BÖLÜM 14

DENTAL MATERYAL OLARAK 3D BASIM ZİRKONYAYA GENEL BİR BAKIŞ

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GİRİŞ

Yttria ile stabilize edilmiş tetragonal zirkonya kristalleri (Y-TZP), mevcut seramik materyaller arasında yüksek mukavemetleri, üstün mekanik özellikleri, biyouyumluluğu ve korozyon direnci ile öne çıkmaktadır. Ancak, yüksek performans ve karmaşık geometrilerin elde edilebildiği seramik materyaller, maliyet açısından ve erişilebilirlik bakımından sınırlı kalabilmektedir. Geleneksel zirkonya üretim süreci, çoğunlukla kazımalı sistemler (KS) kullanılarak gerçekleştirilmektedir; ancak, bu yönteme dayalı materyallerin uygulama aşamasında bazı eksiklikler gözlemlenmektedir. Ayrıca kazımalı sistem büyük bir miktar malzemenin de israfına sebep olarak yöntemin verimliliğini azaltmaktadır[1]. Üreten cihazın kesici uçlarının aşınması ve hasarı kaçınılmazdır bu da sınırlı sayıda üretim için kullanılıp değiştirilmesi gereksinimini doğurur. Seramik kazınması aynı zamanda bazı teknik zorluklar da barındırır örneğin kompleks geometriye sahip restorasyonların üretilmesi için sınırlı yeteneği vardır. Bu tarz kompleks restorasyonların üretilmesi çok zamana sebep olabilir çünkü CNC ünitesi açılanmaları kısıtlar bu da içi boş yapılar üretmeyi zorlaştırır ve undercutlı alanları bypass edilmesine sebep olur[2]. Dahası kazıma süreci ve daha sonrasındaki yüzey iyileştirme gibi süreçler mikroçatlaklar oluşumuna sebep olabilmektedir [3, 4]. KS'nin, hastaların günümüzde yükselen tıbbi bilinci göz önüne alınınca kişisel ihtiyaç ve beklentilerini karşılamasında zorlukları vardır. Bu hususlar araştırmacıları daha iyi özellikler

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