BÖLÜM 3

MİKRO-BİLGİSAYARLI TOMOGRAFİ VE DİŞ HEKİMLİĞİNDE KULLANIM ALANLARI

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GİRİŞ

Mikro-bilgisayarlı tomografi (mikro-CT) 1984 yılında ilk kez tanıtıldıktan sonra pek çok alanda ve sağlık alanında kullanımı her geçen gün artmıştır. Benzer şekilde Diş Hekimliği'nde kullanımı yaygınlaşan bu yöntem, yüksek çözünürlüklü üç boyutlu görüntüleme imkânı sayesinde araştırma ve klinik çalışmalarda önemli katkılar sağlamaktadır. Bu kitap bölümünde, mikro-CT'nin temel işleyiş mekanizması özetlendikten sonra, genel kullanım alanlarından bahsedilmiş ve Diş Hekimliği'ndeki kullanım alanlarından geniş bir şekilde bahsedilerek sağladığı avantajların değerlendirilmesi amaçlanmaktadır. Bu kitap bölümü aynı zamanda okuyuculara özellikle Restoratif Diş Hekimliği alanıyla ilgili mikro-CT çalışmaları hakkında bilgi vermesi açısından değerli olacaktır.

X-IŞINI

Mikro-CT çalışma mekanizmasını daha iyi anlayabilmek için röntgen görüntülerinin oluşmunu sağlayan X-ışını hakkında bir fikir sahibi olmak gerekir.

X-Işını Oluşumu

X-ışınları, vakum tüpünde bir katottan tungsten alaşımlı bir anota doğru elektronları hızlandırmak için yüksek voltaj kullanarak oluşturulan elektromanyetik radyasyon biçimidir. Bu süreçte, hızlandırılan elektronlar elektromanyetik radyasyon salarak X-ışınlarını oluştururlar (1).

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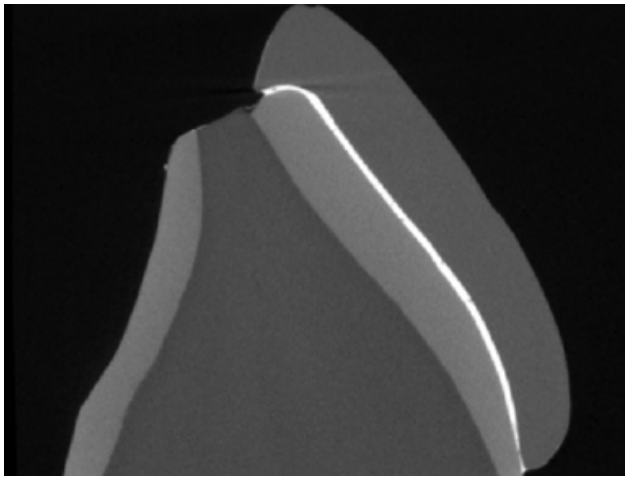

Şekil 15. Lityum disilikat restorasyonun polimerizasyondan sonra siman aralığının mikro-CT görüntüsü (102)

SONUÇ

Mikro-CT, diş hekimliğinde pek çok alanda kullanılmaktadır. Cerrahi alanda kullanımının yanı sıra, özellikle son yıllarda restoratif diş hekimliğinde kullanımının belirgin biçimde arttığı görülmektedir. İki boyutlu radyografik yöntemlerle tespit edilemeyen restorasyon–kavite arayüzündeki mikro boşlukların görüntülenmesine olanak sağlaması bu yöntemin en önemli avantajlarından biridir. Ayrıca, yeni geliştirilen restoratif materyallerin diş dokusu üzerindeki remineralizasyon etkilerinin değerlendirilmesinde de etkin bir şekilde kullanılmaktadır. Tüm bu özellikleri nedeniyle mikro-CT, restoratif diş hekimliği araştırmalarında giderek daha yaygın bir tanı ve analiz yöntemi haline gelmektedir.

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