International Journal of Advanced Engineering Research and Science (IJAERS)
Peer-Reviewed Journal
ISSN: 2349-6495(P) | 2456-1908(O)
Vol-8, Issue-5; May, 2021
Journal Home Page Available: https://ijaers.com/
Article DOI: https://dx.doi.org/10.22161/ijaers.85.47

Endodonic Intervention in Single Session on Patients with Need for Endodontic Treatment

Eduardo Fernandes Marques, Wellington Sousa Oliveira, Diego Araújo dos Santos, Isabela Cordeiro Reis, Edinaura Rios Cunha e Felipe Camargo Munhoz

Received: 29 Mar 2021;
Received in revised form:
26 Apr 2021;
Accepted: 20 May 2021;
Available online: 30 May 2021

Keywords— ***Endodontics, dentistry, single session.***

Abstract— *Endodontic treatments have evolved in order to prepare the root canal system to receive an airtight filling of this system and thus preserve the health of the periapical tissues and / or restore it, when affected by injuries. Such goals are achieved through obedience to an appropriate chemical-mechanical preparation of the root canals, followed by filling them. The aim of this study is to perform endodontic intervention in a single session in patients in need of endodontic treatment.Fifty patients were treated at the ITPAC / FAPAC - Porto Nacional multidisciplinary clinic, asymptomatic and in need of treatment or endodontic retreatment. In all cases, anesthesia was performed with 2% lidocaine, absolute isolation, irrigation with 2.5% sodium hypochlorite, preparation of the cervical third with the Logic 25/05 rotary system, confirmation of the working length and foraminal patency with locator foraminal Root Zx, instrumentation of the apical third with Logic 25/05 system, final irrigation with agitated 17% EDTA with 25 IRRS ultrasound insert (VDW Endo Ultrasonic Files, Endodontic Synergy, Munich, Germany) at a frequency of 30 kHz for 20 seconds, connected to a piezoelectric device.After complete chemical-mechanical preparation, the thermoplasticized filling was performed in a single session. Then, coronary rehabilitation with composite resin was performed. Proservations of 1, 3, 6 months were carried out to analyze the regression of the infectious process and repair of the apical third. In the immediate postoperative period, 15% of the patients had spontaneous pain, however the incidence of severe pain , flare-ups, was around 5%. At 6 months, all patients were asymptomatic and without fistulas, however, only 60% had complete resolution of the periapical radiolucent areas. Therefore, in the medium term, endodontic treatment in a single session provided 100% of clinical success, but reduced percentage of radiographic success.*

I. INTRODUCTION

The main objectives of endodontic treatment are the resolution of pulp or periapical inflammation. In order for these objectives to be achieved, the space occupied by the pulp tissue will undergo professional intervention. For the endodontic treatment to be properly performed, it is essential to have a three-dimensional knowledge of dental anatomy including the number of roots, number of channels, location of them, pulp cavity shape, in addition to the possible curvatures and anatomical singularities that can be found in different cases a be treated (Bergenholtz, 2016).Pineda and Kuttler (1972), stated that in order to unblock, prepare and fill the root canal correctly, it is necessary to know details of its internal morphology. On

the other hand, the performance of endodontic interventions without this knowledge can lead to failure and sometimes to the loss of the dental element.

The need to provide the student with the integral and interdisciplinary concept of the profession is imperative, aiming at the training of general practitioners able to prevent, diagnose, plan, predict, execute and evaluate integrated dental treatment plans (Martinho et al., 2017).

The integration of endodontics and oral rehabilitation aims to develop in the student the ability to integrate the knowledge and practice of his / her learning, carried out in the specific subjects previously taken. Thus, the knowledge, skills and attitudes already acquired in isolation should be gathered logically and sequentially ordered, in order to perform most dental clinical procedures, providing the patient with a favorable and more predictable prognosis (Brignardello-Petersen, 2017).

However, the repair of lesions with immediate canal filling, in just one session, is possible to be performed (Tanomaru et al., 2002). Segura-Egea et al. (2015), promoted a systematic review investigating the effectiveness and complications of patients treated endodontically in one visit and in multiple visits. Twelve studies were included in this review and concluded that there was no significant difference between the two therapies evaluated in terms of radiographic success.

Recognition of complications will greatly contribute to the quantity and quality of clinical work, as the best effort on the part of the faculty will be dedicated to those causes that, significantly, compromise the realization of the treatment plan initially proposed. This will result in the improvement of the teaching-learning binomial, as well as in the satisfaction of the student and the patient (Martinho et al., 2017).

In this context, the objective of this study is to perform endodontic intervention in a single session in patients in need of endodontic treatment.

II. MATERIAL AND METHODS

The study refers to a descriptive, quali-quantitative and longitudinal research to analyze the quality of endodontics performed in a single session.

Fifty patients were selected who needed endodontic treatment of both genders and aged between 18 and 59 years. Endodontic treatments were performed in a single session, with equipment that helps in the quality of our work (use of rotary motors, foraminal locator, digital x-ray), reducing the number of consultation sessions, which provided tooth disinfection, avoiding tooth loss. dental element and streamlined its oral rehabilitation, these patients underwent proservation which in this case is the radiographic follow-up after endodontic treatment to obtain the final result of this study.

Initially, anamnesis was performed, according to the form, intra and extra-oral clinical examination and periapical radiographic evaluation (use of radiographic positioner).

All of these procedures were performed at the dental clinic of FAPAC / ITPAC Porto.

The service protocol was performed as follows:

Initially, anamnesis, tactile inspection and periapical radiography of the dental element were performed, followed by anesthesia with Lidocaine 1: 200000 (Dentsply / Sirona, Ballaigues - Switzerland). Afterwards, tooth prophylaxis will be performed with a straight white AC brush (Microdont, Socorro - SP) and Herjos prophylaxis paste (Vigodent, Rio de Janeiro - RJ), caries removal with low rotation spherical drills (Dentsply / Maillefer, Ballaigues - Switzerland) and coronary opening with 1014 and 3082 drills (KG Sorensen, Barueri - SP).

The absolute isolation was done with a rubber sheet (Madeitex, São José dos Campos - SP), Ostby isolation arch (Prisma, São Paulo - SP) and various isolation clamps (KSK, Rio de Janeiro - RJ) disinfecting the operative field with 0.2% chlorhexidine (A Fórmula manipulation pharmacy, São Paulo-SP).

Initial exploration with K file # 10 or 15 (Dentsply / Sirona, Ballaigues - Switzerland) was carried out up to the apparent length of the tooth. Instrumentation technique to be performed will be with the Prodesign Logic 25/05 engine and rotary system (Easy, Belo Horizonte - Brazil), followed by the preparation of the cervical third with Prodesign Logic 25/05 files (Easy, Belo Horizonte - Brazil) towards the crown - apex respecting the anatomy of the canal, always maintaining a minimum distance of 5mm from the apical limit on the radiography and in curved channels until the beginning of the curvature. Next, dentistry was performed with Root ZX foraminal locator (J Morita, Kyoto - Japan), obtaining the actual tooth length. A foraminal patency was performed with the Prodesign Logic 25/01 rotary file (Easy, Belo Horizonte - Brazil) 1 mm beyond the actual tooth length, defined by an electronic foraminal locator. Patency check with file (10 or 15). Subsequently, a Prodesign Logic 25/05 file (Easy, Belo Horizonte - Brazil) will make the apical stop 1 mm below the actual length of the tooth, thus establishing the working length.

Throughout the instrumentation, irrigation was performed with 2.5% sodium hypochlorite (Manipulation Pharmacy - Formula and Action - São Paulo - SP), Lüer Slip 10 mL plastic syringe (Advantive, Nanchanc Jangxi - China) and disposable needle 25 x 0.55 (BD, Curitiba - PR). 30 mL of solution will be used per experimental unit. The needle will be inserted throughout the instrumentation process until it reaches 2 mm below the working length.

The channels, at the end of the preparation, were dried with capillary tips (Ultradent Products, Inc, South Jordan, Utah, USA) coupled to a high-powered sucker and with absorbent paper cones (Tanari, Manacapuru - AM).

The final irrigation was carried out with 3 mL of 17% EDTA (Pharmacy of manipulation - Formula and Action - São Paulo - SP). First, 1 mL of 17% EDTA was introduced, followed by ultrasonic vibration with a 25 IRRI S insert (VDW; Endo Ultrasonic Files, Endodontic Synergy, Munich, Germany) at a frequency of 30 kHz. The ultrasound insert was connected to a piezoelectric ultrasound operating at 30 kHz (CVDent 1000; CVD Vale, São José dos Campos, SP, Brazil), set at power level 3, over a period of 20s. This process was repeated 2 more times. After this process, irrigation was carried out with 5 mL of sodium hypochlorite (Farmácia Fórmula & Ação, São Paulo - SP. The channels were dried with capillary tips (Ultradent Products, Inc, South Jordan, Utah, USA) coupled to a sucker high power and with absorbent paper cones (Tanari, Manacapuru - AM).

The sealer that was used will be AH Plus (Dentsply / Sirona, Munich, Germany) and will be mixed according to the manufacturer's recommendations.

The channels were filled, in the same session, by the Continuous Condensation Wave technique (Buchanan, 1994) which follows the principles of the Schilder technique (1967) using the Touch'n Heat equipment. For this purpose, accessory M and FM cones (Tanari, Manacapuru - AM) were selected. These were calibrated using a calibrating endodontic ruler (Dentsply / Maillefer, Ballaigues - Switzerland) and adjusted to the working length. The Thermoplasticizer of the Touch'n Heat device performed cutting, plasticizing and condensation of the gutta percha within the channels, up to 11 mm, inside the root canal. This filling phase is called “Down Packing”. Subsequently, the “Back Fill” phase was performed with the insertion of plasticized gutta percha with the aid of Easy Pack (Easy, Belo Horizonte - Brazil).

Definitive restoration of composite resin or glass ionomer cement was performed after treatment and final radiography was performed with a radiographic positioner (Indusbello, Londrina - PR). The dental element was preserved in 1 month, 3 months, 6 months, analyzing the regression of pathology and symptoms.

The disposal of the materials used in this study was inserted in a hospital garbage bag (Azeplast Indústria e Comércio Ltda., Santa Cataria - Brazil), made according to ANVISA standards, after the completion of the laboratory procedures for this research. The bag of hospital waste, with biological material, was presented to the sector for the disposal of material with biological risk from ITPAC / FAPAC - Porto Nacional to be discarded, following the rules of ANVISA.

III. RESULTS AND DISCUSSION:

Endodontic treatment in a single session on teeth with furcation lesions of 50 patients is enabling the healing process of dental elements. Below is one of the clinical cases with 3-month proservation (Figure 01 - Initial radiography, figure 02 - Initial clinical examination (presence of Parúlide), figure 03 - Root canal filling in a single session, Figure 04 - Immediate restoration with composite resin, Figure 05 - Proservation for one week (absence of Parúlide) and Figure 06 - Proservation for 6 months.

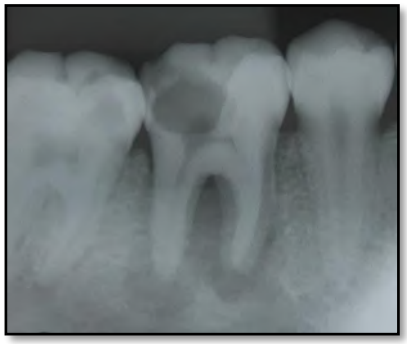

Fig.1: Initial radiography

Fig.2: Initial Clinical Examination (presence of Parúlide)

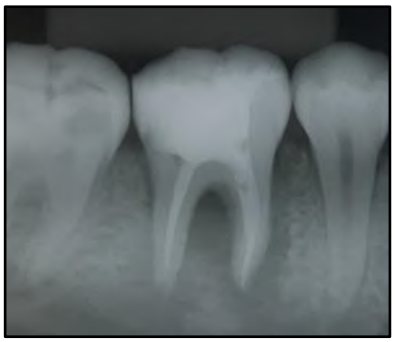

Fig.3: Root canal filling in a single session

Fig.4: Immediate restoration with compositeresin

Fig.5: Proservation of one week

Fig.6: 6-month proservation

Moreira et al (2017) performedA systematic search was performed in the electronic databases MEDLINE/PubMed and Cochrane Central Register of Controlled Trials until August 18, 2016, without language restriction. The eligibility criteria were as follows: (1) systematic reviews (SRs) and (2) a focus on endodontic techniques in single or multiple visits. The phases of eligibility and analysis of risk of bias were conducted by 2 or 3 independent and calibrated examiners, and a fourth examiner was consulted to resolve inconsistencies. Assessment of Multiple Systematic Reviews was used to evaluate the risk of bias of the included SRs, which were assessed according to the risk to develop knowledge and the existing knowledge gap.The main characteristics including healing rates, success, and clinical complications during and after endodontic treatment were extracted from the SRs. From the 20 SRs initially identified, 8 were included in the analysis. Of these, 6 SRs showed low to moderate risk of bias and were suitable as strong clinical evidence on the topic. Overall analysis indicated that single and multiple visits showed similar repair or success rates regardless of the precondition of the pulp and periapex. The apical periodontitis subgroup showed a slight positive trend toward a decreased incidence of postoperative complications and a higher effectiveness and efficiency for a single session.In this research it was possible to observe regression of the infectious process and symptomatology in the periods of preservation, corroborating with the study by De Deus et al., 2016.

Nagata et al., 2017 investigated the total number of visits required to conclude root canal treatments (RCTs) as well as the motivations associated to the choice of dentists practicing in low-income areas of Brazil.A total of 3,103 questionnaires were electronically and individually delivered to professionals of Salvador, Sergipe, and Alagoas (Brazil). The questionnaire encompassed sociodemographic data and questions regarding the number of sessions required to conclude RCT. Also, postoperative pain, professional qualification, the use of technological resources, and time for one-visit treatment were evaluated. Data were analyzed using Chi-square and Poisson regression analyses ($p < 0.05$). A total of 326 responses were obtained with higher prevalence of specialists in the field of endodontics (36.8%). Dentists reported greater preference for rotary instrumentation (Alagoas 54.6%, Aracaju 62.1%, and Salvador 83.5%), and most of the participants reported multiple visits to treat root canals with the necrotic pulp tissue associated or not to periapical radiolucency, excluding Salvador (53.8%). Dentists who graduated in public dental schools were less likely to perform RCT of necrotic teeth with periapical lesion in one clinical appointment ($p = 0.034$). The single-

session therapy was positively associated to continuing education attendance ($p = 0.004$) and to the occurrence of clinical complications ($p < 0.001$). Dentists who graduated in *lato sensu* programs were more likely to conclude RCT in less than 60 minutes ($p < 0.001$), although the occurrence of postoperative pain was more likely observed upon this scenario ($p < 0.001$).It was possible to conclude that despite the social inequalities in the analyzed area, professionals have been seeking for knowledge by means of continuing education programs and the implementation of technological resources in their clinical routine, although this fact has poorly influenced the acceleration of RCT. This study agrees with the work ofAlbuquerque et al., 2019.The present study found satisfactory results of treatment in a single session, the number of flare-ups was reduced and regression of symptomatic conditions and periradicular lesions.

REFERENCES

[1] Brignardello-Petersen R.J Insufficient evidence about outcomes of regenerative endodontic techniques.Am Dent Assoc. 2017 Dec;148(12):e187. doi: 10.1016/j.adaj.2017.08.041. Epub 2017 Sep 26.

[2] Bergenholtz G.Assessment of treatment failure in endodontic therapy.J Oral Rehabil. 2016 Oct;43(10):753-8. doi: 10.1111/joor.12423. Epub 2016 Aug 13.

[3] De-Deus G, Canabarro A. Strength of recommendation for single-visit root canal treatment: grading the body of the evidence using a patient-centered approach. Int Endod J 2016;50:251–9.

[4] Juliana Y Nagata , Fernanda B Fagundes , Eliseu A Münchow , Maria Tp Albuquerque Single-session Endodontic Treatment is a Reality in Low-income Areas in Brazil? J Contemp Dent Pract. 2020 Jun 1;21(6):657-665.

[5] Maria Stella Moreira, Anuar Sadat Neres-Santiago Anuar, Tamara Kerber Tedesco, Marcelo Dos Santos, Susana Morimoto.Endodontic Treatment in Single and Multiple Visits: An Overview of Systematic Reviews J Endod. 2017 Jun;43(6):864-870.

[6] Maria Tereza Pedrosa Albuquerque, Joice Velames Silva, David Junio Oliveira Poppe, Crislaine Santana Santos, Tainá Pires Santos, Eliseu Aldrigh Münchow, Juliana Yuri Nagata Endodontic Tendencies in a Very-Low-Income Population Area of Northeastern Brazil Int J Dent. 2019 Sep 5;2019:9543593.

[7] Martinho FC, Rabello DGD, Ferreira LL, Nascimento GG.Participation of endotoxin in root canal infections: A systematic review and meta-analysis.Eur J Dent. 2017 Jul-Sep;11(3):398-406. doi: 10.4103/ejd.ejd_84_17.

[8] Pineda F, Kuttler Y Mesiodistal and buccolingual roentgenographic investigation of 7,275 root canals Oral Surg Oral Med Oral Pathol. 1972 Jan;33(1):101-10.doi: 10.1016/0030-4220(72)90214-9.

[9] Segura-Egea JJ, Martín-González J, Castellanos-Cosano L.Endodontic medicine: connections between apical periodontitis and systemic diseases.Int Endod J. 2015 Oct;48(10):933-51. doi: 10.1111/iej.12507. Epub 2015 Aug 3.

[10] Tanomaru Filho M, Leonardo MR, da Silva LA. Effect of irrigating solution and calcium hydroxide root canal dressing on the repair of apical and periapical tissues of teeth with periapical lesion.J Endod. 2002 Apr;28(4):295-9. doi: 10.1097/00004770-200204000-00009.