

Transient Coronectomy Procedure to Preserve the Inter-Dental Papilla at the Extraction site: Technique Presentation.

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Abstract

The loss of interdental papilla may cause phonetic, functional, and esthetic problems. The reconstruction of the lost interproximal dental papilla has been considered a difficult task with unpredictable outcomes.

The aim of this paper is to present a technique that enhances immediate interdental papilla preservation around natural teeth and implants, which was followed for 4 years with excellent esthetic results.

Keywords: Interdental papilla; Tooth extractions; Coronectomy; Dental esthetics; Transient Decoronation

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Introduction

Interdental papilla volume and architecture play a key factor at the final restorative treatment outcome of the teeth, especially in the esthetic zones.

When a tooth is extracted, dimensional alternations at the facial soft and hard tissue take place, therefore the interproximal papilla recedes and collapses, as a result, restoring the lost interdental papilla in the esthetic zone is considered one of the most challenging and least predictable problems [1-5].

Several surgical and non-surgical treatment modalities have been described for papilla preservation and re-construction, around natural teeth and around implants with different levels of risk and predictability [6-16]. Socket preservation procedures have been also considered in the preservation of the ridge contour and to support the soft tissue in the extraction site [17]. The root submergence technique is also used as an alternative to socket preservation, in order to preserve the periodontal tissue at the pontic site of fixed dental prosthesis [18-19].

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Coronectomy was performed in the past in order to preserve the dimensions of the alveolar bone ridge by leaving the root submerged in order to improve stability of conventional prosthesis [20]. In addition coronectomy is a process that used as an alternative to extraction of third molars, to minimize the risk of nerve injury, with minimal complications [21-23].

Coronectomy (decoration) in this paper, is considered transient (Transient Coronectomy), and defined as removal of the clinical crown leaving the root submerged in the bone to save the interdental papilla from collapsing till we finish preparing the temporary prosthesis so working in a clean environment free of blood extract the roots at the end of the appointment it improves the patient compliance during the treatment.

Transient coronectomy is indicated when anterior teeth at the maxilla or at the mandible should be extracted and temporary restoration is needed. The final rehabilitation could be implant or conventional fixed prosthesis.

Technique

Step 1: The clinical tooth crown (CTC) was cut at the level above the gingiva (decoration) In order to prevent injury to the soft tissue (Figure 1a and 1b).

Step 2: Shaving and trimming of the residual roots carefully in concave form leaving the interproximal thin walls that support the interdental papilla. Figure 1c

Step 3: Try in and lining of the temporary bridge sit inside the roots in this way the volume and the shape of the original soft tissue is preserved.

Step 4: Atraumatic extraction of the roots.

Step 5: Socket preservation and soft tissue suturing.

Step 6: Cementation of the adjusted and provisional temporary bridge that has been prepared earlier in the beginning of the appointment.

Step 7: The future treatment options, conventional bridge rehabilitation, or rehabilitation over implants. (Figure 2).

Figure 1: Transient coronectomy:step by step.



Figure 1A: High speed is used to cut the clinical tooth crown (CTC).



Figure 1B: The clinical tooth crown (CTC) was cut over the level of the gingiva.



Figure 1C: Grinding of the roots in concave way, and the interproximal root shelf was designed as the papilla shape. Abutment teeth were prepared.



Figure 1D: Try in of the temporary bridge.



Figure 1E: Passive setting of the temporary bridge inside the submerged roots. With original interdental papilla shape.



Figure 1F: Atraumatic extraction of the submerged roots.



Figure 1G: 4 crowns were transected at the beginning of the treatment.

4 remaining roots were extracted after adjusting and finishing the temporary bridge

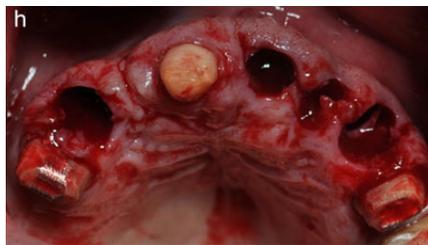


Figure 1H: Sockets after the extraction of the submerged roots with minimal injury to the soft tissue.



Figure 1I and 1J: Socket preservation, excellent preservation of the interdental papilla and the socket soft tissue.



Figure 1K: Cementation of the temporary bridge, immediately after the suturing.



Figure 1L: 3 months follow up, good ridge contour. The interdental papilla was preserved in its original shape and volume.

Figure 2: Implants placement and follow up after the rehabilitation.



Figure 2A: Implant placement (at 5 months).



Figure 2B and 2C: Implants follow up (after 4 months).



Figure 2D: Temporary Bridge over the implants.



Figure 2E: Follow-up 24 months, fixed prosthesis over the implants with good esthetic outcome.

Figure 3: Transient Coronectomy in Extraction of teeth with PFM fixed bridge.



Figure 3A: Fixed PFM bridge, the teeth should be extracted.



Figure 3B and 3C: Transient coronectomy of the abutment teeth.



Figure 3D: Easy removal of the PFM bridge and the residual roots.



Figure 3E: The extractions of the residual roots.



Figure 3F: The bridge and the extracted roots.



Figure 3G: Implants insertion.

Discussion

Maintaining the interdental papilla following tooth extraction has been challenge for restorative dentistry. The aim of the present report is to introduce the transient coronectomy as an approach to prevent papilla collapse during the treatment.

Immediately after tooth extraction, there is collapse of the papilla, so to optimally preserve the tissue, surgeons implement to maintain bone architecture and immediate provisionalization to maintain soft tissue .the tissue must be maintained during the surgical procedure.

In 2006 MArgeas reported the use of natural tooth as provisional following implant placement [24].

In 2008 Taleghani, *et al.* Reported the use of temporary bridge with an ovate pontic at the tissue of extraction to support the proximal papilla, the facial soft tissue, and the healing gingival tissue [25].

The root submergence technique for pontic site development in esthetic implant therapy have been used with excellent esthetic outcomes [18-19]. Leaving of roots under fixed prosthesis has on the other hand several risks, like periapical lesions, external root resorption, late eruption of the submerged root that can lead to late failure of the treatment [26].

The transient coronectomy technique by cutting the root in a way that support the interproximal papilla and matching a temporary restoration (crown, bridge) that fit 100% the original location and shape of the interdental papilla, inhibit immediate papilla collapse. The removal of the roots later during the same appointment and socket preservation eliminates the risk of late failure that can be happened to the submerged roots. Coronectomy technique has several advantages working in a clean environment, less bleeding during the treatment so less acryl contamination and less time consuming while preparing the temporary bridge.

This technique is highly recommended in cases of PFM Bridge on multiple teeth by coronectomy we prevent metal staining to the gingiva and less time consuming trying to remove the bridge.

Conclusion

This report demonstrates a technique with excellent and predictable results, and can be considered as a simple, minimal invasive procedure to preserve the interdental papilla.

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