

THE EDITOR'S CORNER

Centric Shangri-La

One of the lessons I remember most vividly from my dental school years, more than a quarter of a century ago, was the one about centric relation. As I demonstrated my understanding of the concept to our prosthodontic occlusion lecturer, I felt almost like a military trainee in boot camp repeating to an intimidating drill sergeant, “It is the most posterior, superior position of the mandibular condyle in the glenoid fossa from which lateral excursions can be made! Sir, YES SIR!!!” This lesson was drilled into us so emphatically and so often that I came to assume that the very definition came down from Mount Sinai on the tablets given to Moses. Scribed in stone, this was the immutable, unchangeable word of the dental gods—something we could really believe in. In fact, we were so determined to locate our “hinge axes” on our TMJ and rehabilitation patients that we actually tattooed those positions onto the patients’ skin with red ink.

As a general dentist for the first seven years of my career, I went by the widely accepted prosthodontic description of CR. The first *new* definition I learned was essentially the mirror image of the other: “the most superior, *anterior* position of the mandibular condyle” I don’t even remember where I learned it, but I bought into it—for a while. Then the definition changed again. What was going on? What would happen to all those poor souls whom I treated to the previous position? By the time I went back to school for specialty training, there were already seven different definitions of centric relation in the prosthodontic literature. Most of them were based on biomechanical, gnathological, or positional considerations—physically locating the mandibular condyle somewhere in the glenoid fossa. By one estimate, there are now more than 26 published definitions of CR. Which one is right? And if you can’t believe in centric relation as a dentist, what can you believe in?

Once I entered orthodontics, I found that great emphasis was still placed on the importance of CR and its relationship to CO. Where I trained, every one of our orthodontic and TMJ examination forms contained an

item asking whether CR = CO. I took that to mean that some ominous evil lurked in the shadows if CR \neq CO. Orthodontic glossaries shed a little more light on the subject. Looking at the AAO's public website, I now find the following definition: "A gnathologic term, signifying optimal condyle-articular eminence-glenoid fossa relationships, determined by muscle balance and not by tooth intercuspation." It goes on to say: "Changing concepts no longer accept the most retruded, rearmost, or hinge-axis definition, originally derived from prosthetic articulators. To the orthodontist, the condylar position can vary somewhat, but is generally recognized as high on the posterior surface of the articular eminence. Lack of harmony of centric occlusion and centric relation status is particularly important in diagnosis of TMJ problems."

Although this definition is more intellectually satisfying than the ones I had learned previously, one point still bothers me. If "lack of harmony between centric occlusion and centric relation status is particularly important in diagnosis of TMJ problems", a doctor would reasonably expect to be able to locate one particular mandibular or condylar position from which to compare CR to CO. But if "the condylar position can vary somewhat, but is generally recognized as high on the posterior surface of the articular eminence", the implication is that there is not any fixed or specific point that can be compared to CO for such an evaluation.

In contrast, the definition of centric occlusion has been relatively stable over the years. The AAO website describes CO thus: "Mandibular position dictated by maximum and habitual intercuspation of the upper and lower teeth; variously referred to as intercuspal position, habitual centric, usual occlusal position. The condylar position may or may not be in harmony with centric

relation. Because of this, the term habitual occlusion is preferable. Historically, a gnathologic and articulator oriented term."

So where does that leave us with respect to centric relation? If we wish to define it loosely, we might say it is the position where the mandible ought to be when functioning in occlusion, as compared to where the mandible really is, namely, centric occlusion. The trick then becomes deciding "where it ought to be". CR is certainly not the mantra I learned many years ago; it simply cannot be described in fixed positional terms. The neuromuscular school tells us that there is a *range* of acceptable positions for the mandible, as determined by muscle physiology, neurophysiology, and mandibular kinesiology. The published orthodontic definition of CR agrees with this idea, but leaves unresolved the diagnostic challenge of determining where that range lies.

To suggest, as has been done for more than a century, that CR/CO discrepancies are of concern in TMD treatment only results in a circular kind of logic: If the TMJ is asymptomatic, healthy, and devoid of clinical signs, then CR = CO and harmony exists, no matter where the mandible is or where the condyle lies in the glenoid fossa. Conversely, if the TMJ is symptomatic, unhealthy, or demonstrating clinical signs, CR \neq CO and harmony does not exist, no matter where the mandible is or where the condyle lies in the glenoid fossa.

I would suggest that the term *centric relation* has become obsolete. Like the mythical Shangri-La, it is a wonderful, magical place where all problems are solved—but it does not exist in physical reality. If we as clinicians continue to place emphasis on establishing "harmony" between CO and some mythical concept of CR, we are doing ourselves a disservice.

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