



SMART DENTAL UPDATES

Vol 2 | Issue 28 | 2021

Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you “**SMART DENTAL UPDATES**” which contain latest and interesting news in the field of Dentistry.

This issue contain

- Dental follicles promote soft tissue management in surgical exposure of labially impacted maxillary canine
- Efficacy of a New-generation Platelet-rich Fibrin in the Treatment of Periodontal Intrabony Defects
- Restorative Management and Treatment of Pseudo-Class III Malocclusion

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Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited



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Dental follicles promote soft tissue management in surgical exposure of labially impacted maxillary canine

The maxillary canines are crucial for maxillofacial aesthetics and dental occlusion. To early interceptive measures with extraction of deciduous teeth which fails to prevent the development of impacted anterior teeth a combined treatment of surgical exposure and orthodontic therapy is a viable alternative.

The objective of this study was to report a technically improved operation on the surgical exposure of labially impacted maxillary canine.

The preservation of DF promotes soft tissue management in combined surgical and orthodontic treatment of labially impacted maxillary canine to achieve better periodontal status.

In this study, 24 consecutive subjects with a mean age of 14.5 were included. All the subjects underwent surgical exposure treatment for unilateral labially impacted maxillary canine and orthodontic treatment. Impacted teeth were assigned to the experimental group and contralateral unimpacted canine teeth were assigned to the control groups. Two blinded dental investigators measured the periodontal status after the completion of fixed orthodontic treatment. Gingival index (GI) was scored on the mesial, distal, buccal, and palatal surfaces; and mean gingival indices were determined for each tooth. Probing depth (PD) was examined with a standard periodontal probe. In the experimental group the presence of any gingival scars around the teeth was recorded. The exposure of the impacted tooth was performed under local anesthesia. A curved incision was undertaken on the mucosa within the scale of the surface of the crown in the experimental group and the location of incision was estimated roughly in CBCT. To expose the bone surface thoroughly the submucosal tissues and muscle were incised step by step. In order to provide a clear view of intact dental follicle (DF) the surgical field was washed with normal saline irrigation. To obtain adequate exposure the curved incision was



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performed on the incisal one-third of the labial surface of the DF parallel to the incisal ridge. With a 5-0 nylon suture surrounding the crown dissected DF and mucosa was sutured. Preadjusted edgewise metallic brackets of

A)Evaluation of the impacted teeth: clinical photographs	B) Incision and full thickness flap reflection
Orthopantomograms during orthodontic treatment	Clinical evaluation post-orthodontic treatment

0.022×0.028-in. slot was used. Sequential traction was necessary since the root of maxillary left lateral incisor and the crown of maxillary left canine might collide during orthodontic tooth movement. To achieve preliminary alignment the impacted canine was brought to the arch after sequential traction. At every regular re-examination the eruption status was precisely documented. For the impacted tooth and the contralateral tooth at the time of removal of fixed appliance periodontal and bony measurements was recorded.



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24 patients were successfully treated with unilateral maxillary canine teeth impaction. On the first postoperative day only 3 patients (12.5%) reported mild pain. In the experimental group, Gingival scars was observed in 2 subjects and the scores for gingival index in the experimental group was 0.47 and the control group was 0.45. The mean duration of treatment from surgical exposure to alignment of the impacted canines in the dental arch was 9 months ranging from 4 to 18 months. Probing depth was higher in the experimental group. The difference was statistically significant at the mesiolabial site, distolabial site, midpalatal site. In the experimental group mean KT was generally lower than in the control groups. Experimental group and control group showed no statistical significance. In both the control and experimental the alveolar bone levels, the labial variations were far greater than those seen in the palatal bony plates. With regards to the alveolar bone levels between the control and experimental groups there were no statistically significant differences. During the orthodontic treatment the presence of ARR was common with the fixed appliances. Between the two groups the Apical root resorption (ARR) ranged from 0.4 to 3.0 mm and was not statistically significant.

To achieve better periodontal status the preservation of DF promotes soft tissue management in combined surgical and orthodontic treatment of labially impacted maxillary canine.

References: Hu LR, Qi WT, Bao CY, Pan J, Liu X. Dental follicles promote soft tissue management in surgical exposure of labially impacted maxillary canine. BMC Oral Health. 2021 Nov;21(1):1-8.



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Efficacy of a new-generation platelet-rich fibrin in the treatment of periodontal intrabony defects

The main goal of the periodontal treatment is to eliminate inflammation and to prevent further destruction of the periodontium, as well as to achieve sustainable condition in the long-term. Significant efforts have been implemented to develop both materials and surgical techniques that can predictably contribute to periodontal regeneration over the past decades.

The objective of this study was to assess the healing of intrabony defects after treatment with a new generation of platelet-rich fibrin (A-PRF+) respect to enamel matrix derivative (EMD).

This was a randomized, controlled, prospective clinical trial. The role and clinical applicability of a new generation of platelet-rich fibrin, 'Advanced Platelet-Rich Fibrin (A-PRF+)' in periodontal wound healing. According to World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions the subjects were divided into stage III. Periodontitis. At base line the subjects received oral hygiene instruction, motivation and sub-gingival scaling/root planing under local anaesthesia. Thirty (30) intrabony defects of 18 subjects were randomly treated with A-PRF+ (test, n=15) or enamel matrix derivative EMD (control, n=15). At baseline and 6 months after surgery the following clinical parameters were recorded such as pocket depth (PD), gingival recession (GR) and clinical attachment level (CAL). The defects were randomly allocated by computerised random number generator and treated with either A-PRF+ (test group) or EMD (control group). After administration of local anesthesia intracrevicular incisions were performed extending to the adjacent teeth. Full-thickness buccal and oral extended flaps were raised, and all granulation tissue was removed. A-PRF+ was applied in the test group after defect debridement. The root surface adjacent to the defect was conditioned for 2 min with 24% ETDA gel in the control group after debridement. The defect and the adjacent mucoperiosteal flap was rinsed with sterile saline to remove all EDTA residue, and



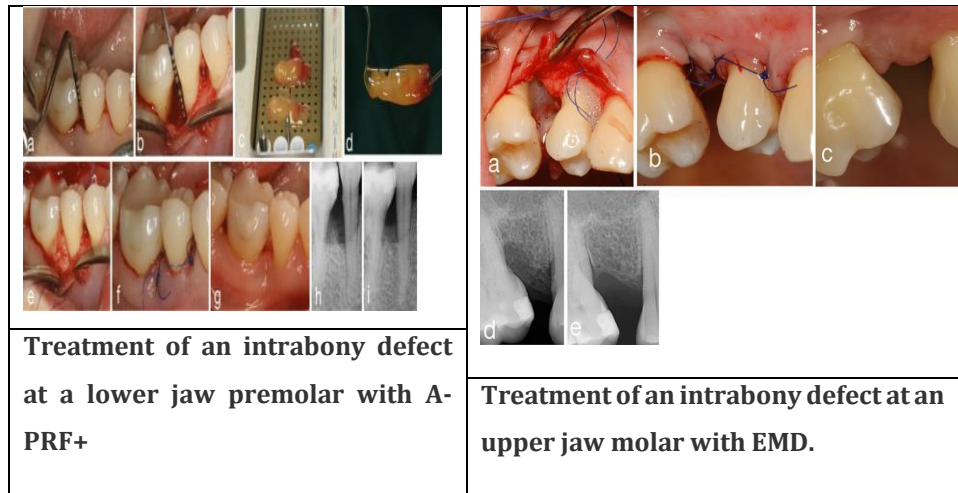
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then Straumann® Emdogain® was applied. With 5.0. non-absorbable modified vertical or horizontal mattress sutures the flap was repositioned coronally and closed thoroughly. All the subjects had received antibiotics for a week, two times daily postoperatively. The postoperative care consisted of 0.2% chlorhexidine rinses two times daily for 3 weeks. 14 days after surgery sutures were removed.

Thirty (30) intrabony defects of 18 non-smoking subjects age 55.5 ± 14.5 years, suffering from chronic periodontitis were included in this study. Full-Mouth Bleeding Score (FMBS) values decreased after surgery. Comparison of pocket depth (PD) and transgingival bone sounding (BS) values were not estimable because the two group means at 6 months were identical. Power estimates of at least 99.8% were obtained for all outcomes. Post-operative recovery was uneventful without exception. Allergic reactions or infections was not observed.

After the completion of the six-month follow-up and analysis of the data of 30 intrabony defects the



trial was terminated which showed a comparable distribution and configuration in the two groups. After 6 months, the mean PD has decreased significantly in both groups. After 6 months, the mean GR increase was 3.93 ± 2.73 mm in the test group and 3.33 ± 1.58 mm in the control group. The mean clinical attachment level (CAL) gain was 2.33 ± 1.58 mm in the A-PRF+ group and 2.60 ± 1.18 mm in the enamel matrix derivative group. CAL improved significantly in both the groups. After 6 months, the mean BS has decreased to 5.67 ± 0.89 mm in the test group and to 5.67 ± 0.81 mm in the control group.



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In the surgical treatment of intrabony periodontal defects the new-generation platelet rich fibrin behaves as effectively as enamel matrix derivative. Both methods resulted in comparable outcomes based on the 6-month results. There was no significant difference between the test and control groups. For the treatment of intrabony periodontal defects A-PRF+ seems to be suitable.

Reference: Csifo-Nagy BK, Solyom E, Bogнар VL, Nevelits A, Dori F. Efficacy of a New-generation Platelet-rich Fibrin in the Treatment of Periodontal Intrabony Defects: a Randomized Clinical Trial. (2021) 21:580

Restorative Management and Treatment of Pseudo-Class III Malocclusion

A 31 year old Male came with the chief complaint that he needs to have a better smile. No contributory past medical history except smoking. Extraoral examination showed that no abnormality including TMJ, lymph nodes, facial symmetry, and lateral profile. In both arches with recurrent caries underneath the subject had multiple old discolored composite restorations in the anterior area. The subject had multiple missing teeth with deficient alveolar ridges. Large old restoration on #22 with recurrent caries was observed. Additionally, large old restorations on multiple posterior teeth was noted with periapical radiolucency on tooth #36 related to an old root canal treatment. With minimal bone loss periodontal status of anterior teeth was fair. In the posterior area, localized horizontal bone loss was evident.

Diagnosis included pseudo-class III malocclusion accompanied by dental wear of maxillary anterior teeth and midline diastema. In both maxillary and mandibular anterior teeth he had recurrent caries related to the old defective composite restorations. Recurrent caries on multiple maxillary and mandibular posterior teeth with periapical radiolucency related to tooth #36 was observed. The subject agreed on extracting tooth



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#22 after diagnosis and treatment plan presentation. As the subject wanted to improve his smile and correct his malocclusion with no orthodontic intervention, replacing his anterior teeth with full-coverage lithium disilicate restorations was planned. As the subject did not want to go through implant treatment the missing teeth #14 and #15 also were going to be replaced with a zirconia fixed dental prosthesis. Proper inter-occlusal records were taken. For diagnostic mock-up all impressions and records were sent to the lab for diagnostic wax-up and for silicone matrix fabrication. To have his tooth #22 extracted after initial preparation of anterior maxillary teeth to facilitate the fabrication of the provisional FDP to replace tooth #22 immediately after extraction the subject was then referred to an oral surgeon. To evaluate the tissue maturation the subject was seen two weeks after postextraction for a follow-up. The tissue maturation around the extraction site was confirmed satisfactory after removing the maxillary anterior provisionals. The remaining maxillary teeth from #16-25 was prepared. Using the double retraction cord technique gingival displacement was performed. The final restorations were made to adopt the subjects existing occlusal scheme as the anterior edge-to-edge relationship did not require changing the occlusal vertical dimension as confirmed by the provisional restorations. Monolithic zirconia FDP was used to replace the missing teeth #14 and #15 while teeth from #12 to #25 were designed to have lithium disilicate full-coverage restorations, including the FDP replacing #22.



Intraoral frontal view of the patient teeth preoperatively

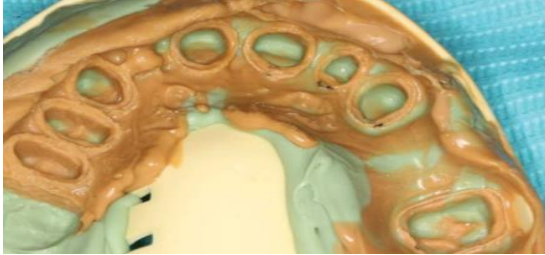


Diagnostic wax-up illustrating the desired corrected tooth relationship.



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Final impression after tooth preparation using vinyl polysiloxane impression material.	Postoperative intraoral frontal view of the full-coverage restorations illustrating the corrected occlusal relationship.
	
Extraoral lateral view of the final restorations illustrating the desired esthetic outcome.	Extraoral frontal view of the patient smile with the final full-coverage restorations.

This clinical approach will give chance to treat subjects suffering from minor occlusal discrepancies that require restorative intervention without the need to go through orthodontic therapy.

Reference: Alfaifi AH. Restorative Management and Treatment of Pseudo-Class III Malocclusion. Case Reports in Dentistry. 2021 Nov 3;2021.



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