



MICRO LABS LIMITED



SMART DENTAL UPDATES

Dear Doctor,

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

This issue contains

- A Long-Term Clinical Observation of a Newer Technique for Direct Fabrication of Fiber-Reinforced Composite Bridge
- Influence of the position of the antrostomy in sinus floor elevation on the healing of mini-implants
- Effect of coronal tooth structure loss on the clinical survival of root canal retreated teeth

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Limited

A Long-Term Clinical Observation of a Newer Technique for Direct Fabrication of Fiber-Reinforced Composite Bridge

Prosthetic replacements of anterior or posterior edentulous segments present an aesthetic challenge to clinicians. The use of fiberglass in dentistry has increased due to the improvements in the development of adhesive techniques reducing the cost of treatment and avoiding abutment tooth craving. This study aims to evaluate the clinical usefulness of the new technique to fabricate a direct fiber-reinforced composite bridge (FRCB) over a long period of time.

Twenty-one FRCB were performed with the new direct technique on 21 patients with a mean age of 58.85 years and female predominance in the Faculty of Dentistry of Oviedo (Spain). The framework design releases the embrasures allowing adequate interproximal brushing, avoidance of periodontal disease and



“T” shape of the fiber-reinforced composite bridge

interproximal caries. A baseline examination was performed and the patients were examined regularly at six-month intervals (nine years' follow-up). The restorations were also evaluated by an examiner using parameters to check their stability, longevity and the lack of periodontal disease.

The most frequent location was the maxillary premolar region and the purpose of the restorations was to give a definitive bridge in 100% of the patients.

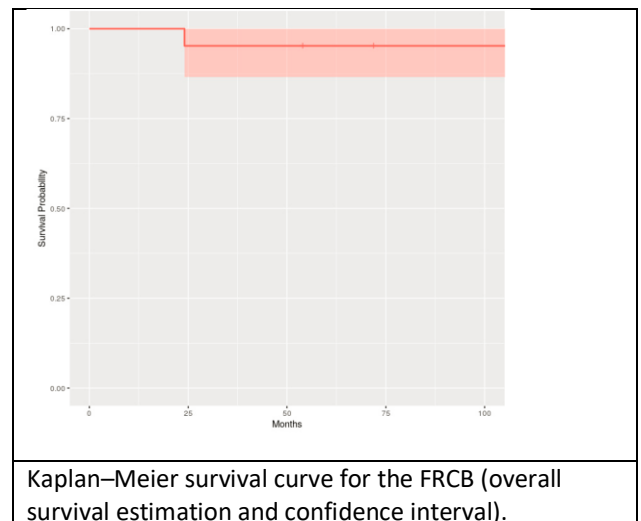


The FRCB after the occlusal adjustment and composite polishing

Only one total debonding of the prostheses was detected during the observation period at 24 months and three partial adhesive-cohesive veneering composite fractures at the pontic after 60, 72 and 84 months, respectively. Kaplan–Meier was performed to detect the overall survival rate of the restorations at the end of the follow-up.

Nine-year survival rates for the FRCB was 95.2%. All the cases had a clinically acceptable periodontal condition and an interproximal absence of caries in the abutment teeth.

Currently, this type of restoration allows a minimally invasive aesthetic and is an affordable procedure, being a good alternative to other types of treatments.



Source: Martínez MFE et al. Dent. J. 2020, 8, 48; doi:10.3390/dj8020048

Two “T” shaped pins reinforces and stabilizes the FRCB, allowing greater survival over time..

Influence of the position of the antrostomy in sinus floor elevation on the healing of mini-implants

The loss of teeth in the posterior segments of the maxilla creates edentulisms that can be restored with fixed prostheses supported by implants. However, due to the alveolar crest resorption that occurs before and after tooth extraction and to the extension of the pneumatization of the maxillary sinus, bone height might result to be insufficient to install implants. In this case, sinus floor elevation represents a solution for bone volume augmentation to allow implant installation. the

Choice of one or the other position of antrostomy did not influence significantly the outcome

aim of the present study was to evaluate histologically the healing of mini-implants installed after sinus floor elevation using a lateral approach and placing the antrostomy at different level from the sinus floor.

Sinus floor elevation using a lateral approach was performed in 24 healthy volunteers.

The antrostomy was randomly placed either close to the base of the sinus floor (group base) or at about 3–4 mm cranially to it (group standard).

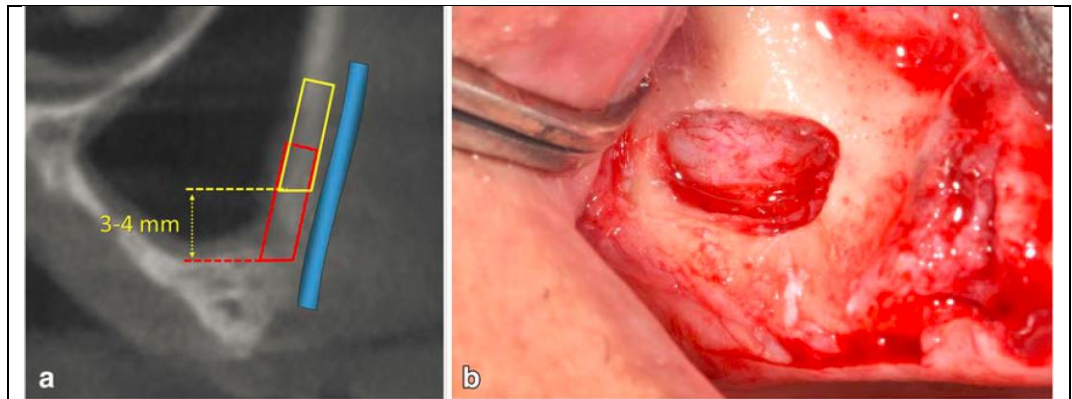
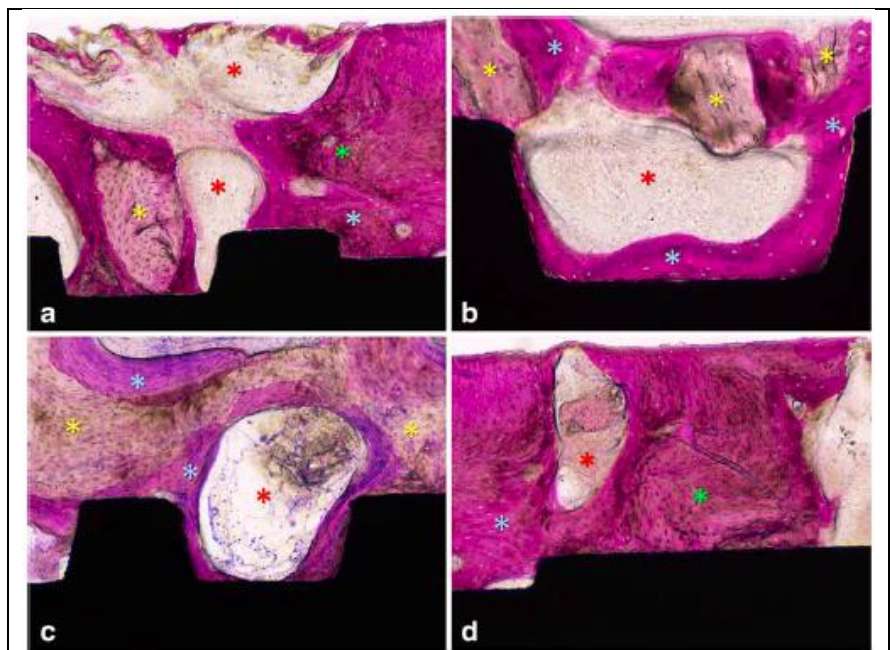


Fig. 1 a Schematic drawings showing the different antrostomies location: Standard (in yellow) and Base (in red). b Clinical view of the antrostomy

After 6 months of healing, mini-implants were installed within the grafted region, through the alveolar crest. Three months later, biopsies were collected.

Sixteen biopsies from 16 patients were available for histological analyses. The new bone reached fractions of $40.9 \pm 11.9\%$ and $48.5 \pm 20.1\%$ at the base and standard groups, respectively ($p = 0.208$). Xenograft particles were found in contact with the implant surface at percentages of $12.1 \pm 11.0\%$ in the base group, and $15.9 \pm 23.7\%$ in the standard group ($p = 0.674$).



Photomicrographs of ground sections illustrating the healing at the microimplants after 3 months from installation. a–c Newly formed bone and marrow spaces surround the implants and are in close contact with the implant surface (a). The xenograft was embedded into new bone and marrow spaces and in close vicinity to the implant surface (a). d Old pre-existing bone in contact with the implant surface, located in the coronal regions of the microimplants.

Asterisks: light blue, newly formed bone; red, marrow spaces; yellow, xenograft; green, old pre-existing bone. Magnification a, c, d $\times 100$; b $\times 200$. Acid fuchsin and toluidine blue stain

Based on the present study, the choice of one or the other position of antrostomy did not influence significantly the outcome and, therefore, should be left to the preference of the surgeon.

Source: Hirota A et al. Oral Maxillofac Surg . 2020 May. doi: 10.1007/s10006-020-00846-7. Online ahead of print.

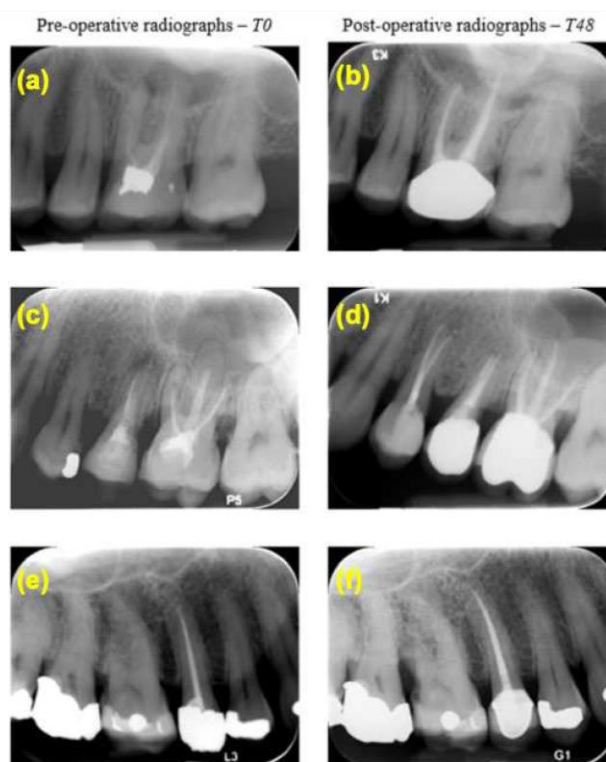
Effect of coronal tooth structure loss on the clinical survival of root canal retreated teeth

The preservation of coronal tooth structure without compromising root canal access has been shown to be desirable when planning root canal treatment. This study examined the impact of the residual volume of coronal tooth structure in posterior teeth measured with an intra-oral scanner on the 4-year clinical survival of root canal retreated teeth. It also assessed retrospectively the effectiveness of the Dental Practicality Index (DPI) in predicting the survival of root canal retreated teeth.

DPI score can potentially be used to identify teeth with failed root canal treatment

A total of 156 posterior root canal treated teeth (140 patients) had baseline periapical radiographs (PA) and cone beam computed tomography (CBCT) scans taken prior to root canal retreatment. These teeth were followed-up with a clinical examination at 1, 2, 3 and 4 years (T12, T24, T36 and T48) with periapical radiographs and CBCT images taken at T12, and PA taken at T24, T36 and T48 where appropriate. Root canal retreated teeth were dichotomised into 'survived' versus 'extracted'. Fisher's exact test was used to determine the association between the volume of remaining coronal tooth structure and the 4-year tooth survival. The Dental practicality index for each tooth was established using the pre-operative clinical and radiographical data. Fisher's exact test was used to establish a relationship between categorical variables, the total score of DPI vs tooth outcome.

The percentage of extractions associated with teeth with less than 29.5% remaining coronal tooth structure was 3 times higher (12.5%) compared to that of teeth with a residual tooth structure >29.5% (3.5%), but with no significant difference ($P=0.073$). There was a significant correlation between the outcome of root canal retreatments at 1-year, assessed by both PA and CBCT, and the 4-year survival (Fisher's exact test, $P= 0.007$ & $P= 0.001$, respectively). Teeth with DPI scores ≥ 6 were more likely to be extracted than teeth with DPI score < 6 (18.8% vs 3.9%) (Fisher's exact test, $P= 0.045$).



Teeth with less than 30% of remaining tooth structure were associated with a survival rate above 80% and teeth with more than 30% of residual tooth structure survived in more than 94% of the cases. The radiographic outcome of root canal treatment can also help to predict tooth survival with teeth having an unfavourable outcome at 1-year more likely to be extracted within 4-years of completion of treatment. The DPI score can potentially be used to identify teeth with failed root canal treatment which are likely to be extracted following retreatment and cuspal coverage

Source: Al-Nuaimi Net al. Int Endod J. 2020 May 8. doi: 10.1111/iej.13322. Online ahead of print.



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