BÖLÜM 5

GEÇMİŞTEN GÜNÜMÜZE ORTODONTİK ARK TELLERİ

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Ortodontik tedavilerde en çok kullanılan materyallerden olan ark telleri dişlere esas kuvveti aktaran tedavinin ana unsurudur. Ortodontistler optimum diş hareketi sağlarken doku hiyalinizasyonu ve indirekt rezorbsiyonları en aza indirebilmek adına ark tellerinin hafif ve devamlı kuvvet uygulayarak hareket sağlamasını isterler (1). Tarih boyunca altın, paslanmaz çelik, krom-kobalt, nikel-titanyum gibi çeşitli materyallerden teller kullanılmış ve günümüzde de kullanılmaya devam etmektedir. Bu teller arasında tedavinin tüm aşamaları için en iyisi şudur diyebilmek mümkün olmamakla birlikte tedavinin her aşaması için en ideal ark teli elastisite, yaylanma (springback), şekil alabilme (formability), kuvvet aktarımı, hafıza, sürtünme, lehimlenebilme ve puntolanabilme gibi özellikler göz önünde bulundurularak seçilmelidir. Ortodontistler günümüzde en düşük maliyet ve zaman harcayarak en başarılı sonuca ulaştıracak en uygun özelliklerdeki telleri seçmektedir (2).

En uygun özellikteki telleri belirleyebilmek için de tellerde aradığımız bazı özelliklerin tanımlamalarını izah etmek gerekir;

Bir maddenin elastik davranışı, dışardan uygulanan bir kuvvete karşı gösterdiği ***gerilme-gerinim*** cevabıyla tanımlanmaktadır. (Şekil 1) Gerilme yükün madde içindeki dağılımını tanımlarken gerinim ise uygulanan yükün iç biçimini bozması, birim uzunluktaki değişim olarak ifade edilir. Gerilme-gerinim grafiğindeki farklı noktalar malzemenin ***mukavemet*** özelliğini göstermektedir. Bu noktaların her biri malzemenin dayanabildiği en büyük yükü farklı yollarla tanımlar. İlk noktalar kalıcı deformasyonun başladığı ***elastik limitini***, daha yüksek nokta ise ***orantı sınırını*** ifade etmektedir. Bu noktayı tam olarak belirlemek zordur. Gerilme- gerinim eğrisinin % 0.1 gerinim değerine taşınan paralel çizgiyle kesişimi ise ***akma***

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paslanmaz çelik, Ni-Ti ve nitrit kaplı Ni-Ti'ye nazaran daha düşük seviyelerde korozyon meydana geldiği (66) bir başka çalışmada ise ark teli ile braket arasında sürtünmenin azaldığı tespit edilmiştir (65). Bununla birlikte yapılan bazı çalışmalarda da kaplamaların zamanla renk değiştirdiği veya kaplamanın soyularak altındaki metalin görüldüğü bildirilmektedir (67, 68). Bir başka çalışmada ise kaplamaların yüzey pürüzlülüğünü artırdığı ve kaplamanın %25'inin 33 gün içinde bozulması nedeniyle bu tellerin daha az estetik olduğu ileri sürülmüştür (69).

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