

DIFFERENCES IN GINGIVAL INFLAMMATION AND POCKET DEPTH MEASUREMENT IN RELATION TO UPPER And LOWER JAWS⁺

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Abstract :

The aim of this study is to determine the differences in gingival inflammation and pocket depth in relation to the upper and lower jaws . 150 sites were selected with pocket that are more than 5 mm in depth in 9 patients suffering from chronic periodontitis. The pockets were measured by constructing a stent and grooves were cut in the sent. A William probe was used and a mark on the probe was made to measure the pocket depth (PD) from mark to the tip of the probe with a vernier .

The patients were longitudinally followed in a sequence of 4 visits of one week interval .V1 represents the base line reading, V2 after O.H.I., V3 after scaling & V4 after root planning . At each visit the PD was recorded, in addition the GI was score .The results indicate an overall reduction in PD reading due to resolution of the inflammation, the effect is more pronounced on the buccal and lingual surface compared to proximal surface . This is true for each quadrant upper and lower jaws, left and right .

المستخلص :

ان الغاية من هذه الدراسة هي تعيين الاختلافات في الالتهاب اللثوي وقياس الجيوب اللثوية للفك العلوي والسفلي الايمن واليسر .

اختير ١٥٠ سطحاً مصاباً بالنساج المزمن مع وجود جيوب بعمق اكثر من 5 سم عند ٩ مرضى وقد اتبع عمل جهاز اكريلكي لكل مريض ، الغاية منه احتساب عمق الجيب واستخدام مسبار من نوع Williams وقيست المسافات باستعمال Vernier . وقد تم متابعة المرضى على مدى اربعة اسابيع وذلك لزيارة واحدة في كل اسبوع اعتبرت الزيارة الاولى لحساب القاعدة وفيها اعطي كل مريض ارشادات للسيطرة على الصفيحة الجرثومية اما في الزيارة الثانية فقد تم تغليح الاسنان وفي الزيارة الثالثة اجري تسطيح او تنعيم الجذور في كل زيارة اخذت القياسات لعمق الجيوب والتهاب اللثة باستخدام مؤشر اللثة .

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بينت النتائج انخفاض عاماً في عمق الجيوب عند زوال الالتهاب علماً ان هذا الانخفاض كان اكثر في السطوح الدهليزية والسابقة مقارنة بالسطوح الوحشية والانسية والفرق عالي الدلالة العلمية. بالنتيجة نفسها ايضاً بالنسبة لكل ربع في الجهتين اليسرى واليمنى ايضاً والفك الاسفل والفك الاعلى .

Introduction :

Periodontal probing is still one of the more diagnostic tools to determine the presence and severity of periodontal lesions . In addition to its traditional role as an instruments for estimating sulcus of pocket depths the periodontal probe has been used to quantify dental plaque[1]and gingival inflammation[2,3]and to estimate the level of alveolar crest[4] .

Pocket depth recorded along various tooth surfaces during the initial examination of a patient with periodontal disease were assumed to represent the depth of periodontal pockets at those sites . If as a result of treatment the measurement obtained with the probe decreased , this was attributed to tissue shrinkage or the formation of new attachment since increased pocket depth measurement is associated with chronic periodontitis .

Listgarten (1979)[5] indicated that pocket depth measurement might be related to a variety of factors such as thickness of the probe , pressure applied , contour of the tooth surface degree of inflammatory cell infeltration and the compressibility of tissue .

However in spite of these difficulties these appear to be no alternative to this method . Soft tissue compressibility is meant to give an over estimation of pocket depth this compressibility is related to the severity of inflammation of more tissue inflamed .It is claimed that compressibility is more .

However there are conflicting quantitive studies of Van Der Velder (1981)[6] to determine the amount of compressibility and its variation with deep or shallow pocket .

Periodontal diseases , once established , is often time consuming and costly to treat , while untreated or unsuccessfully treated periodontal disease is a significant cause of tooth loss .Approximately 10-15% of populations of industrialized countries are affected by generalized sever chronic periodontitis , and evidence suggests that it may often have its onset during adolescence and early adulthood . Furthermore , gingivitis which always precedes periodontitis is widely prevalent in children. What causes periodontal disease ? Dental plaque[7] .

Also several reports have been presented describing the short – long – term effect of various forms of periodontal therapy . In addition , the effect of different treatment procedures on the clinical attachment has been examined and related to initial probing depth[8,9,10].

Material and Method :

Patient suffering from chronic periodontitis attending the Department of Periodonotics College of Dentistry , University of Baghdad, 3 Females 6 males their age ranged from 22-46 years . They had to fulfill the following criteria .

- 1- A consent was obtained to participate in the study after it was fully explained to them .
- 2- They had to display advanced break down of periodontal support at several sites . A minimum of 20 sites should show pocket depth ≥ 5 mm a total of 50 site were included .
- 3- No systemic diseases are present which could contribute to the disease condition .
- 4- No patient should have received antibiotic therapy during the 3 months prior to study matching .
- 5- None of the female patient were pregnant or taking contraceptive pills .

The examination kit :

- | | |
|---------------------------|-----------------------------------|
| 1- plane dental mirrors . | 2- Collage tweezers . |
| 3- Sickle probes . | 4-Preiodontal probes (Williams) . |
| 5- Periodontal curettes . | 6-Hoes . |
| 7- Perforated stock tray. | 8-Dental stone . |
| 9- Verners . | |

Each patient was examined and all information was registered on a special form . Data obtained included, age, sex , address . Intra oral examination consisted of scoring for the GI system[2] . Pocket depth of each sit using a stent was recorded .

The experimental period was planned for 4 weeks at each visit ,GI & PD were registered with intervals of one week between each visit .V₁ is regarded as a baseline instructions in oral hygiene was given after motivation .

In V₂ which is one week after the same procedure was done recording GI & PD, scaling & polishing and hygiene inst. Motivation was reinforced .

In (V₃) the examination was repeated as in the previous two visits, root planning was performed with hoes and finished with curettes, one week after the (V₄) the measurement was recorded and the experimental period terminated .

Result :

PD

Tables 1, 2, 3, 4 show the means of PD measurement for each surface at each visit for each quadrant, the great reduction occurs at V4.

The result followed by the four factors, which showed too high significant differences at ($P_{\text{value}}=.000$) exception with location factor which recorded a non-significant difference at ($P_{\text{value}}=.488$).

Briefly from these results we can conclude that:

- 1- With surface factors array recovery according to the (PD) scale of (L and M) followed by (B) and finally followed by (D) Figure (1).

The different changeability of surfaces responding of (PD) is shown by different periods of visits.

In addition to that Table (2) represents the summary of statistics of surface factor.

With location factor array recovery according to (PD) scale was at upper and then followed by lower location within a non-significant differences figure (2) shows the exiguous deviations of response between the two locations by the different periods of visits. In addition Table (3) represents the summary of statistics of location factor.

With site factor, array scale recovery according to (PD) scale was at left and followed by right site within a highly significant difference.

Figure (3) shows the large deviations of response between the two sets by the different periods of visits. In addition Table (4) represents the summary of statistics of site factor.

The effect of optimal plaque control on the GI is shown as a drop in GI at V2 for all surfaces, this effect is significant when comparing the means between v1-v2 and V2-V3, when comparing the surfaces as anticipated. The situation on the buccal and lingual surfaces is found better when compared it with proximal surface for each quadrant, this is true for all the jaws, this is in agreement with a study done by Werhag (1975)[11].

The same statistical analysis was done for GI in relation to surfaces, location (left and right), site (upper and lower), this was clear in table 5, and figure 4 showed the differences changeability of surface responding of GI by different period of visits, in addition Table (6) represents the summary of statistics of surface factor for GI, with location factor array recovery according to GI scale at upper and then followed by lower location within a nonsignificant differences. Figure (5) shows the exiguous deviations of responding between the two locations (upper and lower) by difference.

In addition Table (7) represents the summary of statistics of location factors (upper and lower) , with site factors (left and right) array scale recovery according to GI scale of left and followed by right site within highly significant differences .

Figure (6) shows the large deviations of responding between the two sites by the different periods of visit . In addition Table (8) represents the summary of statistics of site factor for GI .

Table (1) Mean values in PD for the upper right , left ; lower right , left during different visit .

upper right					upper left				
Surface Visits	B	L	M	D	Surface Visits	B	L	M	D
V ₁	16.72	16.43	16.97	16.85	V ₁	16.63	16.44	16.97	16.80
V ₂	15.51	16.25	16.87	16.69	V ₂	16.22	16.15	16.75	16.85
V ₃	15.91	15.79	16.01	15.99	V ₃	15.21	14.95	15.98	15.81
V ₄	13.25	13.40	13.90	13.99	V ₄	13.18	13.15	14.03	13.66
Lower right					Lower left				
Surface Visits	B	L	M	D	Surface Visits	B	L	M	D
V ₁	16.44	16.84	17.56	17.22	V ₁	16.35	15.99	16.99	16.89
V ₂	16.24	16.52	17.36	17.21	V ₂	16.05	15.81	16.75	16.71
V ₃	16.01	16.07	17.11	16.99	V ₃	15.61	15.12	16.60	16.51
V ₄	13.25	13.01	14.45	14.22	V ₄	13.02	13.01	14.60	13.11

Table (2) The summary of statistics of surfaces factors of PD .

Surface	Mean	Std. Error	95% confidence interval	
			Lower Bound	Upper Bound
B	15.413	.062	15.289	15.536
L	15.308	.062	15.184	15.432
M	15.308	.062	15.184	15.432
D	15.956	.062	15.832	16.080

Table (3) Summery of statistics of upper and lower for PD .

Dependent Variable : PD

Surface	Mean	Std. Error	95% confidence interval	
			Lower Bound	Upper Bound
U	15.475	.044	15.387	15.562
L	15.518	.044	15.430	15.605

Table (4) The summary of statistics of site factors (left and right) for PD

Site	Mean	Std. Error	95% confidence interval	
			Lower Bound	Upper Bound
L	15.302	.044	15.214	15.389
R	15.691	.044	15.603	15.778

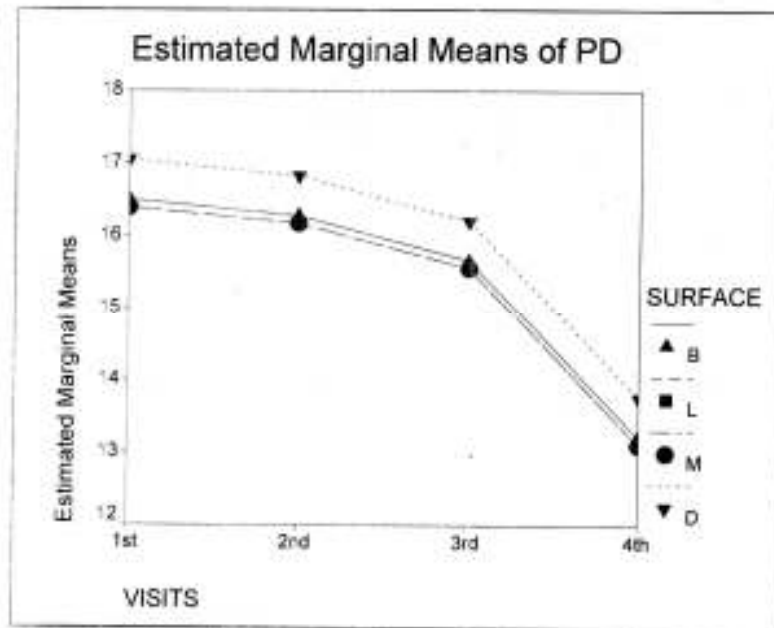


Figure (1): The different changeability of surfaces responding to PD by different visits .

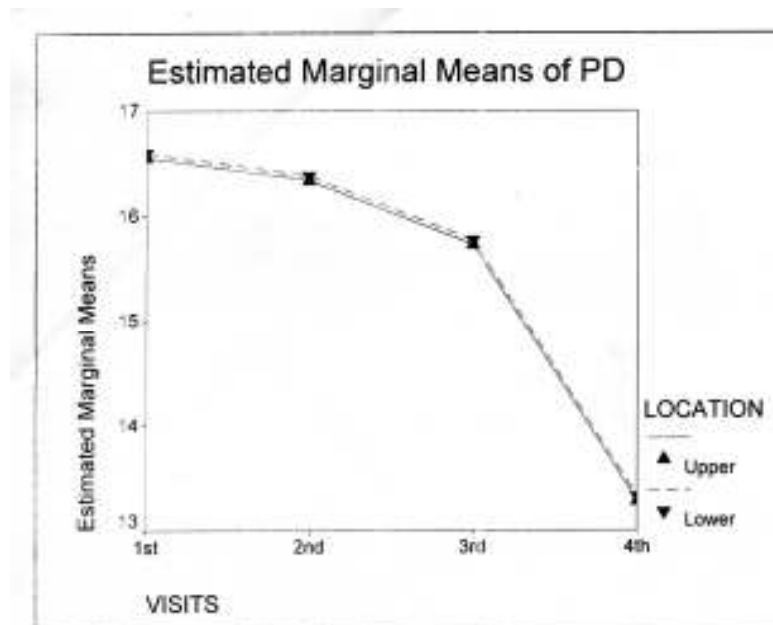


Figure (2) The exiguous deviations between upper and lower by different visits for PD

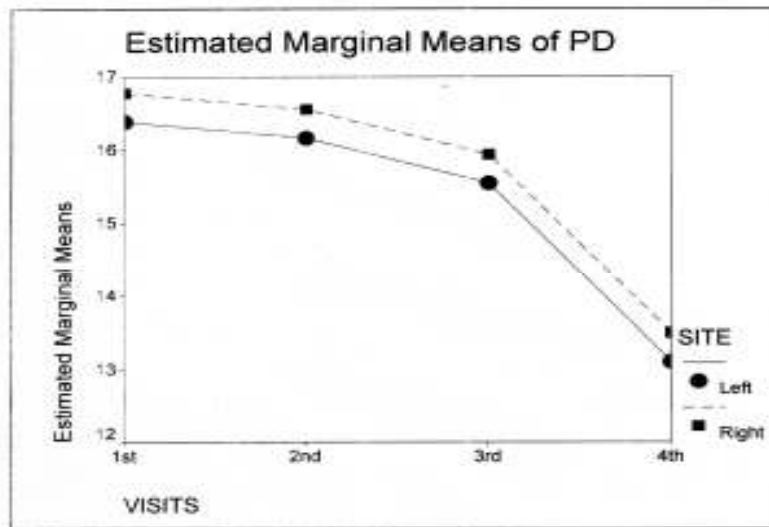


Figure (3) The large deviation of responding between the two sites left and right for PD .

Table (5) Mean value in GI in upper right , left ; lower right , left jaw during different visits .

upper right					upper left				
Surface Visits	B	L	M	D	Surface Visits	B	L	M	D
V ₁	1.888	1.772	2.195	2.175	V ₁	1.995	1.85	2.07	2.65
V ₂	0.925	0.899	1.190	1.55	V ₂	1.256	1.05	1.505	1.62
V ₃	0.12	0.15	0.70	0.65	V ₃	0.456	0.50	0.85	0.9
V ₄	0	0.0	0.2	0.3	V ₄	0.00	0.00	0.2	0.25
Lower right					Lower left				
Surface Visits	B	L	M	D	Surface Visits	B	L	M	D
V ₁	1.985	2.125	2.350	2.333	V ₁	1.952	1.935	2.054	2.299
V ₂	0.995	0.885	1.05	1.235	V ₂	0.933	0.855	1.163	1.02
V ₃	0.398	0.342	0.45	0.56	V ₃	0.03	0.159	0.55	0.455
V ₄	0.0	0.0	0.0	0.0	V ₄	0.00	0.00	0.1	0.2

Table (6) The summary of statistics of surface factors GI .

Surface	Mean	Std. Error	95% confidence interval	
			Lower Bound	Upper Bound
B	.808	.036	.736	.881
L	.783	.036	.710	.855
M	1.039	.036	.967	1.111
D	1.137	.036	1.065	1.210

Table (7): The summary of statistics of location (upper and lower) for GI factor .

Site	Mean	Std. Error	95% confidence interval	
			Lower Bound	Upper Bound
U	.996	.025	.945	1.047
L	.888	.025	.837	.939

Table (8): represents the summary of statistics of site factors left and right .

Site	Mean	Std. Error	95% confidence interval	
			Lower Bound	Upper Bound
L	.964	.025	.913	1.015
R	.919	.025	.868	.971

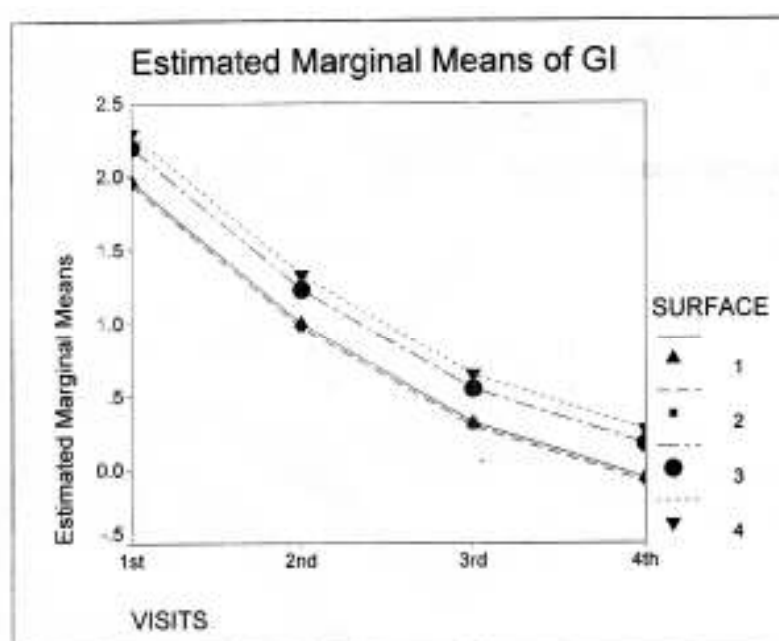


Figure (4): The difference changeability of surface responding of GI by different visit .

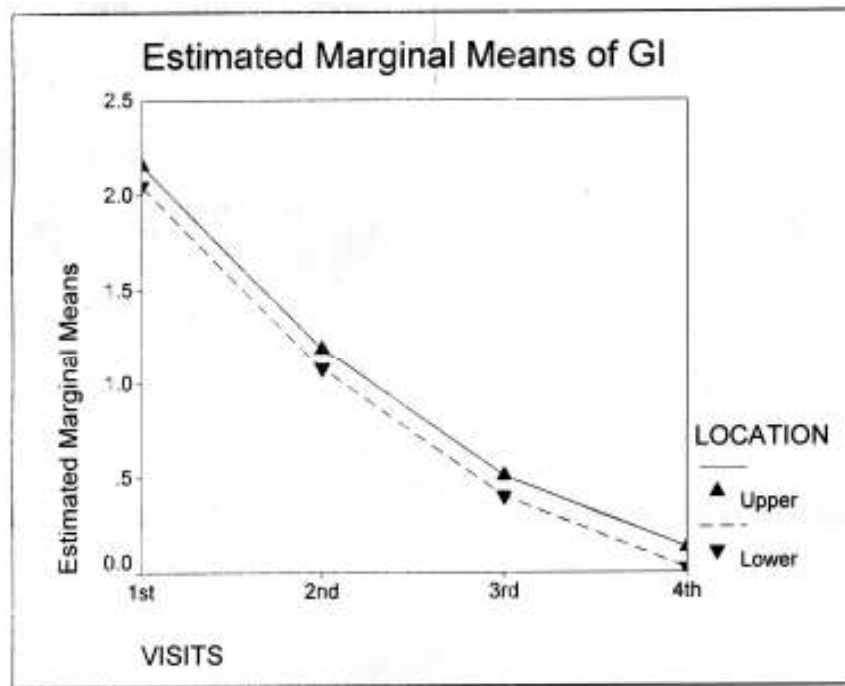


Figure (5): The exisnous deviation of responding of GI between upper and lower by different visits .

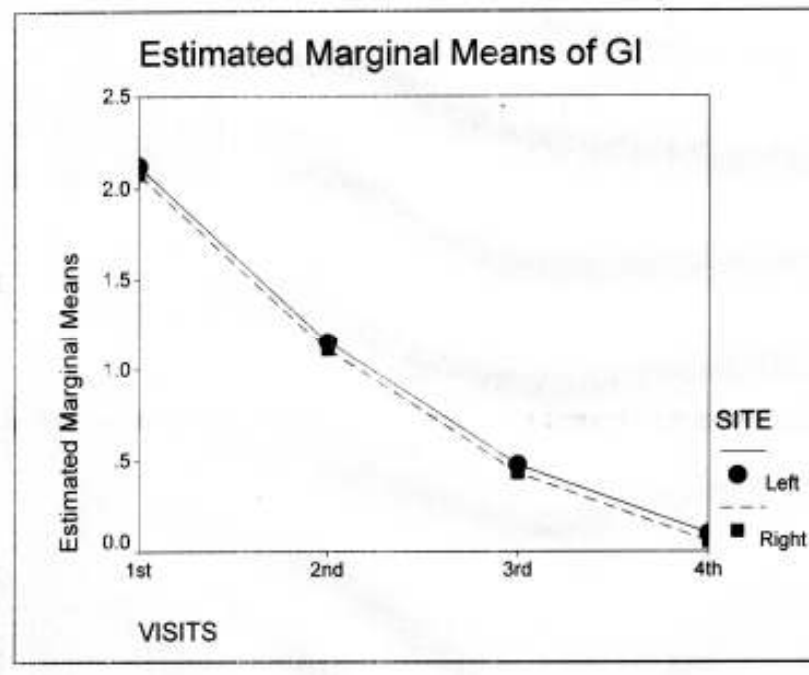


Figure (6): Arranged deviations of responding of GI between the two sites (left and right) in the different periods of visits .

Discussion :

In recent years , several reports have been presented describing the short and long term effects of periodontal therapy[12,13,14].

The findings demonstrate the decisive importance of the proper removal of the bacterial plaque for the control and arrest of progression of periodontal disease .

Indent the decisive factor in resolution of soft tissue inflammation is the root planning Axellsson and Lindhe (1974)[15]. This explains why the main reduction occurs at V4 .

Also there is a general reduction in all surfaces for each quadrant upper and lower , left and right , whivh took place when GI was recorded at 4 visits. This reduction was more gradual with each visit . With surface factor the responce of PD treatment was at (L and M) followed by B and finally (D) .

If we compare the upper and lower we find that the upper respond more than the lower .

With site factor we saw the array recovery according to (PD) scale was of left and followed by right .

So this overall improvement in the periodontal conditions as well as the resulting shallow pockets at buccal , lingual and proximal sits is in close agreement with findings from similar studies by e.g. Rosling et. al., (1976 a,b) and Isidor (1981)[16].

It is interesting to observe that scaling and root planning used without adjunctive surgery also resulted in the elimination of pockets deeper than 6mm . This observation is in agreement with data presented by Bader Sten et. al.,(1984a)[9], who studied the effect of non surgical therapy on patients with severely advanced periodontal disease .

Conclusion :

In conclusion , the present clinical trial demonstrated that non surgical methods of treatment are effective in eliminating gingivitis and reducing probing depth provided the subgingival plaque is eliminated and reinfection is prevented following active therapy . So, there is non significant difference between reduction of the upper and lower jaw . And if we compare the reduction in left and right for PD reduction during the 4 visits we found highly significant differences. Also there is an overall reduction in PD measurement for all surfaces at the 4 visits especially with a highly significant V4 . There is non significant difference between reduction of GI for upper and lower . There is highly significant difference between left and right of 4 visits for all surfaces .

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