UNIVERSIDADE FEDERAL DO RIO DE JANEIRO

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ANÁLISE DA QUALIDADE DA OBTURAÇÃO EM RAIZES MESIAIS DE MOLARES INFERIORES UTILIZANDO DOIS CIMENTOS ENDODÔNTICOS: ENDOSEQUENCE E AH PLUS

RIO DE JANEIRO

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Análise da qualidade da obturação em raizes mesiais de molares inferiores utilizando dois cimentos endodônticos: EndoSequence e AH Plus

Dissertação apresentada ao Mestrado Profissional em Clínica Odontológica, Universidade Federal do Rio de Janeiro como requisito para obtenção do título de Mestre em Clínica Odontológica, área de concentração Endodontia.

Orientadoras: Profª. Dra. Heloisa Carla Dell Santo Gusman

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À minha família .

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“ Uma vida sem desafios não vale a pena ser vivida.”

Sócrates

Root canal filling quality of mandibullar molars with EndoSequence and AH Plus sealers: a micro-CT study

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RESUMO

Objetivo: O objetivo deste estudo foi avaliar, por microtomografia computadorizada (micro-CT), a qualidade da obturação de canais mesiais de molares inferiores utilizando os cimentos EndoSequence BC Sealer e AH Plus. **Metodologia:** Vinte molares inferiores foram divididos em dois grupos (n=10) de acordo com o cimento utilizado na obturação. O preparo quimico-mecânico foi realizado com as limas rotatórias K3XF. As amostras foram escaneadas por micro-CT antes e depois da intrumentação, e depois da obturação. O volume do sistema de canais radiculares (SCR) após a instrumentação e o volume da obturação foram calculados, assim, o volume percentual da obturação e dos espaços vazios pôde ser obtido. **Resultados:** Todas as amostras apresentaram volumes de obturação menores do que o volume pós instrumentação do SCR ($p < 0,05$). Não houve diferença estatística significante entre os grupos quanto ao volume da obturação e o volume de espaços vazios ($p > 0,05$). **Conclusões:** Os cimentos endodônticos EndoSequence BC Sealer e AH Plus proporcionaram uma qualidade semelhante de obturação em canais mesiais de molares inferiores. Nenhum dos cimentos foi capaz de proporcionar total preenchimento do SCR.

Palavras-chave: obturação endodôntica, EndoSequence, biocerâmicos, microtomografia computadorizada.

ABSTRACT

Aim: The aim of this study was to evaluate, by computadorized microtomography (micro-CT), the root canal filling quality of mesial roots of mandibullar molars using EndoSequence BC Sealer and AH Plus sealers. **Methodology:** Twenty mandibular molars were divided into two groups (n=10) according to the sealer used in the obturation. Root canals were prepared using K3XF rotary files. The specimens were scanned before and after instrumentation, and after obturation by using micro-CT. The root canal system volume after instrumentation, and the filling volume were calculated, so the percentage volume of the filling, and voids and gaps could be obtained. **Results:** All the specimens presented the final volume smaller than the inicial volume ($P < 0.05$). There was no significant difference between groups with regard to the filling volume and voids and gaps volume ($P > 0.05$). **Conclusions:** EndoSequence BC Sealer and AH Plus sealer promoted a similar root filling quality in mesial root canals of madibullar molars. None of the sealers was able to fill the entire area of the root canal system.

Key Words: root canal filling, EndoSequence, bioceramics, micro-computed tomography

SUMÁRIO

INTRODUÇÃO

A obturação endodôntica é uma etapa essencial do tratamento endodôntico, cujo objetivo é selar o sistema de canais radiculares (SCR), prevenindo uma futura contaminação ou recontaminação bacteriana (Sjögren *et al.* 1997). A complexidade anatômica do SCR, principalmente pela presença de irregularidades, ramificações e istmos, constitui um desafio durante o tratamento endodôntico (Kim *et al.* 2016). Normalmente, a obturação endodôntica consiste em um núcleo denso, como a guta-percha, envolto por um cimento para a melhor adaptação da obturação às paredes do SCR (Evans & Simon 1986). O cimento pode preencher as irregularidades do canal, túbulos dentinários e ramificações que não são preenchidas por guta-percha (Balguerie *et al.* 2011).

Os cimentos endodônticos podem interagir com a dentina fisicamente e quimicamente. A interação física é estabelecida pela penetração do material nos túbulos dentinários, criando retenções mecânicas. A interação química é caracterizada pela formação de tags ao longo da interface cimento-dentina (Haragushiku *et al.* 2012, Viapiana *et al.* 2014). Os cimentos a base de resina epoxy possuem a capacidade de adesão à dentina, como por exemplo o cimento AH Plus (Dentsply De Trey Gmbh, Konstanz, Alemanha), que também exerce atividade antibacteriana contra *Enterococcus faecalis*, é biocompatível, apresenta bom escoamento e estabilidade dimensional a longo prazo (Ruiz-Linares *et al.* 2013). Materiais a base de silicato tricálcico como os cimentos a base de MTA e os biocerâmicos, possuem alta formação de tags na interface cimento-dentina, com alta resistência ao cisalhamento (Reyes-Carmona *et al.* 2010, Viapiana *et al.* 2014).

Os biocerâmicos foram introduzidos na Endodontia recentemente, como material reparador (Damas *et al.* 2011, Leal *et al.* 2011) e cimento obturador (Hess *et al.* 2011, Loushine *et al.* 2011), sendo o resultado da combinação de silicato de cálcio e fosfato de cálcio. O EndoSequence BC Sealer (Brasseler USA, Savannah, GA) é um cimento biocerâmico pré-misturado que apresenta em sua composição, óxido de zircônia, silicatos de cálcio, fosfato de cálcio, hidróxido de cálcio e agentes espessantes (Loushine *et al.* 2011), sendo biocompatível, com propriedades antibacterianas, radiopaco, quimicamente estável e não sofre contração após a presa (Candeiro *et al.* 2012). Os cimentos biocerâmicos apresentam composição química

diferente daqueles a base de MTA, porém possuem aplicações clínicas similares, combinando biocompatibilidade semelhante à do MTA, com características mais eficientes, como menor tempo de presa, manipulação mais simples, não escurecimento do dente, e maior efeito antibacteriano (Utneja *et al.* 2015).

A microtomografia computadorizada (micro-CT) é um método de avaliação que permite o estudo da morfologia interna dentária tridimensionalmente (Hammad *et al.* 2009). É altamente confiável para a avaliação da penetração do material obturador nas irregularidades do SCR sem a necessidade de destruição das amostras (Jung*et al.* 2005). Alguns estudos investigaram a qualidade da obturação endodôntica por meio de micro-CT através da avaliação do volume percentual do material obturador e de bolhas na obturação com diferentes técnicas e cimentos (Hammad *et al.* 2009, Metzger *et al.* 2010, Endal *et al.* 2011, Somma *et al.* 2011, Naseri *et al.* 2013, Keleş *et al.* 2014, Celikten *et al.* 2015, 2016, Can *et al.* 2016, Ho *et al.* 2016).

Não há consenso sobre a influência da técnica obturadora na qualidade de obturação. Alguns autores observaram que a termoplastificação da guta-percha influencia o volume total da obturação, tendendo a gerar uma quantidade menor de espaços vazios (Naseri *et al.* 2013, Keleş *et al.* 2014, Ho *et al.* 2016). Entretanto, Somma *et al.* (2011) e Celikten *et al.* (2015) compararam diferentes técnicas obturadoras utilizando os cimentos AH Plus e EndoSequence, respectivamente, e não observaram influência da técnica na qualidade da obturação, independentemente da termoplastificação.

Estudos avaliaram a influência de diferentes cimentos sobre a qualidade da obturação (Hammad *et al.* 2009, Can *et al.* 2016, Celikten *et al.* 2016), sendo que os cimentos biocerâmicos EndoSequence e Smartpaste bio, foram mais eficazes que os cimentos AH Plus e ActiV GP quando utilizados com a técnica do cone único no preenchimento do terço apical em dentes unirradiculares com canais únicos (Celikten *et al.* 2016). Estes estudos que avaliaram diferentes cimentos sobre a qualidade da obturação utilizaram canais únicos, que apresentam baixa complexidade anatômica. Neste contexto, considerando a importância da obturação tridimensional do SCR, o objetivo deste estudo foi avaliar, por micro-CT, a qualidade da obturação de canais mesiais de molares inferiores, utilizando os cimentos EndoSequence BC Sealer e AH Plus.

MATERIAIS E MÉTODOS

SELEÇÃO E PREPARO DAS AMOSTRAS

O presente estudo foi aprovado pelo comitê de ética e pesquisa do Hospital Universitário Clementino Fraga Filho (HUCFF/UFRJ), sobre o protocolo 475.563. Foram utilizados vinte molares inferiores humanos com ápice desenvolvido, extraídos por motivos clínicos, e apresentando estrutura radicular hígida, que foram armazenados em solução de timol 0,1% à 4°C até sua utilização. O acesso coronário foi realizado utilizando-se brocas esféricas diamantadas e Endo-Z de alta rotação (Dentsply Maillefer), não sendo executadas manobras de cateterismo e patência nos canais radiculares para evitar alterações na anatomia original da região apical.

AQUISIÇÃO DAS IMAGENS

A aquisição das imagens das raízes mesiais dos dentes foi realizada de acordo com a metodologia empregada no estudo de Almeida *et al.* (2015), onde foi confeccionada uma base de resina acrílica para cada elemento dentário, utilizada para seu posicionamento no aparelho de micro-CT. Os dentes foram retirados de seu recipiente unitário, onde ficaram imergidos na solução de timol, e levados ainda úmidos ao interior do aparelho. Para aquisição das imagens foi utilizado o microtomógrafo Skyscan 1173 (BrukerCo. Kontich, Bélgica), onde o elemento dentário foi posicionado sobre um dispositivo de alumínio especialmente desenvolvido para se acoplar ao aparelho, e mantido em posição específica através de sua base individual de resina acrílica. Esta base garante a padronização das imagens obtidas antes, depois do preparo químico mecânico e obturação dos canais, pois permite a reposição precisa da amostra dentro do scanner. A aquisição das imagens foi realizada com energia de 70 kV, corrente de 114 μA e filtro de alumínio de 1,0 mm de espessura, e um tamanho de pixel igual a 14,87 μm, conferindo uma resolução de 21,39 μm.

PREPARO QUÍMICO-MECÂNICO

O pré-alargamento do 1/3 coronal foi realizado com as brocas LA Axxess Diamond (SybronEndo, Glendora, CA, EUA). A odontometria e a patência foram determinadas com a utilização de limas K #10 (Dentisply Maillefer, Ballaignes, Suiça) e avaliação radiográfica, estabelecendo o comprimento de trabalho a 1 mm do ápice radiográfico. Todos os canais foram instrumentados com o sistema de limas de NiTi K3XF (SybronEndo, Glendora, CA, EUA) com uma velocidade de 350 rpm com torque limitado pelo motor-elétrico Easy Endo (Easy Equipamentos Odontológicos, Belo Horizonte, Brasil) seguindo a sequência: 25/08, 25/06 e 25/04 até o comprimento de trabalho passivamente. O alargamento da região apical foi realizado utilizando 25/06 e 30/04. Entre as trocas de limas, os canais foram irrigados copiosamente com 3 mL de solução de hipoclorito de sódio a 5,25%. Após a instrumentação, os elementos dentários foram submetidos novamente a aquisição da imagem por micro-CT, conforme descrito anteriormente.

OBTURAÇÃO

Após o preparo quimico-mecânico, os dentes foram aleatoriamente divididos em dois grupos de 10 dentes cada, de acordo com o cimento e a técnica de obturação utilizados: Grupo BCS e Grupo AHP. O Grupo BCS utilizou os cones de guta-percha EndoSequence (Brasseler USA, Savannah, GA) #30 ou #35 e o cimento BC Sealer (Brasseler USA, Savannah, GA) e o Grupo AHP utilizou cones de guta-percha acessórios tamanho FM ou M (Dentsply-Maillefer, Ballaigues, Suíça), e o cimento AH Plus (Dentsply-Maillefer, Ballaigues, Suíça). Em ambos os grupos, o cone obturador foi ajustado no comprimento de trabalho. Após a certificação radiográfica do limite de obturação, os canais foram preenchidos com hipoclorito de sódio a 5,25% e submetidos à irrigação ultrassônica passiva (PUI) utilizando o aparelho Delsonic 2000 (Deldent, Petach Tikva, Israel) com uma lima ultrassônica de ponta # 20, com potência de 30 kHz durante 1 minuto. Os canais foram irrigados com 5 ml de água destilada, secos com cone de papel #35 (Dentsply-Maillefer), preenchidos com EDTA por 3 minutos (1ml/min), irrigados com 5 ml de hipoclorito de sódio a 5,25%, e novamente lavados com 5 ml de água e secos.

O Grupo BCS foi obturado de acordo com as recomendações do fabricante, utilizando a Técnica do Cone Único. O cimento pré-misturado foi introduzido no canal com auxílio de uma lima K#15. O cone de guta-percha selecionado foi coberto com o cimento e introduzido no canal até o comprimento de trabalho. Foi utilizada a ponta Medium do aparelho System B Heat-Source (Analytic Technologies, Redmond, EUA) para a remoção de guta-percha na parte coronal, e um condensador metálico número 4 de Schilder à frio para adaptar a guta-percha remanescente à entrada do canal e realizar a compressão do material no interior do canal. O Grupo AHP foi obturado com a Técnica da Onda Contínua de Calor, como descrito por Barbosa *et al.* (2009). O cimento foi preparado de acordo com as instruções do fabricante e introduzido no canal com auxílio de uma lima K#15. O cone de guta foi coberto com o cimento e introduzido até o comprimento de trabalho. O aparelho System B foi utilizado com a ponta Medium introduzida no canal 5 mm aquém do comprimento de trabalho para a remoção de guta-percha dos terços cervical e médio. O sistema Obtura II (Obtura Corporation, Fenton, MO) foi utilizado para o preenchimento dos terços médio e cervical com os incrementos de 4 mm de guta-percha em uma temperatura de 200ºC.

Após a obturação, a câmara pulpar de todos os dentes foi selada com algodão e material provisório à base de óxido de zinco, e os mesmos foram armazenados por 7 dias em estufa a 37ºC e 100% de umidade para a total presa dos cimentos. Após a obturação, os elementos dentários foram submetidos novamente a aquisição da imagem por micro-CT, conforme descrito previamente.

AVALIAÇÃO DAS IMAGENS

Apenas as raízes mesiais dos molares inferiores foram avaliadas. As imagens foram analisadas utilizando-se o software CTAn (BrukerCo.,Kontich, Bélgica). O software NRecon (BrukerCo., Kontich, Bélgica) foi utilizado para a reconstrução das imagens. As imagens obtidas antes do preparo químico-mecânico foram utilizadas para conferir a equivalência dos grupos quanto a anatomia. O volume pós instrumentação foi determinado a partir da imagem obtida após o preparo químico-mecânico. O volume de obturação foi determinado a partir da imagem obtida após a obturação. A diferença entre estes dois valores foi calculada e resultou no ΔV, que representa a área não obturada do SCR. O volume percentual de obturação foi

determinado com base na divisão do volume de obturação pelo volume pós instrumentação. O volume percentual de espaços vazios foi calculado com base na divisão do ΔV pelo volume pós instrumentação.

ANÁLISE ESTATÍSTICA

O teste t independente foi utilizado para comparar os grupos quanto ao volume pós instrumentação, volume da obturação, ΔV, volume percentual de obturação e volume percentual de espaços vazios ($p < 0,05$). O teste t pareado foi utilizado para comparar os volumes pós instrumentação de obturação dentro de um mesmo grupo ($p < 0,05$).

RESULTADOS

A Tabela 1 mostra os valores médios, mínimos, máximos e desvio padrão do volume pós instrumentação, volume de obturação, ΔV, volume percentual de obturação e volume percentual de espaços vazios dos dois grupos. Não houve diferença estatística significante entre os grupos quanto ao volume pós intrumentação ($p > 0,05$). Além disso, não houve diferença estatística significante entre os grupos quanto aos demais parâmetros analisados ($p > 0,05$). Todas as amostras apresentaram volume de obturação menor do que o volume pós instrumentação ($p < 0,05$), mostrando que em nenhuma amostra o SCR foi totalmente preenchido. A figura 1 mostra as imagens tridimensionais obtidas após a obturação dos dois grupos, evidenciando o volume de obturação e os espaços vazios.

DISCUSSÃO

O presente estudo avaliou a qualidade da obturação de canais mesiais de molares inferiores por micro-CT, através do volume do canal preenchido pelo material obturador utilizando os cimentos EndoSequence BC Sealer e AH Plus. Não houve diferença entre os grupos quanto aos parâmetros analisados, sendo que ambos os grupos apresentaram volumes de obturação menores do que o volume pós instrumentação, mostrando o preenchimento incompleto do SCR.

Os cimentos utilizados neste estudo apresentam características físico-químicas similares, como alto escoamento, biocompatibilidade e radiopacidade (Candeiro *et al.* 2012), apesar de serem formados por substâncias distintas. O AH Plus consiste em um cimento à base de resina epoxy testado em um grande número de estudos que relatam propriedades satisfatórias ao uso clínico (Hess *et al.*, 2011, Loushine *et al.* 2011, Candeiro *et al.* 2012; Pawar *et al.* 2014, Uzunoglu *et al.* 2015, Razmi *et al.* 2016). O EndoSequence BC sealer, um cimento biocerâmico à base de silicato de cálcio, apresenta grandes expectativas quanto às suas vantagens na obturação do SCR, por se tratar de um material bioativo, com atividades biológicas semelhantes ao do MTA (Utneja *et al.* 2015).

No presente estudo, foram utilizadas diferentes técnicas de obturação. No grupo BCS, a Técnica de Cone Único foi utilizada de acordo com a recomendação do fabricante, e com base na literatura (Hess *et al.* 2011, Uzunoglu *et al.* 2015, Celikten *et al.* 2016). Além disso, o estudo de Celikten *et al.* (2015) não mostrou diferença significativa na qualidade da obturação quando as técnicas do Cone Único, Condensão Lateral e Thermafill foram comparadas utilizando o cimento EndoSequence BC Sealer. No grupo AHP, a Técnica de Onda Contínua de Calor foi utilizada com base nos achados de Keleş *et al.* (2014), que compararam as técnicas de Condensação lateral e Onda Contínua de Calor utilizando o AH Plus, e observaram menor volume de bolhas e espaços vazios na técnica de Onda Contínua de calor. Além de outros autores, que observaram que a termoplastificação da guta-percha influencia o volume total da obturação, tendendo a gerar uma quantidade menor de espaços vazios (Naseri *et al.* 2013, Ho *et al.* 2016). A principal diferença entre as técnicas utilizadas é que a Técnica do Cone Único se baseia no preenchimento das irregularidades e ramificações do canal exclusivamente pelo cimento endodôntico carreado pelo cone de guta-percha (Barbosa *et al.* 2009). Enquanto a Técnica de Onda Contínua de Calor promove a termoplastificação da guta- percha, promovendo a penetração não apenas de cimento nestas áreas do SCR, mas da própria guta-percha plastificada (Buchanan 1998, Goldberg *et al.* 2001, Robberecht *et al.* 2012).

A metodologia do presente estudo incluiu a utilização de PUI e de EDTA antes da obturação para promover uma melhor penetração do material obturador em irregularidades do SCR. A limpeza adequada do SCR pode influenciar na qualidade da obturação (Freire *et al.*, 2015), sendo que a solução irrigadora desempenha um

papel importante nessa limpeza. A PUI proporciona um aumento no poder de penetração do hipoclorito de sódio em áreas de difícil acesso ao SCR (Haapasalo *et al.* 2010, Justo *et al.* 2014). Outro fator crucial para a limpeza, é a remoção da smear-layer, que requer o uso de agentes quelantes seguidos por solventes teciduais, portanto, o uso do EDTA seguido do hipoclorito de sódio, são eficazes para tal função (Sayin *et al.* 2007).

A micro-CT é um método que vem sendo muito utilizado nos últimos anos para avaliar a obturação do SCR através de uma análise tridimensional (Hammad *et al.* 2009, Metzger *et al.* 2010, Endal *et al.* 2011, Somma *et al.* 2011, Naseri *et al.* 2013, Celikten *et al.* 2015, 2016, Can *et al.* 2016, Ho *et al.* 2016). Diversas técnicas, como a radiográfica, cortes transversais em raízes, injeção de corantes associado à diafanização, entre outras, foram descritas na literatura para avaliar a qualidade da obturação do SCR, porém, estas apresentam limitações. A técnica de cortes transversais pode apresentar perda de material durante sua realização (Hammad *et al.* 2009). A inserção de corantes dentro do SCR é afetada negativamente pelo ar presente nas lacunas na interface material obturador-dentina, resultando na falha em revelar o total volume da bolha (Somma *et al.* 2011). Além disso, estas técnicas requerem a destruição da amostra analisada. Já a micro-CT, oferece as vantagens de fornecer dados tridimensionais precisos e preservar as amostras (Wolf *et al.* 2014). Apesar da evolução dos microtomógrafos, o tempo para aquisição da imagem ainda é grande, o que justifica a realização de estudos com um número reduzido de amostras (Keleş *et al.* 2014, Can *et al.* 2016).

No presente estudo, não houve diferença estatística significante entre os grupos quanto ao volume pós instrumentação ($p > 0,05$), o que evidencia que os grupos são comparáveis entre si. Além disso, não houve diferença estatística significante entre os grupos quanto aos demais parâmetros analisados ($p > 0,05$). Estes resultados estão de acordo com os de Celikten *et al.* (2016), que não observaram influência dos cimentos AH Plus, EndoSequence BC Sealer, Smartpaste bio e ActiV GP no percentual do volume total de obturação, nem no percentual do volume total de bolhas e espaços vazios utilizando a técnica de Cone Único em todos os grupos. Entretanto, estes autores observaram que os cimentos biocerâmicos EndoSequence e Smartpaste bio foram mais eficazes que os cimentos AH Plus e ActiV GP no preenchimento do terço apical em dentes unirradiculares com canais

únicos. Esta diferença pode ser justificada pela variação anatômica do terço apical dos dentes, que de acordo com os autores, parece influenciar mais no volume de bolhas na obturação endodôntica do que o próprio cimento e técnica de obturação utilizada. Nossos resultados mostraram que todas as amostras apresentaram volume de obturação menor do que o volume pós instrumentação ($p < 0,05$), evidenciando que em nenhuma amostra o SCR foi totalmente preenchido. O volume percentual de obturação observado no grupo AHP (87,72% ± 7,08) é divergente dos estudos de Can et al. (2016), Celikten et al. (2015) e Somma et al. (2011) de 97,62% ± 0,71, 98,3% ± 1,3 e 98,16% ± 3,43 respectivamente. Da mesma forma, o volume percentual de obturação do grupo BCS (86,92% ± 7,97) também não está de acordo com os valores encontrados nos estudos de Celikten et al. (2015, 2016), 97,8% ± 1,20 e 98,42% ± 1,24 respectivamente, utilizando o mesmo cimento. A provável razão para tal diferença entre os resultados é que aqueles estudos utilizaram canais únicos com menor complexidade do SCR quando comparado ao presente estudo, que utilizou raízes mesiais de molares inferiores com dois canais e portanto, uma área maior e mais complexa do SCR. Tal complexidade dificulta a penetração do material obturador e consequentemente favorece a formação de espaços vazios.

Com base nos resultados obtidos por estudos anteriores e pelo presente estudo, pode-se dizer que, por enquanto, a qualidade da obturação é mais dependente da anatomia do SCR do que do cimento ou técnica utilizada, uma vez que o acesso a muitas dessas áreas complexas durante o preparo químico-mecânico ainda não é alcançado. Nenhuma associação de técnica e cimento estudada até o presente momento conseguiu preencher todo o SCR, o que evidencia uma limitação da técnica e dos instrumentos e materiais existentes. Embora os cimentos biocerâmicos se mostrem promissores quanto à melhora da qualidade de obturação, são necessários mais estudos utilizando diferentes técnicas para que seja possível avaliar todo o potencial que este material pode oferecer.

CONCLUSÃO

Baseado no exposto, podemos concluir que os cimentos endodônticos EndoSequence BC Sealer e AH Plus proporcionaram uma qualidade semelhante de obturação em canais mesiais de molares inferiores. Nenhum dos cimentos foi capaz de realizar total preenchimento do SCR.

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LEGENDA DA FIGURA

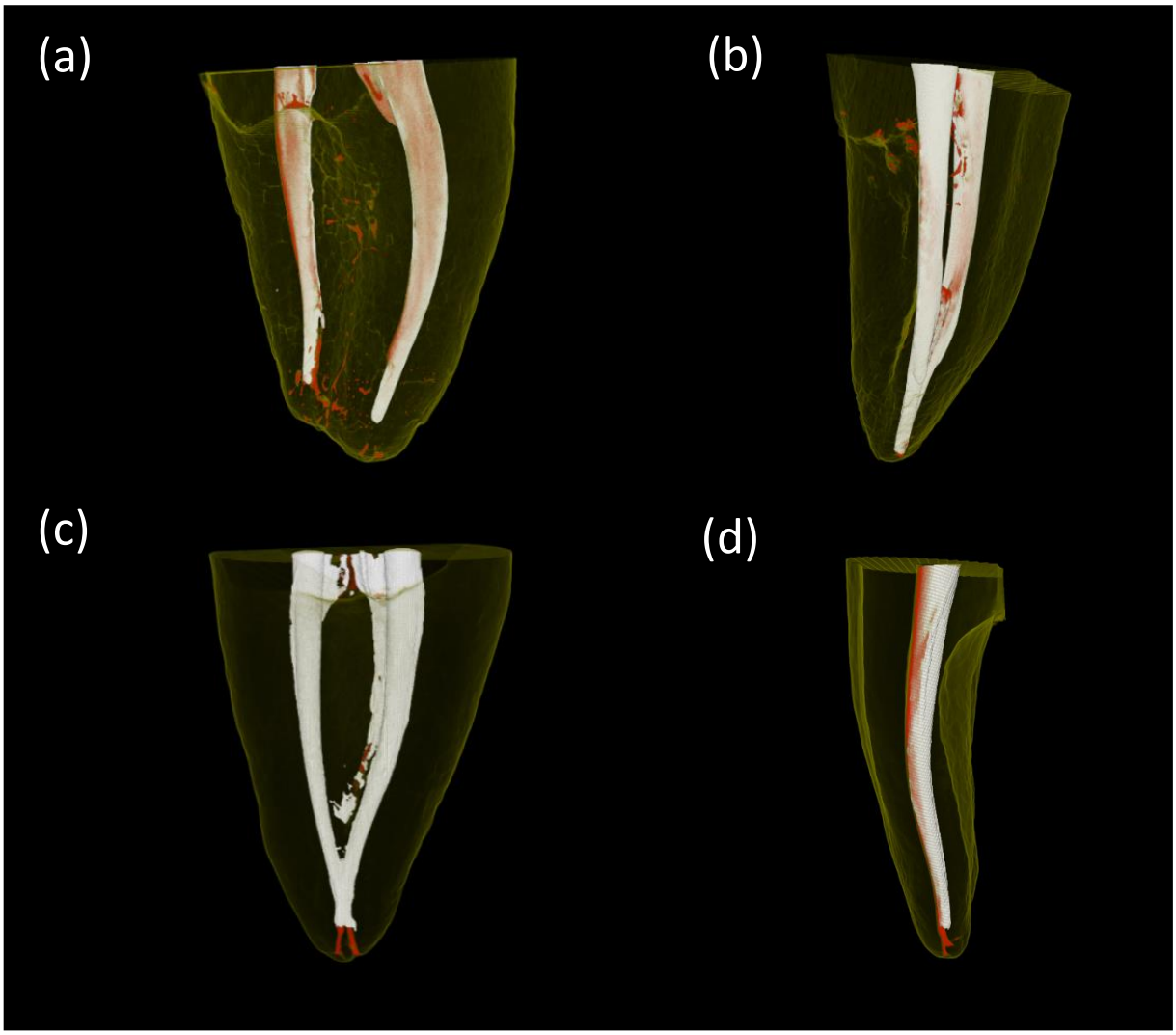
Figura 1 - Imagens tridimensionais obtidas após a obturação das grupos.
(a,b) BCS; (c,d) AHP; (branco) volume obturado; (vermelho) espaços vazios.

Tabela 1 - Média ± desvio padrão (DP) e Intervalo do volume de obturação e de espaços vazios.

	BC Sealer		AH Plus	
	Média ± DP	Intervalo	Média ± DP	Intervalo
Volume pós instrumentação (mm^3)	1316,16 ± 380,51 [a]	935,82 - 2117,43	1508,33 ± 266,13 [a]	983,87 - 1796,04
Volume de obturação (mm^3)	1133,52 ± 317,92 [b]	836,84 – 1842,61	1326,36 ± 260,00 [b]	732,95- 1637,20
ΔV (mm^3)	179,64 ± 136,75 [c]	10,79 - 501,45	181,97 ± 103,19 [c]	72,37 - 348,02
Volume de Obturação (%)	86,92 ± 7,97	70,66 – 98,95	87,72 ± 7,08	74,50 - 95,77
Espaços vazios (%)	13,08 ± 7,97	1,05 – 29,34	12,28 ± 7,08	4,23 - 25,50

*Letras diferentes indicam diferença estatística ($p < 0,05$).

Figura 1



ANEXO A – NORMAS DE PUBLICAÇÃO DO PERIÓDICO INTERNATIONAL ENDODONTIC JOURNAL

Author Guidelines

Content of Author Guidelines: 1. General, 2. Ethical Guidelines, 3. Manuscript Submission Procedure, 4. Manuscript Types Accepted, 5. Manuscript Format and Structure, 6. After Acceptance

Useful Websites: Submission Site, Articles published in *International Endodontic Journal*, Author Services, Wiley's Ethical Guidelines, Guidelines for Figures

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1. GENERAL

International Endodontic Journal publishes original scientific articles, reviews, clinical articles and case reports in the field of Endodontology; the branch of dental sciences dealing with health, injuries to and diseases of the pulp and periradicular region, and their relationship with systemic well-being and health. Original scientific articles are published in the areas of biomedical science, applied materials science, bioengineering, epidemiology and social science relevant to endodontic disease and its management, and to the restoration of root-treated teeth. In addition, review articles, reports of clinical cases, book reviews, summaries and abstracts of scientific meetings and news items are accepted.

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International Endodontic Journal adheres to the definition of authorship set up by The International Committee of Medical Journal Editors (ICMJE). According to the ICMJE, authorship criteria should be based on 1) substantial contributions to conception and design of, or acquisition of data or analysis and interpretation of data, 2) drafting the article or revising it critically for important intellectual content and 3) final approval of

the version to be published. Authors should meet conditions 1, 2 and 3.

Acknowledgements: Under acknowledgements please specify contributors to the article other than the authors accredited. Please also include specifications of the source of funding for the study and any potential conflict of interests if appropriate. Please find more information on the conflict of interest form in section 2.6.

2.2. Ethical Approvals

Experimentation involving human subjects will only be published if such research has been conducted in full accordance with ethical principles, including the World Medical AssociationDeclaration of Helsinki (version 2008) and the additional requirements, if any, of the country where the research has been carried out. Manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each subject and according to the above mentioned principles. A statement regarding the fact that the study has been independently reviewed and approved by an ethical board should also be included. Editors reserve the right to reject papers if there are doubts as to whether appropriate procedures have been used.

When experimental animals are used the methods section must clearly indicate that adequate measures were taken to minimize pain or discomfort. Experiments should be carried out in accordance with the Guidelines laid down by the National Institute of Health (NIH) in the USA regarding the care and use of animals for experimental procedures or with the European Communities Council Directive of 24 November 1986 (86/609/EEC) and in accordance with local laws and regulations.

All studies using human or animal subjects should include an explicit statement in the Material and Methods section identifying the review and ethics committee approval for each study. The authors MUST upload a copy of the ethical approval letter when submitting their manuscript. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.

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The International Endodontic Journal asks that authors submitting manuscripts reporting from a clinical trial to register the trials in any of the following public clinical trials
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Randomised control clinical trials should be reported using the guidelines available at www.consort-statement.org. A CONSORT checklist and flow diagram (as a Figure) should also be included in the submission material.

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Submitting authors of epidemiological human observations studies are required to review and submit a 'strengthening the reporting of observational studies in

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Conflict of Interest Disclosure Form

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- Enter your institution and address information as appropriate, and then click 'Next.'
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5. MANUSCRIPT FORMAT AND STRUCTURE

5.1. Format

Language: The language of publication is English. It is preferred that manuscript is professionally edited. A list of independent suppliers of editing services can be found at http://authorservices.wiley.com/bauthor/english_language.asp. All services are paid for and arranged by the author, and use of one of these services does not guarantee acceptance or preference for publication

Presentation: Authors should pay special attention to the presentation of their research findings or clinical reports so that they may be communicated clearly. Technical jargon should be avoided as much as possible and clearly explained where its use is unavoidable. Abbreviations should also be kept to a minimum, particularly

those that are not standard. The background and hypotheses underlying the study, as well as its main conclusions, should be clearly explained. Titles and abstracts especially should be written in language that will be readily intelligible to any scientist.
Abbreviations: International Endodontic Journal adheres to the conventions outlined in Units, Symbols and Abbreviations: A Guide for Medical and Scientific Editors and Authors. When non-standard terms appearing 3 or more times in the manuscript are to be abbreviated, they should be written out completely in the text when first used with the abbreviation in parenthesis.

5.2. Structure

All manuscripts submitted to *International Endodontic Journal* should include Title Page, Abstract, Main Text, References and Acknowledgements, Tables, Figures and Figure Legends as appropriate

Title Page: The title page should bear: (i) Title, which should be concise as well as descriptive; (ii) Initial(s) and last (family) name of each author; (iii) Name and address of department, hospital or institution to which work should be attributed; (iv) Running title (no more than 30 letters and spaces); (v) No more than six keywords (in alphabetical order); (vi) Name, full postal address, telephone, fax number and e-mail address of author responsible for correspondence.

Abstract for Original Scientific Articles should be no more than 250 words giving details of what was done using the following structure:

• **Aim**: Give a clear statement of the main aim of the study and the main hypothesis tested, if any.

• **Methodology**: Describe the methods adopted including, as appropriate, the design of the study, the setting, entry requirements for subjects, use of materials, outcome measures and statistical tests.

• **Results**: Give the main results of the study, including the outcome of any statistical analysis.

• **Conclusions**: State the primary conclusions of the study and their implications. Suggest areas for further research, if appropriate.

Abstract for Review Articles should be non-structured of no more than 250 words giving details of what was done including the literature search strategy.

Abstract for Mini Review Articles should be non-structured of no more than 250 words, including a clear research question, details of the literature search strategy and clear conclusions.

Abstract for Case Reports should be no more than 250 words using the following structure:

• **Aim**: Give a clear statement of the main aim of the report and the clinical problem which is addressed.

• **Summary**: Describe the methods adopted including, as appropriate, the design of the study, the setting, entry requirements for subjects, use of materials, outcome measures and analysis if any.

• **Key learning points**: Provide up to 5 short, bullet-pointed statements to highlight the key messages of the report. All points must be fully justified by material presented in the report.

Abstract for Clinical Articles should be no more than 250 words using the following structure:

• **Aim:** Give a clear statement of the main aim of the report and the clinical problem which is addressed.

• **Methodology:** Describe the methods adopted.

• **Results:** Give the main results of the study.

• **Conclusions:** State the primary conclusions of the study.

Main Text of Original Scientific Article should include Introduction, Materials and Methods, Results, Discussion and Conclusion

Introduction: should be focused, outlining the historical or logical origins of the study and gaps in knowledge. Exhaustive literature reviews are not appropriate. It should close with the explicit statement of the specific aims of the investigation, or hypothesis to be tested.

Material and Methods: must contain sufficient detail such that, in combination with the references cited, all clinical trials and experiments reported can be fully reproduced.

(i) Clinical Trials should be reported using the CONSORT guidelines available at www.consort-statement.org. A CONSORT checklist and flow diagram (as a Figure) should also be included in the submission material.

(ii) Experimental Subjects: experimentation involving human subjects will only be published if such research has been conducted in full accordance with ethical principles, including the World Medical Association Declaration of Helsinki (version 2008) and the additional requirements, if any, of the country where the research has been carried out. Manuscripts must be accompanied by a statement that the experiments were undertaken with the understanding and written consent of each subject and according to the above mentioned principles. A statement regarding the fact that the study has been independently reviewed and approved by an ethical board should also be included. Editors reserve the right to reject papers if there are doubts as to whether appropriate procedures have been used.

When experimental animals are used the methods section must clearly indicate that adequate measures were taken to minimize pain or discomfort. Experiments should be carried out in accordance with the Guidelines laid down by the National Institute of Health (NIH) in the USA regarding the care and use of animals for experimental procedures or with the European Communities Council Directive of 24 November 1986 (86/609/EEC) and in accordance with local laws and regulations.

All studies using human or animal subjects should include an explicit statement in the Material and Methods section identifying the review and ethics committee approval for each study, if applicable. Editors reserve the right to reject papers if there is doubt as to whether appropriate procedures have been used.

(iii) Suppliers: Suppliers of materials should be named and their location (Company, town/city, state, country) included.

Results: should present the observations with minimal reference to earlier literature or to possible interpretations. Data should not be duplicated in Tables and Figures.

Discussion: may usefully start with a brief summary of the major findings, but repetition of parts of the abstract or of the results section should be avoided. The Discussion section should progress with a review of the methodology before discussing the results in light of previous work in the field. The Discussion should end with a brief conclusion and a comment on the potential clinical relevance of the findings. Statements and interpretation of the data should be appropriately supported by original references.
Conclusion: should contain a summary of the findings.
Main Text of Review Articles should be divided into Introduction, Review and Conclusions. The Introduction section should be focused to place the subject matter in context and to justify the need for the review. The Review section should be divided into logical sub-sections in order to improve readability and enhance understanding. Search strategies must be described and the use of state-of-the-art evidence-based systematic approaches is expected. The use of tabulated and illustrative material is encouraged. The Conclusion section should reach clear conclusions and/or recommendations on the basis of the evidence presented.
Main Text of Mini Review Articles should be divided into Introduction, Review and Conclusions. The Introduction section should briefly introduce the subject matter and justify the need and timeliness of the literature review. The Review section should be divided into logical sub-sections to enhance readability and understanding and may be supported by up to 5 tables and figures. Search strategies must be described and the use of state-of-the-art evidence-based systematic approaches is expected. The Conclusions section should present clear statements/recommendations and suggestions for further work. The manuscript, including references and figure legends should not normally exceed 4000 words.
Main Text of Clinical Reports and Clinical Articles should be divided into Introduction, Report, Discussion and Conclusion,. They should be well illustrated with clinical images, radiographs, diagrams and, where appropriate, supporting tables and graphs. However, all illustrations must be of the highest quality
Acknowledgements: *International Endodontic Journal* requires that all sources of institutional, private and corporate financial support for the work within the manuscript must be fully acknowledged, and any potential conflicts of interest noted. Grant or contribution numbers may be acknowledged, and principal grant holders should be listed. Acknowledgments should be brief and should not include thanks to anonymous referees and editors. See also above under Ethical Guidelines.

5.3. References

It is the policy of the Journal to encourage reference to the original papers rather than to literature reviews. Authors should therefore keep citations of reviews to the absolute minimum.

We recommend the use of a tool such as EndNote or Reference Manager for reference management and formatting. The EndNote reference style can be obtained upon request to the editorial office (iejeditor@cardiff.ac.uk). Reference Manager reference styles can be searched for here: www.refman.com/support/rmstyles.asp

In the text: single or double authors should be acknowledged together with the year of publication, e.g. (Pitt Ford & Roberts 1990). If more than two authors the first author followed by *et al.* is sufficient, e.g. (Tobias *et al.* 1991). If more than 1 paper is cited the references should be in year order and separated by "," e.g. (Pitt Ford & Roberts 1990, Tobias *et al.* 1991).

Reference list: All references should be brought together at the end of the paper in alphabetical order and should be in the following form.

(i) Names and initials of up to six authors. When there are seven or more, list the first three and add *et al.*

(ii)Year of publication in parentheses

(iii) Full title of paper followed by a full stop (.)

(iv) Title of journal in full (in italics)

(v) Volume number (bold) followed by a comma (,)

(vi) First and last pages

Examples of correct forms of reference follow:

Standard journal article

Bergenholtz G, Nagaoka S, Jontell M (1991) Class II antigen-expressing cells in experimentally induced pulpitis. *International Endodontic Journal* **24**, 8-14.

Corporate author

British Endodontic Society (1983) Guidelines for root canal treatment. *International Endodontic Journal* **16**, 192-5.

Journal supplement

Frumin AM, Nussbaum J, Esposito M (1979) Functional asplenia: demonstration of splenic activity by bone marrow scan (Abstract). *Blood* **54** (Suppl. 1), 26a.

Books and other monographs

Personal author(s)

Gutmann J, Harrison JW (1991) *Surgical Endodontics*, 1st edn Boston, MA, USA: Blackwell Scientific Publications.

Chapter in a book

Wesselink P (1990) Conventional root-canal therapy III: root filling. In: Harty FJ, ed. *Endodontics in Clinical Practice*, 3rd edn; pp. 186-223. London, UK: Butterworth.

Published proceedings paper

DuPont B (1974) Bone marrow transplantation in severe combined immunodeficiency with an unrelated MLC compatible donor. In: White HJ, Smith R, eds. Proceedings of the Third Annual Meeting of the International Society for Experimental Rematology; pp. 44-46. Houston, TX, USA: International Society for Experimental Hematology.

Agency publication

Ranofsky AL (1978) Surgical Operations in Short-Stay Hospitals: United States-1975. DHEW publication no. (PHS) 78-1785 (Vital and Health Statistics; Series 13; no. 34.) Hyattsville, MD, USA: National Centre for Health Statistics.8

Dissertation or thesis

Saunders EM (1988) In vitro and in vivo investigations into root-canal obturation using thermally softened gutta-percha techniques (PhD Thesis). Dundee, UK: University of Dundee.

URLs

Full reference details must be given along with the URL, i.e. authorship, year, title of document/report and URL. If this information is not available, the reference should be removed and only the web address cited in the text.

Smith A (1999) Select committee report into social care in the community [WWW document]. URL http://www.dhss.gov.uk/reports/report015285.html [accessed on 7 November 2003]

5.4. Tables, Figures and Figure Legends

Tables: Tables should be double-spaced with no vertical rulings, with a single bold ruling beneath the column titles. Units of measurements must be included in the column title.

Figures: All figures should be planned to fit within either 1 column width (8.0 cm), 1.5 column widths (13.0 cm) or 2 column widths (17.0 cm), and must be suitable for photocopy reproduction from the printed version of the manuscript. Lettering on figures should be in a clear, sans serif typeface (e.g. Helvetica); if possible, the same typeface should be used for all figures in a paper. After reduction for publication, upper-case text and numbers should be at least 1.5-2.0 mm high (10 point Helvetica). After reduction, symbols should be at least 2.0-3.0 mm high (10 point). All half-tone photographs should be submitted at final reproduction size. In general, multi-part figures should be arranged as they would appear in the final version. Reduction to the scale that will be used on the page is not necessary, but any special requirements (such as the separation distance of stereo pairs) should be clearly specified.

Unnecessary figures and parts (panels) of figures should be avoided: data presented in small tables or histograms, for instance, can generally be stated briefly in the text instead. Figures should not contain more than one panel unless the parts are logically connected; each panel of a multipart figure should be sized so that the whole figure can be reduced by the same amount and reproduced on the printed page at the smallest size at which essential details are visible.

Figures should be on a white background, and should avoid excessive boxing, unnecessary colour, shading and/or decorative effects (e.g. 3-dimensional skyscraper histograms) and highly pixelated computer drawings. The vertical axis of histograms should not be truncated to exaggerate small differences. The line spacing should be wide enough to remain clear on reduction to the minimum acceptable printed size.

Figures divided into parts should be labelled with a lower-case, boldface, roman letter, a, b, and so on, in the same typesize as used elsewhere in the figure. Lettering in figures should be in lower-case type, with the first letter capitalized. Units should have a single space between the number and the unit, and follow SI nomenclature or the nomenclature common to a particular field. Thousands should be separated by a thin space (1 000). Unusual units or abbreviations should be spelled out in full or defined in the legend. Scale bars should be used rather than magnification factors,

with the length of the bar defined in the legend rather than on the bar itself. In general, visual cues (on the figures themselves) are preferred to verbal explanations in the legend (e.g. broken line, open red triangles etc.)

Figure legends: Figure legends should begin with a brief title for the whole figure and continue with a short description of each panel and the symbols used; they should not contain any details of methods.
Permissions: If all or part of previously published illustrations are to be used, permission must be obtained from the copyright holder concerned. This is the responsibilty of the authors before submission.
Preparation of Electronic Figures for Publication: Although low quality images are adequate for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit EPS (lineart) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented programmes. Scans (TIFF only) should have a resolution of 300 dpi (halftone) or 600 to 1200 dpi (line drawings) in relation to the reproduction size (see below). EPS files should be saved with fonts embedded (and with a TIFF preview if possible). For scanned images, the scanning resolution (at final image size) should be as follows to ensure good reproduction: lineart: >600 dpi; half-tones (including gel photographs): >300 dpi; figures containing both halftone and line images: >600 dpi.

Further information can be obtained at Wiley Blackwell's guidelines for figures: http:/authorservices.wiley.com/bauthor/illustration.asp.

Check your electronic artwork before submitting it: http://authorservices.wiley.com/bauthor/eachecklist.asp.

5.5. Supporting Information

Publication in electronic formats has created opportunities for adding details or whole sections in the electronic version only. Authors need to work closely with the editors in developing or using such new publication formats.
Supporting information, such as data sets or additional figures or tables, that will not be published in the print edition of the journal, but which will be viewable via the online edition, can be submitted. It should be clearly stated at the time of submission that the supporting information is intended to be made available through the online edition. If the size or format of the supporting information is such that it cannot be accommodated on the journal's website, the author agrees to make the supporting information available free of charge on a permanent Web site, to which links will be set up from the journal's website. The author must advise Wiley Blackwell if the URL of the website where the supporting information is located changes. The content of the supporting information must not be altered after the paper has been accepted for publication.

The availability of supporting information should be indicated in the main manuscript by a paragraph, to appear after the References, headed 'Supporting Information' and

providing titles of figures, tables, etc. In order to protect reviewer anonymity, material posted on the authors Web site cannot be reviewed. The supporting information is an integral part of the article and will be reviewed accordingly.

Preparation of Supporting Information: Although provision of content through the web in any format is straightforward, supporting information is best provided either in web-ready form or in a form that can be conveniently converted into one of the standard web publishing formats:
• Simple word-processing files (.doc or .rtf) for text.
• PDF for more complex, layout-dependent text or page-based material. Acrobat files can be distilled from Postscript by the Publisher, if necessary.
• GIF or JPEG for still graphics. Graphics supplied as EPS or TIFF are also acceptable.
• MPEG or AVI for moving graphics.

Subsequent requests for changes are generally unacceptable, as for printed papers. A charge may be levied for this service.

Video Imaging: For the on-line version of the Journal the submission of illustrative video is encouraged. Authors proposing the use such media should consult with the Editor during manuscript preparation.

6. AFTER ACCEPTANCE

Upon acceptance of a paper for publication, the manuscript will be forwarded to the Production Editor who is responsible for the production of the journal.

6.1. Figures

Hard copies of all figures and tables are required when the manuscript is ready for publication. These will be requested by the Editor when required. Each Figure copy should be marked on the reverse with the figure number and the corresponding author's name.

6.2 Proof Corrections

The corresponding author will receive an email alert containing a link to a web site. A working email address must therefore be provided for the corresponding author. The proof can be downloaded as a PDF (portable document format) file from this site. Acrobat Reader will be required in order to read this file. This software can be downloaded (free of charge) from the following Web site: www.adobe.com/products/acrobat/readstep2.html. This will enable the file to be opened, read on screen, and printed out in order for any corrections to be added. Further instructions will be sent with the proof. Hard copy proofs will be posted if no e-mail address is available; in your absence, please arrange for a colleague to access your e-mail to retrieve the proofs. Proofs must be returned to the Production Editor within three days of receipt. As changes to proofs are costly, we ask that you only correct typesetting errors. Excessive changes made by the author in the proofs, excluding typesetting errors, will be charged separately. Other than in exceptional circumstances, all illustrations are retained by the publisher. Please note that the

author is responsible for all statements made in his work, including changes made by the copy editor.

6.3 Early Online Publication Prior to Print

International Endodontic Journal is covered by Wiley Blackwell's Early View service. Early View articles are complete full-text articles published online in advance of their publication in a printed issue. Early View articles are complete and final. They have been fully reviewed, revised and edited for publication, and the authors' final corrections have been incorporated. Because they are in final form, no changes can be made after online publication. The nature of Early View articles means that they do not yet have volume, issue or page numbers, so Early View articles cannot be cited in the traditional way. They are therefore given a Digital Object Identifier (DOI), which allows the article to be cited and tracked before it is allocated to an issue. After print publication, the DOI remains valid and can continue to be used to cite and access the article.

6.4 Online Production Tracking

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6.5 Author Material Archive Policy

Please note that unless specifically requested, Wiley Blackwell will dispose of all hardcopy or electronic material submitted two months after publication. If you require the return of any material submitted, please inform the editorial office or production editor as soon as possible.

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The corresponding author will be sent complimentary copies of the issue in which the paper is published (one copy per author).

6.7 Author Services

For more substantial information on the services provided for authors, please see Wiley Blackwell Author Services

6.8 Note to NIH Grantees: Pursuant to NIH mandate, Wiley Blackwell will post the accepted version of contributions authored by NIH grant-holders to PubMed Central upon acceptance. This accepted version will be made publicly available 12 months after publication. For further information, see www.wiley.com/go/nihmandate

7 Guidelines for reporting of DNA microarray data

The *International Endodontic Journal* gives authors notice that, with effect from 1st January 2011, submission to the *International Endodontic Journal* requires the reporting of microarray data to conform to the MIAME guidelines. After this date, submissions will be assessed according to MIAME standards. The complete current guidelines are available athttp://www.mged.org/Workgroups/MIAME/miame_2.0.html. Also, manuscripts will be published only after the complete data has been submitted into the public repositories, such as GEO (http://www.ncbi.nlm.nih.gov/geo/) or ArrayExpress (http://www.ebi.ac.uk/microarray/submissions_overview.html), in MIAME compliant format, with the data accession number (the identification number of the data set in the database) quoted in the manuscript. Both databases are committed to keeping the data private until the associated manuscript is published, if requested.

Prospective authors are also encouraged to search for previously published microarray data with relevance to their own data, and to report whether such data exists. Furthermore, they are encouraged to use the previously published data for qualitative and/or quantitative comparison with their own data, whenever suitable. To fully acknowledge the original work, an appropriate reference should be given not only to the database in question, but also to the original article in which the data was first published. This open approach will increase the availability and use of these large-scale data sets and improve the reporting and interpretation of the findings, and in increasing the comprehensive understanding of the physiology and pathology of endodontically related tissues and diseases, result eventually in better patient care.

ANEXO B – PARECER SUBSTANCIADO DO CEP

HOSPITAL UNIVERSITÁRIO
CLEMENTINO FRAGA FILHO
((HUCFF/ UFRJ))

PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: Avaliação do Desvio Apical após o Tratamento Endodôntico
Pesquisador: Bernardo Corrêa de
Almeida **Área Temática:**
Versão: 3
CAAE: 20585313.7.0000.5257
Instituição Proponente:UNIVERSIDADE FEDERAL DO RIO DE JANEIRO
Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer:
936.678 **Data da Relatoria:**
14/01/2015

Apresentação do Projeto:
Protocolo 183-13.Emenda recebida em 28.12.2014.
Foram solicitados as seguintes emendas
1- A avaliação do desvio apical nas amostras será realizado também através do uso da microtomografiacomputadorizada, conferindo maior precisão e fidelidade na obtenção dos resultados. Sendo anexado aos documentos o projeto com a alteração.

2- A aquisição das imagens microtomográficas será realizada no Laboratório de Instrumentação Nucleardo Instituto Alberto Luiz Coimbra de Pós-Graduação e Pesquisa de Engenharia na Universidade Federal do Rio de Janeiro. Sendo anexado aos documentos como declaração da Instituição co-participante.

Objetivo da Pesquisa: ver parecer
consubstanciado de 2/12/2013

HOSPITAL UNIVERSITÁRIO CLEMENTINO FRAGA FILHO ((HUCFF/ UFRJ))

Avaliação dos Riscos e Benefícios: ver parecer consubstanciado de 2/12/2013

Comentários e Considerações sobre a Pesquisa: ver parecer consubstanciado de 2/12/2013

Considerações sobre os Termos de apresentação obrigatória: ver parecer consubstanciado de 2/12/2013

Recomendaçõ:

sem recomendações

Conclusões ou Pendências e Lista de Inadequações:

Novo projeto com as alterações relativos a emenda solicitada bem como declaração da instituição coparticipante foram anexados em 28/12/2014

Situação do Parecer:

Aprovado

Necessita Apreciação da CONEP:

Não

Considerações Finais a critério do CEP:

1. De acordo com o item X.1.3.b, da Resolução CNS n.º 466/12, o pesquisador deverá apresentar relatóriossemestrais que permitam ao CEP acompanhar o desenvolvimento dos projetos.
2. Eventuais emendas (modificações) ao protocolo devem ser apresentadas, com justificativa, ao CEP, deforma clara e sucinta, identificando a parte do protocolo a ser modificada.

RIO DE JANEIRO, 22 de Janeiro de 2015

Assinado por:
Carlos Alberto Guimarães
(Coordenador)