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RESEARCH ARTICLE

TO EVALUATE THE COMPRESSIVE RESISTANCE AND DIMENSIONAL STABILITY OF THREE COMMERCIALLY AVAILABLE BITE REGISTRATION MATERIAL DISINFECTED BY THREE DISINFECTANTS AT DIFFERENT TIME INTERVALS.

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Abstract

Introduction:-

Diagnosis and treatment of a patient for prosthetic rehabilitation requires the clinician to fabricate diagnostic casts, as well as master casts, and articulate them on an articulator,Plaster, Modelling compound, Waxes, Acrylic resin and Zinc oxide-eugenol paste are the materials that have been proposed for maxillomandibular registration procedures ,Modifications have been made by adding plasticizers and catalysts to the impression materials in order to be used as interocclusal recording media.[1] For this reason it is necessary to record maxillomandibular relationship and accurately transfer it to the articulator.Aninterocclusal record is a precise recording of a maxillomandibular position.[2] The introduction of polyether and polyvinylsiloxaneinterocclusal recording media has made clinicians unsure which material should be used. These elastomeric materials are chemically similar to the impression materials that have been used successfully for many years.[3]

Objective:-

1. To compare and evaluate the compressive resistance of three different brands of bite registration materials of 2mm,5mm,10mm,20mm thickness and 10 mm in diameter when 25 N of constant force was applied to the test samples at 12 hrs,24 hrs intervals.
2. To compare and evaluate the dimensional stability of three different brands of bite registration materials when immersed in three different disinfectant solutions for 2 min, 5 min, and 60 min time intervals.

Bite registrations consist of a dimensionally stable material which is capable of recording the desired anatomic area. The impression then displays the anatomy of the impressed area. During this procedure, the material has contact with saliva and blood, which are sources of contamination, and carries a great number of microorganisms of the oral flora upon removal from the mouth. Some of the several types of impression materials currently employed in dentistry have a great potential to retain microorganisms on their surfaces. Poulos and Antonoff stated that the polyvinyl siloxane is the most resistant to the retention of microorganisms, followed by the polysulphide. Besides, the number of microorganisms in these materials is quickly reduced through disinfection procedures. Reversible and irreversible hydrocolloids, both hydrophilic, are the materials that retain more bacteria after impression.[4] Occupational safety and health association (OSHA) guidelines requires dentists, dental laboratory employers, and other employers in health care fields to provide protection for their employees against the possibility of infection transmission by implementation of conscientious and consistent barrier controls. These universal precautions however, do not address specific issues that involve the decontamination of particular devices that contact a patient's oral cavity or body fluids. The OSHA subsection that relates to dentistry does not state how a particular dental

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device should be processed to eliminate potentially infectious organisms.[5] Leung and Schonfeldobserved the transfer of microorganisms from the impressions to the plaster casts, bringing about a risk of contamination to the laboratories of dental prosthesis[10]. Therefore, the disinfection of impressions is a fundamental procedure in the routine dental practice.[6]

Bite registrations are a potential vehicle in transmission of infectious agents. Moreover, casts produced from contaminated impressions may themselves be contaminated because microorganisms are able to migrate from the impressions into the casts, while setting occurs. The disinfection of impressions, and other laboratory fabricated material, is more difficult and requires immersion. The agent chosen must not have a deleterious effect on the dimensional stability of impression materials, and must act in a reasonable time.Many studies and research works have been carried out to know the qualities of bite registration materials such as minimal resistance to closure, dimensional stability after initial setting and compressive resistance, etc. To be a good bite registration material two properties like compressive resistance and dimensional stability must be optimal .So the present study on compressive resistance and dimensional stability of addition silicone bite registration materials has been undertaken.

Materials And Methods:-

Materials :

The present study was carried out in the Department of Prosthodontics, Crown and Bridge and Implantology, Navodaya Dental College,Raichurin collaboration with Mechanical Department, Navodaya College of Engineering, Raichur&Mechanical Department, Basaveswara College of Engineering, Bagalkot

Addition Silicone Bite registration or interocclusal recording materials.

Dental Avenue (DMG; Lot No.:683566) - O bite,(II)62897)-Jet Bite,,(II)Viola Divalent (Lot No.:PL4126)-Virtual CAD Bite.

Disinfectants:

1. 2% Glutaraldehyde:Glutihyde, Raman & Weil; Batch no: 12180
2. 0.5% Chlorhexidinegluconate: Plakil, Vishal Dento Care; Batch No: 237310
3. 1% Sodium hypochlorite: VIP; Batch No: 09168

Armamentarium used in the study

Metallic Cylinders Of Internal Diameter 10 Mm And Length 2 Mm,5mm,10mm,20 mm2. ADA Specification No: 19 Die3. Automixing Tips4. Dispensing Gun 5. Mixing Tips 6. Water Bath with Thermostat 7.Timer 8.Glass Slab 9.Mixing Spatula 10.Universal Testing Machine (Utm)11. Profile Projector12. B.P Blade No11

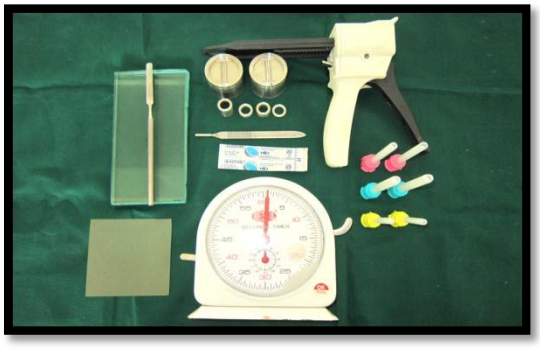


Fig 1:-Armamentrium

To record compressive resistance,

Metal cylinders (stainless steel) of 2 mm, 5 mm, 10mm and 20 mm length and 10mm diameter were used to prepare the samples to study the compressive resistance.

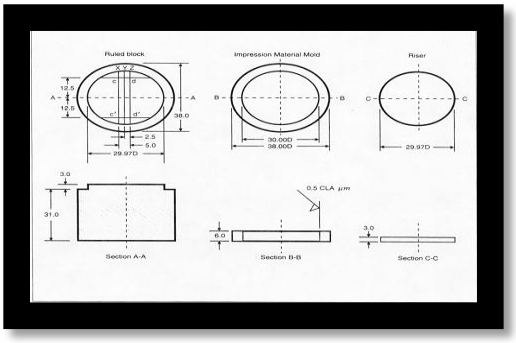
Three addition silicone materials that are supplied in the form of cartridges were mixed by using mixing tips and dispensing gun.Each mixed material was injected into 10mm diameter stainless steel cylinders of height 2 mm, 5 mm, 10 mm and 20 mm, and allowed to set. Five specimens were fabricated for each recording material of four

different lengths,for a total number of 60 specimens .Each specimen was subjected to a constant compressive force of 25N for 60 seconds by means of Universal Testing Machine (UTM).

Specimens were tested for 12 hours, 24 hours interval, readings were recorded. The amount of compression of each specimen after 25N loading are recorded and compared by means of statistical analysis. Results were evaluated using appropriate statistical analysis.

To analyse the dimensional stability,
ADA Specification No.19 for Elastomeric Dental Impression materials was used to make the specimens. This apparatus consisted of a detail reproduction test block - part A, a ring mold - part B (this simulated a tray orcontainer for the impression material), and a riser – part C, the riser is 29.97 mm in diameter and 3 mm in height where as the ring is 30 mm in diameter and 6 mm in height. This would allow the riser to fit inside the ring. The bite registration materials would occupy the difference in height between the riser and the ring mold. The riser places pressure on the impression materials and the excess impression material would flow outward around the riser. There are five lines on the top surface of the testing block. Lines X, Y, Z, and cross lines CD and C'D'. All lines are at 90 degree angle with the top surface of testing block.

The width of lines X, Y, Z 58, 24, 83 µm and for CD and C'D' were 70 and 40 µm respectively these were measured and provided by the manufacturer of the apparatus and guaranteed to be within +/- 0.008µm. The reproducibility of these lines is used to test the ability of the impression material to reproduce fine detail.
The die has a highly polished surface, which eliminated the need for a separator and minimized cleaning operations, which could damage the ruled surface of the die. In this study, line Z was selected for measurements from where it crosses line CD (to be called point A) to where it crosses line C'D'(to be called poin



The distance from point A to point B (25 mm) was selected in this study using the inside edge of lines as references for measurements. Top surface of the test block. The distance between points A and B was selected for all measurements in this study. The manufacturer provided all line widths. Lines X=58, Y=24, and Z=83 µm Cross lines CD=70, and C'D'=40 µm. All lines include 90 degree angle.

Measured distance for AB (mm) – Actual distance for AB (mm) divided by Actual distance for AB (mm) multiplied by 100 = Percent Dimensional Changes (%)
The bite registration material were prepared according to manufacturer's instructions.36 specimens were made from the three different bite registration material using the ADA specification no 19 die ,all the 108 specimens were then immersed in a controlled water bath at 37 degree Celsius . 6 specimens from each material were immersed in each of the three different type of disinfectant for three different intervals of time, so 54 specimens were disinfected and 54 specimens served as a control group. Linear dimensions were measured for the control group and for the disinfected group using a profile projector.

Statistical Analysis:-

Data was expressed in terms of mean and SD. Comparison of compressive resistance between three commercially available addition silicone bite registration materials was done by ANOVA test followed by post hoc Tukey's multiple comparison tests. Comparison the dimensional stability of three commercially available addition silicone bite registration materials when immersed in three different disinfectant solutions was done by ANOVA test

followed by post hoc Dunett's t test. A p-value less than 0.05 were considered as significant. Data analysis was done using software Minitab v.14.0.

Statistical formulae used in the study

1) Mean

$$(\underline{X}) = \frac{\sum Xi}{n}$$

Where i = 1, 2 ……..n

n = Total number of samples studied.

2) Standard deviation (SD) =

$$\sqrt{\frac{\sum (Xi - X)^2}{n - 1}}$$

3) Variance = SD^2

4) One-way ANOVA

$$F = \frac{\text{Between group variance}}{\text{Within group variance}}$$

Fig 2:-Bite Registration Materials And Disinfectant

Fig 3:-Universal Testing Machine

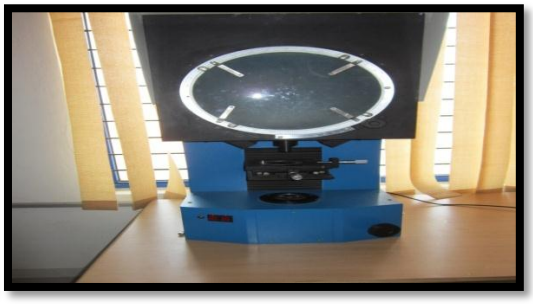


Fig 4:-Profile Projector

Fig 5:-Water Bath

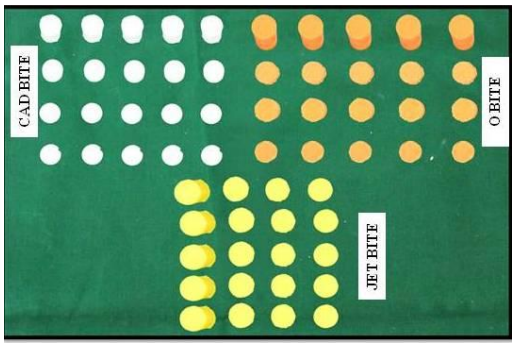


Fig 6:-Specimens ForMesauring Compressive Resistance

Fig 7:-Utm With Sample Mounted

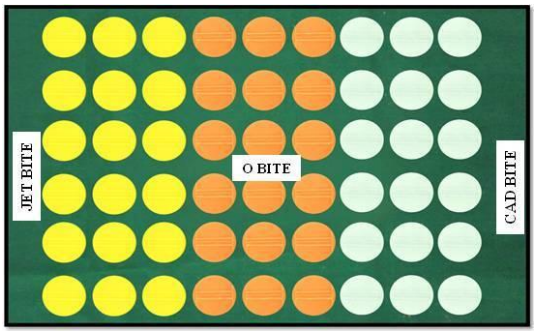


Fig 8 :-Specimens ForMesauring Dimensional Stability

Fig 9:-Specimens Immersed In Disinfectants

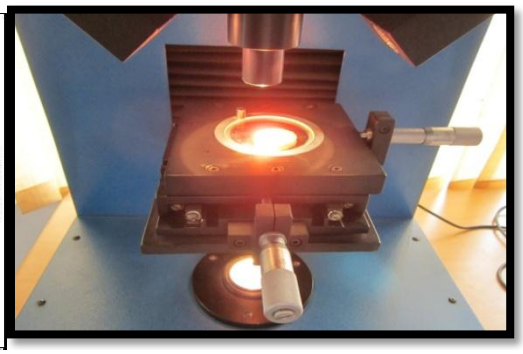


Fig 10:-Specimen Mounted On Profile Projector

O BITE

2 mm		5 mm		10 mm		20 mm	
12 hr	**24 hr**	**12 hr**	**24 hr**	**12 hr**	**24 hr**	**12 hr**	**24 hr**
1.97	1.94	1.69	1.62	1.8	1.5	1.64	1.61
1.8	1.82	1.7	1.7	1.6	1.7	1.58	1.6
1.9	1.98	1.42	1.66	1.2	1.65	1.66	1.72
1.95	1.95	1.9	1.7	1.6	1.6	1.51	1.58
1.86	1.85	1.7	1.78	1.9	1.8	1.59	1.69

Table 1:-Compressive Resistance of O Bite at 12 hr and 24 hr interval

Cad Bite

2 mm		5 mm		10 mm		20 mm	
12 hr	**24 hr**	**12 hr**	**24 hr**	**12 hr**	**24 hr**	**12 hr**	**24 hr**
1.6	1.94	1.6	1.5	1.48	1.35	1.3	1.25
1.5	1.82	1.5	1.4	1.26	1.25	1.2	1.3

1.4	1.98	1.3	1.5	1.33	1.4	1.3	1.4
1.3	1.95	1.4	1.3	1.2	1.3	1.5	1.25
1.4	1.85	1.3	1.5	1.35	1.4	1.2	1.4

Table 2:-Compressive Resistance of CAD Bite at 12 hr and 24 hr interval

Jet Bite

2 mm		5 mm		10 mm		20 mm	
12 hr	**24 hr**	**12 hr**	**24 hr**	**12 hr**	**24 hr**	**12 hr**	**24 hr**
1.5	1.56	1.74	1.7	1.5	1.7	1.55	1.65
1.76	1.7	1.56	1.65	1.8	1.6	1.68	1.63
1.9	1.72	1.64	1.75	1.7	1.6	1.62	1.55
1.3	1.65	1.66	1.55	1.5	1.6	1.55	1.62
1.9	1.8	1.54	1.6	1.6	1.7	1.6	1.71

Table 3:-Compressive Resistance Of Jet Bite At 12 Hr And 24 Hr Interval

Control Group
O Bite

SAMPLE NO	READINGS
1	24.79
2	24.79
3	24.8
4	24.8
5	24.75
6	24.74
7	24.59
8	24.67
9	24.65
10	24.32
11	24.58
12	24.32
13	24.40
14	24.8
15	24.79
16	24.88
17	24.85
18	24.81

Table 4:-Dimensional stabilty readings of O bite at different time intervals

Jet Bite

SAMPLE NO	READINGS
1	24.83
2	25.0
3	24.8
4	24.86
5	24.81
6	24.78
7	24.83
8	24.81
9	24.80
10	24.91
11	24.93
12	24.94
13	24.68

14	24.76
15	24.82
16	24.84
17	24.79
18	24.66

Table 5:-Dimensional stabilty readings of JET bite at different time interval

Cad Bite

SAMPLE NO	READINGS
1	24.84
2	24.81
3	24.06
4	24.59
5	24.65
6	24.51
7	24.84
8	24.81
9	24.78
10	24.74
11	24.17
12	24.5
13	24.5
14	24.8
15	24.79
16	25.0
17	25.0
18	24.77

Table 6:-Dimensional stabilty readings of CAD bite at different time intervals

Disinfected Group

O BITE			
SAMPLE NO	**DISINFECTANT**	**DURATION**	**READINGS**
1	2% GLUTARALDEHYDE	2 MIN	25.0
2	2% GLUTARALDEHYDE	2 MIN	24.51
3	2% GLUTARALDEHYDE	5MIN	24.66
4	2% GLUTARALDEHYDE	5MIN	24.70
5	2% GLUTARALDEHYDE	60MIN	24.42
6	2% GLUTARALDEHYDE	60 MIN	24.35
7	1 % SODIUM HYPOCHLORITE	2 MIN	24.68
8	1 % SODIUM HYPOCHLORITE	2 MIN	24.75
9	1 % SODIUM HYPOCHLORITE	5MIN	24.58
10	1 % SODIUM HYPOCHLORITE	5MIN	24.62
11	1 % SODIUM HYPOCHLORITE	60MIN	24.1
12	1 % SODIUM HYPOCHLORITE	60 MIN	24.16
13	0.5 % CHLOROHEXIDINE GLUCONATE	2 MIN	24.5
14	0.5 % CHLOROHEXIDINE GLUCONATE	2 MIN	24.69
15	0.5 % CHLOROHEXIDINE GLUCONATE	5MIN	24.78
16	0.5 % CHLOROHEXIDINE GLUCONATE	5MIN	24.58
17	0.5 % CHLOROHEXIDINE GLUCONATE	60MIN	24.15
18	0.5 % CHLOROHEXIDINE GLUCONATE	60 MIN	24.77

Table 7:-Dimensional stabilty readings of O bite at different time intervals

JET BITE

SAMPLE NO	DISINFECTANT	DURATION	READINGS
1	2% GLUTARALDEHYDE	2 MIN	24.84
2	2% GLUTARALDEHYDE	2 MIN	24.80
3	2% GLUTARALDEHYDE	5MIN	24.78
4	2% GLUTARALDEHYDE	5MIN	24.79
5	2% GLUTARALDEHYDE	60MIN	24.51
6	2% GLUTARALDEHYDE	60 MIN	24.69
7	1 % SODIUM HYPOCHLORITE	2 MIN	24.94
8	1 % SODIUM HYPOCHLORITE	2 MIN	24.96
9	1 % SODIUM HYPOCHLORITE	5MIN	24.87
10	1 % SODIUM HYPOCHLORITE	5MIN	24.78
11	1 % SODIUM HYPOCHLORITE	60MIN	24.51
12	1 % SODIUM HYPOCHLORITE	60 MIN	24.69
13	0.5 % CHLOROHEXIDINE GLUCONATE	2 MIN	24.59
14	0.5 % CHLOROHEXIDINE GLUCONATE	2 MIN	24.68
15	0.5 % CHLOROHEXIDINE GLUCONATE	5MIN	24.69
16	0.5 % CHLOROHEXIDINE GLUCONATE	5MIN	24.78
17	0.5 % CHLOROHEXIDINE GLUCONATE	60MIN	24.58
18	0.5 % CHLOROHEXIDINE GLUCONATE	60 MIN	24.69

Table 8:-Dimensional stabilty readings of JET bite at different time intervals

CAD BITE			
SAMPLE NO	**DISINFECTANT**	**DURATION**	**READINGS**
1	2% GLUTARALDEHYDE	2 MIN	24.74
2	2% GLUTARALDEHYDE	2 MIN	24.81
3	2% GLUTARALDEHYDE	5MIN	24.84
4	2% GLUTARALDEHYDE	5MIN	24.17
5	2% GLUTARALDEHYDE	60MIN	24.80
6	2% GLUTARALDEHYDE	60 MIN	24.68
7	1 % SODIUM HYPOCHLORITE	2 MIN	24.76
8	1 % SODIUM HYPOCHLORITE	2 MIN	24.18
9	1 % SODIUM HYPOCHLORITE	5MIN	24.81
10	1 % SODIUM HYPOCHLORITE	5MIN	24.74
11	1 % SODIUM HYPOCHLORITE	60MIN	24.90
12	1 % SODIUM HYPOCHLORITE	60 MIN	24.48
13	0.5 % CHLOROHEXIDINE GLUCONATE	2 MIN	24.40
14	0.5 % CHLOROHEXIDINE GLUCONATE	2 MIN	24.58
15	0.5 % CHLOROHEXIDINE GLUCONATE	5MIN	24.62
16	0.5 % CHLOROHEXIDINE GLUCONATE	5MIN	24.74
17	0.5 % CHLOROHEXIDINE GLUCONATE	60MIN	24.55
18	0.5 % CHLOROHEXIDINE GLUCONATE	60 MIN	24.78

Table 9:-Dimensional stabilty readings of CAD bite at different time intervals

	CAD	O bite	Jet bite	F-value	p-value	Remarks	Post hoc multiple comparison
2 mm	1.44 ± 0.11	1.89 ± 0.07	1.67 ± 0.26	8.897	P=0.004	Significant	CAD vs. O, $p<0.05$ CAD vs. JET, $p>0.05$

							O vs. JET, p>0.05
5 mm	1.42 ± 0.13	1.68 ± 0.17	1.63 ± 0.08	5.44	P=0.021	Significant	CAD vs. O, p<0.01 CAD vs. JET, p>0.05 O vs. JET, p>0.05
10 mm	1.32 ± 0.10	1.62 ± 0.27	1.62 ± 0.13	4.37	P=0.04	Significant	CAD vs. O, p>0.05 CAD vs. JET, p>0.05 O vs. JET, p>0.05
20 mm	1.30 ± 0.12	1.59 ± 0.06	1.60 ± 0.05	20.77	P<0.0001	Significant	CAD vs. O, p<0.001 CAD vs. JET, p<0.001 O vs. JET, p>0.05

Table 10:-Comparison of compressive resistance between three commercially available addition silicone bite registration materials at 12 hrs (Mean ± SD)

	CAD	**O bite**	**Jet bite**	**F-value**	**p-value**	**Remarks**	**Post hoc multiple comparison**
2 mm	1.48 ± 0.13	1.91 ± 0.07	1.69 ± 0.09	23.19	P<0.0001	Significant	CAD vs. O, p<0.001 CAD vs. JET, p<0.05 O vs. JET, p<0.05
5 mm	1.44 ± 0.09	1.69 ± 0.06	1.65 ± 0.08	15.34	P<0.0005	Significant	CAD vs. O, p<0.001 CAD vs. JET, p<0.01 O vs. JET, p>0.05
10 mm	1.34 ± 0.06	1.65 ± 0.11	1.64 ± 0.05	23.67	P<0.0001	Significant	CAD vs. O, p<0.001 CAD vs. JET, p<0.001 O vs. JET, p>0.05
20 mm	1.32 ± 0.07	1.64 ± 0.06	1.63 ± 0.06	38.96	P<0.0001	Significant	CAD vs. O, p<0.001 CAD vs. JET, p<0.001 O vs. JET, p>0.05

Table 11:-Comparison of compressive resistance between three commercially available addition silicone bite registration materials at 24hrs (Mean ± SD)

Time	**2 % G**	**1% S**	**0.5% C**	**Percentage DC for 2 % G**	**Percentage DC for 1 % S**	**Percentage DC for 0.5 % C**
2 min	25	24.68	24.5	0	-1.28	-2
2 min	24.51	24.75	24.69	-1.96	-1	-1.24
5 min	24.66	24.58	24.78	-1.36	-1.68	-0.88
5 min	24.7	24.62	24.58	-1.2	-1.52	-1.68
60 min	24.42	24.1	24.15	-2.32	-3.6	-3.4
60 min	24.35	24.16	24.77	-2.6	-3.36	-0.92

Table 12:-percent dimensional changes Measurement for O bite

Time	**2 % G**	**1% S**	**0.5% C**	**Percentage DC for 2 % G**	**Percentage DC for 1 % S**	**Percentage DC for 0.5 % C**
2 min	24.84	24.94	24.59	-0.64	-0.24	-1.64
2 min	24.8	24.96	24.68	-0.8	-0.16	-1.28
5 min	24.78	24.87	24.69	-0.88	-0.52	-1.24
5 min	24.79	24.78	24.78	-0.84	-0.88	-0.88
60 min	24.51	24.51	24.58	-1.96	-1.96	-1.68
60 min	24.69	24.69	24.69	-1.24	-1.24	-1.24

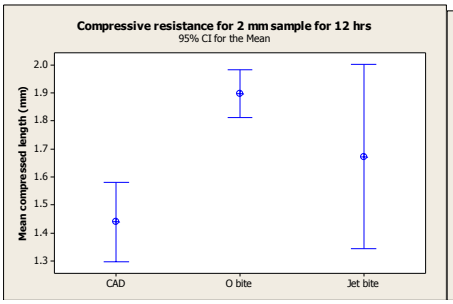
Table 13:-percent dimensional changes Measurement for Jet bite

Time	2 % G	1% S	0.5% C	Percentage DC for 2 % G	Percentage DC for 1 % S	Percentage DC for 0.5 % C
2 min	25	24.68	24.5	0	-1.28	-2
2 min	24.51	24.75	24.69	-1.96	-1	-1.24
5 min	24.66	24.58	24.78	-1.36	-1.68	-0.88
5 min	24.7	24.62	24.58	-1.2	-1.52	-1.68
60 min	24.42	24.1	24.15	-2.32	-3.6	-3.4
60 min	24.35	24.16	24.77	-2.6	-3.36	-0.92

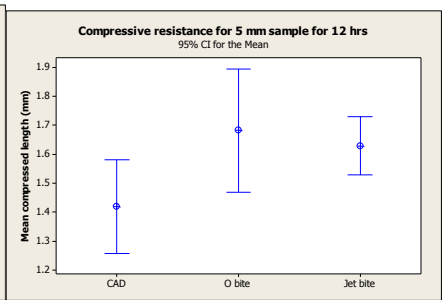
Table 14:-percent dimensional changes Measurement for CAD bite

Material	2 % G	1% S	0.5% C	control	F-value	p-value	Remarks
CAD	24.67 ± 0.25	24.64 ± 0.27	24.61 ± 0.14	24.67 ± 0.25	0.11	p>0.05	NS
O	24.61 ± 0.23	24.48 ± 0.28	24.58 ± 0.23	24.68 ± 0.17	1.46	p>0.05	NS
Jet	24.73 ± 0.12	24.79 ± 0.17	24.67 ± 0.07 *	24.82 ± 0.08	3.60	P<0.02	Significant

Table 15:-Comparison the dimensional stability of three commercially available addition silicone bite registration materials when immersed in three different disinfectant solutions



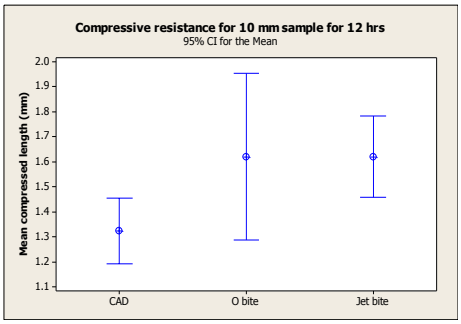
Graph No:1



Graph No: 2

Graph 1:-Shows comparison of compression resistance between different bite registration materials of 2mm thickness specimens for 12 hrs.

Graph 2:-Shows comparison of compression resistance between different bite registration materials of 5mm thickness specimens for 12 hrs.



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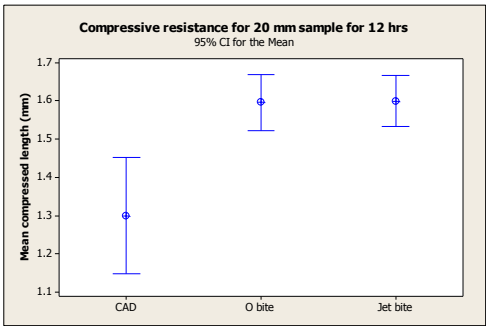
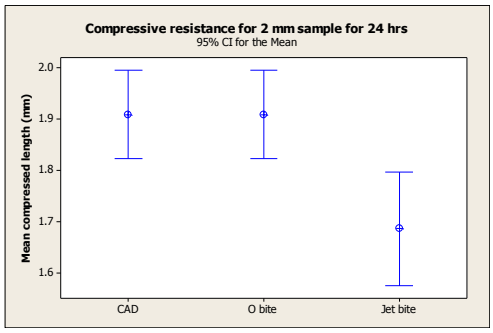
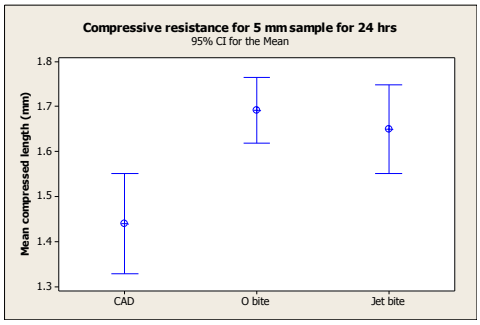


Graph No: 4

Graph 3:-Shows comparison of compression resistance between different bite registration materials of 10mm thickness specimens for 12 hrs.

Graph 4:-Shows comparison of compression resistance between different bite registration materials of 20mm thickness specimens for 12 hrs.

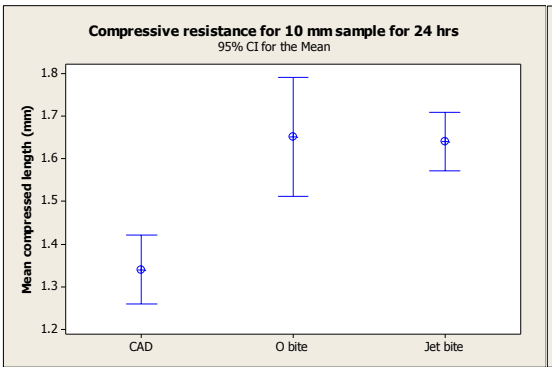


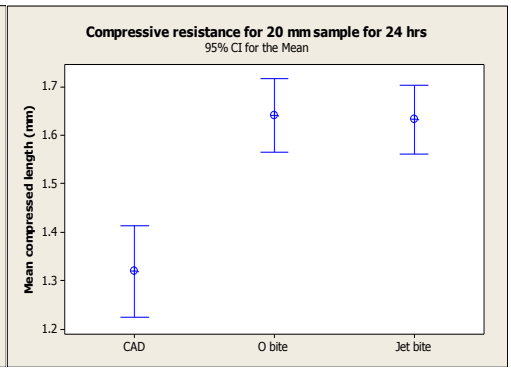


Graph No: 5 **Graph No: 6**

Graph 5:-Shows comparison of compression resistance between different bite registration materials of 2mm thickness specimens for 24 hrs.

Graph 6:-Shows comparison of compression resistance between different bite registration materials of 5mm thickness specimens for 24 hrs.

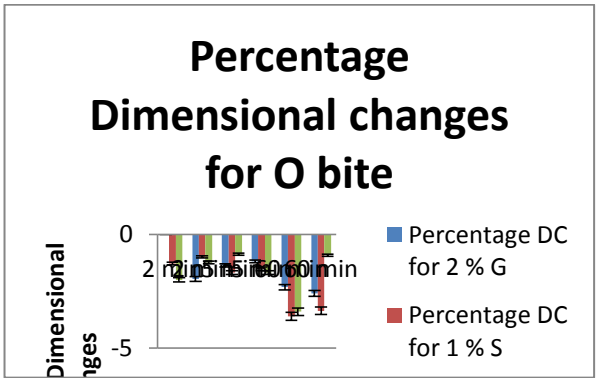




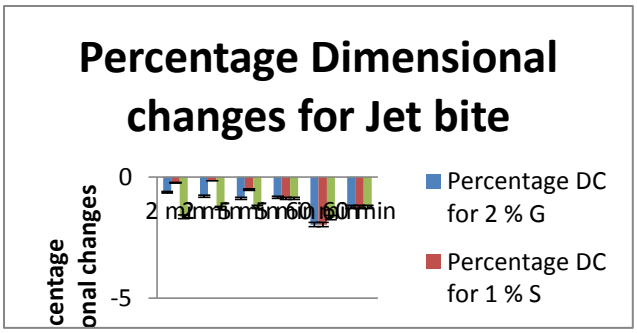
Graph No: 7 **Graph No: 8**

Graph 7:-Shows comparison of compression resistance between different bite registration materials of 10mm thickness specimens for 24 hrs.

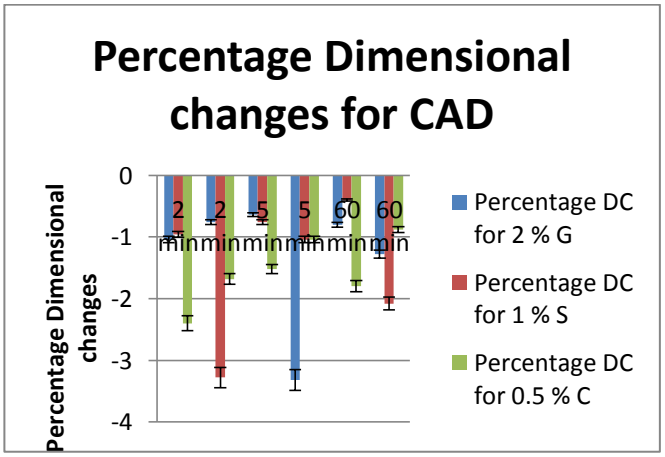
Graph 8:-Shows comparison of compression resistance between different bite registration materials of 20mm thickness specimens for 24 hrs.



Graph No 9:-Shows comparison of percent dimensional changes for O Bite at three different time intervals of immersion disinfection i.e. 2 min, 5min, 60min, disinfected with 2% Glutaraldehyde, 1% Sodium Hypochlorite, and 0.5% Chlorehexidinegluconate.



Graph 10:-Shows comparison of percent dimensional changes for JET Bite at three different time intervals of immersion disinfection i.e. 2 min, 5min, 60min, disinfected with 2% Glutaraldehyde, 1% Sodium Hypochlorite, and 0.5% Chlorehexidinegluconate.



Graph 11:-Shows comparison of percent dimensional changes for CAD Bite at three different time intervals of immersion disinfection i.e. 2 min, 5min, 60min, disinfected with 2% Glutaraldehyde, 1% Sodium Hypochlorite, and 0.5% Chlorehexidinegluconate.

Discussion:-

According to Millstein and Hsu, "The interocclusal record should be an accurate and dimensionally stable representation of an interocclusal space that is subsequently transferred to an articulator.[7] Recording maxillomandibular relationships is an important step in oral rehabilitation. This relationship is transferred to the articulator, so that the laboratory procedures done on the casts will correspond with the patient's mouth. There are various methods of recording maxillomandibular relationships namely, graphic, functional, cephalometric and direct interocclusal.[8]

Direct interocclusal records are most commonly used to record maxillomandibular relationships because of their simplicity.The first interocclusal registration was made in 1756 by Philip Pfaff.Plaster, wax, modelling compound, zinc oxide - eugenol paste, autopolymerizing acrylic resin, condensation type silicones, polyether and polyvinylsiloxane are the commonly used materials for recording maxillomandibular relationship.[9] TomislavIvanis, Jansenka. Concluded that elastomers that underwent 24 hour immersion showed linear dimensional change within clinically acceptable range, they found that the obtained dimensional changes depended on the impression material, the medium and time of exposure. All the differences in dimensional changes were statistically significant.[10]The thickness of the interocclusal recording materials was selected to simulate clinical situations. A limited thickness of recording material is usually indicated between prepared teeth on one arch opposing an unprepared dental arch compared with a thickness of material between two opposing edentulous arches. The specimens were stored at room temperature for 12 hours and 24 hours to simulate the time between clinical and laboratory phases (registration and mounting).Among the 2mm thickness specimens at 12 hr interval, CAD bite registration material showed the least compression distance value of 1.44 than Jet bite of 1.67, O bite of 1.89. (Table: 10)

1. Among the 5mm thickness specimens at 12 hr interval, CAD bite registration material showed the least compression distance value of 1.42 than Jet bite of 1.63, O bite of 1.68. (Table: 10)
2. Among the 10mm thickness specimens at 12 hr interval, CAD bite registration material showed the least compression distance value of 1.32 than Jet bite of 1.62, O bite of 1.62. (Table: 10)
3. Among the 20mm thickness specimens at 12 hr interval, CAD bite registration material showed the least compression distance value of 1.30 than Jet bite of 1.69, O bite of 1.59. (Table: 10)
4. Among the 2mm thickness specimens at 24 hr interval, CAD bite registration material showed the least compression distance value of 1.48 than Jet bite of 1.69, O bite of 1.91. (Table: 11)
5. Among the 5mm thickness specimens at 24 hr interval, CAD bite registration material showed the least compression distance value of 1.44 than Jet bite of 1.65, O bite of 1.69. (Table: 11)
6. Among the 10mm thickness specimens at 24 hr interval, CAD bite registration material showed the least compression distance value of 1.34 than Jet bite of 1.64, O bite of 1.65. (Table: 11)
7. Among the 20mm thickness specimens at 24 hr interval, CAD bite registration material showed the least compression distance value of 1.32 than Jet bite of 1.63, O bite of 1.64. (Table: 11)

The three disinfectant solutions used in this study had very marginal effect on the elastomeric impression materials. CAD bite and O bite showed to be most dimensionally stable after immersion disinfection, and of all the disinfectantsemployed in the present investigation, chlorehexidinegluconate affected the least changes in the dimensions of the three bite registration materials.(Table no:15) Oda Y, Matsumoto T and Sumii T have stated thatCondensation silicone impression materials and polysulfide rubber impression materials greatly shrank over time, but their shrinkage decreased with immersion in disinfectants. Vinyl silicone impression materials and polyether impression materials showed excellent dimensional stability in air. However, hydrophilic vinyl silicone impression materials and polyether impression materials expanded greatly when immersed in disinfectants, especially when immersed in ethanol. Hydrophobic vinyl silicone impression materials showed excellent dimensional stability regardless of the presence or absence of disinfectants.[11]

Adaba GL ET al among others, warn that polyether is particularly sensitive to immersion and that disinfection by immersion is contraindicated for this material. Merchant also warns that polyether should be disinfected for short periods with the disinfectants accepted by the ADA, which in turn recommends immersion not exceeding 30 minutes.[12] Craig RG, Sun Zobserved that several bite registration elastomers had a desirable combination of high stiffness and low permanent deformation at the time of removal. Polyvinylsiloxane and polyether bite registration materials are characterized by short working time, setting time, high stiffness, low-percent strain in compression and low flow.[13] Studies done by Craig RG and Sun Z, Chai J, Tan E and Pang I C, Campos AA and Nathanson Dhave also shown that polyvinylsiloxane bite registration material was more accurate and dimensionally stable than polyether bite registration material[14,15,16].

Conclusion:-

Based on the observations of this study, the following conclusions were drawn

1. All the specimens tested for compressive resistance showed that, as the time increased the compressive resistance of the three materials irrespective of thickness was increased.
2. As the thickness of specimen increased the compressive resistance decreased.
3. Among the three materials used CAD bite showed better compressive resistance than Jet Bite and O bite. The results were highly significant.
4. The three disinfectants employed in the study affected marginally on all the three bite registration materials CAD bite and O bite were dimensionally stable when compared to Jet bite.
5. Of all the disinfectants employed in the present study 0.5% chlorhexidinegluconate showed the least changes in the dimensions of the three bite registration material.

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