Clinical evaluation of a new micro-hybrid composite material for direct restoration of posterior sectors


AIM: The aim of the present study is the clinical evaluation of a new composite material, specifically designed for direct restorations of posterior sectors of the oral cavity (Estelite Sigma Quick Posterior® - Tokuyama Dental). This material has excellent mechanical, physical properties and introduces important innovations, such as RAP technology (Radical Amplified Photopolymerization Technology), allowing for a rapid material polymerization (the polymerization time is about one-third shorter than other composite resins) and a good stability to light. Another advantage is the presence of hybrid fillers, constituted by 0.2 µm spherical particles obtained by sol-gel process (ensuring excellent material moldability and polishing) and 3 µm irregular particles obtained by smash process, which implement the mechanical characteristics.

MATERIALS AND METHODS: Our clinical experimentation was based on 10 direct restorations of posterior sectors, using the above-mentioned material (restorations performed between June 2010 and March 2011). We evaluated the clinical characteristics of the material and patient feedback both at time zero (immediately after restoration) and at time one, that is to say six months after restoration. The criteria we used are based on the modified United States Public Health Service (USPHS) criteria, which constitute a system of clinical evaluation suggesting an anamnestic, visual and instrumental (bodkin) analysis, in order to evaluate: color harmony; integrity of restoration; marginal integrity; anatomical form of the marginal ridge; anatomical form of the whole surface; margin discoloration; abrasion; postoperative sensitivity; patient satisfaction. Each of these criteria was rated (A = excellent; B = acceptable; C = filling reconstruction; D = unacceptable), allowing for a global evaluation of the characteristics of the material.

RESULTS: Both at time 0 and time 1, Estelite Posterior produced excellent results for all the examined criteria, with a few infrequent exceptions, confirming the properties advertised by the manufacturer, from both a mechanical and clinical perspective (See the graph below). Therefore, this material can be included in the category of the best commercially available composite materials for restorations of posterior sectors.