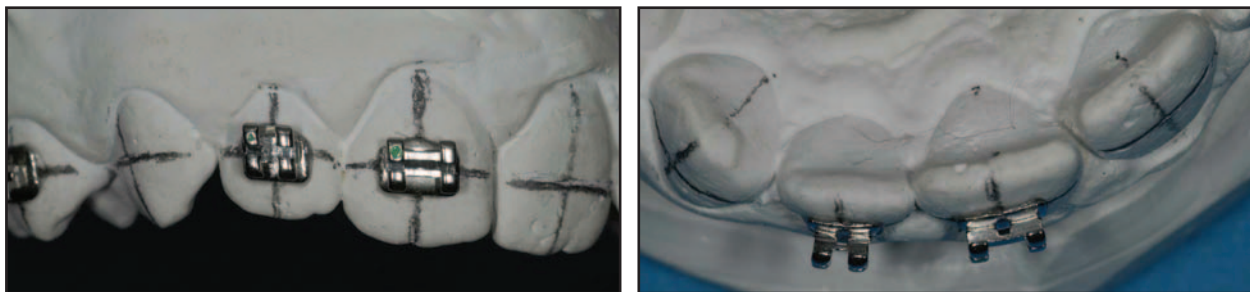


Fig. 6 Anterior bracket positioning: upper lateral incisor brackets at  $X - .5\text{mm}$ , central incisor brackets at  $X$ .

the formula  $X \pm .5\text{mm}$ .<sup>9</sup> The upper and lower canine brackets are positioned at  $X + .5\text{mm}$ , the lateral incisor brackets at  $X - .5\text{mm}$ , and the central incisor brackets at  $X$ , the same height as on the guide tooth (Fig. 6). If a bracket positioned as described above would be less than 1mm from the gingival margin, or if premature contact with the opposing tooth is likely, a correction value  $X_c$  must be applied to all bracket heights.

Flattening the occlusal plane inevitably alters the cusp plane, which carries the risk of creating premature contacts and subsequent occlusal trauma. A short-term solution is to build up DuraLay\* occlusal biteplanes on the posterior teeth until leveling has been accomplished. Ideally, however, any premature contacts should be eliminated toward the end of the leveling stage, when all rotations have been corrected and the curve of Spee has been flattened. Once it is certain that a prematurity is genuine, rather than the result of improper tooth inclination or rotation, it can be eliminated with selective minor grinding.

\*Reliance Dental Manufacturing Co., 5805 W. 117th Place, Worth, IL 60482.

On the other hand, if cusp contact is insufficient, composite resin can be used to add height.

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