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## A survey type of study to know materials and methods used by private clinicians for gingival dilation

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### Abstract

The marginal integrity of the fixed prosthesis can be achieved by finish line exposure. Different materials and methods are used for finish line exposure to get emergence profile and prosthesis in harmony with adjacent soft tissue.

**Purpose:** The study was conducted to determine approaches of gingival retraction used by private dentists.

**Materials and Methods:** A questionnaire was prepared and sent to 134 clinicians. Only 120 clinicians responded. The data collected was analysed statistically.

**Results:** This study showed that 67% the clinicians used retraction cord for gingival dilation, 15.9% the chemical impregnated cord, 10% and 7.1% the advanced medicaments like magic foam cord.

**Conclusion:** The increased level of knowledge and information about gingival displacement materials and methods shall definitely improve the periodontal health and increase clinical longevity of the fixed prosthesis.

**Keywords:** gingival dilation, marginal integrity, finish line, gingival sulcus

### 1. Introduction

The fixed prosthesis should be in harmony with adjacent hard and soft tissues. This requires accurate replication of tooth preparation, finish line and gingival sulcus for the fixed prosthesis to have suitable emergence profile and have harmony with adjacent soft tissue.

The lateral displacement of free gingival margin permits adequate flow of low viscosity impression material into sulcus and for accurate capturing of prepared finish line and a portion of apical uncut tooth structure. Several gingival displacement materials and methods have been

**Proposed:** mechanical, mechano-chemical (chemicals embedded in cords or in injectable matrix form), and surgical (electro surgery, lasers, rotary curettage).

**Aims and Objectives:** The study was conducted to determine approaches of gingival retraction used by private dentists.

**Materials and Methods:** A questionnaire was prepared and sent to 134 clinicians. Only 120 clinicians responded. The questionnaire included the following

1. Do you routinely use gingival displacement or retraction prior taking final impression?
  - a. Yes
  - b. No
2. What type of gingival retraction do you routinely use?
  - a. Retraction cord
  - b. Chemical method
  - c. Surgical method
  - d. Combination
3. Specify the type of retraction cord that you use?
  - a. Braided
  - b. Knitted
  - c. Twisted
  - d. Or any other specify

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4. Mention the brand of retraction cord that you use?
  - a. Ultrapak
  - b. Gingipak
  - c. Gingibraid
  - d. Knit-pak
  - e. Siltrax AS
  - f. Or any other specify
5. Which retraction cord technique do you use routinely?
  - a) Single cord technique
  - b) Double cord technique
  - c) Or any other technique
6. If chemical is used, please specify which one is used?
  - a. Aluminum Chloride
  - b. Ferric Sulfate
  - c. 2% epinephrine
  - d. Zinc sulphate
  - e. Aluminum chloride
  - f. Or any other
7. Do you use any of the advanced gingival retraction material?
  - a. Magic foam
  - b. Expasyl
  - c. Stayput
  - d. Traxodent

- e. Or any other, please specify then
8. In case surgical method is used, then mention which one?
  - a. electro surgery
  - b. lasers
  - c. rotary curettage

**Results:** This study showed that 67% the clinicians used retraction cord for gingival dilation, 15.9% the chemical impregnated cord, 10% and 7.1% the advanced medicaments like magic foam cord.

**Table 1:** The type of technique and the percentage of clinicians that use it

Technique	N%
Retraction cord (Plain)	67%
Retraction cord (Impregnated)	15.9%
Surgical	10%
Cordless (Expasyl, Stayput etc)	7.1%

Plain retraction cords for gingival displacement were used by 67% participating dentist of which 77.6% were knitted, 7.4% were braided, 4.4% were twisted and 10.6% were unknown. Single cord retraction technique is followed widely by 77.5% and double cord retraction by 15.5%. The retraction cords used and their frequency of use among the private clinicians are listed in Table 1.

**Table 2:** The retraction cords used and their frequency of use

Name of product	Manufacturer	Total (n%)
Ultrapak	Ultradent Products	58
Gingipak	Gingipak	12
Medipak	Medicept dental	10
Sure-cord	Suredent	7
Gingibraid	DUX dental	5
Ultrapak E	Ultradent products	4.2
Hemodent retraction cord	Premier dental products	3.8
Knit-pak	Premier dental products company	3.5
Sil-Trax Plain	Pascal international	2.5
Crownpak	Gingipak	2.2
Unibraid	DUX dental	1.8

The retraction cord was impregnated with chemicals by 15.9% clinicians. The chemicals used for soaking the retraction cords as per their percentage are buffered aluminum chloride (44.6%), aluminum chloride (22.4%), 2%

epinephrine (21.7%), zinc sulphate (7.3%) and basic ferric sulphate (4.0%). The medicaments used to soak the cords are listed in the table no. 3.

**Table 3:** The medicaments used to soak the cords

Name of medicament	Active component	Total users n (%)
Hemodent	Buffered Aluminum Chloride	44.6
Stypin	Aluminum Chloride	22.4
Lignocaine with epinephrine	2% epinephrine	21.7
zingisol	Zinc sulphate	7.3
Stasis	Basic Ferric sulphate	4.0

Cordless technique for gingival displacement was used by 7.1% participating dentist, and the percentage of products

reportedly used in the cordless technique is listed in Table 4.

**Table 4:** the percentage of products reportedly used in the cordless technique

Product name	Manufacturer	Total users n (%)
Expasyl	Kerr Corp	37
Magic foam cord	Coltene/ Whaledent	33
Stay put	Coltene	22
Traxadent	Premier Dental Products Company	8

Surgical techniques were used by 10% participating clinicians out of which 61.3% rotary gingival curettage, 29.7% electro surgery and 9% soft tissue laser.

**Discussion:** Gingival retraction has a wide variety of applications in clinical dentistry: to expose the sub-gingival finish line for crown margins in fixed prosthodontics, for the management of cervical abrasion, root caries, and root sensitivity in restorative dentistry, and to capture an accurate impression to enhance the marginal fit of the implant prosthesis in implant dentistry. There are variety of materials and methods available for gingival displacement and finish line exposure. The selection of any one of the materials and methods depends on the clinical situation and the preference of the clinician.

The present study revealed that 67% the clinicians used retraction cord for gingival dilation. This finding is similar to that of Azza *et al.* who stated that 82% participating clinicians used retraction cord for gingival dilation. This is in accordance with Ahmed *et al.* reported 92% of dentists used gingival displacement cords.

The retraction cord was impregnated with chemicals by 15.9% clinicians. The chemicals used for soaking the retraction cords as per their percentage are buffered aluminum chloride (44.6%), aluminum chloride (22.4%), 2% epinephrine (21.7%), zinc sulphate (7.3%) and basic ferric sulphate (4.0%). This is in contradiction with results of Ahmed *et al.*, in which only 1.3% of dentist reported using epinephrine as an active component. Donovan *et al.* found that Aluminum chloride was used by 89.55% of dentists. Hansen *et al.* found that 54% of prosthodontists preferred buffered Aluminum chloride to soak the cords.

Cordless technique for gingival displacement was used by 7.1% participating dentists. Cordless technique seems to be more effective in displacing tissues and less injurious to gingival health. Ahmad *et al.* found 28% of participating dentists used cordless technique.

### Conclusion

67% used plain retraction cord, 15.9% impregnated retraction cord, surgical by 10% and cordless method by 7.1%. 44.6% used cords impregnated with basic aluminum chloride. The increased level of knowledge and information about gingival displacement materials and methods shall definitely improve the periodontal health and increase clinical longevity of the fixed prosthesis.

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