Accuracy of bracket positioning is essential, so that the built-in features of the bracket system can be fully and efficiently expressed. This helps treatment mechanics and improves the consistency of the results. The authors use the following techniques, and recommend them.

**Bonding and Banding Technique**

The use of light-cured systems for bonding brackets and cementing bands is helpful. Light-cured systems avoid time pressure on the orthodontist when setting up cases. The bonding materials should be carefully used exactly to the maker’s recommendations, with plenty of good quality light. This will reduce breakages. Errors can be introduced when replacing loose brackets. The bonding agent should be thick enough to prevent floating of the brackets during positioning.

Bracketing and banding should always be performed by the orthodontist. Setting up of the case is the most important aspect of the treatment, after correct diagnosis and treatment planning. Banding and bonding should therefore not be delegated. When bonding brackets, if possible it is helpful to avoid viewing the incisor teeth from the side, or from above or below. This will require the patient to turn the head, and the orthodontist to change seating position from time to time (Fig. 1).

**The Use of Gauges**

Vertical accuracy can be greatly improved by the use of gauges and a bracket positioning chart (Fig. 2a,b). This will deal with difficulties such as tooth length discrepancies, labially and lingually displaced roots, partly erupted teeth, and gingival hyperplasia. The technique has previously been reported (ref. 1, 2).
The bracket placement gauges are used in slightly different ways in different areas of the mouth. In the incisor regions the gauge is placed at 90° to the labial surface (Fig. 3). In the canine and premolar regions the gauge is placed parallel with the occlusal plane (Fig. 4a, 4b, 4c). In the molar region the gauge is placed parallel with the occlusal surface of each individual molar (Fig. 5a, 5b, 5c).

**Figure 2a:**
Recommended bracket positioning chart.

**Figure 2b:**
Bracket positioning gauges.

**Figure 3:**
In the incisor region, the gauge is placed at 90° to the labial surface.

**Figure 4a:**
In the canine and premolar regions the gauge is placed parallel with the occlusal plane.

**Figure 4b:**
Parallel placement on UL Cuspid.

**Figure 4c:**
Lower bicuspid placement.

**Figure 5a:**
In the molar region the gauge is placed parallel with the occlusal surface of each individual molar.

**Figure 5b:**
Molar attachment positioned parallel to occlusal surface.

**Figure 5c:**
Parallel gauge placement to molar’s occlusal surface.
**Modified Bracket Placement Charts**

If the treatment plan involves extraction of four first or second premolars, a modified bracket positioning chart may be used (Fig. 6). This will ensure good vertical relationships between the marginal ridges of canines and second premolars.

**MBT™ Bracket Placement Guide (Bicuspid Extraction)**

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<th>U6</th>
<th>U4 5</th>
<th>U3</th>
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**Figure 6**

If the treatment plan involves extraction of four first molars, a modified bracket positioning chart may be used as shown in figure 7. This will help to achieve good vertical relationships between the marginal ridges of second premolars and second molars. Second molar bands and tubes are used for the second molars, even though they will occupy the first molar positions.

**MBT™ Bracket Placement Guide (1st Molar Extraction)**

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<td>4.0</td>
<td>-1.0 mm</td>
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</table>

**Figure 7**

If the patient demonstrates a deep anterior overbite, the brackets on the upper and lower centrals, laterals and cuspids can be placed 0.5mm more occlusal to assist in bite opening. Conversely, if the patient demonstrates an anterior open bite, these brackets can be placed 0.5mm more gingival to assist in bite closure.

**Chipped or Worn Teeth**

It is advisable to make adjustments for chipped or worn teeth, or those with unusual anatomy, at the time of bonding and banding. The use of gauges and a bracket positioning chart will not deal with chipped or worn teeth, or teeth of abnormal anatomy, such as pointed canines.

For example, if a central incisor has a 0.5mm chip at the start of treatment, the bracket may be placed 0.5mm more gingivally than shown on the bracket positioning chart. Enamel shaping can then be carried out later in the treatment, leaving good coordination of incisal edges (Fig. 8).

**Figure 8:**

If a central incisor has a 0.5mm chip at the start of treatment, the bracket may be placed 0.5mm more gingivally than shown on the bracket positioning chart.

If upper canines are very pointed, and it is planned to re-shape the teeth later by 1mm, it is correct to anticipate this, and position the brackets 1mm more gingivally than shown on the bracket positioning chart (Fig. 9).

**Figure 9:**

If upper canines are very pointed it is often helpful to position the brackets 1mm more gingivally than shown on the bracket positioning chart.

**Rotations**

Slight roto bonding is helpful when bracketing rotated incisors. On a rotated tooth the bracket can be bonded slightly more mesially or distally, sometimes with a very small amount of excess composite under the mesial or distal of the bracket base (Fig. 10, 11a, 11b). In this way full correction of the rotation can be achieved with no special measures. Also, viewing canines, premolars, molars, and rotated incisors occlusally or incisally with a mouth mirror helps bracket positioning relative to the vertical long axis of the crown.

**Figure 10:**

On a rotated tooth the bracket can be bonded slightly more mesially or distally, and in this way full correction of the rotation can be achieved.

**Figure 11a:**

A clinical example of roto bonding. Full correction of rotations can be achieved during the early stages of treatment, without any other special measures. Also see Figure 11b.
Special Care With Molars

Special attention is needed in the relationship between the lower first molar and the lower second premolar. This is the most difficult relationship in orthodontics. Special attention is needed to carefully place the lower second bicuspid bracket, because it is well back, and prone to contamination with saliva. A common mistake is to seat the mesial of the molar band too low, and this should be avoided (Fig. 12a, 12b).

Care is needed to avoid positioning the lower first molar band with the bracket too mesially. It should straddle the buccal groove (Fig. 13).

If there is a close bite on the lower first molars, the molar bracket should be at the correct height, as recommended in the bracket placement chart. It should not be positioned more gingivally. A lower second molar band and tube can be used in this situation, as part of the versatility of the MBT™ Appliance System (Fig. 14).

Re-positioning

Any positioning errors should be corrected before moving into wires heavier than .014 steel or .019 x .025 Nitinol Heat-Activated Wire. Re-aligning can then be done, before going into heavier wires.

When working with small clinical crowns, either due to partial eruption, or gingival hyperplasia, stepping of .014 round wires is helpful. The tooth can be bracketed with the bracket too incisal. At the .014 round steel stage the crown length can be increased by stepping the wires. At the next visit the tooth can be bracketed correctly and a larger wire inserted. In this way, treatment time can be reduced (Fig. 16).

There is also an opportunity to replace any wrongly positioned brackets when banding or bracketing newly erupted teeth, because normally it will be necessary to go back to light aligning wires. Also, if a patient comes in with a loose bracket which needs rebonding, it is worth checking the position of all other brackets. This is an opportunity to correct errors elsewhere.

The authors take time and care to try to achieve accurate bracket positioning at the set-up appointment. During treatment bracket positions are monitored and reviewed at adjustment visits. Using the techniques described and recommended in this article it is possible, in most cases, to avoid the need to change bracket positions in the later stages of treatment. This improves the efficiency of the treatment and the quality of the results.

REFERENCES


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