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BÖLÜM 1

KÖK KANALLARININ LAZERLE DEZENFEKSİYONUNDA GÜNCEL YÖNTEMLER

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Tülin DOĞAN ÇANKAYA[2]

GİRİŞ

Kök kanal tedavisinin uzun vadeli başarısı için kök kanallarının debridmanı ve dezenfeksiyonu sonrası üç boyutlu hermetik şekilde doldurulması gerekmektedir (1). Kök kanallarının karmaşık yapısı, dallanmalar, isthmuslar, lateral kanallar sebebiyle kök kanallarını mikroorganizmalardan arındırmada sadece mekanik enstrümantasyon yeterli değildir (2). Ulaşılması zor olan bu alanlar için kök kanallarının irrigasyonu ve irrigasyon solüsyonunun aktivasyonu önem arz etmektedir. Geleneksel iğne irrigasyonun bu alanlara ulaşmada yetersiz kalması sebebiyle döner fırçalar, enstrümantasyon sırasında devamlı irrigasyon, sonik sistemler, ultrasonik sistemler, nnegatif basınç yöntemi, GentleWave ve lazerler gibi aktivasyon teknikleri önerilmiştir (3, 4).

Endodontide ilk lazer kullanımı Weichman & Johnson (5) tarafından 1971 yılında bildirilmiştir. Zamanla teknolojik gelişmelerle birlikte endodontide lazer kullanımı yaygınlaşmıştır. Ablasyon, penetrasyon ve dezenfeksiyon yetenekleri nedeniyle lazerler, kök kanal tedavisinde şekillendirme ve irrigasyonda, vital pulpa tedavisinde (pulpa kapaklama ve pulpotomi), dentin aşırı duyarlılığı tedavisinde, kök gelişiminin hızlandırılmasında ve kanallardaki yabancı maddelerin (örn. kırık eğeler ve fiber postlar) çıkarılmasında kullanılmaktadır (6). Endodontide kullanılan lazer türleri; Er:YAG lazer, Er,Cr:YSGG lazer, Nd:YAG lazer, Nd:YAP lazer, CO_2 lazer ve Diod lazerlerdir.

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SONUÇ

Kök kanallarındaki dallanmalar, isthmuslar, anastomozlar, lateral ve aksesuar kanallar gibi karmaşık kök kanal sistemlerinin varlığı nedeniyle endodontide etkili bir dezenfeksiyon için irrigasyon solüsyonunun aktivasyonu önem kazanmıştır. Son yıllarda irrigasyon aktivasyon yöntemlerinin geliştirilmesi sayesinde kök kanallarından bakterilerin elimine edilmesi, geleneksel yöntemlere kıyasla giderek daha modern, kolay, hızlı ve minimal bir hal almaktadır. Azaltılmış enstrümantasyon sürelerinin yanında irrigasyon aktivasyon sürelerinin arttırıldığı minimal invaziv endodontide, PIPS ve SWEEPS tekniklerinin kök kanal tedavisinin başarısını artırdığı yönünde birçok çalışma mevcuttur ve daha fazla klinik çalışmaya ihtiyaç vardır.

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BÖLÜM 2

ENDODONTİK TEDAVİDE KOMPLİKASYONLAR

Gizem YÜKSEL[1]
Oğuz TAVŞAN[2]

GİRİŞ

Endodontik tedavinin temel amacı kök kanal sistemindeki mikroorganizmaları kemo-mekanik preparasyon yoluyla elimine ederek, kök kanalının apikal ve koronalinde hermetik bir tıkama sağlamaktır. Bu sayede periapikal iyileşme gerçekleşir ve yeniden enfeksiyon oluşumu önlenir (1).

Endodontik tedavi; teşhis, planlama ve tedavi aşamalarında titizlikle çalışılması gereken bir tedavi türüdür (2).Diş hekimleri endodontik tedavilerde; teşhis, vaka seçimi, tedavi planı, giriş kavitesi preparasyonu, kanalların temizlenmesi ve şekillendirilmesi, kök kanal dolgusu ve post preparasyonu sırasında birçok problemle karşılaşabilir (2).

Endodontik tedavi ile ilgili komplikasyonlar 3 ana başlık ve alt başlıklara ayrılır:

1. **Tedavi Öncesinde Karşılaşılabilecek Komplikasyonlar**
    - Hatalı Teşhis ve Hatalı Tedavi Uygulanması
    - Anesteziye Bağlı Oluşabilecek Komplikasyonlar
2. **Tedavi Sırasında Karşılaşılabilecek Komplikasyonlar**
    - Giriş Kavitesi Hazırlanması Sırasında Oluşan Komplikasyonlar
    - Bulunamayan Kanallar
    - Perforasyon
- **Kök Kanallarını Preperasyonu Sırasında Oluşan Komplikasyonlar**
    - Perforasyon
    - Apikal Transportasyon

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Histolojik olarak, güta perka periapikal dokulara uzandığında, bir inflamatuar reaksiyon ortaya çıkar (136). Periapikal lezyona sahip dişlerde dışarı çıkan güta perkanın varlığının iyileşmeyi geciktirdiği genellikle belirtilmiştir (137, 138). Sonuçları etkileyebilecek faktörler arasında, söz konusu dişin periapikal durumu, kullanılan kök kanalı doldurma materyallerinin tipi ve miktarı, diğer eşlik eden iatrojenik hatalar veya patolojiler, hekimin deneyimi, hastanın genel sağlık durumu etkilidir (139, 140)

Çoğu taşkın dolum vakasında aşırı enstrümantasyon ve enfekte dentin birikimini ile birlikte apikal daralım tahrip olmuştur (141). Ekstrüze edilmiş gutta-perka uzun vadede yabancı cisim reaksiyonuna neden olabilir ve periradiküler bölgede lezyon oluşumuna yol açabilir (142).

Tedavi sonucu, kök kanalları yeterli şekilde tedavi edildiği taktirde ekstrüze olan kök kanal dolgu patı tedavinin başarısına anlamlı bir etki yapmaz. Ancak postoperatif komplikasyonlara ve yabancı cisim reaksiyonlarına yol açabilmektedir (143).

SONUÇ

Endodontik tedavi öncesinde ve tedavi sırasında birçok komplikasyon ortaya çıkabilmektedir. Diş hekimleri, komplikasyonların önlenmesi ve yönetilmesi hakkında gerekli bilgi ve beceriye sahip olmalıdır. Komplikasyonları önlemek ve yönetmek için gerekli klinik protokoleri dikkatle uygulamalıdır.

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BÖLÜM 3

ENDODONTİK POSTOPERATİF AĞRI YÖNETİMİNDE SİSTEMİK KORTİKOSTEROİDLERİN KULLANIMI

Özge BAŞAR[1]
Ahter ŞANAL ÇIKMAN[2]

GİRİŞ

Ağrı, Uluslararası Ağrı Çalışmaları Birliği (IASP) tarafından "gerçek veya potansiyel doku hasarıyla ilişkili veya buna benzeyen, hoş olmayan duyusal ve duygusal deneyim" olarak tanımlanmaktadır(1). Odontojenik ağrı, dişlerden veya onları destekleyen yapılardan, mukozadan, diş etlerinden, maksilladan, mandibula veya periodontal membrandan başlayan ağrıyı ifade eder(2). Odontojenik ağrılar tedavi edilmediği takdirde ilerler, yaşam kalitesini bozar, psikososyal ve ekonomik yansımaları olur. Aynı zamanda bir halk sağlığı sorunudur(3).

Odontojenik ağrının mikrobiyolojik, fiziksel ve kimyasal nedenleri olabilir. Mikrobiyolojik nedenler, pulpa hastalığını veya apikal periodontitisi tetikleyebilen, devam ettirebilen mikroorganizmaları içerir. Fiziksel nedenler arasında travma, aşırı enstrümantasyon ve taşkın dolum veya kavite hazırlığı sırasında oluşan ısı sayılabilir. Kimyasal nedenler arasında restoratif materyaller, irrigasyon solüsyonları, kanal içi ilaçlar veya dolgu materyalleri yer alabilir. Bu ağrıların çoğu, endodontik tedavi veya çekim gibi acil müdahale gerektiren periapikal veya pulpa hastalığından kaynaklanmaktadır(4).

Odontojenik ağrının tedavisi lokal veya sistemik olabilir. Lokal tedavi, iltihaplı pulpa dokusunun çıkarılmasından veya pulpal nekrozun toksik içeriğinin nötralize edilmesinden oluşur. Kök kanal tedavisinin de amacı, kemomekanik debridman yoluyla mikroorganizmaları, nekrotik pulpayı ortadan kaldırmak, enfeksiyonu önlemek için yeterli bir kanal dolumuyla apikal periodontitisi engellemek ve tedavi etmektir(5). Tedaviler sırasında veya sonrasında da ağrı oluşabilir ve ağrıyı yönetmek için sistemik etkili ilaç gruplarına ihtiyaç duyulabilir. (6, 7, 8).

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sinin eksiksiz tamamlanması esas amaç olmalıdır. Endodontideki son gelişmeler, kanal tedavisi sonrası ağrı sıklığını azaltmış ve postoperatif ağrı konusunda hasta memnuniyetini arttırmıştır. Çünkü hastalara işlem sonrası beklenen ağrı hakkında bilgi vermek ve ilaç yazarak ağrıyı yönetmek, hastanın güvenini arttıracak, hastaların ağrı eşiğini yükseltecek ve hastaların gelecekteki diş tedavilerine ilişkin bakışlarını iyileştirecektir(71, 72).

Endodontik ağrı genellikle kronik inflamasyon, bakteriyel yan ürünlerin varlığı, hazırlanmış bağışıklık hücrelerinin akışı ve sitokin ağının ve diğer inflamatuar mediatörlerin aktivasyonu ile ilişkili olduğundan, ağrı, kortikosteroidlerin uygulanmasıyla azaltılabilir. Ancak ilacın dozajı, veriliş yolu ve zamanı, ağrı eşiği düşük/yüksek olan hastalarda kortikosteroidlerin etkinliği ile ilgili daha fazla veriye ve dişin vitalitesine bağlı olarak kortikosteroid kullanımının net bir şekilde belirlenmesine ihtiyaç vardır(66, 73).

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BÖLÜM 4

DENTAL OPERASYON MİKROSKOBU VE GÜNCEL YAKLAŞIMLAR

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GİRİŞ

Son yıllarda, hızla gelişen teknoloji sayesinde diş hekimliği bilimi de oldukça ilerlemiş olup, cerrahi ve cerrahi olmayan endodonti alanlarında klinik uygulamaları kolaylaştıracak yeni teknoloji, alet ve materyaller geliştirilmiştir. Bu güncel gelişmelerle birlikte hekimler zor gibi görünen işlemlerde daha konforlu işlemler yapabilmektedirler (1).

Büyütme sistemlerinin yaygınlaşması da bu önemli gelişmelerden sayılmaktadır. Komplike vakalar üzerinde çalışan hekimler daha yüksek görme keskinliğine ihtiyaç duymaktadırlar. Keskin görüş, çıplak gözle kısmen sağlanabilse de büyütme sistemleri ile bu keskinlik birkaç katına çıkarılabilmektedir (2, 3).

Kök kanal sisteminin temizlenmesi, preparasyonu, yeterli irrigasyonu ve üç boyutlu olarak doldurulması, kök kanal tedavisinin başarısı için önemli faktörlerdendir. Genel olarak, tedavi edilemeyen veya bulunamayan kök kanalları nedeniyle endodontik tedaviler başarısızlıkla sonuçlanabilmektedir. Bu yüzden uygun bir şekilde yapılan büyütme endodontik tedavinin başarısını arttırabilmektedir. Özellikle dental operasyon mikroskobunun (DOM) endodontide kullanılmaya başlanması diş hekimliğinde büyük gelişmeler sağlamıştır. DOM' un kullanılmasıyla birlikte geleneksel dokunma temelli olan endodonti, öngörülebilir görme tabanlı endodontiye dönüşmüştür. Endodonti alanında ihtiyaç duyulan büyütme 3x ile 30x arasında olsa da opersayon mikroskopları 40x ve ötesine kadar büyütme yetenekleri ile bu ihtiyacı karşılamaktadır (4-7).

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Uzun dönemli randomize kontrollü çalışmalarda, büyütme kullanılarak ve kullanılmadan yapılan endodontik tedavi sonuçlarının karşılaştırılması, birçok kafa karıştırıcı faktör nedeniyle zordur. Bununla birlikte, çok sayıda çalışma, endodontik tedavide büyütme sistemlerinin kullanımının desteklenmesinde artış olduğunu göstermektedir. Büyütme kullanılmadan yapılan tedavilerde sıklıkla gözden kaçan ve tedavi edilmeyen maksiller molar dişlerin MB2 kanallarının uzun vadeli prognozunu azalttığı görülmektedir. Ayrıca endodontik mikrocerrahi, modern mikrocerrahi yöntemlerle büyütme altında yapıldığında başarı oranı % 94 iken, büyütme veya son teknoloji cihazlar kullanılmadığında başarı oranı % 59 oranlarına düşmektedir (71, 84-86).

Dental lupların kullanımında, belirli bir adaptasyon süresi sonrası başarının arttığı unutulmamalıdır. Ayrıca göz yorgunluğu gibi problemlere yol açmaması açısından uyumlanmasına da dikkat edilmesi gerekmektedir (33).

Hekimlerin büyütme cihazlarının özelliklerini ve çeşitli büyütme seviyelerini öğrenmeleri, bu cihazları kullanmalarına teşvik edecek, endodontik tedavileri uygulama yeterliliklerini artıracak ve dolayısıyla vakaların başarı oranlarını arttıracaktır (33).

Günümüzde diş hekimliğinde, lisans eğitimlerinde de büyütme sistemleri kullanımı teşvik edilmektedir. Sağladıkları ergonomi, iyi görüntü vermeleri, tedavilerde özgüven artışı gibi avantajlarının deneyimli hekimler kadar stajyer hekimler için de önemli olduğu görülmektedir. Yakın gelecekte, büyütme kullanımının özellikle endodonti alanındaki uygulamalarda standart haline gelmesi muhtemeldir (33).

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BÖLÜM 5

LAZERLERİN ENDODONTİDE KULLANIMI

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GİRİŞ

Günümüzde lazerler, uygulama kolaylığı, tedavi sürecini kısaltması, hastalara ağrısız ve konforlu bir tedavi seçeneği sunması gibi avantajları nedeniyle diş hekimliğinde cerrahi, endodonti, periodontoloji ve protez gibi alanlarda sıklıkla kullanılmaktadır (1).

Lazer terimi, 'Light Amplification by the Stimulated Emission of Radiation'ın kısaltılarak adlandırılmasıdır. Lazerler sert dokuda; çürük önleme, kök kanal dezenfeksiyonu, beyazlatma, çürük temizleme, kavite hazırlama, aşırı dentin duyarlılığının tedavisi, büyüme modülasyonu ve teşhis amaçlı kullanılırken, yumuşak dokuda ise; yara iyileşmesi, hiperplastik dokunun eksize edilmesi, kısmen sürmüş dişlerin gömülü alanlarının açığa çıkarılması, maligniteler için fotodinamik tedavi, herpetik lezyonun fotostimülasyonda uygulanmaktadır (1).

Son yıllarda, lazer sistemlerinin endodontik tedavide kullanımı oldukça popülerlik kazanmıştır. Lazerler endodontik tedavide sıklıkla kök kanallarının dezenfeksiyonunda geleneksel yöntemlere yardımcı olarak kullanılmaktadır. Lazer ışığının geleneksel yöntemlerle ulaşılamayan alanlara (örneğin isthmusların, lateral kanalların ve dentin tübüllerinin derinliklerinde bulunan bakterilere) ulaşabileceği düşünülmektedir. Lazerlerin dentin dokusunun daha derin kısımlarını etkileyerek endodontik tedavinin etkinliğinde ve başarı oranında artış sağladığı bildirilmiştir (2). Lazerlerin kök kanalında bakterisidal bir etkiye sahip olduğunu gösteren ve lazerlerin antimikrobiyal potansiyelini araştıran çok sayıda çalışma mevcuttur (3-6). Buna ek olarak lazerler endodontide giriş kavitesi açılmasında, mine ve dentinin preparasyonunda, düz ve eğimli kanallarda dentin kaldırılmasında, smear tabakasının uzaklaştırılmasında, fiber postların çıkarılmasında ve vital pulpa tedavilerinde kullanılmaktadır.

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40.04) preparasyonun ardından dezenfeksiyon amacıyla yalnızca NaOCl veya NaOCl+Er:YAG lazer uyguladıkları çalışmalarında, tüm preparasyon boyutlarında Er:YAG + NaOCl kombinasyonunun yalnızca NaOCl ile irrigasyona göre etkinliğinin daha fazla olduğunu bildirmişlerdir. Buna ek olarak her iki irrigasyon grubu için 40#/0.04 apikal genişlikte en yüksek bakteriyel azalma gözlenirken, Er:YAG + NaOCl grubuna benzer etki sağlamak için NaOCl grubunun daha fazla apikal genişletmeye ihtiyacı olduğunu belirtmişlerdir.

SONUÇ

Lazer uygulamaları, yüksek miktardaki enerjinin küçük noktalara odaklanıp uygulanabilmesi ve istenilen bölgeye yönlendirilebilmesi nedeniyle ileri bir tedavi yöntemidir. Dental lazerlerin diş hekimliğinin pek çok alanında yaygınlaşmasındaki asıl sebeplerin başında ise, uygulama kolaylığı, tedavi sürecini kısaltma, prognozu iyileştirme ve hastalara ağrısız ve konforlu bir tedavi seçeneği sunması gelmektedir.

Lazerler, endodontide geleneksel yöntemlerle beraber veya tek başlarına pulpa canlılığını tespit etmede, dentin hassasiyeti tedavisinde, kök ucu cerrahisinde, kök kanallarının genişletilmesi ve doldurulmasında, vital pulpa tedavisinde, kök kanallarının dezenfeksiyonunda, kırık kanal aletleri veya güta-perka gibi yabancı cisimlerin kök kanalından uzaklaştırılması gibi alanlarda kullanılabilmektedir.

Son yıllarda literatür lazer tedavisinin endodontik tedaviye etkili bir yardımcı yöntem olduğunu tamamen kanıtlamıştır. Ancak lazerlerin kullanımı esnasında dikkat edilmesi gereken parametreler iyi bilinmeli ve lazerlerin etkinliklerinin yanı sıra meydana getirdikleri yan etkiler konusunda da fikir sahibi olunmalıdır. Lazerlerin kullanım alanları genişletilmeden önce detaylı in vitro ve in vivo araştırmaların artırılması gerekmektedir. Bu alanda gelecekte yapılacak araştırmalar, eksikliklerin nasıl giderilebileceği, tedaviye bağlı kazaların nasıl önlenebileceği ve bunun daha fazla klinik muayene ve tedavide nasıl uygulanabileceği konusu üzerinde yoğunlaşacaktır.

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BÖLÜM 6

KÖK REZORPSİYONLARINA GENEL BİR BAKIŞ, DIŞ SERVİKAL KÖK REZORPSİYONUNUN İNCELENMESİ

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GİRİŞ

Odontoklastik hücre aktivitesi sonucu oluşan dişteki sert doku kaybı kök rezorpsiyonu olarak adlandırılır(1). Süt dişlerinde oluşan kök rezorpsiyonları daimi dentisyona giden yolda normal bir fizyolojik süreç olarak kabul edilirken, daimi dişlerde görülen rezorpsiyonlar sıklıkla patolojiktir(2). Kök rezorpsiyonlarının tedavi süreci oldukça güç olmakla birlikte, şüpheli bir prognoz sergilemekte ve başarısızlık durumunda dişin çekimi söz konusu olabilmektedir(3).

Kök rezorpsiyonunun etiyolojisi ile ilgili teoriler lokal ve sistemik olmak üzere ikiye ayrılır:

Lokal Sebepler (4–9)

- Çürük,
- Kronik pulpa iltihabı,
- Travma,
- Vital amputasyon,
- Periodontal ve cerrahi tedavi,
- Bisfosfonat kullanımı,
- Parafonksiyon,
- Ortodontik kuvvetler,
- Protetik işlemler esnasında post boşluğu hazırlanması,
- Diş preparasyonu veya kavite hazırlanması sırasında oluşan yüksek ısı,

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SONUÇ

Kök rezorpsiyonlarının erken teşhisi ve tedavisi dişin sağ kalımı için önemlidir. Klinisyenlerin doğru bir tanı koyması ve mevcut rezorpsiyon vakasına göre uygun olan tedavi seçeneğini belirleyebilmesi için rezorpsiyonların klinik ve radyografik ayrımlarını yapabilmesi ve rezorpsiyonun doğasını anlaması gereklidir.

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BÖLÜM 7

GEÇMİŞTEN GÜNÜMÜZE KÖK KANALLARININ SINIFLANDIRILMASINDA KULLANILAN YÖNTEMLER

Sena KAŞIKÇI[1]

GİRİŞ

Endodontik tedavilerde başarı, kök kanallarının tamamen temizlenmesi, şekillendirilmesi ve üç boyutlu olarak ideal bir şekilde doldurulmasıyla sağlanır (1,2). Bunun için kompleks yapıya sahip kök kanallarının morfolojisi hakkında bilgi sahibi olunması ve radyografik olarak dikkatli bir inceleme şarttır. Köklerin sayıları ve kanalların konfigürasyonları popülasyonlar arasında ve ilgili diş gruplarına göre farklılıklar gösterebilmektedir (1-3). Günümüze kadar farklı yöntemler kullanılarak dişlerin morfolojik farklılıkları değerlendirilmiştir:

- Kanallardan kopya modellerin elde edilerek incelenmesi,
- Köklerin histolojik kesitler yardımıyla incelenmesi,
- Köklerin makroskobik kesitler yardımıyla incelenmesi,
- Radyolojik değerlendirmelerin yapılması,
- Boyama ve şeffaflaştırma teknikleri yardımıyla incelenmesi,
- Taramalı elektron mikroskobu yardımıyla incelenmesi,
- Bilgisayarlı tomografiler ve mikro bilgisayarlı tomografiler yardımıyla incelenmesi bu yöntemlerden bazılarıdır (3-8).

Kök kanal anatomisinin karmaşık yapısının gösterilmesi ve varyasyonların çeşitli sınıflandırma sistemleriyle ortaya konması hekimlerin hem anatomi bilgi birikimini hem de başarılı endodontik tedavilerin oranını arttırmaktadır (9,10). Geçmişten günümüze çeşitli sınıflandırma sistemleri kullanılmaktadır.

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