RETHINKING the DEFINITION of CENTRIC RELATION

ALICE LAM, DDS | MIKE CANTRELL, MPT, PRC
JAMES ANDERSON, MPT, PRC | NICHOLAS TRAN, BS

CURRENT THINKING vs EMERGING THOUGHT

Centric Relation (CR) traditionally focuses on the mandibular condylar position within the temporal fossae.

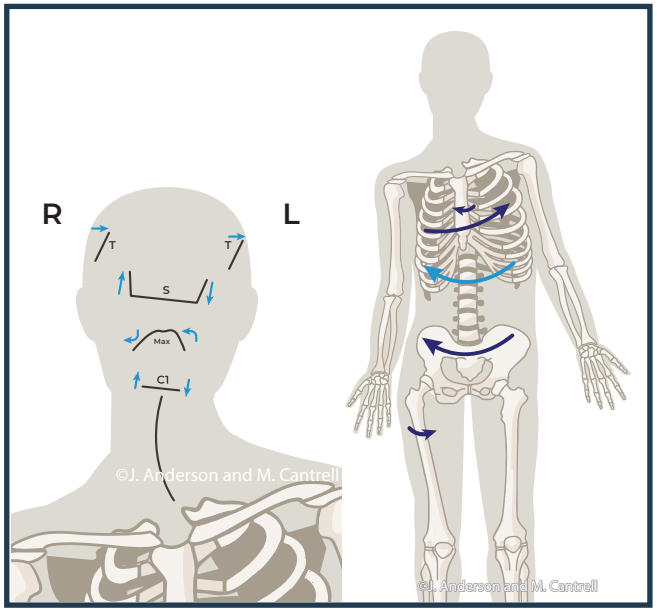
What is not taken into account in the definition is the mobility and position of the temporal fossae secondary to unappreciated cranial bone mobility.

Research and clinical evidence shows that alterations in body patterns, cranial strains, occlusion and CR can, and frequently do, affect one another.

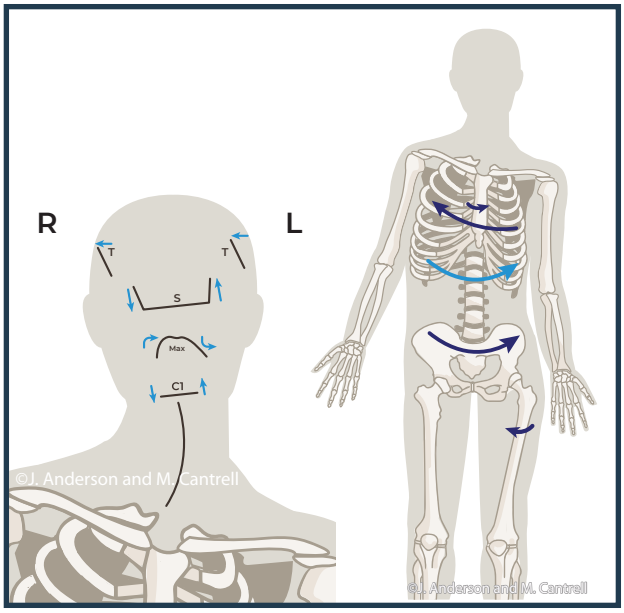
This emerging understanding of fossa mobility and its link to changes in body patterns challenges the current definition of CR and therefore renders the current definition potentially incomplete.

HYPOTHESES

1. There is potential to see changes in both Centric Relation and body position by cutting a lingual maxillary retaining wire.
2. Position and mobility of both sides of the maxilla affects temporal fossa position.
3. Position and mobility of both sides of the maxilla affects body position.
4. Inversely, body position can also affect maxillary position, cranial strain or temporal fossa position.
5. The current definition of Centric Relation is incomplete.



PATIENT A



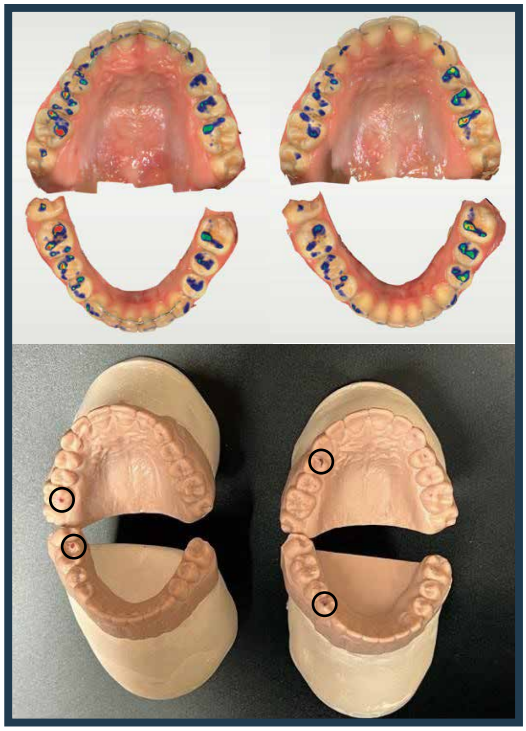
PATIENT B

RESULTS

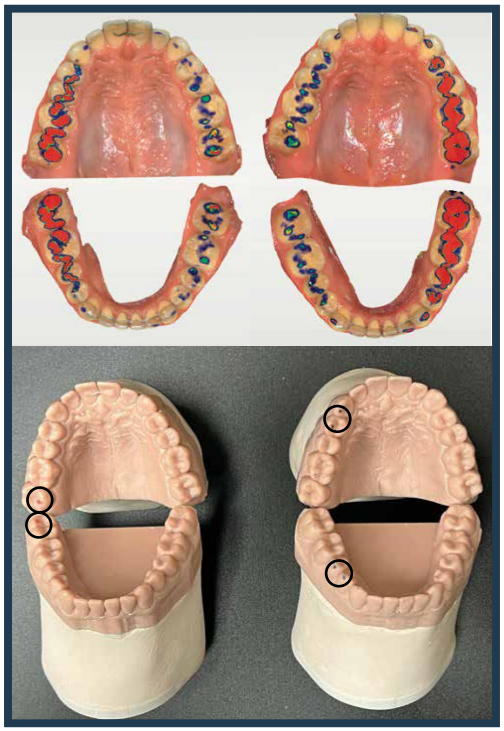
After clipping a maxillary retaining wire on two patients we noted:

Patient A: CR changed, ACP changed from R to L and R sided occlusal contact changed to be balanced. R side transverse and frontal neck alignment changed to neutral. Right rotated sternal and rib cage posture changed to neutral. Right rotated pelvis changed to neutral.

Patient B: CR changed, ACP changed from heavy R to heavy L and R-sided occlusal contact changed to the L. L sided transverse and frontal neck alignment changed to neutral. Left rotated sternal and rib cage posture changed to neutral. Left rotated pelvis changed to neutral.



PATIENT A



PATIENT B

CONCLUSION and CLINICAL SIGNIFICANCE

Hypothesis 1, 2, 3 and 5 are fully supported in this study. Hypothesis number 4 can be inferred as being supported since there was such a strong effect on body position with severance of the lingual wire. Cranial bone alteration induced a cascading series of positional changes on the rest of the body posture. The effect of the bite changing the body via cranial bone mobility could easily support the concept that the body can very-likely affect the bite (and CR) through that same mobility.

Clinical occlusal changes — whether indirectly by adjustments on splints or directly on occlusion via equilibration, restorations, orthodontics, or orthognathic surgery — have significant effects beyond the head and neck. These changes in occlusion commonly influence the position and orientation of both fossa of the temporal bones. The comprehensive dentist should take into account each individual's uniquely acquired body posture and its associated cranial strain patterns in order for CR to truly be repeatable and stable long-term.