

Modern technique for the gingival sulcus management using Magic FoamCord® and Comprecap anatomic®

Agripina Zaharia¹, Mihaela Duta², Corina Stefanescu³

Constanta, Romania

Summary

For a precision fit and long-term success with fixed prosthetic dental restorations, the quality of impressions taken is a key element of decisive importance.

Taking an accurate impression requires appropriate tooth preparation and soft-tissue management as well as proper selection of impression material, system, and tray, the impression technique.

The purpose of this paper is to demonstrate the high qualities of a new, preventive, improved, temporary retraction of the sulcus technique.

Material and method: We used these materials: (a). a polyvinylsiloxane, addition-type surface activated silicone elastomer - based impression material (b). Magic FoamCord - a product for the temporary retraction of the sulcus; material type: polyvinylsiloxane, addition type silicone elastomer and (c) Comprecap anatomic compression caps, observing the producer's indications technique.

Results: The clean, wide open sulcus obtained leads to the accurate, high quality impressions.

Conclusions: The technique with Comprecap anatomic compression caps and Magic FoamCord is designed for easy and fast temporary retraction of the sulcus without the potentially traumatic and time consuming; it accomplishes its goal without the disadvantages of traditional retraction techniques.

Key words: gingival management, impressions, prevention.

Introduction

Modern Dentistry is based on two directions: prevention and aesthetics [3]. Introducing in the dental practice new materials and improved technologies has created new opportunities to attain these two goals. For a precision fit and long-term success with fixed prosthetic dental restorations, the quality of impressions taken is a key element of decisive importance.

Obtaining an extremely accurate impression is one of the first and most important steps in providing our patients

with a superior crown and bridge restoration. Taking an accurate impression requires appropriate tooth preparation and soft-tissue management as well as proper selection of impression material, system, and tray, the impression technique.

Modern impression materials such as addition silicones exhibit excellent physical properties, so impression- taking procedures should be the focus of the main source of errors [2,4,6,7].

Gingival management with proper moisture control and gingival retraction are

¹ Associate Professor, DMD, PhD, Department of Fixed Prosthetics and Occlusology, Faculty of Dental Medicine, "Ovidius", University of Constanta, 1 Decembrie 1918 Street, 31, L28, C, Ap.56, Constanta, 0721337667, fax: 664420, e-mail: agrizaharia@yahoo.com

² Lecturer, DMD, PhD, Department of Fixed Prosthetics and Occlusology, Faculty of Dental Medicine, "Ovidius" University of Constanta

³ Lecturer, DMD, Department of Mobile Prosthetics, Faculty of Dental Medicine, "Ovidius" University of Constanta

two particular factors that determine success or failure of the procedure. For the retraction of soft tissue (widening of the sulcus), three principle methods are available for use today: 1) mechanical; 2) chemo-mechanical; and 3) electrosurgical. The chemo-mechanical technique is probably the most widely used. It is important to note that if we wish to achieve a good haemostatic opening of the gingival margin, the highly sensitive gingiva must not be traumatized to such an extent that long-term retraction is a result; the healing process of maltreated epithelium can present us with an exposed crown margin during the insertion of the final tooth restoration or periodontal disease [1,10].

Magic FoamCord® is the first expanding polyvinylsiloxane retraction material with clinical proven performance: 97 % usable retractions, which lead to a perfect impression, according to a clinical study of Magic FoamCord® conducted in University of Innsbruck, Austria, 2006, by Prof. DDr. Dumfahrt H. [5]; comparing to 57 % usable retractions with Expa-syl™ SDS, Kerr Sybron Dental Specialties, Orange, CA, USA, (Clinical comparison of Expa-syl™, University of Freiburg, Germany, Manolakis A., IADR 2004 [9]).

Material and method

We used these materials:

(a). a polyvinylsiloxane addition-type surface activated silicone elastomers - based impression material in putty and light body viscosity;

(b). Magic FoamCord - a product for the temporary retraction of the sulcus; and

(c) Comprecap anatomic compression caps (Roeko, Monrovia, CA, USA) assorted (sizes: #1 Small – 7 mm, #3 Medium – 10 mm, #5 Large – 12.5 mm) (Figure 3), observing the producer's indication [11].

Clinical case:

Prepare the impression-taking field: For an optimum sulcus expansion a proper



Figure 1 – Crown preparations prior to retraction

hemostasis has to be achieved (Figure 1). If necessary, apply a haemostatic agent to the sulcus. Rinse and dry sulcus thoroughly after the application of any haemostatic agent, avoiding over-dry the working-field. Consequently, a proper setting of the Magic FoamCord can be achieved.

The Comprecap Anatomic -Technique [11].

Select and pre-fit one Comprecap anatomic per preparation.

Apply Magic FoamCord around the preparation, syringing. An application in the sulcus is only necessary where there is a deep sub-gingival preparation margin. Material must not be forced into the sulcus under pressure. Avoid sudden movements. (Figure 2).



Figure 2 – Apply Magic FoamCord around the preparation.



Figure 3 – Place Comprecap Anatomic

Place Comprecap Anatomic (Figure 3).

The Comprecap Anatomic is comfortably held in place by the patient's antagonist for 3 -5 minutes. This procedure makes optimal use of the formation of foam (i.e., the expansive effect of the silicone foam). Due to the counter pressure of the Comprecap Anatomic, the expansion of the Magic FoamCord occurs in the sulcus. (Figure 4).



Figure 4 – Due to the counter pressure of the Comprecap Anatomic, the expansion of the Magic FoamCord occurs in the sulcus.

After proper setting, remove the Comprecap Anatomic and Magic FoamCord in one piece.

Always check that the Magic FoamCord material has set in the mouth before removing it.

The result is a wide open sulcus with clear access to the prepared margins, ready for the final impression using standard impression techniques (Figures 5 and 6).

Remove the final impression from the mouth. Check the impression. The impression has no voids or distortion (figure 7).



Figure 5 – Check the preimpression



Figure 6 – Apply light-body impression material.

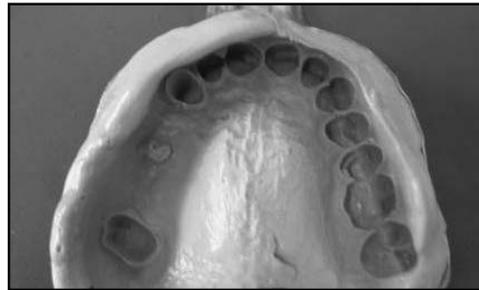


Figure 7 – The definitive impression has no voids or distortion.

Results

This technique offers:

- a clean, nontraumatised , wide open sulcus, leading to
- the accurate, high quality impressions with no voids or pulls on margin detail,
- detailed margins with no tears or rough surfaces.

Discussions

The technique with Comprecap anatomic compression caps and Magic FoamCord:

- is designed for easy and fast temporary retraction of the sulcus without the potentially traumatic and time consuming;
- it accomplishes its goal without the disadvantages of traditional retraction techniques (Table 1).

Benefits [11]:

- Non-traumatic, conservative method of temporary gingival retraction
- Easy and fast application directly to the sulcus without pressure or packing
- Comfortable to the patient
- No haemostatic chemicals to contaminate the impression site – no need for extensive rinsing
- Outstanding retraction for perfect

impressions.

Conclusions:

1. The accuracy of the final prosthetic restorations is highly dependent on: the temporary retraction of the sulcus and impression materials and techniques utilized.
2. This procedure with Comprecap anatomic compression caps makes optimal use of the formation of foam in the sulcus. The result is a clean, dry, wide open sulcus with clear access to the prepared margins, ready for the final impression using standard impression techniques.
3. This technique performs easy and fast temporary, conservative retraction of the sulcus without the potentially traumatic and time consuming; offers outstanding retraction for perfect impressions.

Table 1: Retraction Techniques

RETRACTION TECHNIQUES	ADVANTAGES	DISADVANTAGES
<u>Retraction Cords ± vasoconstrictor additive</u> There are single cord and double cord techniques. Which technique to be used depends upon the amount of tissue that the clinician is trying to move.	Universal technique Achieve various degrees of retraction Cord is inexpensive	Can cause bleeding Painful for the patient Time consuming, 5-10 minutes Epithelial attachment can be damaged, causing recession
<u>Rotary Curettage -</u> Tissue removal with a rotary instrument. Minimal amount of tissue can be removed with a rotary instrument. If more extensive removal is necessary, a scalpel blade is necessary.	Easy to perform No special equipment necessary Inexpensive.	Causes bleeding which can be a challenge to control Healing can be slow Multiple appointments Painful – Patient discomfort Minimal tissue can be removed
<u>Electrosurgery –</u> Tissue removal with an electrosurge unit. Tissue is removed via electric current.	Post surgical hemorrhage is well controlled, provided that the tissue is not inflamed.	Potential for recession after treatment Can't use on patients with pacemakers, undergoing radiation, or other diseases Must use plastic instruments - potential for electric shock.
<u>Expa-syl</u> is a paste that opens the sulcus and leaves the field dry, ready for impression taking or cementation. It is composed of micronized kaolin, aluminum chloride, and water. It creates and maintains space in the sulcus due to the optimal characteristics of its viscosity; there is no chemical reaction, material expansion or setting once it is applied.	Reduced chair time, Presence of the hemostatic agent, aluminum chloride, controls bleeding. little or no pressure is necessary to apply it. Easily removed. Cartridge delivery: no contamination Easy access and placement.	It is important to rinse thoroughly and verify that Expa-syl is totally removed from the sulcus as residue of the ingredient, aluminum chloride, may inhibit set of polyether impression materials. It could generate pain and/or create light reversible gingivitis.

References

1. Akca EA, Yildirim E, Dalkiz M, Yavuzylmaz H, Beydemir B. Effects of different retraction medications on gingival tissue. *Quintessence Int.* 2006 Jan; **37**(1):53-9.
2. Al-Bakri IA, Hussey D, Al-Omari WM. The dimensional accuracy of four impression techniques with use of addition silicone impression materials. *J Clin Dent* 2007; **18**(2):29-33.
3. Amariei C., Ungureanu L. *Ghid pentru s^an^atatea oral^a*, Ed. Ovidius University Press, Constanța, 2002, 15-35
4. Blatz MB, Sadan A, Burgess JO, Mercante D, Hoist S. Selected characteristics of a new polyvinyl siloxane impression material-a randomized clinical trial. *Quintessence International.* 2005 Feb; **36**(2):97-104. [5http://www.coltenewhaledent.biz/download.php?file_id=1595_IFU_Affinis_pss.pdf](http://www.coltenewhaledent.biz/download.php?file_id=1595_IFU_Affinis_pss.pdf)
6. Kolbeck C., Rosentritt M., Hydrophilicity/Flowability of Different Impression Materials with Various Viscosities, IADR/AADR/CADR 85th General Session (March 21-25, 2007)
7. Kugel G, Klettke T, Goldberg JA, Benchimol J, Perry RD, Sharma S. Investigation of a new approach to measuring contact angles for hydrophilic impression materials. *J Prosthodont.* 2007 Mar-Apr; **16**(2):84-92.
8. Kumbuloglu O, User A, Toksavul S, Boyacioglu H. Clinical evaluation of different gingival retraction cords. *Quintessence Int.* 2007 Feb; **38**(2):E92-8.
9. Manolakis A., Bartsch N., Hahn P., Clinical Comparison of a Gingiva Retraction Paste and Impregnated Cords, IADR/AADR/CADR 82nd General Session (March 10-13, 2004)
10. Polat NT, Ozdemir AK, Turgut M. Effects of gingival retraction materials on gingival blood flow. *Int J Prosthodont.* 2007 Jan-Feb; **20**(1):57-62.
11. [www.coltenewhaledent.biz/download.php?file_id=1705&PHPSESSID=60dd25dcef471cac683e3095616cb6cd,75154-HO GA FoamCord.indd](http://www.coltenewhaledent.biz/download.php?file_id=1705&PHPSESSID=60dd25dcef471cac683e3095616cb6cd,75154-HO_GA_FoamCord.indd)

Correspondence to: Dr. Zaharia Agripina, Assoc. Prof., Department of Fixed Prosthetics and Occlusology, Faculty of Dental Medicine, Clinic of Prosthetics. Stefan cel Mare Street, no. 133, Constanta, Romania. E-mail: agrizaharia@yahoo.com