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Poster Session P10 – Jens Andreasen Award

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Poster Session P10/Jens Andreasen Award

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Discolouration of teeth following avulsion and replantation, a randomised controlled trial

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Introduction: Currently nonsetting calcium hydroxide (Ultracal XS®) is recommended as the initial medicament following avulsion and replantation for mature teeth. There is some experimental evidence to suggest Ledermix® placed as an inter-visit dressing may improve the periodontal healing following this injury. The aim was to investigate using a multi-centre randomised controlled trial (m-cRCT) the effect of two root canal medicaments (Ledermix® and Ultracal XS®) on the discolouration of avulsed and replanted teeth.

Patients and methods: The effect of any discolouration was investigated in three ways: Patient satisfaction with the colour, clinical photographs taken at baseline and 12 month reviews and estimation of colour change using CIELAB scores for baseline and 12 month photographs.

Results: These preliminary results report on 19 patients (23 teeth) recruited to this m-cRCT. Ten patients (12 teeth) were randomised to the Ledermix® group and 9 patients (11 teeth) to the Ultracal XS® group. At 12 months, 7 patients (all from the Ledermix® group) were concerned with the discolouration of their tooth. There was significant discolouration of teeth from baseline with Ledermix® causing a darkening and grey brown discolouration (mean change $L^* = -5.1$, $a^* = 0.6$, $b^* = -1.2$ and $\Delta E = 8.1$) and Ultracal XS® causing a yellowing of teeth ($L^* = 3.1$, $a^* = 0.5$, $b^* = 3.2$ and $\Delta E = 6.1$). Between the two groups there was a significant difference for the L* and b* variables (Independent *t*-Test).

Conclusion: Both root canal medicaments cause discolouration, with Ledermix® proving less acceptable to patients.

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One step apexification using two types of mineral trioxide aggregate

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Introduction: The clinical and radiographic success of one step apexification in nonvital immature permanent incisors in children was investigated comparing two types of white MTA.

Materials and methods: Ethical approval was granted and informed consent was obtained from the parents or guardians of all participants. Twenty-two nonvital traumatised permanent incisors with open apices in 21 children (mean age 10 years) were recruited. Teeth were alternately assigned to Group 1 (white MTA ProRoot®) or Group 2 (white MTA Angelus) for apexification. Clinical and radiographic review took place at 3, 6, 12 and 18 months. Two calibrated, blinded examiners evaluated all radiographs. Examiner agreement was assessed using Kappa-Cohen tests. Results were analysed using Fisher's Exact tests and Repeated Measures ANOVA.

Results: Mean follow up time was 10.8 months. The overall clinical success rate was 95.5% and the overall relative radiographic success rate was 86.4%. There were no statistically significant differences in clinical or radiographic outcomes between Group 1 and Group 2. Both groups showed a statistically significant reduction in periapical pathology over time ($P < 0.05$). A significant relationship was identified between nondivergent apical anatomy and ideal positioning of the MTA plug ($P = 0.04$). Interestingly, cervical discolouration was observed in 18.2% of teeth after MTA placement (all in Group 2).

Conclusions: Both commercial brands of white MTA showed similar favourable clinical and radiographic outcomes. One-step apexification using both white MTA ProRoot® and white MTA Angelus can be proposed as a suitable, time efficient, acceptable alternative to traditional calcium hydroxide apexification.

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Management of a complicated trauma case of avulsed permanent teeth

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Introduction: A Caucasian 10-year-old boy, presented at the graduate clinic of the paediatric dentistry department, approximately 50 min after having his front teeth knocked out during an accident at school. Teeth were placed into milk immediately after the accident. Extra-oral examination revealed skin lacerations in the perioral region and a deep laceration in the lower lip. Intraorally, teeth #31, 41 & 42 had been avulsed, while tooth #11 had sustained an extrusive luxation injury and #21 an enamel-dentin crown fracture. An alveolar bone fracture at the anterior region of the mandible was present.

Clinical management: a) Immediate treatment: Replantation of #31, 41 & 42 and splinting with an orthodontic wire and resin, repositioning of #11 and splinting, temporary restoration of fractured #21 and instructions to patient and parents b) Following visits: Pulp extirpation and initiation of endodontic treatment in teeth #11, 31, 41 & 42 7–10 days post-replantation, splint removal after 3 weeks, completion of endodontic treatment, fit of a custom made athletic mouth-guard and follow up of traumatized teeth for development of post-traumatic complications. Complications: During treatment (1.5 months post-replantation), multiple sites of external inflammatory root resorption in #42, 41 & 31 were noted along with a fistula between #41 and 42. After further instrumentation, the resorptive process was arrested 4.5 months later. The 2-year follow up examination revealed no further complications.

Conclusion: Early replantation and proper management improves the longevity of avulsed teeth, although, transient inflammatory resorption may develop.

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Tooth avulsion in growing patients: mini-implant rehabilitation?

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Introduction: Dental avulsion represents 1–16% of all dental traumas and definitely has the most therapeutic implications. The most affected age is between 9 and 10 years, the period in which greatest craniofacial growth and development takes place. An immediate replantation is the treatment of choice, although it may not always be possible. In the event that replantation cannot be placed or has failed, the physician is faced with a wide range of treatment options that can affect a patient's quality of life. Implant rehabilitation has been considered in growing patients, but implants can act as ankylosed teeth and are unable to follow the normal growth of maxillary bones. The goal of this study was to evaluate the effectiveness of implant-prosthesis rehabilitation in growing patients using mini-implants.

Materials and methods: The sample included 12 patients aged from 10 to 14 years. All patients presented missing anterior teeth, requiring insertion of 13 mini-implant fixtures with immediate prosthetic loading. Radiographic and clinical evaluations were conducted 1 year or more after the surgical procedure. The aim of the clinical and radiographic evaluation was to exclude the presence of perimplantitis and to evaluate the mini-implant infraocclusion.
Results: No patients showed perimplantitis. All patients showed low values of infra-occlusion of the mini-implant-supported crowns: the vertical step measured on radiographs varied between 0.28 and 1.35 mm.
Conclusion: The proposed technique made it possible to obtain rehabilitation of the traumatised frontal section in a single session, with immediate high aesthetic and functional success, and high patient satisfaction.

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Abstract withdrawn

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Luxation injuries to permanent incisors-factors affecting development of complications

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Introduction: The aim was to study the occurrence of post-traumatic healing complications in luxated permanent incisors and factors that are possibly related to their development.
Materials and methods: The study material was based on longitudinal data sets from dental records of patients at a pediatric dental trauma clinic. Dental records of 252 patients were reviewed. All teeth were treated during the period 2000–2009 with a minimum follow-up period of 1 year. The following variables were registered: sex, age, type of luxation injury, associated hard tissue injuries, complications, stage of root development, severity of injury, treatment method.
Results: A total of 226 luxated incisors were included in the study. Pulp necrosis was the most frequent complication developed, associated mostly with intrusive luxation (72%), followed by lateral (27%) and extrusive luxation (26%) and subluxation (11%). Intrusions yielded the highest frequency of root resorption (48%), while lower frequencies were found in other types of luxation (3–23%). Significantly higher prevalences of pulp necrosis in lateral and extrusive luxation were found among teeth with fully developed roots ($P < 0.05$). More severely intruded teeth showed increased prevalences of pulp necrosis ($P < 0.001$), however, even in teeth with a mild intrusion, pulp necrosis developed in a high prevalence (56%), regardless of the stage of root formation.
Conclusion: Pulp necrosis is the most frequent complication following luxation injuries and is mostly related to the stage of root development. The occurrence of pulp necrosis is increased in more severely intruded teeth, although the risk is high, even in cases of a mild intrusion.

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Parents' ability to recall past injuries to maxillary primary incisors in their children

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Introduction: We evaluated parents' ability to recall past injuries to their children's maxillary primary incisors.
Materials and methods: Clinical and radiographic trauma-related major and minor signs observed in the first dental visit of 727 pre-school children, were recorded. Major signs included: crown fracture, coronal discoloration, internal resorption, pulp canal obliteration, swelling, fistula and periapical lesion. Minor signs included: enamel cracks, sensitivity to percussion, dull or metallic sound on percussion, increased mobility and widened periodontal ligament. Children were divided into groups: CT-certainly traumatized (presenting major signs or combination of three minor signs), PT-Probably traumatized (presenting 1 or 2 minor signs) and NT-not traumatized. Accompanying parents were asked to recall past injuries to their child's teeth. Possible replies were: 'no'; 'yes' and 'probably yes'. Disagreement between parents was recorded as 'yes'. Crown fracture, coronal discoloration, swelling, fistula and avulsion were defined as 'observable signs of trauma'.
Results: 118 (16.2%) children were accompanied by fathers, 411 (56.6%) by mothers and 198 (27.2%) by both. CT-group had 464 (63.8%) children, PT-group – 103 (14.2%) and NT-group – 160 (22%), with no gender pre-dilection. Parents' positive recall was similar for boys (33.3%) and girls (31.0%). Mothers' recalled trauma in 32.6% and fathers in 27.1%. Parents failed to recall trauma in 52.6% of the CT-group children and in 43.5% of the PT-group children. Parents failed to recall trauma in 51.6% of the children who had observable signs of trauma.
Conclusion: Parents' denial of a previous dental trauma in their children's primary incisors is reliable in less than 50%.

