

# Technique Tips – The ABC of the ESIPC Jig: The ‘Elegantly Simple Incisal Platform, Customized’ (ESIPC) Jig for Capturing/Recording Centric Relation



**Figure 1. (A–F)** Method of making the ESIPC jig.

Centric Relation (CR) is the reference position of the jaws (which is not dependent on the teeth) when the mandibular condyles are in their uppermost position in the glenoid fossa, involving the least stress being placed on the jaw muscles. It is a natural, physiological position that is repeatable, reproducible and transferable for the purpose of mounting study casts on an articulator.

The author has found the bimanual manipulation technique<sup>1</sup> to locate CR often difficult to use, the Lucia Jig<sup>2</sup> method somewhat time-consuming, and the leaf gauge<sup>3</sup> method manually tricky with respect to keeping the gauge held *in situ* whilst taking a jaw registration. The ESIPC jig has overcome these difficulties for the author because it is easy and quick to make and is self-retentive (but still easily removed when required). The ESIPC jig is also versatile as it can subsequently be removed, replaced, remade or repositioned, if necessary, without losing the captured CR position (this is particularly useful when it is used during the provision of direct composite build-ups in toothwear cases).

The method of making

the ESIPC jig is shown in Figure 1 and described as follows:

**A.** Check centric occlusion and the relationship of upper and lower midlines.

**B.** A small increment of temporary (crown) acrylic material is placed, with care, directly on one of the lower central incisors, covering the incisal edge and extending labially and lingually down to the gingiva (for retention) and then *allowed to set fully*. A thickness of 1–2 mm around the incisal edges is usually adequate to produce posterior disclusion, an essential prerequisite, to allow the condyles freedom to seat without hindrance into the glenoid fossae (if posterior disclusion is not achieved, a further thin layer can be added as required).

**C.** Once fully set, patients are instructed to ‘feel their way’ around the upper incisor that’s in contact with this first increment so that, with a number of forward-back-forward-back jaw movements, muscle deprogramming occurs, with minimal risk of any chipping or fracture of the temporary (crown) acrylic material.

After allowing a period of 5–10 minutes for deprogramming, the mandible can be gently guided by the

operator into CR. This position is checked for reproducibility/repeatability (different coloured articulating papers can be used for this). I have found, along with colleagues, that the continued presence of the initial deprogramming increment facilitates effective manipulation and operator control of the mandible with greater ease. Articulating paper can now be used at this point, if necessary, for the following purposes:

- For confirmation that CR has been achieved;
- For the appropriate adjustment of the articulation mark on the ESIPC jig, as necessary, to produce a point contact against the palatal surface of the upper incisor, thus minimizing proprioceptive feedback (this may involve addition or subtraction of the acrylic material) (Figure 1: 1,2,3)

**D.** With CR achieved (which can be verified by upward pressure on the angles of the lower jaw and patients being asked to confirm that no discomfort occurs in their TMJs), the mandible is stabilized in CR with three-point contact, ie with the jig anteriorly and posteriorly by both condyles. The midline relationship is also checked to ensure that there has not been any lateral

deviation of the lower jaw on closure or any late changes in the mandibular position. Although it has been remarked that there are quite frequently late changes in the mandibular position, which may occur whilst the inter-occlusal record is made, the author has not experienced an instance of this clinically to date.

**E.** Then, as this position is controlled by the dentist, and whilst the patient is effectively maintained in this position, a second increment of temporary (crown) acrylic material is added so that the incisal edge of the upper incisor is 'registered'. This is allowed to set whilst the patient's mandible is controlled and held in position.

**F.** When this second increment is fully set, the patient is guided to open and close a few times again to check that CR has indeed been captured. In this manner, if the upper central's incisal edge consistently, repeatedly, precisely and neatly reseats into this 'registered' position, then CR has been achieved and captured.

Subsequently, the fabricated ESIPC Jig can be used as follows:

- To record CR for mounting study casts by the use of either Moyco Beauty Wax (Miltex Inc, York, PA 17402) or bite registration material positioned either side of the ESIPC jig accordingly. This will produce an accurate bite registration which can be transferred to the lab in conjunction with a facebow record.

- Alternatively, the ESIPC jig can be used to aid the direct placement of composite restorations on anterior teeth in wear cases. This is the purpose for which the author has most frequently used the ESIPC jig as it allows the most accurate reproduction of the registered CR with multiple simultaneous contacts on the composite restorations either side of the jig. The ESIPC jig is then easily removed so as to be able to access the underlying tooth for the purpose of restoration with composite resin.

It is understandable that some colleagues will have concerns regarding the use of an ESIPC jig. It was suggested by the reviewer that a comparison be made of the occlusal contacts on completion of a case with those at a review visit in order to help confirm the effectiveness, or otherwise, of the ESIPC jig in locating CR. To this end, the author can report that, with three moderate-to-severe wear cases, the occlusion was checked at review by an

independent clinician, very experienced in the re-organization of occlusions, who confirmed that CR was indeed coincident with CO in each case. Consequently, he has and continues to have every confidence that this strongly suggests that the ESIPC jig can be a simple, accurate, effective and reliable method in helping clinicians to locate CR.

Indeed, this confidence has been confirmed and reinforced by the encouragement, support and positive feedback from colleagues who have already incorporated the ESIPC jig into their clinical practices with great enthusiasm, having been shown its clinical fabrication and use by the author.

Please note that if, in a very difficult case, the retruded arc of closure cannot be achieved using this method, an alternative device, such as a Lucia jig, may be employed.

The traditional Lucia jig, which has served dentists well, is designed to present a smooth palatally-facing inclined plane (to control the OVD) while the angle of the slope encourages the mandible to move posteriorly and superiorly (which is usually what's needed) and it also permits lateral repositioning. It can be made very quickly using heat-softened brown compound (Compound stick, various types, Keystone Industries, Myerstown, PA 17067).

Clinicians may well consider

the ESIPC jig to be less able to allow these movements, nevertheless, it has (in the author's opinion) the advantage of simplicity and, since its inception, continues to serve the author well, demonstrating a particularly delightful degree of clinical efficacy, so much so that he now considers it to be an indispensable tool for use in his clinical practice (even though it's being presented in this article as an option that's available for colleagues to consider as an alternative to the available conventional approaches).

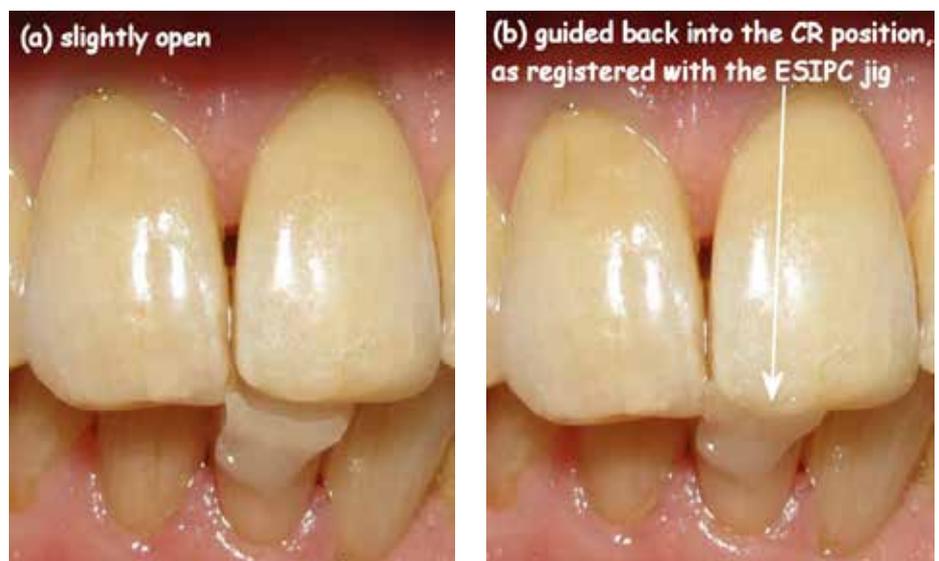
In Figure 2 it is possible to see the ease with which the fully formed ESIPC jig can be used to show the captured CR position repeatedly, consistently and accurately, once the second increment has fully set.

## References

1. Dawson PE. *Functional Occlusion: From TMJ to Smile Design*. St Louis: Mosby, 2007: pp76–82.
2. Lucia VO. A technique for recording centric relation. *J Prosthet Dent* 1964; **14**: 492–505.
3. Long JH. Locating centric relation with a leaf gauge. *J Prosthet Dent* 1973; **29**(6): 608–610.

## Addendum

The aim of this article was to describe the clinical fabrication and use of a novel jig to help locate, capture



**Figure 2. (a, b)** The captured CR position once the second increment has fully set.

and subsequently record CR. It has been commented that the traditional anterior Lucia jig has been used for doing the same job (ie locating CR) in an evidence-based way for many years (the author certainly would not disagree with this), making the ESIPC jig effectively redundant. It is with regards to this latter comment that the author's opinion, with respect, is vehemently at variance (even though the comment does, at the same time, appear to suggest a degree of acceptance, however limited, that the premise of this article holds true).

To clarify, the ESIPC jig, in the author's opinion (and that of many of his colleagues) has significant advantages in its utility when compared to the traditional Lucia jig, other than just the ease of fabrication. For example, with the completed ESIPC jig, the clinician has the option to:

1. Continue to use it *in situ* intra-orally during the placement of anterior composite resin restorations in toothwear cases.
2. Relocate the jig, if necessary, by making a second version elsewhere in the mouth, with even greater ease as there will only be one increment necessary (ie sufficient in size to ensure that the equivalent of a small, localized interocclusal record is made when the patient is guided into CR using

the original ESIPC jig). In the author's view this may be regarded as a second 'single increment' version of the ESIPC jig (at a different location intra-orally), which allows the original ESIPC jig to be thus removed at this point.

The author would also like to point out that, with its intra-oral use in toothwear cases, the ESIPC jig allows the clinician to use the patient's dentition as 'mounted study casts' (for direct rather than indirect restoration placement), and the patient's jaws as a fully self-adjustable, self-setting, articulator and thus no complex measurements or settings are required. Please note that the author has the confidence to say this is based on a background of many years' experience re-organizing the worn dentition adhesively. Thus, whatever he may be lacking in terms of academic knowledge on occlusion or toothwear (and he would not deny this), he personally feels that this is more than amply compensated for by 18 years of invaluable, hands-on, clinical experience in general dental practice.

The author hopes that this helps to demonstrate the fundamentally important, different, valid and novel role now occupied by the ESIPC jig. Far from

being unnecessary or redundant, for the author (along with some enlightened colleagues), the unique advantages conferred by the ESIPC jig have already made it an absolute pre-requisite for use in the treatment of toothwear cases, adhesively.

There were also concerns that frequent late changes in the mandibular position could occur whilst the inter-occlusal record is made, but the author has already stated that he has simply not experienced this. If, and when, he does, it should be noted that the use of an additive (composite resin) adhesive approach would allow any corrective adhesive re-treatment to be carried out with consummate ease, particularly as the underlying healthy tooth tissue is still available. To help illustrate the point, Figure 3 shows a summary of the ESIPC jig being used in the re-treatment of a failed toothwear case (the original treatment had been provided elsewhere).

If, perhaps, there is an interest expressed by colleagues as a result of reading this article, it is my intention to produce a follow-up article, giving more detailed information regarding the technique to utilize the ESIPC jig as effectively as shown below in Figure 3.



**Figure 3.** (1) Before re-treatment (the arrow shows the posterior teeth in occlusion). (2) The completed ESIPC jig customized (to the desired OVD, and also reinforced) for the upper composite build-ups (the lowers were built up 1–2 weeks prior to this). The arrow points to posterior space that will be created/gained with the desired OVD increase that is to be achieved. (3) The ESIPC jig surrounded by the composite build-ups at the desired OVD (conforming to the customized ESIPC jig), which, at this stage, will now help to maintain the position of the patient's mandible. The ESIPC jig is no longer required and so it is removed to allow the UR1 to be restored harmoniously. (4) The composite build-ups completed.