conclusion that the lichen planus is a common disease in middle-aged women, in its reticular form and with preferential location in the mucosa. When there is burning sensation or pain, the use of medications (corticosteroids) relieves the symptoms. Additionally, the histopathologic exam of the lesion associated with its clinical observation is the more accurate method to establish the final diagnosis

The importance of Radiology for Forensic Dentistry in human identification

Martins, E.C.; Martins, E.C.; Caputo, I.G.C.; Inada, M.; Silva, R.F.; Daruge, E.

In current days, Radiology plays an important role in several fields, mainly in health areas. Since the discovery of x-rays, it has been used to visualize organs and/or structures where the man is not able reach. In Dentistry, the Radiology has also an important contribution in the diagnosis and human identification. Supported by the legislation (CFO - Law 5081/1966, Art. 6º and CFO - 63/2005, Art. 64), the dentist is entailed to use of x-ray equipments in dental offices for diagnostic purposes. Dental radiologists may also run imaging exams for Forensic Dentistry goals. In human identification, Radiology has an important applicability providing radiographs that will aid the forensic dentist to complete the cases with satisfactory information. Identification can be done by conventional, panoramic and digitalized radiographs. In human identification, radiographs from the skull, face or teeth can help estimating the age of children and adults. Post-mortem radiographs may reveal evidences of ante-mortem dental treatments that will help in human identification. The work of the forensic dentist becomes easier when a good documentation, especially complete dental radiological documentation, is available.

Eagle's syndrome: a report of one case treated with intraoral approach

Strujak, G.; Romanowiski, M.; Gomes, K.U.; Biron, C.; Gebert, A.O.; Carlini, J.L.

In 1937, Eagle described some cases of pharyngeal and cervicofacial pain caused by elongation of the styloid process (more than 25mm) or calcification of its ligaments. He believed that 4% of the population had the process elongated, and 4% of these patients had symptoms. The symptoms of this condition are vague pharyngeal pain, cervicofacial pain, foreign body sensation in the pharynx, dysphasia, pain on head movements, irradiated pain on the temporomandibular joint and superior limb, earache, headache and vertigo. The variations of these symptoms are attributed to the variations of styloid process length and position, made by adjacent tissues fibrosis for infection, fracture or surgery in the styloid process region. Diagnosis may be difficult with symptom variation. The purpose of this work is present the case of a 39-year-old female patient, who came to our service complaining of pain on the tonsil fossa, on the head movements, on swallow and on opening the mouth, this symptoms irradiated to the ear region, and foreign body sensation on the pharynx. The processes are seen on the panoramic radiograph at both sides. Tenderness to palpation was elicited bilaterally in the tonsil fossa. Styloidectomy was made bilaterally with an intraoral approach. After surgery, the patient had breath complications, needed medication and mechanical ventilation. Seven days later, the patient shown limitation on mouth opening, pain on swallowing and was asked to go to an otolaryngologist because of nose refluxing. Within 30 days, there was an improvement on mouth opening and symptom resolution. The patient is still being followed up.

Conscious sedation with nitrous oxide

Carmo, C.H.; Tobouti, P.L.; Laranjeira, A.P.J.; Tanaka, C.E.; Martins, L.P.

Conscious sedation with nitrous oxide and oxygen basically aims to reduce the anxiety of the patient, thus increasing his/her pain threshold. It is a state of depression of the conscience in which the patient can keep the airways functioning independently and properly and can answer to physical stimuli and verbal command. In contrast with drug-induced anxiety control, which demands certain caution, requiring evaluation of the physical and psychological state of the patient, conscious sedation with nitrous oxide has rapid absorption and elimination, facilitating the control of its effect and allowing the patient to perform any activity immediately after the treatment. The nitrous oxide has little effect on the cardiovascular and respiratory systems, mainly because of its low power, hindering a deeper anesthesia. Therefore, the nitrous oxide has fast induction and recovery due to its blood/gas partition coefficient. Conscious sedation with N_2O/O_2 is contraindicated for patients with blockage of superior airways, psychiatric problems, obstructive chronic pulmonary disease, asthma, etc. The administration of nitrous oxide is regulated by the dentist until reaching the ideal concentration for the patient. The technique of conscious sedation does not eliminate the use of local anesthetics, but rather the combination of the two methods is efficient. The use of conscious sedation with nitrous oxide and oxygen has increased among skilled professionals throughout the country due to its high safety margin and benefits for both the patients and the professionals.

Endodontics

Analysis of the sealing capacity of apical plugs prepared with gray MTA Angelus®, CPM® and MBPc cements

Fidelis, N.S.; Orosco, F.A.; Bramante, C.M.; Garcia, R.B.; Bernardineli, N.; Bortolo, M.V.; Moraes, I.G.

The purpose of this study was to evaluate the sealing capacity of apical plugs prepared with gray MTA Angelus®, CPM® and MBPc cements. Ninety-eight human single-rooted teeth were first hand instrumented in a crown-down direction, then prepared with Gates-Glidden drills (from #5 to #1) and finally with #50 to #90 K-files. The #1 Gates-Glidden drills and all files passed 1 mm beyond the apical foramen. The external surface of the teeth was rendered waterproof and the teeth were assigned to 3 groups (n=30), according to the materials used in apical plug preparation, as follows: Group 1- gray MTA Angelus®; Group 2- CPM®, Group 3- MBPc. Eight teeth served as positive and negative controls, in which apical plugs were not prepared. The sealing capacity was analyzed by the assessment of 2% Rhodamine B dye leakage, after immersion of the teeth for 48 hours at 37ºC. Kruskal-Wallis and Dunn's tests were used for statistical analysis ($p<0.05$). The results showed that, comparing the sealing capacity of the tested materials, MBPc presented statistically significant better results than the other cements.

Is it necessary the use of matrix in perforations treated with MTA?

Assumpção, T.S.; Moraes, I.G.; Bernadineli, N.; Garcia, R.B.; Broon, N.J.; Bramante, A.S.; Bramante, C.M.

Among the different types of treatments for tooth perforations, is their sealing with calcium hydroxide and, more recently, mineral trioxide aggregate (MTA). The aim of the present study was to show the importance of matrix use when the perforation is sealed with MTA and to describe the technique for this preparation. MTA insertion should be carefully done not to extrude to the periodontal space because it could impair the repair process. Matrix preparation is important to prevent this occurrence. This matrix can be fabricated from calcium hydroxide or calcium sulfate, which are inserted via perforation, for further insertion of MTA.

Treatment option for avulsed permanent teeth

Tolentino, L.S.; Fracasso,M.L.C.; Pavan, N.N.; Boselli, G.; Tolentino, E.S.; Queiroz, A.S.

Dental avulsion is a complex injury that affects the pulp tissue, periodontal ligament and alveolar bone. It is more frequent in children aged 7 to 11 years. The prognostic is directly related with the extra-alveolar time and there is a consensus regarding the fact that the shorter the period (<30 minutes), the greater the possibility of pulp revascularization and periodontal ligament fiber reinsertion. Likewise, the need of maintaining the avulsed tooth in an adequate storage medium is consensual. This work reports a case of replantation of an avulsed maxillary right central incisor, which was rendered complex because the clinical attendance was undertaken 48 hours after the injury and the avulsed tooth was kept dry by the patient, a 10-year-old male child. The dental care was provided at the emergency service of the Dental Clinic of UEM-Pr. The radiographic examination showed integrity of the alveolar wall. The tooth was secured by its crown, coronal access was prepared and the root canal was filled with a calcium hydroxide and propyleneglycol paste because tooth had open apex. The patient received local anesthetics, the blood clot was removed and the alveolus was prepared for replantation. After that, a rigid retention was placed for 7 days and postoperative medication was prescribed. Eight sessions for changes of the calcium hydroxide-based dressing were undertaken during 12 months, followed by the definitive root canal filling. After 18 months, the tooth presents a normal appearance and the radiographic examination revealed a subtle alteration in the apical root third. It may be concluded that, although the initial conditions indicated an unfavorable prognostic and are contraindicated in the scientific literature, a considerable benefit for the patient was achieved, as the treatment allowed the reintegration of the patient to his social life, as well as the maintenance of the growth and face development.

Evaluation of physicochemical properties of retrograde filling sealers containing mineral trioxide aggregate and an experimental epoxy sealer

Vivan, R.R.; Vasconcelos, B.C.; Bramante, C.M.; Garcia, R.B.; Bernardineli, N.; Moraes, I.G.

This study evaluated some physicochemical properties of different retrograde filling sealers containing mineral trioxide aggregate (MTA) and an experimental epoxy sealer. The cements comprised ProRoot MTA, gray MTA-Angelus®, white MTA-Angelus®,

C.P.M., an experimental MTA and MBPc (epoxy). Evaluation of pH and release of calcium ions was performed with aid of polyethylene tubes. The tubes were filled with the sealers and immediately immersed in test tubes containing deionized water. Evaluations were performed at 3, 24, 72 and 168 hours. The pH was calculated using a pH meter and the calcium ion release was assessed by atomic absorption spectrophotometry. The tests used for evaluation of the physicochemical properties followed the ADA's #57 specification, except for the setting time, which included utilization of a Gilmore needle. The results demonstrated that all tested sealers presented alkaline pH and were able to release similar calcium ion contents. Concerning the setting time, sealers fabricated by the company Angelus presented the shortest periods. With regard to solubility, all sealers had values close to 1.0%. In conclusion, according to the pH and considering the analyzed time points, there was statistically significant difference only between the 24- and 72-hour periods. In relation to calcium ion release, there was a decrease at the 24-hour period, with increase in the other periods and statistically significant difference in all time points. MBPc presented the largest setting time. With respect to the solubility, there was statistically significant difference between MBPc and the MTA-containing cements.

An in vitro evaluation of dye leakage of three temporary restorative materials

Melani, A.C.F.; Corrêa, C.Q.A.; Bombana, A.C.; Pereira, P.Z.; Zárate, C.B.R.

The aim of this work was to evaluate in vitro dye leakage of three temporary restorative materials in root canals between sessions. Thirty extracted human mandibular molars were selected and received MOD cavity preparations and coronal access. The cavities were cleaned, sealed with cotton balls to protect the canal entrance and received a layer of gutta-percha, leaving a space of 4 mm between the gutta-percha and the cavosurface angle, for further placement of the other materials. The teeth were randomly assigned to three groups: Group1: Gutta-percha + Coltosol®+ Vidrion R®; Group 2: Gutta-percha + Coltosol® + Fill Magic®; Group 3: Gutta-percha + Coltosol® + IRM®. Each material was inserted in a thickness of 2 mm. The specimens were rendered completely waterproof with nail polish, leaving a 2-3 mm window around the MOD cavity. The teeth were then incubated at 37ºC and 100% humidity for 24 hours. Thereafter, the specimens were placed in 0.5% mehtylene blue dye solution at pH 7.2 for 48 hours. After removal of excess dye, the teeth were cut on the buccal and lingual surfaces. To determine the leakage area and the total tooth area, all the specimens were photographed with a digital camera, the images were entered in the AutoCAD (R14) software and the values were converted into percentage. In a decreasing order of leakage, the materials are arranged as follows: Fill Magic®, Vidrion R® and IRM®. The Kruskal-Wallis test revealed significant differences at 5% among the materials. It may be concluded that Fill Magic® resin showed the best performance to restore temporarily endodontically treated teeth.

Horizontal fractures: diagnosis and treatment

Miranda, J.T.; Tolentino, L.S.; Yamamoto, K.; Boselli, G.; Alves, M.L.M.; Endo, M.S.; Hidalgo, M.M.

Horizontal root fractures, also known as intra-alveolar root fractures, represent hard structure disruption from the root that becomes separated into a coronal and an apical fragment. Although fractures can occur in all parts of the root, the middle third is the most affected. The aim of this study was to demonstrate, by means of three case reports, the sequence of procedures to be adopted in case of horizontal root fracture. In the first case, surveillance was the treatment approach of choice. In the second case, the coronal fragment was treated endodontically, while in the third case, the endodontic treatment was started in both fragments, but only the cervical portion was filled with gutta-percha because it was dislocated. Over time, it was observed radiographically normal conditions and absence of adverse clinical signals and symptoms with a good prognosis, which were reached due to the correct diagnosis and treatment.

SEM analysis of root-end preparation using two ultrasonic tips

Borgo, M.; Torres, M.; Bernardineli, N.; Garcia, R.B.; Moraes, I.G.; Bramante, C.M.

The purpose of this study was to evaluate the regularity of root-end preparations performed with two types of ultrasonic tips. For such purpose, 18 mandibular premolars with one root canal were selected and apicoectomized. After this, diamond and stainless steel tips and the association of both were used for preparation of the root-end cavities. Clinical and SEM analyses showed smoother walls with the use of stainless steel tips. The association of both tips did not change the quality of the preparation.

Bacterial leakage versus dye leakage in obturated root canals using RSA and Grossman sealers

Zapata, R.O.; Abarca, D.M.; Bramante, C.M.

The aim of this study was to compare in vitro bacterial and dye leakage using cold lateral condensation and Grossman (Endofill) and Roeko seal automix (RSA) sealers. One hundred and one single-rooted teeth were used. 45 roots were used in the dye leakage test using black Indian ink for 21 days, 15 roots were used as control (no sealer). For bacterial leakage test, 56 roots were used. *Enterococcus faecalis* ATCC 29212 and the Bilis Esculin medium were used to evaluate bacterial leakage for 21 days, 3 roots being used as negative controls and 3 roots as positive controls. Statistical analysis revealed significant differences between the sealers and between the tests. RSA sealer leaked significantly less than the Grossman sealer in both tests ($p<0.01$). The bacterial test was more effective to show the leakage ($p<0.01$). In conclusion, root canal sealers are susceptible to coronal leakage. No relation could be observed between the results obtained with both two tests.

Treatment of external root resorption by employing calcium hydroxide and MTA: a case report

Rivas, V.E.Z.; Nishiyama, C.K.; Moraes, F.G.; Hussne, R.P.

One of the causes of external root resorption is the presence of an impacted tooth adjacent to a permanent one. Third molars are the teeth with the highest prevalence of impaction, followed by maxillary canines. To cease the resorption process, an interdisciplinary treatment approach is need. It is aiming at eliminating the cause by orthodontic movement or extraction of the impacted tooth, in addition to altering the conditions that favor the clastic action, with intracanal dressing changes. A 15-year old patient with a pre-foramen fissure was referred to the Endodontic service of H.R.A.C. for evaluation of tooth 21, which presented an external resorption on the lateral root surface, caused by impaction of tooth 23. The endodontic treatment started with periodical changes of calcium hydroxide dressings, every 60 days, for 2 ½ years, until a repair process was observed. During this period, orthodontic traction was carried out for tooth 23, which took about 3 months to erupt and 6 months to be in occlusion. Filling was performed with mineral trioxide aggregated. Case follow up was accomplished every 6 months, demonstrating a complete repair of periapical tissues and the recovery of tooth 21, thus confirming the success of the therapy employed.

In vivo assessment of the antimicrobial action of 1% sodium hypochlorite, 2% chlorhexidine and 10% castor oil detergent as endodontic irrigants

Siqueira, D.C.R.; Torres, S.A.; Bernardineli, N.

The objective of this study was to evaluate in vivo the antimicrobial activity of 1% sodium hypochlorite, 2% chlorhexidine and 10% castor oil detergent in 18 root canals of human anterior teeth whit pulp necrosis and periapical lesion. After antiseptic access surgery, the first microbiological sample was taken with four sterile absorbent paper points. Instrumentation was performed with K-files using 1.8 mL of the irrigants and the second microbiological sample was taken. The third sample collection was made 72 h after biomechanical preparation. The samples were transported on PBS solution, submitted to serial decimal dilution, streaked in plates with Tryptic Soy Agar, and incubated in aerobic and anaerobic conditions. The number of colony-forming units (cfu) was counted after incubation periods. According to the studied sample, the applied methodology and the results obtained, it may be concluded that all irrigants showed significant numerical reduction after biochemical preparation and an increase in number of microorganisms after 72 hours. The biochemical preparation was not able to prevent bacterial recolonization. After 72 hours, 2% chlorhexidine and 10% castor oil were more effective than 1% sodium hypochlorite.

The importance of the differential diagnosis in paraendodontic surgery

Néspoli, F.G.; Moraes, I.G.; Victorino, F.R.; Bernardes, R.A.; Bernardinelli, N.; Camargo, E.J.; Baldi, J.V.

Paraendodontic surgery aims to solve complications resulting from root canal treatment or intimately related with the periapical region. A 55-year-old Caucasian patient was referred to the Endodontic Clinic of the School of Dentistry of Bauru to be submitted to a paraendodontic surgery in the region of tooth 21 with presumptive diagnosis of inflammatory radicular cyst. However, the periapical radiographic examination of tooth 21 by Clark's localization technique and total occlusal radiograph of the maxilla, it was observed the preservation of the apical periodontal space of the affected tooth and presence of intact lamina dura, with suggestive diagnosis of residual cyst. The paraendodontic surgery was performed with buccal access in the region of teeth 21 and 23 and total flap elevation. After removal of the

bone plate and cyst enucleation, it was observed the absence of involvement of the root apexes of the adjacent teeth with the surgical bone wound, thus corroborating the radiographic findings. The piece was sent for histopathological analysis, confirming the diagnosis of residual cyst. This case report demonstrates the importance of the correct interpretation of the signs and symptoms disclosed in the clinical evaluation and in the complementary imaging exams for the preservation of teeth and prosthetic pieces without the accomplishment of unnecessary surgical interventions.

Corrective paraendodontic surgery

Xavier, B.R.A.; Portilho, C.D.M.; Junior, J.R.C.; Arruda, M.; Rangel, A.L.

The paraendodontic surgery comprehends several procedures, among which the most important is the resolution of failures or accidents occurred during conventional endodontic treatment. The surgical procedures should be scrupulously indicated. Only after eliminating all possibilities of conventional endodontic treatment, surgery should be considered as an option. This case describes a surgical correction by apicoectomy in a tooth that had already been submitted to a failed paraendodontic surgery. A 44-year-old patient came to the Clinic of Specialization in Endodontics of FO/UFG, presenting with gingival fenestration in the apical third of the maxillary right incisor, partially exposing the root apex and the retrofilling material. After radiographic examination, the root canal was retreated and a new surgery was performed. Initially, a flap was elevated, with sulcular incision and oblique relaxing incision at the region of the canine on the same side, the bone wound was enlarged for better visualization of the root apex, followed by apicoectomy with removal of approximately 3mm of the root, which was curetted. The soft tissue surrounding the root was removed for histopathological analysis. Retrofilling was made with MTA and hydroxide of calcium. Due to the gingival fenestration, a bovine collagen biological membrane was used, thus avoiding penetration of soft tissue into the site at which new bone formation should occur, followed by repositioning of the flap and suture. The histopathological analysis revealed a fibrotic scar. One month after surgery, the gingival tissue was healed, without fenestration. Three- and six-month radiographic follow up revealed the occurrence of bone healing.

Root-end fracture during retropreparation using ultrasonic instruments. A scanning electron microscopic analysis

Bortolo, M.V.; Urra, C.; Garcia, R.B.; Moraes, I.G.; Bernardinelli, N.; Fidelis, N.S.; Bramante, C.M.

The purpose of this study was to use a protocol to evaluate, in vitro, the occurrence of root-end fracture during retropreparation using ultrasonic instruments. Twenty palatal roots of human maxillary molars were selected and impressions were taken after the apicoectomy and after the retropreparation. The roots were then assigned to two groups according to the type of root-end preparation: Group 1-performed with smooth retrotips-S12/90 (Satelec, Merignac, France) and Group 2-performed with diamond-coated retrotips-S12/90D (Satelec, Merignac, France). The replicas and the roots were coded and prepared for analysis under scanning electron microscopy (SEM). They were examined, recording the incidence, extent and amount of fractures after each procedure. There were more fractures in Group 1 than in Group 2. Also, there were more fractures on the roots than on the replicas, probably, decurrently of the process of metallization, necessary for preparation for SEM analysis.

Bleaching of endodontically treated teeth with led-laser system: case report

Troiano, M.; Nagano, R.; Oliveira, A.; Floriam, L.J.; Marchesan, M.

This study reports a case of dental trauma with coronal fracture followed by endodontic treatment of the maxillary right and left central incisors (11/21) in a 13-year-old patient who presented with darkening of the tooth remnant but not of the attached fragments. In order to reestablish esthetics after root canal treatment, bleaching was performed with red 35% hydrogen peroxide associated with a led-laser system. Therefore, 3 mm-thick intracanal barriers were placed at the root canal entrance at the cementoenamel junction with zinc phosphate cement in order to avoid gas penetration from the oxi-redox reaction of bleaching product. The led-laser system used to photoactivate this process had a central diode laser (790 nm, 40 mW) and 8 surrounding leds (567 nm, 57 mW). The process was repeated 3 times and the zinc phosphate barriers were replaced, as the literature suggests that leakage increases after this period. Fifteen days after bleaching, root canals were prepared to receive glass ionomer posts cemented with resin-based cement and the definitive crown was placed with composite resin. The advantage of using the led-laser system in dental bleaching is that it allows the gel to be placed only at the darkened portion of the crown while with conventional whitening the entire surface is affected. In this case, the original color of the crown remnant was recovered and harmony with the attached fragments was reestablished.

Pulpectomy in teeth with pulp necrosis: single- or multiple-session treatment?

Pimentel, L.B.; Fraga, S.C.; Garcia, R.B.; Yamashita, J.C.

The literature is divided in two treatment protocols. The results of some studies involving biomechanical preparation, intracanal medication and, later obturation have shown that there are no significant differences in the obtained results from those reached with the single-visit approach. However, it has been demonstrated that biomechanical preparation alone is not sufficient to remove the microbiota of root canals. The microorganisms persist inside the dentinal tubules and in the periapical region in the form of biofilms. Therefore, the use interappointment intracanal medication may increase the success rate in cases of pulpectomy in teeth with pulp necrosis and periapical lesion.

SEM evaluation of root surface after chemopreparation with different substances

Santin, J.; Campos, G.R.; Gonçalves, F.R.; Silva, D.P.; Silva M.C.P.

This study evaluated, by scanning electron microscopy (SEM), the influence of chemical solutions used in the chemomechanical preparation of root canals on dentinal structure. Eight bovine teeth had their crowns removed at the cervical region and the roots sectioned longitudinally, being standardized in 10 mm, having the cementoenamel junction as a reference. The fragments were treated with 0.5%, 1% and 2.5% sodium hypochlorite (NaOCl), 1% NaOCl + Endo-PTC, 2.5% NaOCl + Endo-PTC, and 2% chlorhexidine gel, and were thereafter immersed in 17% EDTA for 3 minutes. The control group was maintained in distilled water for 20 minutes. The specimens were then submitted to SEM analysis at 500x and 1500x magnifications. The groups treated with 2% chlorhexidine gel and distilled water presented with a large inter and peritubular dentin surface, with few and small-diameter dentinal tubules. The teeth treated with 0.5% and 1% NaOCl, and 1% NaOCl + Endo-PTC presented with a smaller inter and peritubular dentin surface, with dentinal tubules with a larger diameter and in larger number, in addition to the presence of small depressions. In the groups treated with 2.5% and 5.25% NaOCl, and 2.5% NaOCl + Endo-PTC, the dentin surface was heavily altered presenting a smaller area of inter and peritubular, large-sized tubules and depressions throughout the dentin surface. According to the employed methodology and the obtained results it may be concluded that the use of NaOCl in the tested concentrations and associations with Endo-PTC was able to cause more alterations on dentin morphology by increasing the number and diameter of exposed dentinal tubules in comparison to chlorhexidine gel and distilled water.

In vitro evaluation of the influence of sodium hypochlorite and EndoPTC in the adhesion of Rely X resin cement

Gonçalves, F.R.; Silva, D.P.; Venâncio, J.S.; Silva, M.C.P.; Campos, G.R.

Biomechanical preparation of the root canal system is a very important step to the success of the endodontic treatment. The aim of this study was to evaluate, in vitro, the influence of chemical substances used in the chemomechanical preparation on the bond strength of Rely X resin-based cement to root dentin. 55 bovine teeth had their crowns removed at the cervical region and the roots sectioned longitudinally, being standardized in 10 mm, having the cementoenamel junction as a reference. Next, the specimens were embedded in autopolymerizing resin blocks and were treated as follows: 1% sodium hypochlorite (NaOCl) (Group 1), 2.5% NaOCl (Group 2), 1% NaOCl + Endo PTC (Group 3), 2.5% NaOCl + Endo PTC (Group 4) and distilled water (Group 5), for a period of 20 min. Thereafter, all specimens were immersed in 17% EDTA for 3 min. One specimen of each group was submitted to SEM analysis for evaluation of the surface. For the tensile bond strength test, the specimens were etched with 37% phosphoric acid for 15 seconds, Single bond adhesive system was applied followed by Rely X resin-based cement. Bond strength means (in kgf) were as follows: G1(12.39);G2(13.75);G3(10.11);G4(13.42) and G5(5.68). The SEM analysis showed that groups 1, 2, 3 and 4 presented a larger number of open dentinal tubules with greater diameter, extensive area of depressions on the surface and less amount of intertubular dentin, in comparison to the control group (lesser number of exposed dentinal tubules). The associations of chemical substances did not affect the bond strength of the resin-based cement to the root dentin in comparison to the groups treated with sodium hypochlorite.

Radiographic evaluation of root canal ramifications before and after the endodontic treatment performed by postgraduate students from FOP-UNICAMP

Pereira, M.V.S.; Montagner, F.; Quadros, I.; Gomes, B.P.F.A.

The aim of this work was to evaluate, by means of radiography, the frequency of root canal ramifications before and after the endodontic treatment performed by postgraduate students. Eight hundred and one cases were selected from 1500 endodontic treatments performed between 1995 and 2002. The radiographic

evaluation aimed to determine the frequency and the classification of root canal ramifications, such as lateral canals, recurrent canals, collateral canals, inter-radicular canals and apical deltas. Lateral canals (4.3%), apical deltas (3.6%) and interradicular canals (0.25%) were the most frequently found ramifications. The greater frequency of lateral canals was found in the maxillary first molars (0.74%) and in the maxillary central incisors (0.49%). The greater frequency of apical deltas was in the mandibular first molars (0.87%). Mandibular first molars presented 0.12% of the inter-radicular canals. Recurrent and collateral canals were not found in the examined teeth. It was concluded that molars are the teeth with the greatest frequency of radiographically detected ramifications. The presence of such ramifications emphasizes the need of a proper chemomechanical preparation, followed by an adequate root canal filling, in order to seal the ramifications.

Clinical complications due to the lack of knowledge of root canal internal anatomy of the root canals: case report

Fontes, T.S.; Pereira, M.V.S.; Lyon, L.A.; Silveira, A.M.V.

The knowledge of internal dental morphology is essential for the correct execution of the root canal disinfection and shaping. Several factors can make the treatment fail, such as fracture of instruments in the root canal and perforations. Fracture of endodontic instruments can be an obstacle to the treatment progression, or even pose risk to treatment completion, such as in cases where root perforation establishes an artificial communication between the pulp chamber or root canals and the periapical tissues. This event is usually due to the lack of knowledge of dental anatomy. The analysis of the pulp chamber is complex because the, using the available resources, the endodontist should interpret the image of a three-dimensional structure in only one dimension. Therefore, deep knowledge of the internal of tooth anatomy is extremely important to reduce the incidence of failures that could lead to tooth loss. Failure of the endodontic treatment frequently represents the lack of observation in one of the initial operative steps. These situations are illustrated by the presentation of the cases of two endodontic instruments fractured inside the root canal and root perforation that induced treatment failure with consequent tooth loss.

Enucleation of apical periodontal cyst with apicoectomy: case report

Davalos, P.M.E.; Venâncio, C.A.B.; Corotti, M.

It is acknowledged that the endodontic treatment has advanced over time both technically and scientifically, thus reaching greater success rates. However, root canal therapy involves some complex operative steps that subject to failures, accidents and a wide array of complications that can lead, in some cases, to complete failure. For cases that cannot be treated by conventional endodontic treatment, endodontic surgery appears as an important treatment resource, as observed in the present case report. A 17-year-old female patient was referred to the Clinic of Endodontics of Uningá for presenting a periapical lesion associated with the root-filled tooth 22, which was under orthodontic treatment. After evaluation of the situation, endodontic surgery for cyst enucleation was indicated together with apicoectomy of tooth 22, which was satisfactorily treated endodontically. The treatment approach was considered as successful because, until the present moment, the case evolves with the gradual disappearance of the radiographic periapical lesion signs, showing an excellent healing process.

Bond strength of Endofill sealer to root canal walls after the surface treatment with CO_2 laser

Alves, G.T.O.; Oliveria. A.G.; Marchesan, M.A.; Alfredo, E.; Silva-Sousa, Y.T.C.; Sousa-Neto, M.D.; Gabriel, A.E.S.

New technologies have been investigated to increase the adhesion of endodontic sealers to root canal walls. Among them, the CO_2 laser has shown promising results due to the microretentive pattern created on dentin surface. Therefore, this study evaluated in vitro the adhesion of Endofill sealer after surface treatment with CO_2 laser, using the push out method and comparing the results to those of conventional dentin treatments. Forty-five caries-free maxillary canines had the crowns sectioned and the root canals endodontically treated. The roots were included in aluminum molds with acrylic resin (16 mm diameter and 8 mm height) and regularized with SiC papers. The internal diameter of each canal was standardized with a tapered diamond drill under a flat base. The specimens were randomly divided into 3 groups (n=15) according to the surface treatment: GI - CO_2 laser irradiation (3W, continuous mode, during 10 s), GII - 2 mL 17% EDTA (5 min), GIII - 2 mL of distilled water (5 min - control). The specimens were them filled with Endofill sealer and stored at 37°C by a period of three times the sealer setting time. After this, the push out test was performed in a universal testing machine at a crosshead speed of 1 mm/min. Kruskal-Wallis test ($p<0.01$) showed that the specimens that received CO_2 laser application had the highest bond strength means (0.137 ± 0.036 KN). The water (0.082 ± 0.030 KN) and EDTA (0.092 ± 0.036 KN) groups were statistically similar to each other ($p>0.01$) and had the lowest means. It was concluded that surface treatment with CO_2 laser increased the adhesion of Endofill sealer to the root canal walls.

Bond strength of a resin-based cement after root canal preparation with endodontic chemical substances

Silva, D.P.; Gonçalves, F.R.; Venâncio, J.S.; Silva, M.C.P.; Campos, G.R.

The present study evaluated “in vitro” the influence of chemical substances used in the chemomechanical preparation on the bond strength of Rely X resin-based cement to root dentin. 55 bovine teeth had their crowns removed at the cervical region and the roots sectioned longitudinally, being standardized in 10 mm, having the cementoenamel junction as a reference. Next, the specimens were embedded in autopolymerizing resin blocks and were treated with the following sodium hypochlorite (NaOCl) concentrations: 0.5% (group 1); 1% (group 2); 2.5% (group 3); 5.25%, in addition to the control group that received distilled water (group 5), for periods of 20 min. Thereafter, all specimens were immersed in 17% EDTA for 3 min. One specimen *per* group was submitted to SEM analysis for surface evaluation. For the tensile bond strength test, the specimens were etched with 37% phosphoric acid for 15 seconds, Single bond adhesive system was applied followed by Rely X resin-based cement. Bond strength means (in kgf) were:: G1:(7.77); G2:(12.39); G3:(13.75); G4:(23.12) and G5:(5.68). Data were submitted to statistical analysis. The SEM analysis showed that the root dentin, when in contact with NaOCl, presented alterations in its morphological structure, with reduction of the intertubular dentin, increase in the diameter of dentinal tubules and presence of areas of depressions on the surface. Based on the obtained results, it may be concluded that 5.25% NaOCl increased significantly the bond strength of the resin-based cement to dentin compared to the distilled water and the other NaOCl concentrations.

Pediatric Dentistry

Orofacial changes in patients with mucopolysaccharidosis

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Mucopolysaccharidoses (MPS) are lysosomal storage diseases caused by a deficiency or absence of any of the enzymes that break down mucopolysaccharides. These build up in the lysosomes and impair cell function. The MPS can be classified into seven types depending on the enzyme that is deficient. The defective gene for the MPS is in one of the autosomal chromosomes; therefore it is an inherited condition of autosomal recessive transmission, except for Hunter Syndrome (MPS Type II), where the defect is in the X chromosome. The objective of this study was to report the case of two male uterine siblings with mucopolysaccharidosis type II, aged 6 and 16 years old, with emphasis on orofacial manifestations. Upon examination, severe systemic changes were detected, such as hydrocephaly, prominence of the temporal and frontal bones, hepatosplenomegaly, mental retardation, joint, pulmonary and heart changes and dental changes were also observed, namely delayed tooth eruption, diastemas and enlarged alveolar ridge. These characteristics are directly or indirectly associated with the accumulation of mucopolysaccharides in the tissues. Therefore, it is very important to know the changes that have taken place so that an adequate treatment plan may be settled to improve the oral conditions and quality of life of these patients.

Replantation of an avulsed primary maxillary central incisor and management of dilaceration as a sequel on the permanent successor

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This case report outlines the sequel and possible management of a permanent tooth traumatized by the predecessor, a primary maxillary right central incisor that was avulsed and replanted by a dentist 1 hour after the trauma in a 3-year-old girl. Three years later, discoloration and fistula were present, so that the primary tooth was extracted. The patient did not come to the scheduled follow-ups in order to perform a clinical and radiographic control of the succeeding permanent incisor, only returning when she was 10 years old. At that moment, impaction and dilaceration of the permanent maxillary right central incisor were detected radiographically. The dilacerated permanent tooth was then surgically removed, and an esthetic fixed appliance was constructed with the crown of the extracted tooth. Positive psychological influence of the treatment on this patient was also observed.