Chapter 16
T–Scan Case Finishing Applications in Aesthetic Dentistry Assisted by the iTero Digital Impression System:
A Case Report

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ABSTRACT

This chapter introduces the iTero digital impression system as a companion to the T-Scan Occlusal Analysis System. Occlusion as a component of aesthetic dentistry is discussed, and how the aesthetic case is aided by T-Scan force control at insertion. The chapter explains that brittle adhesive restorations cannot be evaluated occlusally prior to bonding. Combined with the spatial errors inherent with impression material setting and stone cast articulation, obtaining reliable interocclusal spatial relationships with adhesive restorations can be compromised. Alternatively, the iTero system accurately captures preparation shapes and the opposing interocclusal relationships, which eliminate typical, non-digital cast articulation errors. These clinical realities are illustrated in a10-unit porcelain veneer Case Report, where the iTero system and the T-Scan system are employed together. Finally, recommendations are made that Dental Medicine move towards digital impression making and accept the importance of the T-Scan system in occlusion to improve the standard of patient care.

INTRODUCTION

Digital dental technology, as in so many other industries, is constantly changing. The technologies available to dentists today, continue to improve the way clinicians deliver dental care to the modern dental patient.

When the care is elective and for purely cosmetic reasons, there can often be felt a greater sense of clinician responsibility to ensure the care

rendered completely satisfies the aesthetic desires of the patient, and meets the long-term functional success that clinicians strive for.

Functional success can be defined by:

- The patient's perception of their having an even or stable bite.
- The ability of the patient to chew comfortably without muscle, or TM Joint dysfunction.
- A lack of tooth sensitivity awareness.
- The longevity of the restorative materials.
- The elimination or reduction of patient parafunctional activity, post restoration insertion.
- The objective reduction or elimination of known occlusal or Stomatognathic system aberrations.

Occlusion as a Component of Aesthetic Dentistry

In the early days of the cosmetic "revolution", there was little clinician emphasis placed on the role of occlusion. Success was judged by how happy the patient was with their aesthetics, such that it was widely thought, if the case "looked good," then it "was good." However, patients soon began to experience post insertion tooth sensitivity, and restoration failure. Some of the sensitivity issues resulted from improper manipulation of etchant and adhesive agents (Browning et al., 2007; Perry, 2007). Other sensitivity issues were often occlusal in nature (Coleman, Grippo & Kinderknecht, 2003). Restoration failure, the ultimate failure, was primarily thought to be related to either occlusal function and/or para-function (Thom, 1989).

Both pre-mature occlusal contact in closure, and prolonged occlusal contact in excursive movements made from centric occlusion, have been shown to produce elevated muscle contraction levels, that can load installed adhesive restorations excessively, leading to muscularly-induced sensitivity and restoration failure (Kerstein & Radke, 2006; Kerstein & Radke, 2012). Pre-mature short duration and moderately forceful contacts that occur after initial tooth contact but before the patient reaches stable and complete intercuspation, have been described as "glancing blows." (Kerstein, 2006). It is often these micro-repetitive occlusal forces that precede entry into complete intercuspation, that creates the sensitivity and restoration failure often observed in the aesthetic dental case (Kerstein, 2006).

Esthetic cases in which there is a prosthodontically-accomplished, occlusal vertical dimension change, are more complex to successfully treat, than those in which the vertical dimension remains unchanged. If a patient presents with a short or worn anterior teeth, changing the vertical dimension may be required to lengthen the teeth and improve the aesthetic region.

Changing the vertical dimension of occlusion requires an advanced level of understanding as to how best to:

- Discover the new maxillomandibular relationship;
- Maintain the desired and targeted relationship through the restorative process;
- Create bilateral simultaneous occlusal contact on the new restorations, at the altered vertical dimension; and
- Create rapid posterior disclusion in excursive movements.

Further, it is necessary to create an occlusal design that will reduce or eliminate parafunctional activity, thereby aiding in both the reduction of post insertion sensitivity and in the enhancement of restoration longevity.

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