ENDODONTIC RETREATMENT PRECEDED BY INTRARADICULAR METALLIC PIN REMOVAL: CASE REPORT

RETRATAMIENTO ENDODÓNTICO PRECEDIDO DE REMOCIÓN DE PINO METÁLICO INTRARRADICULAR: RELATO DE CASO

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ABSTRACT
Objective: The endodontic treatment has a high success rate, however technical, pathological or systemic factors can lead to failure. Front of this situation, the conventional retreatment should be considered as the first choice. The aim of this study is to present a clinical case of endodontic retreatment preceded by intraradicular metallic pin removal. Report case: A male patient, 27 years old, sought care due to the appearance of a fistula on the tooth 36, which had already submitted to endodontic treatment. The clinical examination revealed presence of resina restoration, showed a positive response to the vertical percussion, horizontal percussion and apical pressure tests in the referred tooth. Radiographic examination revealed coronary infiltration, partial filling in the ducts, periodontal ligament discontinuation, and extensive bone rarefaction in the furcation region and in the mesial and distal roots, besides a prefabricated pin in the distobuccal conduit. With prior consent of the proposed treatment plan and no impediment to the patient's systemic health, the non-surgical endodontic treatment was performed on tooth 36. Conclusion: The non-surgical endodontic retreatment is efficient for the maintenance of tooth function, and effective in the remission of signs and symptoms, being the preservation of great relevance for the follow-up of the repair in the lesions. Descriptors: Retreatment. Endodontics. Root canal preparation.

RESUMEN
Objetivo: el tratamiento endodóntico tiene una tasa de éxito elevada, pero factores técnicos, patológicos o factores sistémicos pueden llevar al fracaso. Ante esta situación el retratamiento convencional debe ser considerado como la primera elección. El objetivo de este trabajo es presentar un caso clínico de retratamiento endodóntico precedido de remoción de pino metálico intrarradicular. Relato de caso: el paciente del sexo masculino, de 27 años, buscó atención debido a la aparición de fístula en la región del diente 36 ya sometido a tratamiento endodóntico. En el examen clínico se observó la presencia de restauración de resina, una respuesta positiva a las pruebas de percusión vertical, percusión horizontal y presión apical en el diente referido. En el examen radiográfico periapical se verificó, infiltración coronaria, conductos parcialmente obturados, discontinuidad del ligamento periodontal, rarefacción ósea extensa en la región de furca y en las raíces mesial y distal, además de pino prefabricado en el conducto distovestibular. Por el consentimiento previo del plan de tratamiento propuesto y no existiendo impedimento en cuanto a la salud sistémica del paciente, se realizó el retratamiento endodóntico no quirúrgico del diente 36. Conclusión: el retratamiento endodóntico no quirúrgico es eficiente para el mantenimiento del diente en función, la efectividad en la remisión de los signos y síntomas, siendo la preservación de gran relevancia para acompañamiento de la reparación en las lesiones. Descriptores: Retratamiento. Endodoncia. Preparación del conducto radicular.

RESUMO
Objetivo: o tratamento endodôntico possui uma taxa de sucesso elevada, porém fatores técnicos, patológicos ou fatores sistêmicos podem levar ao insucesso. Diante dessa situação o retratamento convencional deve ser considerado como a primeira escolha. O objetivo deste trabalho é apresentar um caso clínico de retratamento endodôntico precedido de remoção de pino metálico intrarradicular. Relato de caso: paciente do sexo masculino, 27 anos, procurou atendimento devido ao aparecimento de fístula na região do dente 36 já submetido a tratamento endodôntico. No exame
clínico observou-se presença de restauração de resina, resposta positiva aos testes de percussão vertical, percussão horizontal e palpação apical no dente referido. No exame radiográfico periapical verificou-se falha na restauração, condutos parcialmente obturados, descontinuidade do ligamento periodontal, rarefação óssea extensa na região de furca e nas raízes mesial e distal, além de pino pré-fabricado no conduto disto-vestibular. Mediante consentimento prévio do plano de tratamento proposto e não existindo impedimento quanto à saúde sistêmica do paciente, realizou-se o retratamento endodôntico não cirúrgico do dente 36. **Conclusão:** o retratamento endodôntico não cirúrgico é eficiente para manutenção do dente em função, mostrando efetividade na remissão dos sinais e sintomas, sendo a preservação de grande relevância para acompanhamento do reparo nas lesões. **Descritores:** Retratamento. Endodontia. Preparo de canal radicular.

**Introduction**

The clinical diagnosis of pulp and periapical pathologies based on knowledge, expertise, semiological and radiographic data and especially on the clinical judgment of the dentist will allow the effective planning of the procedure, allowing a favorable prognosis of endodontic treatment.\(^{(1)}\)

Endodontic failure is usually due to technical and pathological factors or influenced by systemic factors.\(^{(2)}\) Studies show that the success of endodontic treatment is fundamentally related to the different stages of endodontic treatment: chemical-mechanical preparation, disinfection control and obturation of the root canals.\(^{(3)}\) The possible failures in some of these stages will lead to the failure of the endodontic treatment.

Torabinejad\(^{(4)}\) states that conventional endodontic retreatment should be the option of choice in cases of failure of endodontic therapy because it is an effective and conservative intervention. Thus the dental surgeon can obtain significant results when portraying the canal, without the necessity of surgical intervention. According to Friedman,\(^{(5)}\) conventional endodontic retreatment is extremely effective in resolving infections within the root canals, and is a procedure with satisfactory long-term results.\(^{(6)}\)

The prevention of future complications due to the maintenance of unsatisfactory endodontic treatment in a tooth that will have a fixed prosthesis with an intraradicular pin, requires immediate indication of root canal clearance and justifies the need for retreatment.\(^{(7)}\)

The objective of this study is to present a clinical case of endodontic retreatment preceded by intraradicular metallic pin removal.

**Case Report**

A 27-year-old male patient sought care at a post-graduate school and improvement in dentistry in Teresina, due to the appearance of a fistula in the region of tooth 36 already submitted to endodontic treatment. Pain at mastication was reported and in the clinical examination there was presence of resin restoration, positive response to tests of vertical percussion, horizontal percussion and apical pressure in the referred tooth. In the periapical radiographic examination (Image1) there was failure in the restoration, partially obturated ducts, discontinuity of the periodontal ligament, extensive bone rarefaction in the furca region and in the mesial and distal roots, in addition to a prefabricated pin in the distobuccal conduit. In the
anamnesis, the patient reported being under orthodontic treatment and had already undergone invasive dental treatment and was normorreactive.

The established pulpal diagnosis, according to the American Association of Endodontists (8), was previously treated tooth, which consists of a clinical diagnosis category that indicates that the tooth was treated endodontically and the channels filled with filling materials other than intracanal medications. The periapical diagnosis, also according to the American Association of Endodontists, (8) was chronic apical abscess, which is an inflammatory reaction to pulpal infection and necrosis characterized by gradual onset, little or no discomfort and an intermittent release of pus through associated fistula. Radiographically, there are typically signs of bone destruction.

With the prior consent of the proposed treatment plan and with no impediment to the patient’s systemic health, the non-surgical endodontic treatment of the tooth was performed 36.

Initially, after the antisepsis, anesthesia and complete removal of the resin restoration, the intracanal pin (Image 2) was removed using the ultrasonic tip E5 (Helse, Santa Rosa de Viterbo, Brazil) with ultrasound aid (The Gates Gliden (Dentsply-Maillefer, Ballaigues, Switzerland) n° 3 drills were used in the cervical third and the limes of the root canal were removed for the removal of the gutta percha in the root canals. type K (Dentsply-Maillefer, Ballaigues, Switzerland) n° 15 in the apical third (Figure 2). Due to the failure of the filling, it was not necessary to use solvents, because the gutta percha was easily removed with the use of these instruments associated to the irrigation solution of Labarraque, 2.5% sodium hypochlorite (Asfer, São Paulo, Brazil).

In the same session, odontometry was performed with the aid of the apical locator Propex • pixi ™ (Dentsply-Maillefer, Ballaigues, Switzerland), followed by radiographic examination. Then, for the mechanical chemical preparation phase, the foraminal debridement was performed with K-type (Dentsply-Maillefer, Ballaigues, Switzerland) No. 15 on all conduits followed by the use of Reciproc® reciprocating instruments (VDW, Munich, Germany) R40 in the distal and mesiolingual conduits and R25 in the buccal mesio. After the instrumentation and cleaning of the conduits, the EDTA 17% chelating solution (Formula & Action, São Paulo, Brazil) was shaken with the ultrasonic tip E1-Irrisonic (Helse, Santa Rosa de Viterbo, Brazil) for 10 seconds, followed (Asfer, São Paulo, Brazil), drying of the conduits with sterile absorbent paper tips (Maillefer / Dentsply, Switzerland), was followed for the application of Calen compares camphorated monochlorophenol - PMCC (SSWhite - Rio de Janeiro / RJ) as intracanal medication (MIC).

After one month of the first care, the second session was performed, in which the healing of the fistula and disappearance of the symptomatology reported in the initial consultation were observed. The MIC was removed, followed by agitation of the 17% EDTA chelating solution (Formula & Action, São Paulo, Brazil) with the Ultrasonic tip E1-Irrisonic (Helse, Santa Rosa de Viterbo, Brazil) for 10 seconds in 3 replicates with EDTA renewal every time. Final irrigation was performed with 2.5% sodium hypochlorite (Asfer, São Paulo, Brazil).

After drying the conduits with sterile absorbent paper tips (Maillefer / Dentsply, Switzerland), the obturation was followed using the cones R40 and R25 (VDW, Munich, Germany) plus XF cones (Maillefer / Dentsply, Switzerland), Sealer 26® endodontic cement (Maillefer / Dentsply, Switzerland) and the term compaction of the gutta percha by the Tagger hybrid technique, using the gut condensor (Maillefer /
Dentsply, Switzerland). For the provisional sealing, Vitrofill glass-ionomer cement (DFL, Rio de Janeiro, Brazil) was used (image 3).

After seven months postoperative radiographic control was favorable, evidencing repair of the apical lesion and in the furcation region through bone neoforation (Image 4).

**Figure 1**: Initial radiography.

**Figure 2**: Pin removed.

**Figure 3**: Final appearance after the obturation of the conduits.

**Figure 4**: Radiography of preservation, 7 months.

**Discussion**

Faced with a situation of endodontic failure, conventional retreatment should be considered as the first choice, with a success rate ranging from 65% to more than 80%. (5,9)

The indication is made when the patient has one or more of the following characteristics: fistula, edema in the region, palpation and percussion sensitivity, increased periodontal ligament space, previously non-existent radiolucent areas, chewing discomfort, dental mobility and / or progression of a root resorption. (10-11)

Thus, given the conditions presented in the present case, retreatment was the therapy chosen.
A condition for successful endodontic retreatment is proper cleaning of root canals, so special attention should be paid to the technique used to remove the obturator material, the most used being cements, pastes and gutta-percha cones. In retreatment we have to reach the actual working length and completely remove the obturator material, clean the root canal and the final obturation.\(^{(12)}\)

The prevalence of endodontic failure in crown-bearing teeth with intraradicular pins is high. In this way, numerous devices and devices were created to favor the removal of the intraradicular retainers and allow new access to the root canal.\(^{(7)}\) In order to avoid operative accidents during the removal maneuvers of the intraradicular retainers, such as perforations and dental fractures, adequate planning must be structured. In the present case, removal of the intracanal pin was effected effectively as an aid to the ultrasound and ultrasonic tip.

Some studies have shown that there is no difference between manual and mechanized instrument dismantling techniques, evidencing that the Protaper Universal® system had similar results in the removal of obturator material when compared to Hedströen, FlexMaster and Race® instruments, both in straight channels as in curved channels.\(^{(9)}\) The use of solvents such as eucalyptol and chloroform will aid in the dissolution of gutta-percha, reducing the time spent in the root canal.\(^{(12)}\)

When an inadequate obturation is observed on the radiograph where the gutta-percha cone is apparently free (released into the channel), the removal of the material is usually very easy and can be done with the appropriate decalibre Hedström files. In other cases, where the obturation is well compacted, in the cervical third one can use motorized devices, manual instruments or heated instruments. These instruments create a space in which the solvent is placed in order to solubilize the material found there; afterwards, we can use the Hedström or K files in apical feeling. With Hedström files, only penetration and traction movements are applied; and in the K-files penetration, right rotation and removal movements are performed.\(^{(11,13)}\) In this clinical case, it was decided to disengage with manual instruments (limes k), Gates Glidden and irrigation solution, in view of failure in which facilitated the removal step in the material without the need for solvents.

Passive Ultrasonic Irrigation (PUI) consists of the ultrasonic activation of a conventional endodontic instrument or a non-cutting instrument with a smaller diameter than the prepared channel, so that it has free movement without making contact with the dentinal walls.\(^{(14)}\) This technique has been used as an efficient method for the removal of soils and debris.\(^{(15)}\)

In one study, researchers found that in the apical third of the canals, both 2mm and 6mm at the apex, groups that used 17% EDTA assisted by passive ultrasonic activation obtained better cleaning scores than groups that used only EDTA without activation.\(^{(16)}\) In this perspective, the use of EDTA with ultrasound for removal of MIC and smearlayer was used in the present case.

The endodontic obturation can be performed with different techniques, however, studies have shown that gutta-percha, when in the plastic state, fills the root system more effectively, so thermoplastic techniques provide better apical sealing and a more homogeneous appearance. dense to the obturator mass, promoting better filling of the root canal.\(^{(17,18)}\) In the present report, the hybrid technique of Tagger was chosen, which allowed the condensation of gutta-percha heated efficiently. This technique consists in the realization of active lateral condensation only in the apical third, then using the compactors that have their limited action in the middle and
cervical third of the conduit, in order to obtain a three-dimensional obturation, without the undesirable extravasation of the obturator material.\(^{(19)}\)

**Conclusion**

In view of the reported case, it can be concluded that the surgical endodonticon retreatment is efficient to maintain the tooth in function, with effectiveness in the remission of the clinical and radiographic signs of contamination. Preservation is essential to evaluate treatment success.

**References**