

Minimally Invasive Reconstruction in Implant Therapy: The Prosthetic Gingival Restoration

Christian Coachman, CCD, CDT¹
Eric Van Dooren, DDS²
Galip Gurel, DDS, MS³
Marcelo A. Calamita, DDS, MSc, PhD¹
Murilo Calgaro, CDT⁴
Juvenal de Souza Neto, CDT⁵





Figs 1 and 2 Preoperative situation. The maxillary right lateral incisor and canine are missing, with extensive soft and hard tissue deficiencies. The right central incisor and first premolar will be extracted due to lack of interdental bone support and a peri-apical lesion.



Fig 3 Try-in of the diagnostic wax-up, which will guide the 3D implant placement and the design of the final restoration.



Fig 4 Healing after immediate implant placement.



Fig 5 Ceramic try-in.



Figs 6 and 7 The gingival part of the restoration, made of pink ceramic, is only a background that will be overlaid with pink composite resin.



Figs 8 and 9 The restoration after the addition of the direct pink composite resin.



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Figs 15 to 17 Preoperative situation with extensive circumferential bone loss. Note the bone loss on the mesial aspect of the right central and left lateral incisors. The size, location, and shape of the defect would lead to very low predictability with conventional restorations.



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Fig 18 Ridge deficiency analysis. The dotted lines indicate the preoperative bone level (white), soft tissue (pink), and crown situation (yellow).

Fig 19 Solid lines indicate the ideal position of the bone, soft tissue, and crown.



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Fig 20 The red area indicates the amount of bone that should be regenerated to support ideal soft tissue esthetics.



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Fig 21 The red arrow shows the vertical distance between the preoperative situation and the ideal situation. This vertical gain, which is important for the final esthetic result, is the most challenging and unpredictable surgical modality.

Treatment planning

- 補綴による歯肉の回復は、患者の持つ自然な歯肉の形、色、性状を再現し失った軟組織を予知性をもって再建することが出来る。
- チームワークやインターディシプリナリーな治療計画は、診断・長期的成功に優れている

- 患者のニーズや期待を認識した後に、インプラント医、補綴医および歯科技工士は、理想的な歯肉と歯の審美的な結果への障害をすべて認識し、各専門家の役割から技術的および生物学的限界について議論すべきである。
- 患者の多くが既に再生処置に失敗を経験しているので、危険にさらされた最終結果の可能性に気づいている
- 補綴による歯肉の回復は患者の歯—歯肉複合体を回復する一つの選択肢です。

補綴による歯肉回復の利点

- 歯肉および歯の審美的な回復を予知性を持って改善できる。
- 複雑でテクニックセンシティブな外科的処置の必要性を減らすことができる。
- 患者の以前の治療や補綴に依存しない。
- 残存組織と補綴歯肉がスムーズで、清掃性の良い境界面のため喋りやすい

補綴による歯肉回復の欠点

- 治療計画の間、適切な患者教育を必要とする。
- 長期にわたる成功のため、患者の良好な衛生状態を達成する練習と個別的メンテナンス・プログラムが要求される

Fig 22 Diagnostic wax-up showing the amount of missing soft tissue and the ideal tooth shape. Managing the space was challenging because of the mesiodistal distance, which was smaller for the left central incisor than for the right central incisor. To solve this problem, the future crown was planned to maintain the buccal position as in the preoperative situation.



Figs 23 and 24 Surgical guide. The two black lines on the stent show the cemento-enamel junction and the apical limit of the pink wax. The second line will be the depth guide for implant placement. The coronal part of the implant body should be located apically of this second surgical stent line and must allow for palatal screw access.



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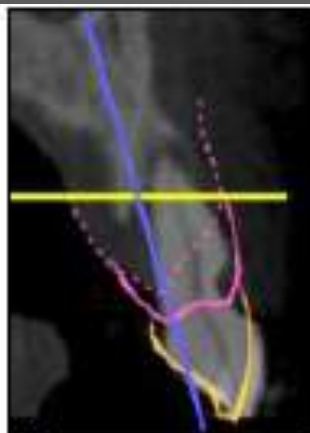
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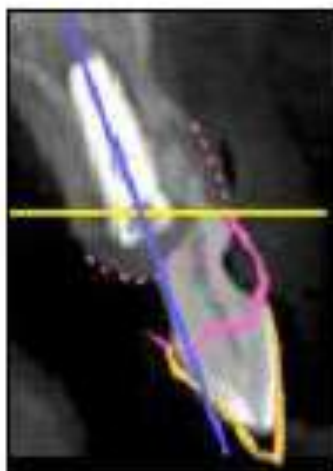
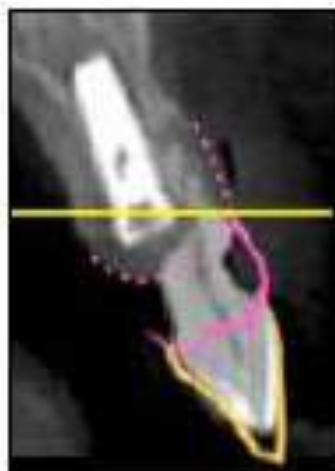
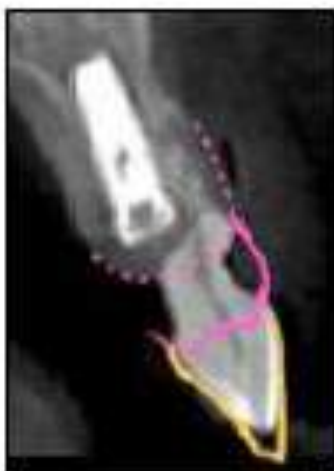
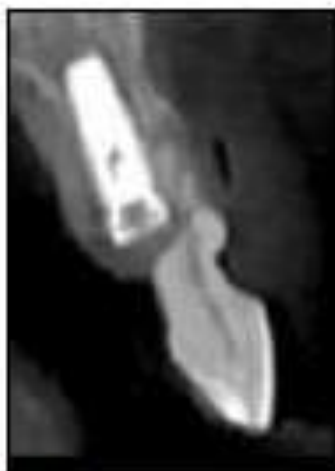


Figs 30 to 32 Immediate implant placement, palatally positioned to facilitate a screw-retained restoration. This is mandatory for a prosthetic gingival restoration. No attempt was made for vertical augmentation. A filler material (Bio-Oss, Geistlich, Zürich, Switzerland) was used to fill the gap between the implant and the buccal cortical plate to minimize horizontal resorption.



Figs 33 and 34 The patient's natural tooth was used as an immediate provisional restoration, bonded to the adjacent tooth. Care was taken to give the ideal prosthetic support to the buccal-lingual contour to minimize horizontal resorption.

Fig 35 Radiograph showing the relationship between the implant and provisional. Note the apical placement of the implant in relation to the cemento-enamel junction of the adjacent teeth.



Figs 36 to 39 Postoperative computed tomography scan. Note the apical and palatal implant placement coinciding exactly with the intersection of the yellow and blue lines, as planned on the preoperative scan.



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Figs 42 and 43 If too much pressure is observed at the incisal edge, the wax can be conditioned further to relieve the

Fig 44 Shaping the subincisal



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Fig 51 First stage of the two-stage prosthetic gingiva technique. At the first insertion appointment, the patient's soft tissue is not in an ideal condition due to the procedures performed, such as numbing and reshaping. This makes matching the shape, color, and texture too difficult. The best solution is to install the restoration only with the ceramic part finished and then add the pink composite resin at a second appointment after soft tissue healing.



Figs 52 to 59 Second stage: Preparing the restoration for the direct pink composite resin: (left to right) mechanical retention, sandblasting, acid etching, vapor steam, silane, adhesive, flowable composite, light curing.



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Fig 60 The restoration in place, ready for the direct composite buildup.

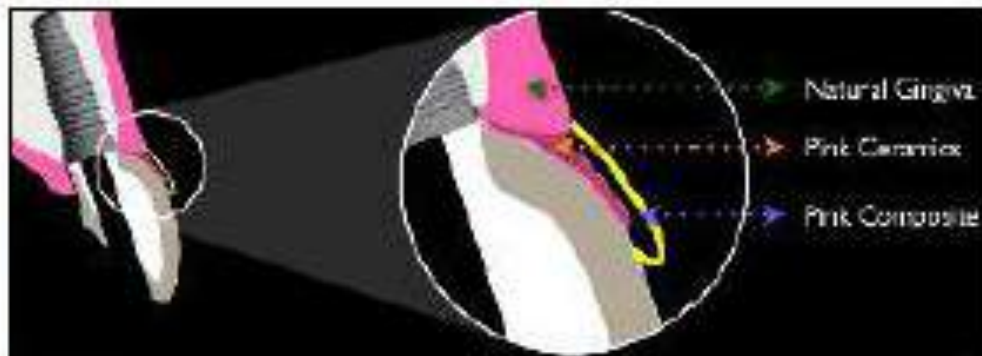


Fig 61 Schematic illustration showing the amount of pink ceramic that should be placed and the space that should be left for the pink composite resin (yellow line).



Fig 63 The composite resin is added with a spatula, starting with a darker color as a background.



Fig 64 Overlaying the composite resin with a lighter color.



Fig 65 The margins are blended with a flat brush.



Fig 66 With a fine-tipped probe, the grooves and the illusion of a gingival sulcus are created.



Fig 67 Light curing is performed after each layer is placed.



Figs 68 to 70 Light-curing stains can be used to customize the color.



Fig 71 A brush is used to create the superficial texture.



Fig 72 The finished composite resin buildup.



Fig 73 The restoration is unscrewed so the pink composite resin can be finished.



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Fig 74 The thin edge of the pink composite should be trimmed, and the concavities underneath should be removed to improve resistance and cleansability.



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Fig 75 Ideal profile of the pink composite resin after the intraoral addition.



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Fig 76 When the restoration is removed from the mouth, it shows a thin extension on the edge of the pink composite resin that must be removed.



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Fig 77 Removing the edge with a diamond bur at a 45-degree angle.



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Fig 78 The edge is reduced but not removed completely. The concavity underneath is eliminated by adding an extra layer of composite resin that will create extra pressure on the soft tissue and remove the edge.



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Fig 84 The unnatural angle between the artificial and natural gingiva is removed.

Fig 85 The light reflection has a similar direction on the natural and artificial soft tissue, providing the illusion of continuity. This mimetic effect will improve even more with the addition of the saliva.



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Fig 86 The adhesive is applied to the areas where composite resin will be applied, such as undercuts and concavities.

Fig 87 Adding pink composite resin to the undercuts and concavities may raise the complexity of the hygiene procedures.

Figs 88 to 90 Final emergence profile after reshaping and adding composite resin chairside.



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Fig 91 During final polishing, care must be taken not to remove the gingiva-like texture.



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Figs 92 and 93 It is paramount to periodically probe the bone level on the adjacent teeth to check if the artificial gingiva flaps overlapping these teeth are compromising the surrounding tissues.



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Fig 102 Final result.

Fig 103 Six-month postoperative view.



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