

## Canine ramps

A canine ramp is a useful technique when a patient has a flattened canine and the teeth that are involved in lateral excursion are weakened with large restorations or have undergone endodontic treatment.

As we age, physiological or pathological tooth wear can alter our occlusion from canine-guided (or 'canine-protected') lateral excursion, to group function. Group function itself is not problematic, but the burden of lateral excursion can be damaging to compromised teeth. For example, an upper premolar with a large mesio-occluso-distal (MOD) amalgam restoration is particularly prone to cusp fracture if a weakened cusp becomes involved in lateral excursion. It may be desirable to restore the patient to canine-guided lateral excursion to protect heavily restored teeth. A minimally invasive option is the canine ramp.

### When should I consider creating a canine ramp?

During your routine examination you may note that a patient has a flattened canine, which is similar in length to the neighbouring lateral incisor and first premolar (**Figure 1**). A flattened canine in itself does not always indicate that treatment is needed. If the wear is physiological (i.e., in keeping with the patient's age) and the other teeth involved in lateral excursion are unrestored, it is unlikely that operative treatment is warranted. In this case, monitoring with appropriate clinical records is sufficient.

However, if the teeth that are involved in lateral excursion are weakened with large restorations or have undergone endodontic treatment, group function may be undesirable and may increase the risk of tooth or cusp fracture.

You may also consider creating a canine ramp if you are planning a restoration and do not wish to involve the restoration in dynamic tooth movements (e.g., a resin-bonded bridge pontic or a post-retained crown).

### How do I create a canine ramp?

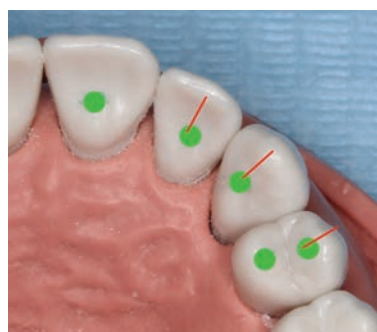
1. You will need articulating paper of two different colours. Using one colour, mark up the patient's intercuspal position (ICP) (or static) contact points (**Figure 2**). These should appear as point contacts or spots.
2. Use the other colour to mark their contacts in lateral excursion (dynamic contacts). These should appear as lines from the ICP contact moving towards the cusp tips or incisal edge (**Figure 3**).



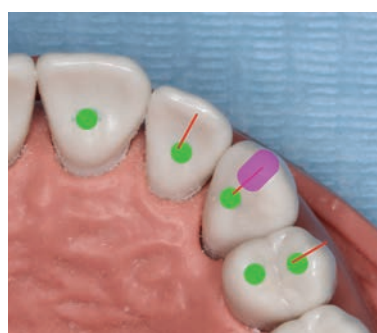
**FIGURE 1:** Note the flattened canine, which is similar in length to the lateral incisor and the first premolar. Also note the grey appearance of the premolars due to large amalgam restorations indicating thin buccal cusps.



**FIGURE 2:** Intercuspal position (ICP) contacts.



**FIGURE 3:** Contacts in lateral excursion.



**FIGURE 4:** Graphic showing the area to apply the composite. Note you should avoid the ICP contact.



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FIGURE 5: Articulated study models demonstrating the ICP.



FIGURE 6: Teeth involved in lateral excursion.



FIGURE 7: Postoperative lateral excursion showing first premolar clearly discluded.



FIGURE 8: Intercuspal contacts unchanged by the addition to the canine.

3. Etch and apply your bonding system to the palatal surface of the canine. Place composite on the dynamic contact (i.e., the line), taking care not to place composite on the ICP contact (**Figure 4**).
4. Clean the original marks from the articulating paper and mark the ICP contacts again. These should appear unchanged and the patient should not notice a difference when they are asked to bite together. However, when you now mark up the patient's lateral excursion, only the canine should appear in occlusion.

### Sample case

**Figure 5** shows articulated study models for a patient mounted in the ICP. The patient's first premolar has been root canal treated, has a post-retained core, and is a bridge abutment for a fixed-moveable bridge. **Figure 6** shows that lateral excursion is guided by the lateral incisor, the canine, and the first premolar. In this case, it would be preferable to remove the first premolar from lateral excursion as it is a heavily restored, compromised tooth. The ICP contacts are first recorded using red articulating paper and then lateral excursive movements are recorded with blue articulating paper. Wax is added

to the blue area but not the red, so the patient's ICP is unaltered. The resulting canine ramp now clearly removes the first premolar from lateral excursion (**Figure 7**), but the ICP remains unaltered (**Figure 8**).

### Risks and benefits of the procedure

Your patient should be informed that this is a minimal procedure, which involves adding resin composite, and no tooth tissue is removed. However, over time this may wear down or debond and the patient may not become aware, as their ICP is unaltered.

Lateral excursive contacts should be examined at future routine dental examinations to determine if the procedure needs to be repeated. The canine tooth should be periodontally sound, as excessive lateral force on a periodontally compromised tooth could result in secondary occlusal trauma. Addition of composite to form a canine ramp will make the palatal aspect of the tooth feel bulkier to the patient initially, and it may restore the canine to its original 'pointy' appearance.

For aesthetic reasons, it may be desirable to add composite to the contralateral canine to preserve symmetry.