

OR1

Evaluation of the Efficacy of Diode Laser in Maturogenesis of Immature Teeth with Necrotic Pulp: A Preliminary Randomized Controlled Trial

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ABSTRACT

Objectives: To compare the radiographic outcomes of regenerative endodontic procedure (REP) using two disinfection Methods, diode laser and triple antibiotic paste in the treatment of immature permanent teeth with necrotic pulps.

Methods: the trial has been reported according to the Preferred Reporting Items for Randomized Trials in Endodontics 2020 guidelines. Thirty-nine patients with immature necrotic anterior teeth were randomly allocated into three groups (n=13): Group I, disinfected using the triple antibiotic paste, Group II, disinfection was done using diode laser, and Group III, were disinfected using the triple antibiotic paste, diode laser was used for bio- stimulation. All groups were evaluated for the increase in root length and thickness, decrease in apical diameter, and decrease in lesion size at baseline, 3, 6, 9, and 12 months after treatment, statistical analysis was conducted using ANOVA test, followed by Tukey's post hoc test. The significance level was set at $p \leq .05$.

Results: Regarding the root length and thickness, all groups showed a gradually increased over the study intervals. The highest mean value was recorded after 12 months in group III ($p=0.00$). Moreover, group III showed the highest mean value in a decrease in apical diameters with no significant difference between groups ($p=0.608$). There was a significant increase in periradicular healing in all groups at 12 months, compared to that at baseline.

Conclusions: The findings of this preliminary trial indicate the potential for using diode laser-assisted revascularization procedure as an effective treatment for immature teeth with necrotic pulps.

OR2

Functionalized Nanoparticles as a Novel Approach for Antibiofilm Strategy; A New Era in 3D Cleaning of Complex Root Canal System

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ABSTRACT

Objectives: to evaluate the antibiofilm efficacy of chitosan nanoparticles and photodynamic therapy conjugated with chitosan nanoparticles on dual-species biofilm using Confocal Laser Scanning Microscopy (CLSM).

Methods: A total of 90 dentin section blocks were prepared to be (4×4×1 mm) (Width × Length × height) respectively, to be used in this study. Each dentin section was placed in a 1.5 mL polypropylene tube filled with brain heart infusion (BHI) broth then underwent sterilization. Cultivation of standard strains *E. faecalis* (ATCC 29212) and *Staph. Epidermidis* (ATCC 12228) bacteria were prepared then inoculated on dentin section blocks and incubated for 3 weeks at 37°C for the formation of mature dual-species biofilm. The specimens were grouped into 4 groups according to the final rinse used. G1: final rinse using chitosan nanoparticles, G2: final rinse using Rose Bengal dye (Photodynamic Therapy), G3: final rinse using chitosan nanoparticles conjugated with Rose Bengal dye (Photosensitizer-functionalized Nanoparticle), and G4: control group (Non-treated bacterial group). The efficacy of the tested final rinse solutions on dual-species biofilm was evaluated using Confocal Laser Scanning Microscopy (CLSM) and data were statistically analyzed.

Results: the highest mean percentage of dead bacteria was found in Group (3) (88.38% ± 5.45), while the least mean percentage of dead bacteria was found in Control Group (4) (7.25% ± 1.12) with a statistically significant difference between groups where ($p < 0.001$).

Conclusions: Under the limitations of this study, conjugation of chitosan nanoparticles with Rose Bengal dye was a potent antibiofilm strategy for disinfection of the root canal system.

OR3

Evaluation of Sealing Ability and Adaptation of Resin and Bioceramic Sealers in Curved Roots (An In-Vitro Study)

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ABSTRACT

Objectives: The purpose of this study was to evaluate sealing ability and adaptation of Resin and Bioceramic sealers in curved canals.

Methods: Eighty human mandibular 1st molars which have curved roots ranged from 5° to 15° were decoronated, the root length was determined. Instrumentation was done using ProTaper rotary files, Samples were divided into two experimental groups (n=40) according to the type of sealer used for obturation of root canals (AH Plus) & (TotalFill). Each group was further divided into two subgroups according to the test of evaluation being carried out as sealing ability (n=30) and adaptation (n=10). Sealing ability was evaluated by Dye penetration Methods and adaptation using scanning electron microscope. Data was collected and statistically analyzed.

Results: The dye penetration in roots which obturated using TotalFill bioceramic sealer was significantly higher than in roots which obturated using AH plus resin sealer. A statistically significant difference was found between AH Plus and Total Fill BC sealer. Regarding the adaptation, more gaps were observed in samples which obturated using TotalFill BC sealer when compared with samples which obturated using AH Plus resin sealer.

Conclusions: Under limitation of this study AH Plus resin sealer provides better sealing ability and adaptation than Total Fill bioceramic sealer in curved canals.

OR4

Investigating The Biocompatibility of Silver Nanoparticles Gel as an Intra-Canal Medicament: An in-Vitro Study on Dental Pulp Stromal Cells

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ABSTRACT

Objectives: Biocompatibility and cytotoxicity of a newly developed silver nanoparticles (AgNPs) gel as an intra-canal medicament on dental pulp stromal cells (DPSCs) were investigated.

Methods: Ninety-five standardized dentin discs (4x4x1 mm) were prepared from freshly extracted human single- rooted teeth, cleaned, autoclaved, treated with: 1.5%NaOCl, Saline and 17%EDTA then randomized into 5 groups that received 50µl of one of the following treatments: 0.01%AgNPs, 0.015%AgNPs, 0.02%AgNPs, Calcium hydroxide (Ca(OH)₂) or no treatment for 1 week. Discs were washed with Saline and 17%EDTA, seeded with DPSCs (10x10³ cells/well) and incubated for 3 and 7 days. At 24 hours unattached cells were counted. At each time point cytotoxicity (LDH assay), cell viability (live/dead staining and confocal microscopy imaging) and cell proliferation(WST-1 assay) were assessed. One Way ANOVA followed by Tukey's test and Kruskal Wallis followed by post-hoc comparisons were used (p≤0.05).

Results: After 24 hours, the percentage of DPSCs attachment ranged between 92.66% and 95.08% with no significant difference between the groups. Cell viability was ≥92% at 24 hours for all groups. However this percentage dropped to less than 60% at 3 days then started to rise again at 7 days. There was no significant difference in cytotoxicity between different groups at all time points except for 0.01%AgNPs group which had the highest cytotoxicity at all three time points. DPSCs proliferation increased significantly from 3 to 7 days in all groups except for Ca(OH)₂.

Conclusions: AgNPs gel showed comparable biocompatibility to that of Ca(OH)₂ and the negative control group when used in-vitro as an intra-canal medicament.

OR5

The Effect of Trypsin-Chymotrypsin on Postoperative Pain after Single Visit Endodontic Treatment: A Randomized Controlled Trial

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ABSTRACT

Objectives: To evaluate the effect of Trypsin-Chymotrypsin on post-operative pain associated with single visit endodontic treatment of teeth with irreversible pulpitis, to investigate its synergistic effect with non-steroidal anti-inflammatory drugs NSAIDs and to detect its reported side effects.

Methods: A prospective parallel double blind randomized controlled trial was conducted on sixty patients had mandibular first molar diagnosed with symptomatic irreversible pulpitis SIP. Patients were allocated randomly into four groups (n=15) regarding to the orally administered post-operative medication. Patients were received either ibuprofen (600mg); Ambezim-G (Trypsin 5 mg Chymotrypsin 5 mg); combination of both pharmaceuticals or placebo tablets. Following single-visit endodontic treatment, participants rated pain scores on a visual analogue scale VAS, verbal rating scale VRS and numerical rate scale NRS at 6, 12, 24, 48, and 72 hours. Age difference was analyzed using one-way ANOVA test. Pain scores data were analyzed using Kruskal-Wallis test for comparison among the four groups, Friedman's test to detect changes by time intervals within the same group and Dunn's test for pair-wise comparisons when Kruskal-Wallis or Friedman's test was significant. Chi-square test was used for comparison among the four groups regarding qualitative data. The significance level was set at $P \leq 0.05$.

Results: Data analysis revealed no statistically significant difference between Ibuprofen, Trypsin-Chymotrypsin and combination of both pharmaceuticals groups. No adverse events were detected through the follow up period.

Conclusions: Trypsin-chymotrypsin has a comparable efficacy to NSAIDs on post-endodontic pain reduction. Combination therapy doesn't provide a significant enhancement in post-endodontic pain reduction.

OR6

A power of Nano Sealers in Endodontics

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ABSTRACT

Objectives: to evaluate the sealing ability of experimental nano sealers (nano calcium hydroxide and nano bioactive glass) and to compare it with the commercial AH plus sealer using a dye penetration Methods.

Methods: Sixty single-rooted mandibular premolars were selected. The coronal portion of each tooth was removed to standardize root length at 16 mm and the root canals were prepared with NiTi rotary files (ProTaper Next) up to X4 (40/0.06). Teeth were randomly assigned and divided according to the sealer used for obturation into three groups of 20 each. Group I: AH plus, Group 2: Nano calcium hydroxide and Group 3: Nano-bioactive glass. All root canals were obturated using single cone gutta-percha (#40/.06) and one of the tested sealers. Root canal sealing was assessed by a dye penetration test. The data were statistically analyzed by ANOVA test followed by post hoc analysis ($P < 0.05$).

Results: Significant improvement shown by the presented study suggests that nano calcium hydroxide sealer showed significantly less dye leakage than nano bioactive glass sealers and Ah plus sealer.

Conclusions: This study showed that the synthesized nano-powder sealers are suitable for use in root canal therapy to prevent leakage. The root canal can be sealed better by using smaller nano-powder particle sizes. In addition, the two groups exhibited noticeable differences in leakage in comparison with commonly used AH plus sealer.

OR7

Antimicrobial Efficacy of NanoChitosan, Chlorhexidine, Chlorhexidine/ NanoChitosan Combination versus Sodium Hypochlorite Irrigation in Necrotic Mandibular Premolars: A Randomized Clinical Trial

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ABSTRACT

Objectives: to assess the antimicrobial effectiveness of Chitosan Nanoparticles (CNPs), Chlorhexidine (CHX) and their combination (CHX/CNPs) versus that of Sodium hypochlorite (NaOCl) in patients with mandibular necrotic premolars and to evaluate their effects on postoperative pain after single-visit endodontic treatment.

Methods: Sixty patients with necrotic mandibular premolars were divided randomly into four groups [n=15] according to the used irrigating solution. Instrumentation was done using rotary ProTaper files. During instrumentation, irrigation was done using 2.5% NaOCl; afterward, canals were flushed with sterile saline. A final flush with the study irrigants was done as follows: 3% CNPs for group A, 2% CHX for group B, CHX/CNPs for group C and 5.25% NaOCl for group D. Samples were collected from root canals before and after canal preparation then cultured to assess the number of CFU/ml. All patients were instructed to record their pre-and Postoperative pain levels on a numerical rating scale (NRS).

Results: CNPs and CHX/CNPs were significantly more effective than either CHX or NaOCl however; there was no significant difference between them against anaerobic bacteria. All tested irrigants were similarly effective against aerobic bacteria. CNPs and CHX/CNPs were associated with significantly lower postoperative pain levels in the first 24 hours after treatment.

Conclusions: CNPs and their combination with CHX are significantly more effective than both CHX and NaOCl against anaerobic bacteria isolated from necrotic mandibular premolars. Postoperative pain intensity was significantly lower with CNPs and CNPs/CHX combination than with either NaOCl or CHX.

OR8

Apical Extrusion and Cleanliness of WaveOne Gold Versus iRace

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ABSTRACT

Objectives: to evaluate the effect of WaveOne Gold versus iRace file systems on the amount of apically extruded debris and cleanliness of the root canal space.

Methods: Forty freshly extracted mandibular premolars with 1 single patent canal were standardized to a length of 21mm. Access cavity prepared, & patency established, then, teeth were divided into 2 groups (n=20): Group A; WaveOne Gold & Group B: iRace were used for RC preparation. Irrigation was carried out using Distilled water. Apically extruded debris were collected in an apical extrusion collection model during preparation. Eppendorf tubes for debris collection were weighed pre, post-operative & after incubation at 70°C for 5 days. Debris net wet was then calculated. Teeth were decoronated & roots split into 2 halves. SEM debris examination at the apical level was evaluated using Rome score & debris surface area calculations by image J software.

Results: WaveOne Gold group had a minimum net debris weight of 0.00004g, maximum of 0.00030g & mean of 0.00019g. iRace scored minimum of 0.00010g, maximum 0.00052, mean of 0.00016g. For the cleanliness, Group A had a mean percentage debris area of 6.05% & that of Group B was 10.19%. Group A had 8 teeth scoring 0 & 12 scoring 1, Group B had 2 teeth scoring 0, 17 scoring 1, & 1 scoring 3, using the Rome score. The difference between WaveOne Gold & iRace was not statistically significant for both tested parameters.

Conclusions: Both file systems showed similar behaviour regarding apical extrusion and cleanliness.

OR9

Evaluation of Chitosan Scaffold and MTA Pulpotomy in Mature Permanent Molars With Irreversible Pulpitis (A Randomized Controlled Trial)

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ABSTRACT

Objectives: To evaluate the clinical and radiographic outcomes of Chitosan scaffold and MTA when used as pulpotomy agents in mature permanent teeth with irreversible pulpitis.

Methods: A full pulpotomy procedure was performed in 30 mandibular permanent molars with signs and symptoms of irreversible pulpitis. After the control of bleeding, the teeth were randomly allocated into two groups according to the pulp dressing material; whether MTA in Group I or Chitosan scaffold/ MTA in Group II. Teeth were then restored with Glass ionomer and composite restoration. Patients were then clinically and radiographically assessed for any signs and symptoms of pathosis at 1,3,6,9 and 12 months. CBCT analysis was done immediate post operatively and after 12 months. MRI analysis was done at 6 months follow up in order to assess the true vitality of the remaining radicular pulp.

Results: MTA pulpotomy had 92.3% success rate, whereas chitosan/MTA pulpotomy had 30.8% success rate, while 30.8 % of the cases had uncertain outcome and 38.4% failed. Statistical analysis showed that there was statistically significant difference between the two groups (PMC= 0.01). CBCT analysis showed that there was a statistically significant difference between the two groups regarding the development of new periapical pathosis (PFE= 0.003). MRI analysis showed significant decrease in the signal intensity only in failed cases.

Conclusions: MTA Pulpotomy exhibited a high success rate in mature molars with irreversible pulpitis. The addition of chitosan was not able to regenerate the missing coronal portion and improve the outcome.

OR10

Revascularization-associated Intracanal Calcification

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ABSTRACT

Objectives: to describe the clinical and radiographic results of revascularization treatment of four necrotic immature teeth using two different scaffolds.

Methods: After access cavity preparation, the root canals were irrigated with 1.5% sodium hypochlorite (20 mL/ 5 minutes) and then irrigated with saline (20 mL/5 minutes). Calcium hydroxide paste was placed 3 mm short of the apex and the canals were sealed with of a temporary restorative material, and patients were dismissed for 2 to 3 weeks. At the second appointment, two patients were treated by revascularization using induced blood clot combined with Platelet rich fibrin (PRF) scaffold and the other two patients were treated by conventional revascularization with induced blood clot.

Results: Clinical examinations revealed that the four cases were asymptomatic at the recall appointments at 3, 6, and 12 months. CBCT images revealed evidence of root maturation, thickening of the dentinal walls and complete healing of the periapical lesion with normal bone architecture. Intra canal calcification was noted at the middle and apical thirds of the root canals.

Conclusions: On the basis of the short-term results up to 12 months, Revascularization treatment allowed continued maturegenesis of immature teeth with necrotic pulps. However, occurrence of intracanal calcification would impair the vitality and function of revascularized pulp tissues and would severely compromise endodontic therapy if so indicated in the future.

OR11

Apothecary: The Recent Era For Pulpotomy

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ABSTRACT

Objectives: to evaluate the biological properties of new materials after pulpotomy technique; Pulpine Mineral (PMIN) and Pulpine NE (PNE) in comparison to the Mineral Trioxide Aggregate (MTA), conducted

Methods: Seventy-two teeth in 6 dogs were used in this study, after performing pulpotomy, data were collected, tabulated and statistically analysed using Chi-Square and Kruskal Wallis test. Histopathological analyses were performed after 10, 30, and 90 days, while Immunohistochemical analysis after 90 days

Results: MTA and PMIN showed 87.5% absence of inflammatory cell count at 90 days while PNE exhibited 62.5% heavy inflammatory cell count at 90 days. MTA and PMIN revealed an initial complete dentin bridge formation at 10 days and formation of thick calcific barrier at 90 days while the majority of PNE displayed no or partial dentin bridge formation at 30, 90 days and instead of the formation of abundant intracanal calcification. MTA and PMIN demonstrated moderate to strong expression of osteopontin while PNE had a very faint osteopontin reaction.

Conclusions: On the basis of this study, we concluded that PMIN is a promising alternative to MTA in vital pulp therapy techniques

OR12

Root Canal Morphology and Isthmus Portion Detection Using Teeth Clearance Technique and Cone Beam Computed Tomography

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ABSTRACT

Objectives: To detect the root canal and isthmus portion classification of the mesial root of mandibular first molar, using Cone Beam Computed Tomography (CBCT) at two different scanning modes compared with the stereomicroscopic evaluation after teeth clearance technique

Methods: Sixty randomly extracted mandibular first molars were scanned with CBCT then cleared, sectioned and photographed.

Results: There was statistically significant difference between the cleared teeth, voxel size 400 μ and 150 μ in detection of root canal and isthmus. Voxel size 150 μ 400 μ were significantly less accurate than the cleared teeth. Only voxel size 150 μ was successful in detection of isthmus at 1mm and 2.5mm from the apex

Conclusions: Vertucci type IV and II were the most common canal configuration reported, Isthmus was found with high incidence at 4mm and 5.5mm from the apex. The high-resolution mode is the better to detect isthmus.

OR13

The Effect of Addition of Silver Nanoparticles on The Antibacterial Effect of Three Different Root Canal Sealers (an in vitro study)

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ABSTRACT

Objectives: To evaluate the effect of addition of silver nanoparticles (SNP) to AD Seal, MTA Fillapex and GuttaFlow 2 in terms of antibacterial effect.

Methods: The method applied was the Direct Contact Test (DCT). Crushed sealers were put in sterile polyethylene tubes. About 18 mg of each sealer were weighed and placed in a tube. The tubes then incubated at 37 degrees Celsius then covered with 400 micro-L of Brain Heart Infusion (BHI) broth and 100 micro-L of bacterial suspension of Enterococcus Faecalis. After 1 min, 1 hour, the bacterial survival was evaluated by culturing on Brain Heart Infusion (BHI) agar plates and the Colony Forming Unit/mL (CFU/mL) were counted. Results: The results showed that there was no statistically significant difference between AD Seal and MTA Fillapex with or without addition of SNP at 1 min. However, a statistically significant difference was shown between GuttaFlow 2 and GuttaFlow 2 + SNP. At 1 hour,

Results: it showed a statistically significant difference between all groups except ADSeal + SNP and GuttaFlow 2 showed no statistically significant difference, with the highest antibacterial effect was for MTA Fillapex + SNP. There was statistically significant difference between all groups at 1 minute and 1 hour with the highest antibacterial effect at 1 hour except for AD Seal which showed the least antibacterial effect at 1 hour and the highest value favoring MTA Fillapex+ SNP

Conclusions: The addition of silver nanoparticles to all sealers increased their antibacterial effect

OR14

Enterococcus Faecalis; The Endodontic Pathogen and Its Diverse Effects on Monocyte Derivatives.

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ABSTRACT

Objectives: To investigate how *E. faecalis* infection affects the differentiation, phenotype and cytokine secretion profile of dendritic cells and macrophages.

Methods: Murine bone marrow-derived stem cells were co-cultured with *E. faecalis* then one group was exposed to GM-CSF/IL4 to allow differentiation of dendritic cells while other group exposed to M-CSF allow differentiation of macrophages. The cells were analyzed using MACSQuant® Analyzer Flow Cytometer to detect phenotypic changes. Gene expression was analyzed with reverse transcriptase-polymerase chain reaction (RT-PCR).

Results: The results showed that *Enterococcus faecalis* did not inhibit cellular differentiation and was identified within the cells involved in the process of binary fission. Although the viability of dendritic cells was not affected by *E. faecalis*, it was enhanced in macrophages. Accessory molecules (MHCII, CD80, CD86) and anti-inflammatory cytokine TGFβ1 were suppressed in *E. faecalis*-induced dendritic cells, while IL1B, TNF alpha and IL12 levels were up-regulated. A different profile was noticed in macrophages where there is upregulation of CD38 and IRF5 proteins, indicators of M1-like polarization. These M1-like macrophages expressed an aberrant cytokine mRNA profile, with reduction in pro-inflammatory cytokines IL-1B and IL-12 and increase in regulatory cytokine IL-10. No changes in TNF alpha or TGFβ1 was detected.

Conclusions: *Enterococcus faecalis* interacts with the immune cells in a sophisticated manner that enhances its own survival and resists the bacterial clearance mechanism of the immune cells.

OR15

Impact of Conservative Access Cavity Using Micro-Guided Endodontics

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ABSTRACT

Objectives: To compare between conservative access cavity (CEC) using Micro-Guided Endodontics and traditional access cavity (TEC) by measurement of volume of dentin removed (VDR) and fracture resistance

Methods: Fifty freshly extracted human double rooted maxillary premolar teeth were divided into 3 groups. For the first group (n=20) the conservative access cavities were prepared through the use of CBCT surface scanner, and 3D printer to fabricate a Micro-Guided Endodontics. For the second group (n=20) the traditional access cavities were done following the conventional guidelines. The third control group (n=10) were kept intact. Volume of dentin removed (VDR) was measure using Cone Beam Computed Tomography (CBCT), besides measuring fracture resistance using Instron universal machine.

Results: Traditional access group recorded significant higher VDR compared to conservative access group, in the perspective of fracture resistance, there was a significant difference between control group and traditional access group. However, no significant difference in fracture resistance between control group and conservative access group, but a significant difference between traditional access group and conservative access group was noted. There was a significant negative correlation between VDR and fracture resistance, where the later decreased when VDR increased, vice versa.

Conclusions: Within the limitations of this study, it can be concluded that the CEC by micro-guided endodontics technique improved the fracture resistance of endodontically treated teeth when compared to TEC. Where fracture resistance significantly decreased when VDR increased.

OR16

Cyclic Fatigue Resistance, EDX and Differential Scanning Calorimetric Analysis of Three Different Nickel- Titanium Rotary File Systems

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ABSTRACT

Objectives: To assess impact of elemental composition, core metal mass and phase transformation behaviour on of the dynamic cyclic fatigue resistance of Hyflex EDM One file (HEDM), AF blue S one (AFBS) and ZB-F6 Ni-Ti rotary files at room and simulated body temperatures.

Methods: Twenty instruments of each system were tested for dynamic cyclic fatigue resistance in a simulated root canal with 90° of curvature and a 5-mm radius of curvature at room (25) and body temperature (37°C). Number of cycles to failure (NCF) and the length of fractured fragments (FL) were recorded. The morphological characteristics of the fractured instruments were observed through scanning electron microscopy (SEM). The core metal mass at the fractured surface of each instrument was calculated by Image J software analysis of SEM images. The chemical composition of the tested files was examined using EDX analysis. Four instruments of each file system were evaluated using DSC to assess the structural phase state of the file at different temperatures (4°C, 25°C, 37°C) and to determine the transformation temperature of each file system.

Results: HEDM showed significantly higher cyclic fatigue values than AFBS and ZB-F6 instruments, at both temperatures tested. Increasing the temperature to 37°C significantly decreased the cyclic fatigue resistance of ZB-F6, but had no effect on HEDM and AFBS instruments. Scanning electron micrographs confirmed a predominantly ductile mode of fracture for all the instruments. EDX analysis showed that all the instruments were mainly composed by nickel (HEDM: 41.2 wt%; AFBS: 41.1wt%; ZB-F6: 44.7wt%), titanium (HEDM: 32.0 wt%; AFBS: 32.9 wt%; ZB-F6: 35.7wt%). DSC analysis revealed that HEDM and AFBS exhibited a martensitic phase at body (37°C) and room temperature (25°C), whereas ZB-F6 revealed an austenitic phase at body temperature,

Conclusions: Dynamic cyclic fatigue resistance of the rotary NiTi instruments tested increased when the instruments had less cross-sectional metal mass, less Ni (wt%), a thermally treated surface and a martensite phase at body temperature.

OR17

Efficacy of Injectable-Platelet Rich Fibrin in Vital Pulp Therapy; An Experimental Animal Study

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ABSTRACT

Objectives: Histological, immunohistochemical and scanning electron microscopic evaluation of the effect of i-PRF combined with bioactive materials (Mineral Trioxide Aggregate and Bioactive Bone Graft) as capping materials on dog's teeth pulp.

Methods: ninety-two teeth of eight male mongrel dogs were randomly assigned into four groups. Group A: capped with MTA, Group B: MTA+ i-PRF, Group C: BBG, Group D: BBG+ i-PRF. Then access cavity was restored with Intermediate Restorative Material (IRM). The dogs were euthanized at each pre-determined interval (1 month, and 3 months). Then, specimens were prepared for histopathological, immunohistochemical examination using dentin sialoprotein marker. Moreover, scanning electron microscopic test is used to determine the marginal adaptation of the tested materials

Results: Regarding histopathological study, Chi square test was used to compare different groups. Regarding immunohistochemistry, data were explored for normality using Kolmogorov-Smirnov test and ANOVA and Tukey's post hoc tests was used for intergroup comparisons, while paired t test was used for intragroup comparisons (effect of time within the same group. Kruskal-Wallis and Mann Whitney U tests were used for Scanning electron microscopic data. Statistical significance was considered at $P < .05$. according to histopathological study, the results of dentin continuity, morphology and thickness after one month showed that there was a significant difference between all groups. immunohistochemical study and SEM test, revealed that after one and three months the best values were recorded in groups B and D, in relative to immunoexpression of DSP marker and lowest gap area between the capping materials and dentin, followed by group C, with the least value recorded in group A.

Conclusions: injectable-Platelet Rich Fibrin is a promising material for vital pulp therapy.

OR18

Percentage of Touched Surfaces and Change in Cross-Sectional Area of Oval Shaped Root Canals after XP-Endo Shaper, IRaCe and HyFlex CM Instrumentation Using AutoCAD Software

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ABSTRACT

Objectives: This study evaluated the percentage of touched walls and changes in mean cross-sectional areas of root canal after preparation using (XP-endo Shaper, IRaCe and HyFlex CM) rotary systems.

Methods: sixty unidentified extracted single rooted human mandibular premolar teeth were collected, impeded in epoxy resin blocks and divided into 3 main groups according to the rotary systems used group A: XP-endo Shaper, group B: IRaCe and group C: HyFlex CM (n=20) every ten teeth were impeded in silicon block so two blocks for each group. Each resin block was sectioned, photographed under stereomicroscope before and after instrumentation and analyzed using AutoCAD analytical software.

Results: The percentage of touched canal walls recorded a statistically significantly difference for the XP Shaper and HyFlex CM groups compared to IRaCe group ($p<0.001$). There was a significant difference in mean change in cross sectional areas of root canal for IRaCe compared to HyFlex CM and XP Shaper respectively ($p<0.001$). For all groups, there was a significant difference between all thirds (coronal, middle and apical) in change in cross sectional area and touched canal walls except XP-endo Shaper group

Conclusions: None of the three-instrumentation technique completely prepared the dentin walls entirely in oval-shaped root canal. XP- endo Shaper group and HyFlex CM group respectively have more cutting efficiency and maintain root stability through preservation dentin of root canal compared to IRaCe group. This was observed at all canal levels (coronal, middle and apical).

OR19

A Comparative Evaluation of The Efficacy of Three Irrigant Activation Systems: Fanta Af Max File, Xp Endo Finisher File and Irri- Safe Ultrasonic Tip on Enterococcus Faecalis Eradication in Long Oval Canals Using Confocal Laser Scanning Microscope. “A Randomized in- Vitro Study”

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ABSTRACT

Objectives: To assess and compare the efficacy of three irrigant activation systems: Fanta AF Max, XP Endo finisher and ultrasonic activation with Irri-safe ultrasonic tip on Enterococcus faecalis eradication and the maximum depth of the irrigant penetration into the dentinal tubules of long oval canals in single rooted teeth.

Methods: Fifty-four extracted human single rooted teeth with long oval canals were included. Teeth were prepared with hyflex rotary system up to size 40 taper 4%, irrigation was done using 2.5% sodium hypochlorite and 17% EDTA. After sterilization of the teeth, 6 teeth were considered as a negative control group, then the teeth were inoculated with Enterococcus faecalis for 21 days. After the incubation period, 6 teeth were considered as a positive control group and the rest of the teeth were randomly allocated into three groups (n=14) according to the activation system used. The canals were irrigated using 5.25% NaOCl and the irrigant was activated for 3 minutes. After that, the teeth were splitted longitudinally into two halves, treated by live /dead stains and examined using Confocal laser scanning microscope.

Results: The XP Endo finisher file showed the highest percentage of bacterial death in comparison to the other groups where the difference was statistically significant regardless the root depths and levels (P-value <0.001). When comparing the different root levels, the results revealed that the coronal the middle parts showed the highest bacterial death percentage compared to the apical third with statistical significance (P- value <0.001). Regarding the irrigant penetration depth, the XP Endo finisher group showed that highest irrigant penetration depth values into the dentinal tubules when compared to the other groups.

Conclusions: XP Endo Finisher had the highest ability to eradicate Enterococcus faecalis compared to Fanta AF Max and Irrisafe, in addition, it showed the deepest irrigant penteration depths into the dentinal tubules as well.

OR20

Fabrication and Evaluation of The Physico-Chemical Properties of A Novel Locally Produced Modified White Portland Cement

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ABSTRACT

Objectives: to fabricate a radiopaque white Malaysian Portland cement (RMPC) with reduced particle size, and evaluate its physiochemical properties compared with ProRoot MTA (PMTA).

Methods: Under optimized parameters, ordinary white Malaysian Portland cement (OMPC) was modified through a ball milling protocol and analysed using a particle size analyser (PSA). Subsequently, nano-zirconium oxide was added to produce RMPC, and then compared with OMPC and PMTA. SEM/EDX and XRD were performed for chemical analysis. The initial setting time was evaluated using Vicat apparatus. The pH values and solubility were recorded at 0, 1, 3, 7 and 14-day intervals. One-way ANOVA was used for statistical analysis ($P=0.05$).

Results: PSA showed that RMPC exhibited the smallest ($535.4+10.9$ nm) particle size, while OMPC ($1147.8+337.1$ nm) had the largest, and this difference was statistically significant ($p<0.05$). SEM images confirmed the difference in particle size between the cements. XRD analysis revealed that all cements had similar composition, except for PMTA which contained bismuth oxide and RMPC contained zirconium oxide. Mean setting time of RMPC (23 mins) was significantly shorter compared with PMTA (128 mins) and OMPC (160 mins) ($p<0.05$). All groups had an alkaline Ph with statistically significant difference compared with the control group at all time intervals ($p<0.05$). Solubility results also showed significant differences amongst groups ($p<0.05$).

Conclusions: RMPC is a more homogenous material with a smaller particle size and faster setting time compared with PMTA. The RMPC developed can provide a potential cheaper substitute to PMTA for clinical use.

OR21

Secrets of NiTi Alloy; Clinical Point of View

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ABSTRACT

The epitome of an endodontic treatment should satisfy the bio-mechanical principles of cleaning and shaping of the root canal system which is influenced by type and efficiency of endodontic instruments used for the procedure. NiTi alloy has been used as the raw material for making endodontic files. NiTi files present several advantages compared with stainless steel files, such as higher flexibility, fewer canal aberrations and a shorter procedural duration. The mechanical behavior of NiTi alloy is determined by the relative proportions and characteristics of the microstructural phases. In recent years, several novel thermomechanical processing and proprietary manufacturing technologies have been developed to optimize the microstructure and the flexibility of NiTi alloys. The integration of surface engineering (implantation or electropolishing) and/or microstructure control (heat treatment or innovative manufacturing techniques) into the endodontic file design has resulted in more favorable outcomes for instrument flexibility, fatigue resistance and cutting efficiency. However, each rotary system has its own advantages; so, a hybrid concept should be utilized to gain optimum advantage of the newer generation rotary systems.

OR22

Multidisciplinary Approaches to Management of Separated Endodontic Instruments (The Secrets Behind The Scenes)

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ABSTRACT

The main goals of endodontic treatment are the elimination of bacteria from the anatomical complexity of the root canal system, prevention of reinfection, and preservation of structural integrity of dentin for a successful treatment outcome. Unfortunately, the fracture of an instrument within a root canal impedes adequate disinfection, preparation, and 3D filling of the root canal system. There are various factors have been associated with instrument fracture including operator, anatomy, instrument, and technique/use related factors. Although some instrument fragments can be removed by a variety of mechanical methods, others cannot be removed effectively due to the presence of curves, or the absence of straight-line access to the fragment. Thus, the management of the broken fragments especially which located beyond a curve in a root canal is challenged procedures. The long-term prognosis of treatment after instrument fracture is influenced by many factors including canal preparation stage, level of microbial contamination, and intracanal location of the fractured instrument. The multidisciplinary approaches to the management of broken instruments depend on 3 main strategies: retrieval, bypassing, and surgical removal of the broken instrument. Currently, a computer-aided design utilizing cone-beam computed tomography (CBCT) data followed by 3D printing of a guided template to the endodontic field aims for augmenting the concept of management of broken instruments with the minimally invasive approach. This lecture will spot the light on the multidisciplinary approaches to the management of broken instruments safely and efficiently while answering many questions regarding their effects on the treatment outcome.

OR23

Mb2: The Dentist's Nightmare

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ABSTRACT

One of the most infamous canals we chase in endodontics is the second mesio-buccal (MB2) canal of maxillary molars. It's often referred to as the "fourth canal" and is one of the most frustrating aspects of maxillary molar root canals.

Outlines:

Introduction MB2 Incidence MB2 Location

How to detect MB2 ?

Factors affecting MB2 detection ? MB2 Radiography

Preparation of MB2 Obturation of MB2 Clinical cases of MB2

OR24

Turning Your Access Cavity From Zero To Hero!

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ABSTRACT

Since Minimally Invasive Dentistry and being conservative, is the paradigm that all dentists is shifting to. Conventional Root canal treatment was well-established since centuries, however, since the 19th century, development of new concepts in endodontics were settled, they first introduced the concept of Minimally Invasive Endodontics (MIE) of which it aims to maximally preserve the healthy tooth structure during the endodontic treatment, then Contracted endodontic cavities' (CEC) concept was developed which focuses on preserving peri- cervical dentin (PCD) which is crucial to transferring load from the occlusal table to the root. However, with years of Digital revolution changing and shaping all of our lives, it also changed our workflow and shifted operating procedures into a safer, less invasive and to predictable outcomes. To elaborate, the concept of effective method to obtain safe and reliable results in root canal treatment was introduced in our field by an advancement called "Guided Endodontics". Same as concept of Guided Implantology and Guided Teeth preparation, in Guided Endodontics a 3D endodontic guide is fabricated to guide drills into pre-planned positions for localization and exploration of root canal orifices or bone trephination and root end re-sectioning surgeries. Discussing its steps, benefits, uses, Impact and outcomes of Guided endodontics on treatment planning and limitations over the conventional root canal treatment, and some future perspectives which will eventually develop research, clinical and educational fields in dentistry.

OR25

Persistent Infection: The Real Battle Beyond The Apex

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ABSTRACT

Endodontic treatment failure is usually characterised by the presence of post-treatment apical periodontitis is an evidence of root canal treatment failure. It may be persistent, emergent or recurrent. The major aetiology of post- treatment disease is persistent intraradicular infection, but in some cases a secondary intraradicular infection due to coronal leakage or an extraradicular infection may be the cause of failure. Understanding the causes of endodontic treatment failure is of paramount importance for the proper management of this condition. Teeth with post- treatment apical periodontitis can be managed by either nonsurgical endodontic retreatment or periradicular surgery, both of which have very high chances of restoring the health of the periradicular tissues and maintaining the tooth function in the oral cavity.

OR26

Guided Endodontics: Applications and Limitations

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ABSTRACT

Guided endodontics is a technology-driven treatment approach that represents a paradigm shift in endodontic therapy and offers predictable solutions in cases of partial or complete root canal calcification and root end surgeries. The virtual planning and guided access procedure; relying on the combined use of cone-beam computed tomographic imaging, oral scanning, and endodontic access guides, may help to preserve the tooth structure and avoid errors such as deviations and perforations, which may lead to an improvement in the long-term prognosis of the treatment. On the opposite side, procedural errors might negatively impact endodontic treatment success and contribute to infections in inaccessible apical areas. In such circumstances, surgical intervention is required. The aim of this lecture is to highlight the advantages and limitations of Guided endodontics techniques and to provide an idea on how to design an endo guide suitable for your case.

OR27

Open Apex: Discussing 3 Dilemmas

Soudi A *

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ABSTRACT

Open apex cases management is one of the hardest situations we face during our daily routine. In this lecture; I would try to minimize the risk of management, illustrate the dilemma of open apex and make it clear enough how to manage and what shall we do if we face a failure.

OR28

The Guided Subtractive Approach: When Minimal Invasiveness Meets Longevity

Farouk AT*

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ABSTRACT

The main goal of restorative dentistry is to conserve natural tooth structure. No doubt that endodontic treatment results in a significant loss of tooth structure; i.e. during preparing access cavity and canals instrumentation, leaving the unrestored endodontically treated teeth structurally compromised having a lower lifetime prognosis. Different protocols have arisen to restore endodontically treated teeth including direct restorative protocol, indirect restorative protocol, post and core placement followed by full coverage. Multiple factors must be considered during the selection of a final restoration. These include the amount of remaining tooth structure, occlusal function, and position of the tooth in the arch. Since one of the main factors responsible for the increased fracture susceptibility of endodontically treated teeth is extensive tissue loss, restoration technique should preserve maximum healthy structures.

OR29

Single Cone with Bioceramic a Myth or a Truth

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ABSTRACT

The technique of single-cone obturation with biocearmic is a technique that uses only the master cone. There have been an increase in its use, especially by employing larger cones with larger taper sizes that best match the geometry of rotary nickel-titanium systems (NiTi), not requiring the use of accessory cones, thus reducing the time spent in endodontic obturation.

Objective: To review the literature on this technique and to compare it with other existing techniques, single cone with resin sealer , single cone with bioceramic , discussing different properties of bioceramic during setting reaction comparing with lateral obturation and continues wave obturation in term of anti-bacterial, voids, leakage , apical seal , solubility and how many study show that bioceramic is soluble but in the real body fluid the result are different , retreatment using formic acid and finally the outcome based on Literature review

The single-cone obturation technique with bioceamic enables an easier and faster endodontic obturation. And according to RCT study publish on 2022 and A RETROSPECTIVE SUDY aimed to compare the efficacy of single cone with bioceramic with CWC with resin- The success rates of the obturation techniques were 92.3% in the CWC group and 94.3% in the single cone with follow up period 30 month.

OR30

CBCT in Endodontics: Explore The Hidden

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ABSTRACT

CBCT is a 3D imaging modality that is designed for dentists and it offers a low dose high resolution image that can be manipulated with user friendly software. CBCT should be used only when justified according to guidelines. Well understanding of guidelines is not only useful to determine when it is indicated to use CBCT but also to know how to use to get the maximum benefits. How to prepare patient before imaging, what to include in request, important considerations during imaging and step by step post-imaging interpretation will be discussed during the presentation.

OR31

Technology Paving Customization in Root Canal Instrumentation

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ABSTRACT

The goal of endodontic treatment is to provide a well retained functional tooth following healing of apical periodontitis. This is accomplished by the triad of endodontic success; root canal shaping, disinfection and subsequent sealing of the root canal system. Root canal anatomical complexities represent eminent challenges jeopardizing the control of microorganisms and hence healing. Technological revolution has been a constant in the dental health with rapid advances and geometric progression. Digital endodontics employed various tools leading to greater predictability and safer treatment. Artificial intelligence is a newer technology in dentistry that has the potential to mimic the human brain to perform prediction and complex decision making that will change the concept of diagnosis, treatment planning and prognosis in the future. It is composed of computational models and algorithms to create an artificial neural network that can then learn and make decisions on its own, similar to the human brain by gaining information from a series of images or radiographs. Thus, the aim of this study was to create novel rotary files designs with different metallurgy to be used in conjunction with artificial intelligence addressing various canal complexities. The mechanical behavior of the innovative files' designs was tested using finite element analysis to decide the suitable design for each clinical situation. Incorporating artificial intelligence in endodontics will allow accuracy and precision of the treatment and will allow the using of a custom-made file for each canal in the future.

OR32

Guided Endodontics Towards A New World

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ABSTRACT

Guided endodontics Towards a new world

3D-guided endodontics is a technology-driven treatment protocol, which provides safe and predictable solution in cases of partial and complete root canal calcifications and root end surgeries. Navigation in dentistry is an example of technological advancements applied to medicine and health science and known as guided dentistry. It is emerging as one of the most reliable representatives of digital technology as it continues to transform surgical interventions into safer, predictable, and less invasive procedures. A paradigm shift in endodontic therapy provides an accurate insight and step-by-step planning on the usage of static and dynamic navigation for difficult root canal treatments enabling the dentists to view any portion of the jaws in three dimensions on a screen or to create a 3D printed model for more sophisticated diagnosis and/or treatment planning. Static guided endodontic approach is a safe and clinically feasible method to locate root canals and prevent root perforations. Special software aligned with CBCT and 3D scan allows virtual planning of the root canal access cavity. Subsequently, a 3D template can be developed to guide the drill into calcified canal. This virtual planning can help to preserve the tooth structure and avoid any procedural errors. Dynamic navigation can also be an efficient tool as these state-of-the-art devices allow virtual real-time navigation intraorally. There is a lack of general awareness and the true potential of Guided Endodontics in clinical dentistry.

OR33

Contemporary Management of Endodontic Procedural Accidents

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ABSTRACT

The incidence of procedural accidents during endodontic treatment is a common incident. Careful attention to the causes and predisposing factors is essential for avoidance as well as management. That is why the endodontic practitioner, whether a specialist or general practitioner, must be aware of the prognostic factors affecting the outcome of the correction procedure once spotting the mishap. The aim of this clinically oriented lecture is to guide clinicians about the prognostic factors as well as the management techniques of the various procedural accidents that would happen during endodontic treatment as well as providing them with a guide for decision making concerning “when and when not to interfere

OR34

Could Phage Therapy Replace Antibiotics in Treatment of endodontic Infections?

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ABSTRACT

Post-treatment apical periodontitis is caused mainly by persistent intra-radicular infection. *Enterococcus faecalis*, a Gram-positive microorganism, is frequently recovered from secondary persistent infections associated with root canal treatment failures. The lack of *E. faecalis* sensitivity to conventional antibiotics may be attributed to its biofilm formation ability. Attacking mature biofilms with antibiotics works poorly, requiring much higher drug doses than usual. Since the bacteria residing in biofilms not only become inaccessible to antibacterial agents and the body's immune system but also provide a reservoir of bacteria for chronic infections throughout the body. The extensive misuse of antibiotics becomes very common in the last few years; unfortunately, this has led to a worrying emergence of virulent, antibiotic-untreatable, multidrug resistant pathogens. So, recent medicine trends are now directed toward the use of biological and natural medications as an alternative to synthetic antimicrobial agents. One alternative recently regaining interest is bacteriophage (phage) therapy, which was first introduced at the beginning of the 20th century. There was a doubt about using phage therapy due to fear of possible unknown harmful genes and the phages' unknown nature. Recently, with the emergence of multidrug resistant strains and the high throughput sequencing abilities, the risk of using phages with unwanted genes has been greatly reduced. studies had shown that, the lytic activity of phage therapy against *E. faecalis* biofilms the ability to control the growth of *E. faecalis* invitro. Accordingly, it has been proposed for the treatment of endodontic infections.

OR35

Dealing With Taurodontic Tooth

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ABSTRACT

Taurodontism is a dental anomaly describe by enlargement of the pulp chamber of multirooted teeth with apical displacement of the pulp floor and bifurcation of the roots with no constriction at the level of cementoenalmle junction is the key features representing a taurodontic tooth, as a change in tooth shape caused by the failure of Hertwig's epithelial sheath diaphragm to invaginate at the proper horizontal level. Taurodontism can be an isolated trait or part of many syndromes. Permanent molars are most commonly affected with relatively low incidence in contemporary societies The large and deep pulp chamber makes instrumentation of canals difficult, thereby challenging an endodontist. This case report describes the endodontic challenge faced in cases of taurodontism as well as the clinical steps involved in its successful endodontic management in right permanent maxillary molar

OR36

To Do or Not To Do Recent Trends In Endodontics: Evidence Based

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ABSTRACT

The main goals of endodontic therapy are to prevent and treat apical periodontitis by reducing the microbial content in root canal system. Although the principles of cleaning and shaping root canals remain unchanged, several improvements in endodontic therapy and technological advancements have been made, including the use of single rotary file systems and single cone obturation techniques, to promote simpler and more predictable technical procedures. However, such techniques should not only be simpler but also result in high-quality root fillings, which increase the likelihood of obtaining healthy peri-apical conditions. This seminar will quickly over view how and when should such techniques be used and are these trends scientific based?

OR37

Can MicroSurgery Fix Problems or Non- Surgical Retreatment is Enough?

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ABSTRACT

The challenges in Endodontics may present for the clinician in many situations, these challenges may be in the anatomy of the tooth due to curvatures or canal tightness another kind of challenge may be during the Retreatment like perforations , transportation & Instruments separation some of these problems could be saved by Non-Surgical Retreatment but on the other hand other problems may need Microsurgical Intervention that we are going to go through.

OR38

Endodontic Biofilms: Where did we begin and how far have, we come?

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ABSTRACT

Apical Periodontitis (AP) is a biofilm-mediated disease caused by the ingress of microorganisms and their toxic-by products from the infected root canal system into the surrounding periradicular tissues. Highly adherent, antimicrobial-tolerant biofilm communities both within (intraradicular) and outside (extraradicular) the roots pose severe challenges to the successful healing of AP. While elimination of biofilms, at least partially, is possible by a combination of mechanical instrumentation and chemical disinfectants, an in-depth understanding of biofilm biology is integral to (a) completely eliminate biofilms and (b) prevent reinfection due to biofilm recovery. We have recently demonstrated that the dense extracellular polymeric substance (the matrix) of biofilms is differentially influenced by environmental conditions relevant to root canal treatment and retreatment. Intriguingly, we also demonstrated that microbial communication system i.e. quorum sensing contributed critically to matrix development over time. Current biofilm knowledge has advanced to an understanding where dismantling of the matrix is not supplementary, but a primary objective of disinfection. With knowledge gleaned from our own studies and those of others, this presentation will:

- Highlight biofilm properties which contribute to its tolerance to antimicrobial agents compared to planktonic bacteria.
- Describe the activity of current endodontic disinfection protocols and strategies against biofilm matrix.
- Shine new light on the futuristic prospects in biofilm matrix elimination and prevention of biofilm recovery.

OR39

Vital Pulp Therapy in Permanent Teeth: Challenges and Promises

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ABSTRACT

Whenever treating deep caries, trauma or iatrogenic incidents resulted in pulp exposure, complete pulpectomy and root canal treatment (RCT) were traditionally the advocated line of treatment. Vital pulp therapy, on the other hand, was only recommended either in treating primary dentition or under certain circumstances where the pulp vitality is necessary for a still developing tooth to continue its maturation. The acceptance of VPT has experienced many ups and downs over the past century, with the famous comment of Rebel in 1922 that the 'exposed pulp was a doomed organ' still having its impact on the minds of some even today. However, over the past two decades, numerous improvements including, the introduction of bioactive calcium silicates, advances in the understanding of pulp reparative processes as well as technical and biological improvements in tissue handling have led to excellent clinical outputs for different VPT techniques. Nowadays, VPT with the advantage of dentine preservation and the fact that the pulp retains its ability to react to future insults and noxious stimuli, gained high popularity in practice with success rates comparable to those of RCT. This lecture reviews the application of Vital Pulp Therapy in permanent teeth while addressing possible promises and challenges, thus answering the clinical questions that practitioners face in their practices.

OR40

Dealing with Infected and Curved Canals -The Knowhow

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ABSTRACT

Knowledge about root canal morphology

Obstacles of root canal treatment regarding microorganisms and root canal complexities.

Challenges during routine endodontic treatment.

Proper selection of your armamentarium (files, master cone, technique of obturation)

Golden rules for safe and efficient rotary instrumentation

Rationale of irrigation activation during root canal treatment

Recent advances in agitation techniques in Endodontics

OR41

Management of Severely Curved Canals. A Clinically Oriented Approach

Fahim M *

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ABSTRACT

Shaping and obturation of severely curved canals is considered a great challenge with high risk of procedural errors, so a delicate protocol is required while dealing with such cases to avoid these errors starting from analyzing the preoperative radiograph, coronal access, radicular access, obtaining patency, shaping till reaching obturation.

OR42

Revisiting Intentional Replantation: Factors Affecting the Success

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ABSTRACT

Intentional replantation was considered, by many authors, as the last treatment option for management of failed endodontic cases that can't be treated by nonsurgical approach or not amenable for surgical intervention due to anatomical considerations or patient medical status. The retardation of this procedures since it's invention by Aboelkasem Elzahrawy may attributed to the most recorded complication after intentional replantation which are ankylosis and external root resorption, but with the advent of atraumatic extraction techniques as periotome assisted extraction ,physics forceps and orthodontic assisted extraction techniques, the literatures record a reasonably raised success rates of the procedure which may give the chance for the intentional replantation to be considered as a "treatment option" rather than "the last treatment option". It is worthy to discuss, in this lecture, beside a traumatic extraction technique, there are multiple factors that affect the success of intentional replantation which may be the handling technique, extra alveolar time, splinting technique, size of the periapical defect and presence or absence of root defects.

OR43

The Daily Clinical Applications of Intracanal Medications

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ABSTRACT

The usage of intracanal medication has been widely spread during our daily endodontic treatment protocols , However the accurate applications of intracanal medications, the correct choice of the type of medication and the proper management of weeping canals still being a part of hard to puzzle to many of dentists. Discussing the aim of canal dressings and great disinfection benefits should be reveled to maximum the ease of getting a well cleaned root canal complex and to demonstrate a better success rate of our daily endodontic treatments.

OR44

Selection of The Best Regenerative Endodontic Treatment Protocol For The Management of Root Resorption According To The Different Clinical Situations.

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ABSTRACT

Local pathologic root resorption is a permanent irreversible condition that can be classified into either internal or external according to the damaged protective layer. It is usually asymptomatic and is detected accidentally through routine radiographs. If it is left untreated it can cause serious complications and may lead to rapid tooth loss. Traditional non-surgical treatment of non-perforating root resorption is based on optimum root canal preparation and disinfection then obturation using thermoplasticized techniques. Although with the success of these techniques, it had its own limitations as sealer can dissolve over time, leading to voids within the canal which may act as a nidus for reinfection. Recently bioceramics were used for obturation of root resorptive defects due to its desirable properties. However, the flow properties of MTA are significantly poorer than those of thermo- plasticized gutta percha and its use as an effective filling material in root resorption depends on adequate ultrasonic activation of the material to disperse it into the recesses of the defect. Moreover, these techniques cannot replace the damaged pulp and tooth structure with vital tissues that act as a defensive mechanism during tissue injury and protection from further damage. Currently Endodontics looks forward towards regeneration rather than repair. However, regenerative endodontic treatment was mainly limited to pulp revascularization of necrotic pulp in immature teeth followed by mature teeth. Recently pulp revascularization techniques were applied in the treatment of root resorption.

OR45

The Power Combo: Perfection and Perseverance

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* *Private Practice, Egypt*

ABSTRACT

Restorative dentistry has remarkably evolved in the past decade. Innovation in materials, technologies and techniques have significantly improved the success of restorations, yet many challenges have emerged in the past couple of years. The COVID pandemic and the economic drop have greatly affected our profession leading to undesirable changes in how dentists operate. The power of our profession lies within helping our patients and reducing their suffering. This can only be managed through the constant pursuit of perfection and the perseverance to improve and do a better job, regardless of the challenges facing us

OR46

Series of Complicated Endodontic Retreatments of Upper Lateral Incisors

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ABSTRACT

The aim of this scientific work is to explain the management of complicated root canal cases efficiently and easily. Last years, many different techniques have been proposed to manage the complicated cases in RCT either for managing intracanal broken instruments, bypassing ledges, gutta-percha removal, perforation repair or treating calcified canals. Moreover, Morphological variations of root canal system became so popular specially the severely curved root canals, where hybridization of rotary systems becomes a must. This lecture covers sequential steps for managing of nearly all root canal cases. It simplifies the procedural steps where all the iatrogenic errors can be avoided or treated, depending on using a simplified, reproducible and clinical approaches, where they can be applied for all complicated root canal cases, helping to either reduce the risk of instruments fracture in severely curved canals or to manage them in cases of fracture. Also, to highlight the solution to manage calcified canals, remove gutta-percha efficiently or perforation repair techniques & materials. Moreover, to express the role of CBCT in these challenging cases.

OR47

Recent Trends in Vital Pulp Therapy

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ABSTRACT

Vital pulp therapy has always been a method to reach the ultimate goal of dentistry, which is conservation of tooth structure and pulp vitality. However, it was never as effective and promising as it has been during the last few years. By the introduction of new materials and technologies, a new gate of hope is open for more tooth structure and pulp vitality conservation. Though a full consensus regarding the diagnosis and management of exposed vital pulps has not yet reached, both the European Society of Endodontology (ESE) and American Association of Endodontists (AAE) have expressed very similar guidelines regarding the matter. Moreover, presence of new materials such as calcium silicates and methodologies such as, tissue engineering and laser therapy have proven to be vital options to achieve a long lasting vital pulp therapy. Hence, reaching tooth and pulp tissue conservatism and maintaining dentinal immunological response and dentinal proprioceptive function. Use of calcium silicates (MTA, Biodentine, Bioceramics) is an integral part to achieve all goals of vital pulp therapy. Moreover, Laser therapy and Tissue Engineering have proven to be future treatments that still require further research and clinical trials in order to conserve more pulp tissue and hence, consider vital pulp therapy as a first choice treatment over nonsurgical root canal treatment.

OR48

Minimal Invasive Post Endodontic Monoblock Restoration: Sharonlay Crown.

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ABSTRACT

The most difficult task is the rehabilitation of highly damaged endo-treated teeth. Although the traditional crown supported by radicular metal posts is still extensively used in dentistry, it has been heavily criticized for its invasiveness. The decision to place a full crown or an onlay is based on the remaining tooth structure; onlay can be inserted if the cuspal width to length ratio is 1:2 or above. A full crown must be planned when the ratio is less than 1:2. Cast post and core or a prefabricated post can provide fracture resistance with equivalent outcomes in single-rooted teeth requiring post-endodontic repair. In the case of premolars, however, contrary to the common practice of just providing cuspal covering through onlays, cervical reinforcement would be required to counteract horizontal stresses acting in the cervical region. Sharonlay is one of the newer ways being developed by researchers to improve the function of teeth and repair in such circumstances. Sharonlay is a new onlay patented design with I.P. no 1956475 dated 27/04/2010 that has a post extending into the radicular section of the premolar giving the required strengthening in a conservative manner while also protecting it against both vertical and horizontal stresses. The current lecture will discuss this type of restoration from A-Z with presentation of clinical cases

OR49

Regenerative Endodontics: A road Less Travelled

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ABSTRACT

Regenerative endodontic procedures “REP” are intended to repair & regenerate part of the pulp-dentin complex, which involves introducing stem cells, tissue scaffolds, growth factors & other ingredients beneficial for regeneration into the root canal system. Most regenerative endodontic procedures reported in literature have presented promising clinical, radiographic results and even regaining pulp sensibility. REP was initially proposed for the treatment of immature permanent teeth to allow for root development and apical closure with subsequent enhancement of the tooth’s fracture resistance. Nowadays, an increasing trend in the applications of REPs in necrotic mature teeth as well, coinciding with the shift towards minimally invasive dentistry with the main goal of preservation of tooth structure. With growing knowledge and better understanding about this treatment procedure; Will there be a Paradigm Shift in clinical endodontics in the near future??

OR50

Pulpotomy Past and Future

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ABSTRACT

Vital pulp therapy is an important treatment modality to preserve and maintain the pulp tissue in a good condition. Vital pulp therapy has been revolutionized recently as the new progress achieved in pathology understanding, and recent improvements in dressing material. owing to the availability of newer material nowadays, There is a lot to do with still vital pulp.

OR51

Insight Into Electronic Work Determination

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ABSTRACT

Working length determination (WLD) is an essential step of root canal treatment procedures that determine the termination point for cleaning, shaping and obturation of the root canal systems. Improper working length determination through underestimating or overestimating this terminating point may affect the outcome of root canal treatment. Currently, electronic WLD using apex locators considers the main standard method used for working length determination recommended to be complemented with WL radiograph to allow greater accuracy of determination. Results accumulated over years from vitro and vivo studies have confirmed the accuracy of electronic WLD with some recorded discrepancies. Some factors are recorded that may result in these discrepancies and cause an inability to obviate the need for radiographic verification

OR52

Broken File Dilemma

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ABSTRACT

Radicular separation of endodontic instruments is the worst nightmare facing every dentist in the modern dentistry. Instrument separation inside the canal worsens the root canal procedures and make cleaning and shaping the canal more difficult. Hindering the procedures will affect the outcome and the prognosis of the case. Separation mode is a complicated phenomenon affected by many factors which I will clarify in my lecture and how to prevent that. Managing a separated instrument will range from orthograde to surgical option. Orthograde conservative conventional options including removal or bypassing the fragment will be the specific part of our lecture. A decision should be taken either to bypass or to retrieve according to many affecting factors which I will clarify. The main goal is not only removing the separated fragment but also the tooth integrity should be maintained so bypass is a good option in many situations. I will clarify when, why and how to bypass a broken file fragment through different protocols and trials. I will clarify all the available treatment options that clinician can perform in broken file cases. Clinicians should be familiar with all options in facing broken file cases even before referral if needed.

OR53

Nano Intracanal Medicaments; A New Strategy In Root Canal Disinfection.

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ABSTRACT

A successful endodontic treatment depends on the initial eradication of all the bacteria; those present in the root canal as well as those already penetrated in depth. The achievement of microbicidal doses becomes critical in the endodontic environment, because in such harsh condition's bacteria may aggregate to form a biofilm or enter a stationary phase, thus acquiring a resistant phenotype. Therefore, disinfection of the root canal is a major determinant in the healing of periapical tissues. Although the chemo mechanical preparation and use of antimicrobials are effective in reducing the bacterial load, some bacteria can still persist. Local use of Antibiotics as intracanal medicament have been reported to be effective in reducing bacterial numbers in the root canal systems of infected teeth which help to reduce the periapical inflammatory reaction including clastic-cell mediated resorption. Nanotechnology is progressing as a promising field that is developing every day in various medical and dental applications because of their great broad spectrum antibacterial effectiveness and suggested biocompatibility. Cytotoxicity is the capacity of a material to impact cellular viability and can be measured at various physiological endpoints such as reduction in cell growth and proliferation, necrosis, apoptosis, or combinations of these aspects. Evaluation of cytotoxic activity of nano intracanal medicaments is of great importance as it affects the biological and physiological behavior of these cells. Using an intracanal medicament of high antibacterial efficacy and low cytotoxic effect is an optimum goal in root canal disinfection which could be achieved using Nano technology.