

A Clinical Survey Of Dentist's Awareness And Knowledge Of Using Gingival Retraction System In Treatment Of Fixed Dental Prosthesis In Dental Clinics Across Gandhinagar District.

Dr. Pankaj Patel¹, Dr. Dipti S Shah² Dr. Kalpesh Vaishnav³, Dr. Dishant Chaudhary⁴, Dr. Khushboo Sharma⁵, Dr. Shivangini Zala⁶

¹(Department of prosthodontics, Crown & Bridge work & Oral Implantology, Karnavati School of dentistry, India)

²(Department of prosthodontics, Crown & Bridge work & Oral Implantology, Karnavati School of dentistry, India)

³(Department of prosthodontics, Crown & Bridge work & Oral Implantology, Karnavati School of dentistry, India)

⁴(Department of prosthodontics, Crown & Bridge work & Oral Implantology, Karnavati School of dentistry, India)

⁵(Department of prosthodontics, Crown & Bridge work & Oral Implantology, Karnavati School of dentistry, India)

⁶(Department of prosthodontics, Crown & Bridge work & Oral Implantology, Karnavati School of dentistry, India)

Abstract:

Aim: To evaluate the awareness and knowledge of using various gingival displacement techniques prior to impression making in fixed dental prosthesis by the dentists in Gandhinagar district.

Settings and Design: Questionnaire based survey among dentists in Gandhinagar district.

Materials and methods: All the participants in Gandhinagar district were surveyed through a questionnaire regarding their usage of gingival displacement technique and their reasons and methods of using gingival displacement technique for fixed dental prosthesis. The results were analysed through discriminated statistical analysis.

Results: Among all the participants of Gandhinagar district, 56% prefer the use of gingival displacement technique for successful clinical practice while 44 % of them do not follow the procedure believing it does not make a major difference in clinical practice.

Conclusions: Through this study, it was clear that all the participants were not able to replicate gingival retraction into their clinical practice ignoring its advantages and benefits. Hence the many participants of Gandhinagar district displayed an acceptable level of knowledge in gingival retraction.

Key words: Gingival retraction, Gingival retraction systems, impression procedure, fixed dental prosthesis

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I. Introduction

Fixed dental prosthesis defined as the general term of any prosthesis that is securely fixed to a natural tooth or teeth, or to one or more dental implant/implant abutment; it cannot be removed by the patients¹.

Today's era of increasing esthetic demands and improved patient's awareness leads fixed prosthodontics to play a vital role. The relationship between fixed prosthesis and soft tissue should be considered crucial for long term success. The success of fixed prosthodontic restoration is largely dependent on long term health stability of surrounding periodontal structures⁵.

For the success of fixed dental prosthesis ideal principle of tooth preparation should be followed. Principle of tooth preparation includes biological, mechanical and aesthetic principle. In biological principle includes prevention of damage, conservation of tooth structures and marginal integrity².

Marginal integrity is one of the main principles of tooth preparation, which contribute to the success of fixed dental prosthesis^{2,3,4,6}.

The restoration can survive in the biological environment of the oral cavity only if the margins are closely adapted to the finish line of the preparation (Figure 1).

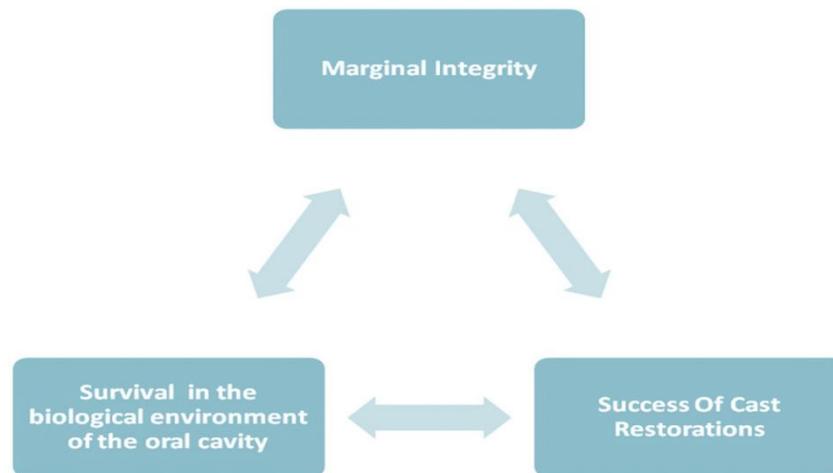


Figure 1: Aim of gingival displacement

There are three types of finish lines according to the location of the marginal placement. Which are as follows³:

- 1) Supra gingival
- 2) Equi gingival
- 3) Sub gingival

It is widely believed that the best biological place for a restorative margin is supra-gingival. Supra-gingival margins stay away from the periodontal tissue and having advantage of preservation of tooth structure during tooth preparation, and impression are more predictable with minimal or no cord packing.

Equi-gingival margins remains equally to the tissue surface and easy to record without any retraction but disadvantage of this margin is that it is plaque retentive.

Over the past few decades, tremendous progress has been made in procedures for making fixed prosthodontic impressions. The gingiva must be displaced to record an accurate impression and sometimes even to permit completion of the preparation & cementation of the restoration^{2,3,4}.

Cervical caries, cervical erosions or restoration extending sub-gingivally, aesthetic region and root sensitivity of the tooth required sub-gingival marginal placement during tooth preparation. So, on that cases gingival tissue must be displaced to allow the material to be injected into that to record sub-gingival margin accurately. This type of margin is technique sensitive to record because chance of epithelium attachment loss is more during cord placement^{2,3,4}.

Gingival displacement or dilation is an important procedure in the fabrication of fixed dental prostheses; quite often, the margins of these restorations are placed very close to the gingival margin or even sub-gingival for that accurate impression should be made with proper retraction procedure so aesthetic and functional criteria should be fulfilled in the restoration².

Therefore, the operating surgeon must correctly record the prepared cervical finish line to enable adequate marginal integrity for the restoration. This is accomplished by displacing the gingival laterally and making the area clean and dry^{2,3,4}.

This survey was undertaken to evaluate the awareness and knowledge of use of various gingival displacement technique and most common methods of gingival displacement used by participants of Gandhinagar district. The results obtained were analyzed with knowledge available from previously published studies and compared different concepts of displacement that are popular nowadays.

II. Material And Method:

The study was conducted amongst all the dentists of Gandhinagar district. Ethical consideration was taken from the institutional review board.

The participants were selected based on the following inclusion and exclusion criteria.

Inclusion Criteria: Dentists who are practicing in Gandhinagar district, by filling the questionnaire form through Google forms.

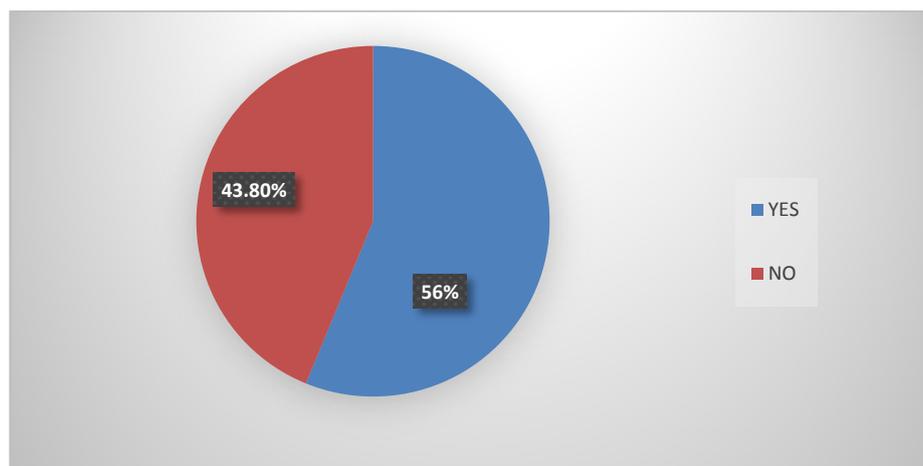
Exclusion Criteria: Dentists who are practicing outside of Gandhinagar district.

The questionnaire (annexure-1) included questions concerned with the use of gingival displacement method, preferred by various dentist, for the use of making fixed dental prosthesis.

All the participants were given a questionnaire to be filled through Google forms and they were explained about the aim and methodology of the study, total 170 participants without any bias and prejudice filled the form and replied within three months of time duration and data are obtained by Google form and analysed by using descriptive statistics such as graph and percentage.

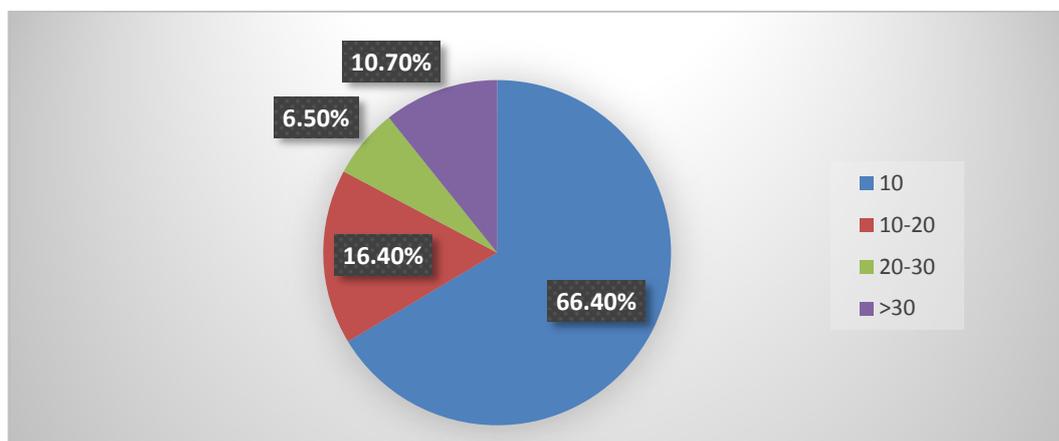
III. Results:

The data obtained from 170 participants which are the representative of the procedures that the dentists are using in their daily practice across the Gandhinagar district before impression making for fixed dental procedure. The results showed that among all the participants, 56% prefer the use of gingival displacement technique for successful clinical practice while 44% of them do not follow the procedure (GRAPH 1).



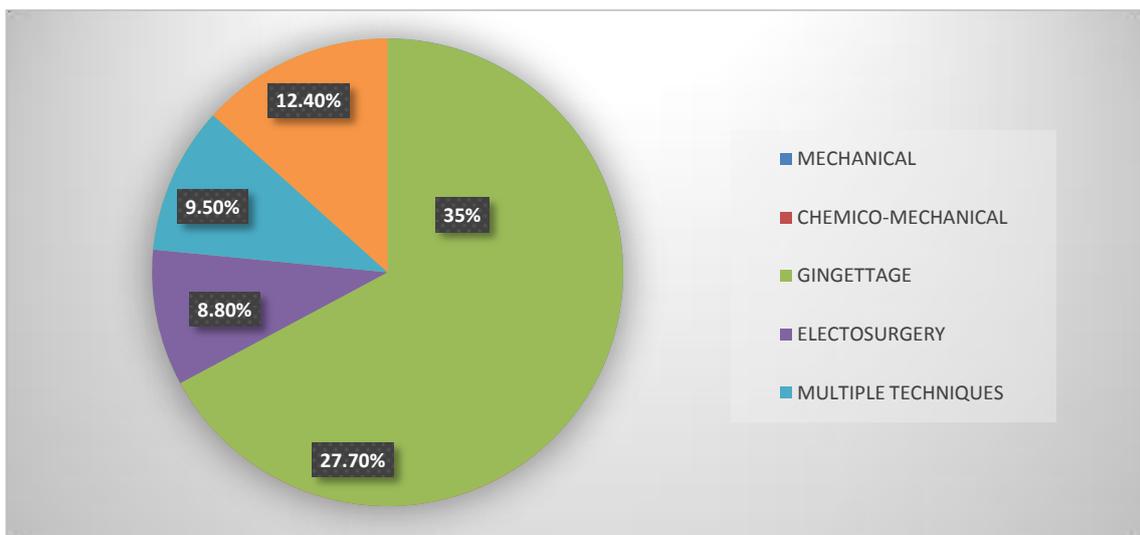
GRAPH 1 Participants from Gandhinagar district who prefer the use of gingival displacement technique for successful clinical practice

Among all participants 66% were doing 10 number of tooth preparation in week and 8% were doing more than 20 number of tooth preparation in week (GRAPH 2).



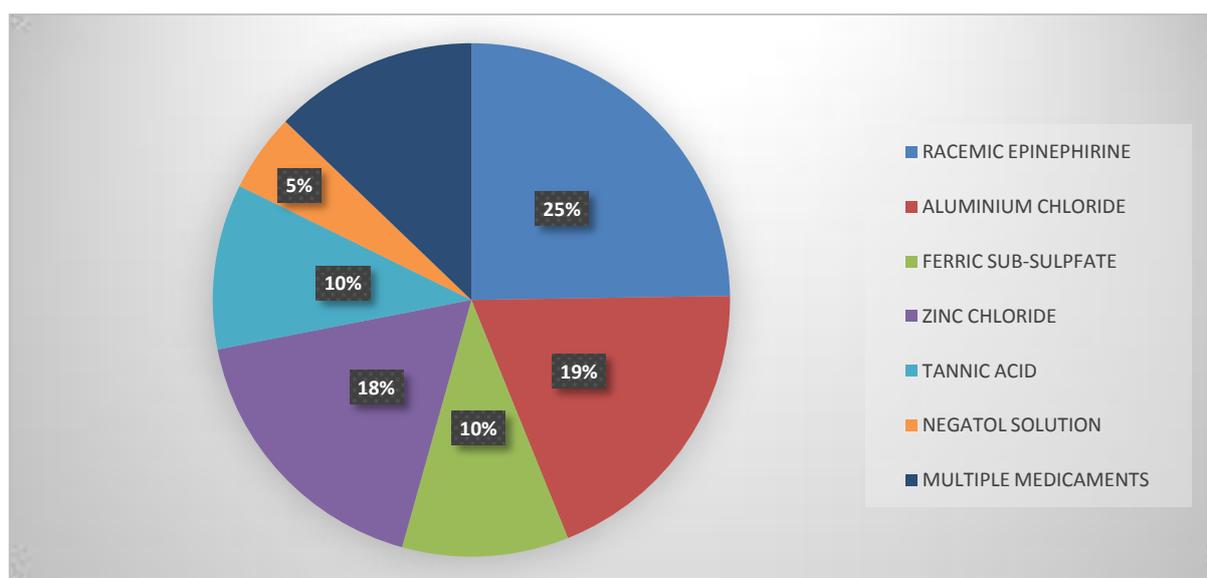
GRAPH 2 Number of tooth Preparations performed by Participants in a week

The results also revealed that the method which was most commonly preferable for displacement technique was mechanical method. Around 35% of preferred mechanical method followed by chemico-mechanical 27% and surgical technique 8% (GRAPH 3).



GRAPH 3Type of Gingival retraction technique used by the participants

Among who preferredchemico-mechanical method, all of the participants stored one medicament at least and some stored more than one medicament in their clinicsAmong them 25% used recemic epinephrine which is the most and 5 % negatol solution which is the least of all of them(GRAPH 4).



GRAPH 4Type of Medicaments used by the Participants

IV. Discussion:

Accurate gingival displacement is a must needed for duplicating the supra and sub gingival margin, providing best condition for the impression material, fluid control and precision of restoration^{5,6}.

One of the most challenging aspects of crown and bridge is the management of the gingival tissues while making an impression. Tissue management includes placing the gingival tissues away from the preparation margins so that the margins can be recorded accurately^{5,6}.

Across the globe, researches have been conducted on different methods of gingival displacement, and their effects on gingival and periodontal health as well as the marginal adaptation after gingival displacement technique, but one haveevaluated the percentage of clinicians using this technique and also their preference of methods for gingival displacement^{7,8,9}.

This study mainly is focusedon the methods of gingival displacement used by Dentists in Gandhinagardistrict and to determine the number of participants recommending the use of gingival displacement technique in their dental practice and also their reasons for using gingival displacement techniques.

After asking sixteen questions to these participants,based on their experience, skill, knowledge, and success rate in fixed partial dental prosthesis,56% prefer the use of gingival displacement technique for

successful clinical practice while 44% of them do not follow the procedure believing it does not make major difference in clinical practice.

Out of those who perform gingival displacement technique, 27.7% participants use chemico-mechanical method, but it is more expensive and more time consuming than mechanical method. To overcome this disadvantage 35% participants use mechanical method which is economical as compared to chemico-mechanical, and is less time consuming, causing less damage to surrounding tooth structures compared to other all methods. While 8.8% participants use electro surgery and 12.4% participants use other techniques which are very less in number because of its technique sensitivity of the procedure and required expertise.

Among who preferred chemico-mechanical method, all of the participants stored one medicament at least and some stored more than one medicament in their clinics. Among them 25% used racemic epinephrine (0.1-0.8%) which is the most because it is good in controlling bleeding, causing less tissue damage, less expensive and allowing good working time. 19% participants use aluminium-chloride (5-25%) which has no side effects. 18% participants use zinc chloride (8-40%), 10% participants ferric sub sulphate (13.3%), 10% participants tannic acid (20-100%), and 5% participants negatol (45%) solution which is the least of all of them because it is highly acidic and poor tissue recovery as compared to other medicaments^{12,14,16,17}.

Moldiet al. in 2013 and Katrevaet al. In 2015, had done their study and their result comparatively match with the presents study^{10,11}.

Through this study, it is quite clear that the rationale for dentists not using gingival displacement technique is due to personal choice and ease, patient discomfort, lack of empathy toward patient, ignoring it even after knowing the advantages, and some do not use it even after citing reasons (Figure 2).

The limitation of this study was it's only covers Gandhinagar district. In further studies efforts should be made to aware the community regarding importance and advancement of gingival retraction technique and their benefits in longevity of fixed dental prosthesis.

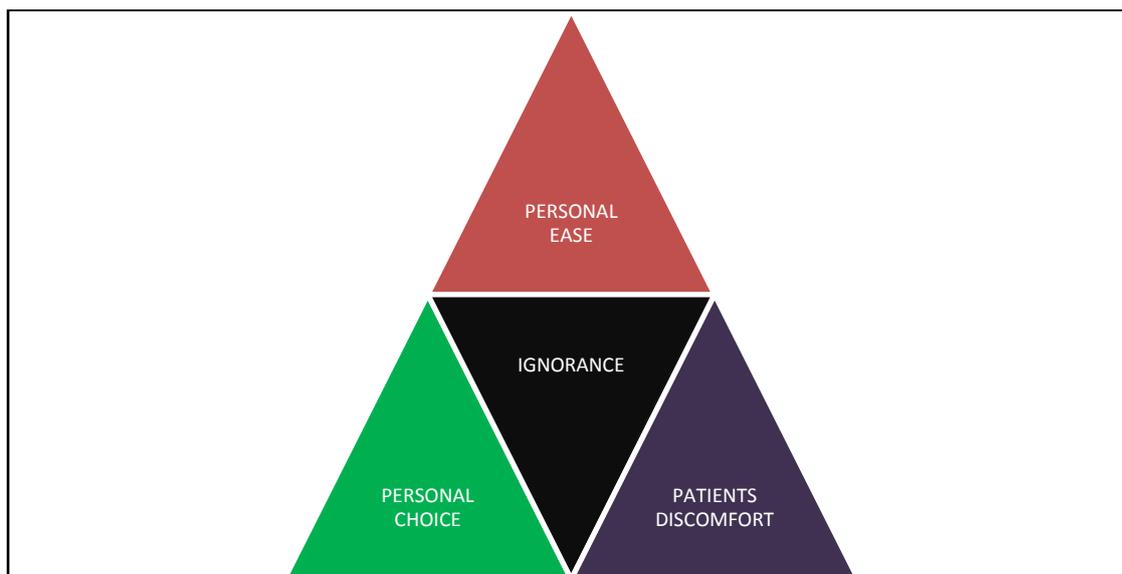


Figure 2 : Rationale for dentists not following gingival displacement technique

V. Conclusion:

- Through this study, it is clear that all the dental practitioners were not able to replicate gingival retraction into their clinical practice ignoring its advantages and benefits.
- Most dental practitioners of Gandhinagar district displayed an acceptable level of knowledge in gingival retraction.
- However, to further enhance the proficiency; efforts should be made to encourage the practitioners to be aware of the advancement in gingival retraction in fixed prosthodontic practice through educational programs.

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KARNAVATI SCHOOL OF DENTISTRY, UVARSA,
GANDHINAGAR, GUJARAT, INDIA

DEPARTMENT OF PROSTHODONTICS, CROWN AND
BRIDGE AND ORAL IMPLANTOLOGY

ANNEXURE-1

**A CLINICAL SURVEY OF DENTIST'S AWARENESS AND KNOWLEDGE OF USING GINGIVAL RETRACTION SYSTEM
IN TREATMENT OF FIXED DENTURE PROSTHESIS IN DENTAL CLINICS ACROSS GANDHINAGAR DISTRICT .**

1. NAME OF DOCTOR -
2. CONTACT NUMBER -
3. ADDRESS OF CLINIC-

• **QUESTIONNAIRE**

- 1.) DO YOU USE ANY GINGIVAL RETRACTION SYSTEM?
 YES
 NO
- 2.) IF YES, THEN HOW MANY TOOTH PREPARATION IN A WEEK?
 (10)
 (10-20)
 (20-30)
 (>30)
- 3.) WHICH TYPE OF GINGIVAL RETRACTION SYSTEM DO YOU USE ?
 MECHANICAL
 CHEMICO-MECHANICAL
 GINGETTAGE
 ELECTOSURGERY
 COMBINATION
 OTHER
- 4.) IF MECHANICAL THEN WHICH TYPE DO U USE IN PATIENTS?
 COPPER BAND TUBE
 RUBBER DAM
 ACRYLIC RESIN COPPING
 TEMPORARY METAL CROWN FILLED WITH THERMOPLASTIC STOPPING
 STRINGS OR FIBRES
- 5.) WHICH IS THE BEST IN MECHANICAL METHOD?
 COPPER BAND TUBE
 RUBBER DAM
 ACRYLIC RESIN COPPING
 TEMPORARY METAL CROWN FILLED WITH THERMOPLASTIC STOPPING
 STRINGS OR FIBRES
- 6.) IF MECHANO-CHEMICAL THEN WHICH TYPE DO YOU USE IN PATIENTS?
 STERILE TWILLS OF COTTON IMPREGNATED WITH SLOW SETTING ZOE CEME
 RETRACTION CORD TECHNIQUE
- 7.) WHICH IS BEST IN THIS BOTH?
 STERILE TWILLS OF COTTON IMPREGNATED WITH SLOW SETTING ZOE CEMENT
 RETRACTION CORD TECHNIQUE
- 8.) WHICH TYPE OF RETRACTION CORD TECHNIQUE DO YOU USE?
 SINGLE CORD
 DOUBLE CORD
 INFUSION TECHNIQUE OF GINGIVAL DISPLACEMENT
 EVERY OTHER TOOTH TOOTH TECHNIQUE
- 9.) WHICH IS BEST IN RETRACTION CORD TECHNIQUE?
 SINGLE CORD
 DOUBLE CORD
 INFUSION TECHNIQUE OF GINGIVAL DISPLACEMENT
 EVERY OTHER TOOTH TOOTH TECHNIQUE
- 10.) WHICH TYPE OF CHEMICAL DO YOU USE IN GINGIVAL DISPLACEMENT AS A HEMOSTATIC AGENT?
 RACEMIC EPINEPHRINE
 ALUMINIUM CHLORIDE
 FERRIC SUB-SULFATE
 ZINC CHLORIDE
 TANNIC ACID
 NEGATOL SOLUTION
 COMBINATION
- 11.) WHICH IS BEST HEMOSTATIC AGENT FROM ALL OF THE ABOVE?

<input type="radio"/> RACEMIC EPINEPHRINE	(0.1-0.8%)
<input type="radio"/> ALUMINIUM CHLORIDE	(5-25%)
<input type="radio"/> FERRIC SUB-SULFATE	(13.3%)
<input type="radio"/> ZINC CHLORIDE	(8%-40%)
<input type="radio"/> TANNIC ACID	(20-100%)
<input type="radio"/> NEGATOL SOLUTION	(45%)
<input type="radio"/> COMBINATION	
- 12.) DO YOU USE GINGIVAL CURETTAGE(GINGITAGE)?
 YES
 NO
- 13.) DO YOU USE ELECTROSURGERY FOR GINGIVAL RETRACTION SYSTEM?
 YES
 NO
- 14.) IN GINGIFORM WHICH ONE DO YOU USE?
 EXPA-STYL
 MAGIC FORM CORD
 COMRECAP
 GEL CORD
 MEROCEL
 STAN-POL
 GINGI LOOPS
- 15.) DO YOU USE LASER IN GINGIVAL RETRACTION ?
 YES
 NO
- 16.) IF YES THEN WHICH TYPE OF LASER DO YOU USE?
 DIODE
 ND-YAG