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Comparative evaluation of tetracycline fibers (periodontal plus ab[tm]) and chlorhexidine chip (periocol-cg[TM]) as an adjunct to scaling and root planing in the treatment of chronic periodontitis - A split mouth study

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Abstract

Background: The most important goal of periodontal therapy is to reduce or eliminate the subgingival micro-organisms associated with periodontal disease and to maintain periodontal health. Scaling and root planing is the traditional method and has shown effective treatment for chronic periodontitis but it does not necessarily eliminate all the pathogens. Hence, the need for antimicrobial therapy as local drug delivery agents was felt. The objective of the study was to compare and evaluate the effectiveness of Tetracycline fibers (Periodontal Plus AB[TM]) and Chlorhexidine chip (Periocol – CG[TM]) as an adjunct to scaling and root planing in the management of chronic periodontitis.

Materials and Methods: 5 patients, with chronic periodontitis were selected and randomly divided into 3 groups/sites Group 1- subjects were treated with scaling and root planing alone (SRP), Group 2 - subjects were treated tetracycline fibers as an adjunct to SRP and Group 3 - subjects were treated with chlorhexidine chip as an adjunct to SRP. Clinical parameters included probing pocket depth, relative attachment level, plaque index, gingival index recorded at baseline, Imonth and 3months.

Results: All the groups showed significant improvement in probing pocket depth and relative attachment level gain at different time intervals of 1 month and 3 months when treated with chlorhexidine chip, tetracycline fibers and scaling and root planing alone. However, the best results were obtained in the group which received Chlorhexidine chip as an adjunct to scaling and root planing.

Conclusion: It can be concluded that the use of chlorhexidine chip (Periochip) as an adjunct to Scaling and root planing was safe and provides a significant reduction in Plaque Index score and Gingival Index score.

Keywords: Tetracycline fibers; Chlorhexidine chip; Chronic periodontitis; Scaling and root planing; Local drug delivery.

Introduction

Periodontal disease is an inflammatory disease characterized by destruction of the supporting structures of the teeth. The initiation and progression of periodontitis is due to dental plaque along with anaerobic periodontal pathogens that are adhered to the oral hard and soft tissue. According to **World Workshop 2017**, periodontitis is defined as a chronic multifactorial inflammatory disease associated with dysbiotic plaque biofilms and characterized by progressive destruction of the tooth supporting apparatus. The main aim of periodontal therapy is to eliminate pathogenic microbiota that are responsible for the causation of inflammatory responses and thereby causes tissue destruction.

It is a well known fact that periodontal diseases are caused by pathogenic microbiota. The most common periodontal pathogens associated with chronic periodontitis includes Porphyromonas gingivalis, Tannerella forsythia, Prevotella intermedia, Campylobacter rectus, Aggregatibacter actinomycetemcomitans. These periodontal pathogens are found in periodontal pocket during the period of exacerbation (period of activity) and their elimination results in improvement in said clinical features[1].

Phase I therapy is the first phase in the sequence of treatment plan of periodontal therapy. The objective of the conventional periodontal therapy is to alter or eliminate the primary microbial etiological factor, plaque and other predisposing factor such as calculus, overhanging restoration and faulty prosthesis. Scaling and root planing is considered as the "gold standard" among non-surgical treatment modalities in chronic periodontitis[2]. However, in clinical cases, the complex anatomy of the root, root concavities, furcation involvement and deep periodontal pockets may hamper the treatment and prevent sufficient reduction of bacterial load.

Recently, a new approach of locally delivered antimicrobials has came into existence for the management of periodontitis **Dr. Max Goodson et al of Forsyth's Dental research center in 1979** first proposed the concept of controlled delivery of drugs in the treatment of periodontitis. In the year 1990, there has been an emergence of a wide range of a controlled delivery (slow release device) introduced to be directly impregnated into the periodontal pocket[3]. This direct route of administration of LDD into the periodontal pocket which establishes and maintain an effective concentration of the active agent at the diseased site without the risk of incurring many of the side effects that can accompany systemic administration. Various antimicrobials like tetracycline, doxycycline, minocycline, metronidazole, chlorhexidine have been devised as local drug delivery agents and are commercially available in the market.

Goodson developed local drug delivery system consisting of an ethylene, vinyl acetate co-polymer fiber (0.5 mm diameter) containing tetracycline 12.7mg/9inches. When it is inserted into the periodontal pocket it is well tolerated by tissue and enhances the periodontal health. Tetracycline is semi-synthetic chemotherapeutic agents which are bacteriostatic as mechanism of action that are effective against rapidly multiplying broad spectrum of micro-organisms. Tetracycline has been incorporated into a variety of delivery systems for insertion into periodontal pockets. These include hollow fibers, ethylene vinyl acetate copolymer fibers, ethyl cellulose fibers, acrylic strips, collagen preparations, and hydroxypropyl cellulose films. Recently, a new local drug delivery system, Periodontal Plus AB, which contains 25mg pure fibrilar collagen with approximately 2mg of evenly impregnated tetracycline has been introduced for the treatment of gingival and periodontal diseases[4].

Chlorhexidine has been introduced as a topical antiseptic or antimicrobial agent for more than 30 years in the treatment of periodontitis Chlorhexidine (CHX) which is a bis-biguanide molecule made up of two (p-chlorophenyl) guanide units linked by a hexamethylene bridge. The inherent limitations to this topical chemotherapy has lead to the development of biodegradable/resorbable chlorhexidine chip for the controlled delivery directly into the pockets and for sustained period of time. CHX as a local drug delivery agent has shown clinical benefits when compared to CHX being used as an oral rinse. A CHX chip is a resorbable chip with 2.5 mg of CHX embedded in a cross-linked hydrolyzed gelatin matrix. When sub-gingivally delivered into deep periodontal pockets, the chip releases a controlled amount of CHX with simultaneous biodegradation over a period of 1 week, maintaining the minimal inhibitory concentration of >125 µg/ml to prevent the occurrence of biofilm[5].

In the light of the above facts, the aim of the present study was to compare the efficacy of tetracycline fibers (Periodontal Plus AB™) and chlorhexidine chip (PerioCol-CG™) when used as an adjunct to scaling and root planing in the management of chronic periodontitis.

Materials and Methods

Study Population

A total of 5 patients with chronic periodontitis having minimum of 8 teeth with probing pocket depth of 5-8 mm, enrolled in the study and were randomly divided into 3 groups/sites. This pilot study was done in the Department of Periodontology and Oral Implantology, National Dental College & Hospital, Derabassi, Punjab. An ethical approval for the study was obtained from the Institutional Ethical Board Committee and a detailed verbal and written consent was taken from each of the patient.

Group 1 / Site 1- subjects treated with scaling and root planning (SRP) alone.

Group 2 / Site 2 - subjects treated with Tetracycline fibers (Periodontal plus AB™) as an adjunct to scaling and root planing.

Group 3/ Site 3- subjects treated with Chlorhexidine chip (Periocol CG™) as an adjunct to scaling and root planing

Inclusion Criteria

- Patients who were diagnosed as suffering from chronic periodontitis having minimum of 8 teeth with probing pocket depth between 5-8 mm
- Willingness to comply were included
- Patient having minimum of 20 teeth
- Patients of both sexes between the age group of 20-50 years
- Patients who did not received any periodontal therapy for the past 6 months
- Patients who were free from any unusual oral lesions
- Patients who were not receiving any antibiotic therapy from the past 6 months
- Systemically healthy patients with no known allergy

Exclusion Criteria

- Patients with known hypersensitivity to Tetracycline and Chlorhexidine

- Individual with history of using antimicrobial mouthrinses within 2 months of the baseline visit or on routine basis
- Patients with known systemic diseases
- Smokers
- Any tooth with periapical disease
- Teeth with furcation involvement
- Sites with overhanging restorations
- Chronic alcoholic patient

Methodology

5 patients within the age group of 20-50 years were selected to participate in the study. Allergic test for Chlorhexidine, Tetracycline and Lidocaine was done. Complete scaling and root planing was performed. Local anesthesia in the form of infiltration and spray was used. After debridement, patients were randomly selected to form control (Group 1 / Site 1) and test (Group 2/ Site 2 and Group 3/Site 3) groups.

Group 1/ Site 1: (Control group) scaling and root planing was done alone and teeth with 5-8 mm probing pocket depth were selected for measuring all the clinical parameters **(Figure 1, 2).**

Group 2/ Site 2: (Test group) teeth with 5-8 mm probing pocket depth were treated with subgingival application of Tetracycline fibers. After scaling and root planing selected teeth were then isolated and dried with cotton rolls Tetracycline fibers were then placed and Coe Pak is to be placed over the experimental sites **(Figure 5, 6, 7, 8).**

Placement of Tetracycline Fibers

These fibers are flexible in nature and can be bent easily. The optimal site for the placement of a fiber into the periodontal pocket is 5mm or more in depth and in cases which does not respond to phase I therapy. Take a 2-3 inch of fiber in a forcep and the fiber should be placed to a close approximate to the pocket anatomy and should be in contact with the base of the pocket. The fiber is placed around the tooth to provide retention. The fiber should be layered on itself until it is filled till the bottom of the pocket which is slightly below the marginal gingiva because gingival shrinkage is known to occur. Inter proximal pockets should be packed on both the sides facially and lingually **(Figure 6, 7)**. Once the fiber placement is completed there should be an isolation of the area with an air syringe and an appropriate dressing should be used to secure the fiber in the pocket **(Figure 8).** Patient is instructed not to brush, floss in the treated area. All the participated patients will be asked to maintain proper oral hygiene Coe Pak applied was removed, after 7 days.

Group 3 / Site 3: (Test group) teeth with 5-8 mm probing pocket depth were treated with subgingival application of Chlorhexidine chip **(Figure 11, 12).** After scaling and root planing, selected teeth were isolated and dried with cotton rolls. Chlorhexidine chip was then placed and Coe Pak was applied over the experimental site.

Procedure for placement of Chlorhexidine Chip

Tooth with pocket depth of ≥5mm were selected for placement of chip. After phase 1 therapy (scaling and root planing), the area is to be dried before the placement of chip insertion and the periochip should be grasped by squared end using non serrated forcep so that the round end of the periochip is inserted subgingivally into the periodontal pocket to its maximum depth **(Figure 13).** After placement of chip, the area is protected with periodontal pack **(Figure 14).** Patient is

asked to refrain from tooth brushing and dental flossing for 7 days. Patient should be recalled after 7 days for pack removal and evaluation should be done for any type of inflammatory response.

Assessment of Clinical Parameter

Clinical parameters included the assessment of probing pocket depth (PPD) using UNC-15 Periodontal probe, Recording of Relative attachment level (RAL) using customised acrylic stent, Plaque index(PI) Silness & Loe (1964). Gingival index (GI) Loe & Silness (1963) measured at baseline, 1 month and 3 months.

Statistical Analysis

The data for the present study was entered in the Microsoft Excel 2007 and analyzed using the SPSS statistical software 19.0 Version. The descriptive statistics included mean and standard deviation. The intragroup comparison for the different time intervals was done using Repeated Measures ANOVA to find the difference between the individual time intervals. The level of the significance for the present study was fixed at 5%.

The intergroup comparison for the difference of mean scores between independent groups was done using the one way ANOVA and Post Hoc Tukey Analysis.

Results

Table 1: intragroup comparison of plaque index scores at different time intervals

	Baseline	1 Month	3rd Month	P value	Significance
Group I	2.20±0.20	1.75±0.22	2.05±0.27	0.001	Significant
Group II	2.40±0.28	1.65±0.33	1.60±0.13	0.001	Significant
Group III	2.45±0.27	1.65±0.37	1.20±0.20	0.001	Significant

The intragroup comparison of the plaque Index between the three time intervals i.e. at Baseline, 1 month and 3 Months was statistically significant for all the three groups i.e. Group III (Chlorhexidine chip and SRP), Group II (Tetracycline fibers and SRP) and Group I (SRP alone)

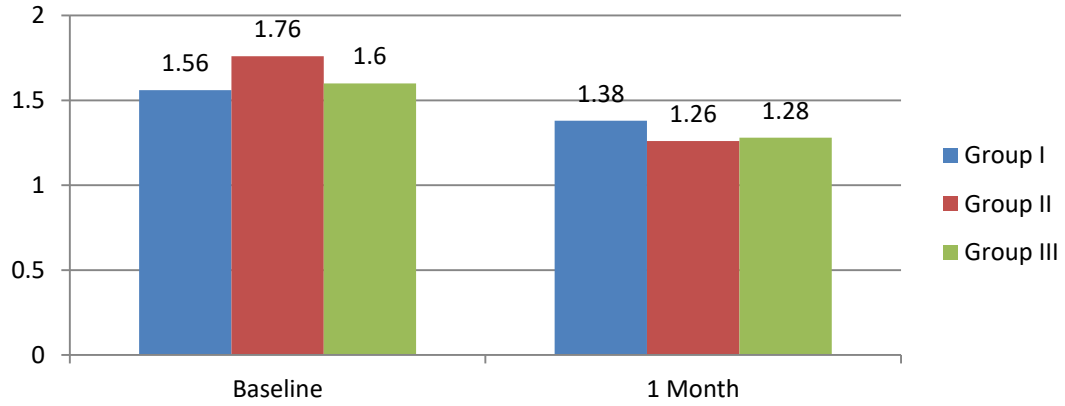
Table 2: Intragroup comparison of gingival index scores at different time intervals

	Baseline	1 Month	3rd Month	P value	Significance
Group I	2.25±0.35	1.85±0.38	2.10±0.37	0.001	Significant
Group II	2.15±0.33	1.60±0.29	1.80±0.41	0.001	Significant
Group III	2.10±0.45	1.40±±0.33	1.20±0.27	0.001	Significant

The intragroup comparison of the gingival Index between the three time intervals at Baseline, 1 month and 3 Months was statistically significant for all the three groups i.e. Group III (Chlorhexidine chip and SRP), Group II (Tetracycline fibers and SRP) and Group I (SRP alone).

Table 3: Intergroup comparison of change in real at 1 month from baseline

	Baseline	1 Month	Change	Percentage Change	P value	Significance
Group I	1.56±0.28	1.38±0.23	0.18±0.36	9.50±21.89	0.165	Non- Significant
Group II	1.76±0.25	1.26±0.25	0.50±0.14	28.66±7.76		
Group III	1.60±0.01	1.28±0.17	0.32±0.17	20.00±11.18		

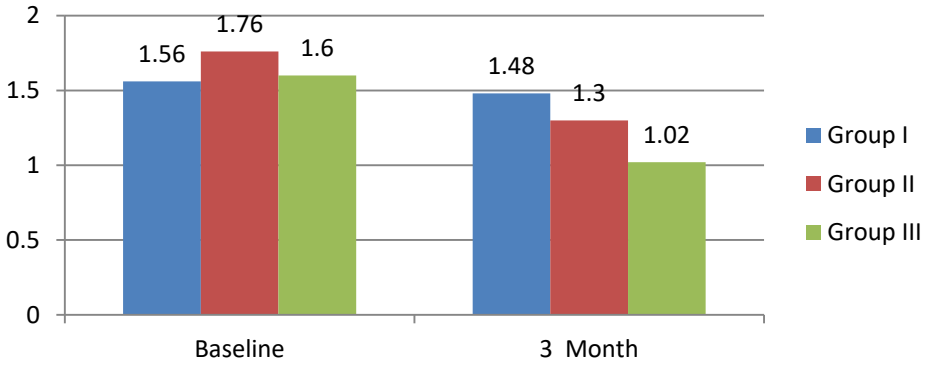


Graph 1: Intergroup comparison of change in ral at 1 month from baseline

The RAL scores at the baseline for the Group I (SRP) was 1.56±0.28, for the Group II (Tetracycline fibers and SRP) was 1.76±0.25 and for the Group III (Chlorhexidine chip and SRP) it was 1.60±0.01. At the 1 Month time interval the RAL scores were 1.38±0.23 for the Group I, 1.26±0.25for the Group II and 1.28±0.17 for the Group III. The mean percentage reduction in the RAL scores was highest for the Group II (28.66±7.76) followed by Group III (20.00±11.18) and Group I (9.50±21.89). The difference between the groups for percentage reduction in the RAL scores was statistically non-significant when analyzed using the One Way ANOVA.

Table 4: Intergroup comparison of change in ral at 3 months from baseline

	Baseline	3 Month	Change	Percentage Change	P value	Significance
Group I	1.56±0.28	1.48±0.16	0.08±0.27	3.13±17.57	0.029	Significant
Group II	1.76±0.25	1.30±0.20	0.46±0.36	24.44±18.38		
Group III	1.60±0.01	1.02±0.04	0.58±0.04	36.25±2.79		

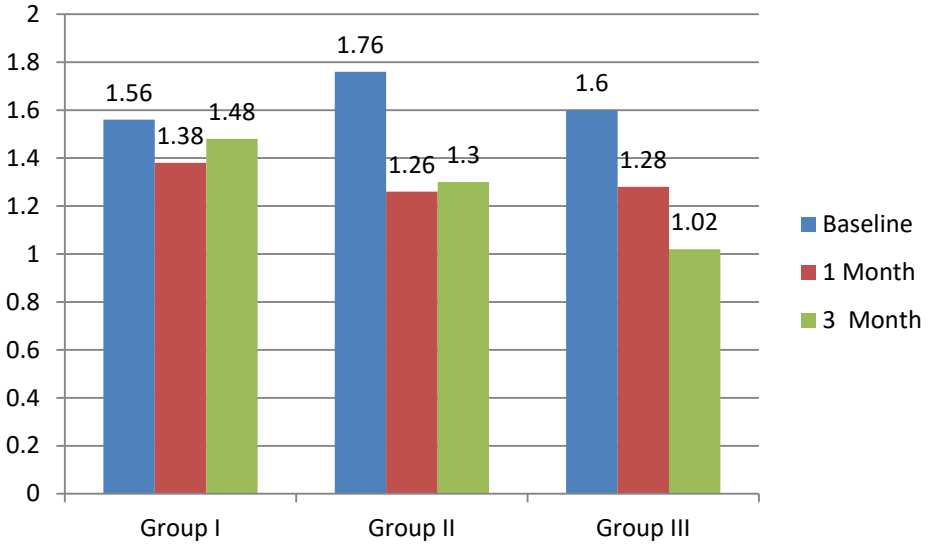


Graph 2: Intergroup comparison of change in ral at 3 months from baseline

The RAL scores at the baseline for the Group I (SRP) was 1.56±0.28, for the Group II (Tetracycline fibers and SRP) was 1.76±0.25 and for the Group III (Chlorhexidine chip and SRP) it was 1.60±0.01. At the 3 Months time interval the RAL scores were 1.48±0.16 for the Group I, 1.30±0.20 for the Group II and 1.02±0.04 for the Group III. The mean percentage reduction in the RAL scores was highest for the Group III (36.25±2.79) followed by Group II (24.44±18.38) and Group I (3.13±17.57). The difference between the groups for percentage reduction in the RAL scores was statistically significant when analyzed using the One Way ANOVA.

Table 5: Intragroup comparison of ral at different time intervals

	N	Baseline	1 Month	3rd Month	P value	Significance
Group I	5	1.56±0.28	1.38±0.23	1.48±0.16	0.001	Significant
Group II	5	1.76±0.25	1.26±0.25	1.30±0.20	0.001	Significant
Group III	5	1.60±0.01	1.28±0.17	1.02±0.04	0.001	Significant

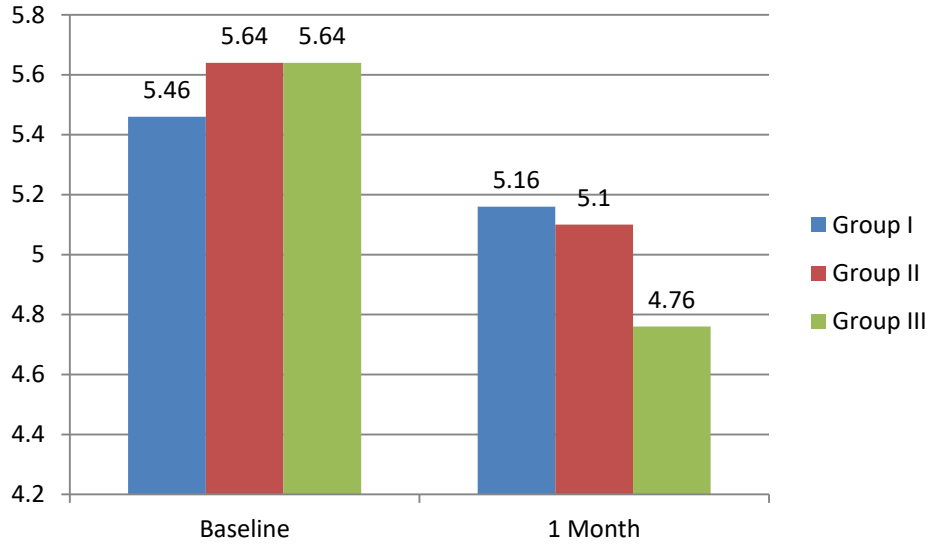


Graph 3: Intragroup comparison of ral at different time intervals

The intragroup comparison of the RAL scores between the three time intervals at Baseline, 1 month and 3 Months was statistically significant for all the three groups i.e. Group III (Chlorhexidine chip and SRP), Group II (Tetracycline fibers and SRP) and Group I (SRP alone)

Table 6 : Intergroup comparison of change in pd at 1 month from baseline

	Baseline	1 Month	Change	Percentage Change	P value	Significance
Group I	5.46±0.41	5.16±0.23	0.30±0.25	5.27±4.40	0.044	Significant
Group II	5.64±0.37	5.10±0.33	0.54±0.29	9.45±5.25		
Group III	5.64±0.08	4.76±0.45	0.88±0.39	15.65±7.15		

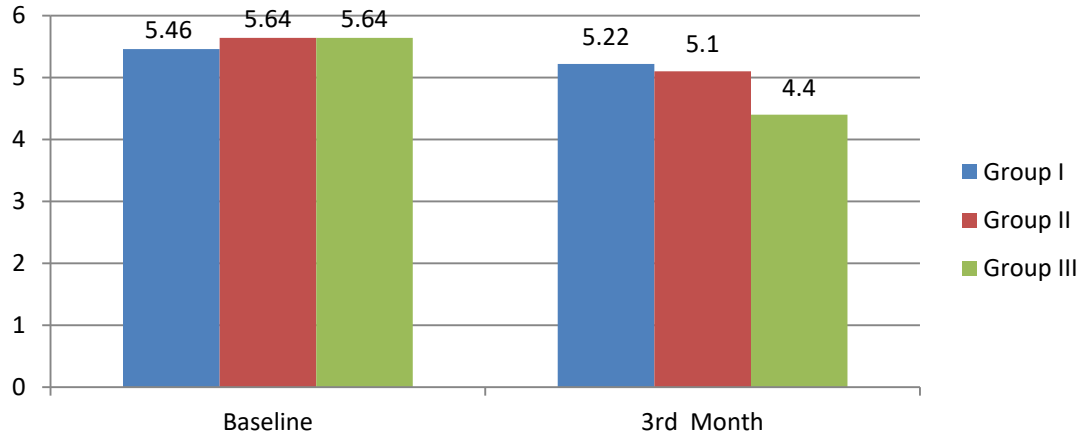


Graph 4: Intergroup comparison of change in pd at 1 month from baseline

The PD scores at the baseline for the Group I (SRP) was 5.46±0.41, for the Group II (Tetracycline fibers and SRP) was 5.64±0.37 and for the Group III (Chlorhexidine chip and SRP) it was 5.64±0.08. At the 1 Month time interval the PD scores were 5.16±0.23 for the Group I, 5.10±0.33 for the Group II and 4.76±0.45 for the Group III. The mean percentage reduction in the PD scores was highest for the Group III followed by Group II and least in the Group I (9.50±21.89). The difference between the groups for percentage reduction in the PD scores was statistically significant when analyzed using the One Way ANOVA.

Table 7: Intergroup comparison of change in pd at 3rd month from baseline

	Baseline	3rd Month	Change	Percentage Change	P value	Significance
Group I	5.46±0.41	5.22±0.53	0.24±0.51	4.21±10.03	0.013	Significant
Group II	5.64±0.37	5.10±0.21	0.54±0.45	9.21±7.85		
Group III	5.64±0.08	4.40±0.26	1.24±0.26	21.98±4.62		

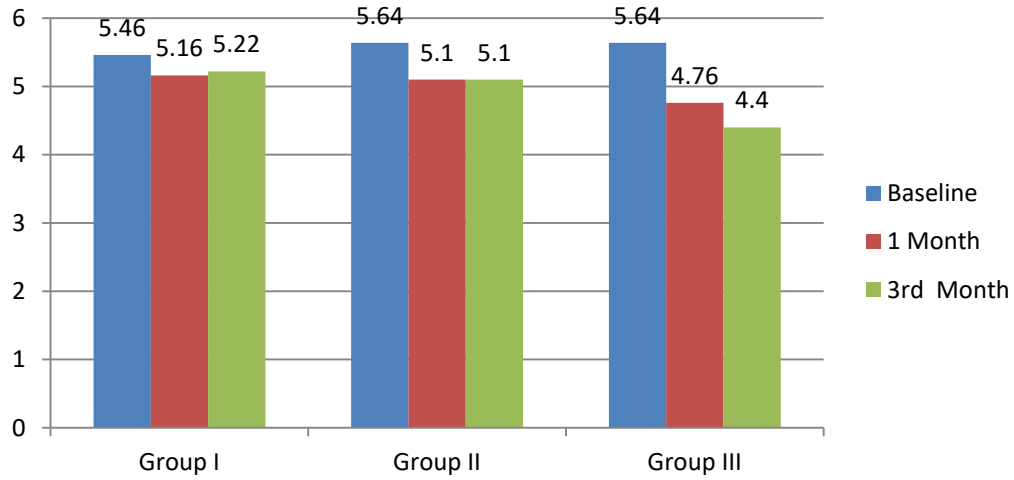


Graph 5 : Intergroup comparison of change in pd at 3 months from baseline

The PD scores at the baseline for the Group I (SRP) was 5.46±0.41, for the Group II (Tetracycline fibers and SRP) was 5.64±0.37 and for the Group III (Chlorhexidine chip and SRP) it was 5.64±0.08. At the 3 Months time interval the PD scores were 5.22±0.53 for the Group I, 5.10±0.21 for the Group II and 4.40±0.26 for the Group III. The mean percentage reduction in the PD scores was highest for the Group III followed by Group II and least in the Group I (9.50±21.89). The difference between the groups for percentage reduction in the PD scores was statistically significant when analyzed using the One Way ANOVA.

Table 8: Intragroup comparison of pd at different time intervals

	Baseline	1 Month	3rd Month	P value	Significance
Group I	5.46±0.41	5.16±0.23	5.22±0.53	0.001	Significant
Group II	5.64±0.37	5.10±0.33	5.10±0.21	0.001	Significant
Group III	5.64±0.08	4.76±0.45	4.40±0.26	0.001	Significant



Graph 6 : Intragroup comparison of Pd At Different Time Intervals

The intragroup comparison of the PD scores between the three time intervals at Baseline, 1 month and 3 Months was statistically significant for all the three groups Group III (Chlorhexidine chip and SRP), Group II (Tetracycline fibers and SRP) and Group I (SRP alone).

Discussion

Successful periodontal treatment is dependent on alteration in the composition of the subgingival microbiota. Therefore, the primary objective of periodontal treatment is to eliminate or reduce the proportion of periodontal pathogens at a level which is manageable by the host. Patient with severe chronic periodontitis are generally treated by phase II therapy (surgical therapy) with an aim to arrest the inflammatory disease process by removal of subgingival biofilm and to establish a local environment as well as microflora which is compatible with periodontal health.

However, several authors have reported that although surgical access improves the removal of etiological factors i.e. plaque and calculus whereas, a significant amount of deposits as well as irritating factors my still remain in an inaccessible area. These residual deposits may be responsible for inadequate periodontal healing or recurrence of disease process as well as there may be a recolonization of periodontal pathogens[6]**.** Also, in some of cases failure to obtain a favourable response which may be due to inadequacy of host immune response. The ability of periodontal pathogen is to escape either by invading gingival tissue or finding shelter in an inaccessible sites, limited access or a host of other possible factors.

In the light of above factors, a combination of mechanical and chemical approach to control the subgingival plaque would seem unauthenticated treatment modality for maintaining a periodontal health. In corporation of an appropriate chemotherapeutic agent as an adjunct with mechanical instrumentation may provide an additional antimicrobial effect which may increase the opportunity to control the disease.

Over the last 3 decades, local delivery of antimicrobial pharmaceutical agents have been employed in an attempt to treat and control the periodontal diseases. This type of approach to the therapy is more beneficial to the clinician because it enables site specific elimination of residual Microflora, achieves a greater drug concentration at low therapeutic doses with lesser adverse drug reaction and is easily applicable along with less time consuming, provides the good patient compliance[7].

Local drug delivery agents decrease the oral microbial load in periodontal pocket, results in significantly improvement in the clinical parameters (PI, GI, PPD and RAL). Goodson suggested that the successfully control of periodontal pathogens demands a delivery of an effective antimicrobial agents[8,9]. These antimicrobial agents reach the periodontal pocket by maintaining a minimum effective concentration for a efficient duration of time period to produce a desired specific therapeutic effects. Tetracycline have been incorporated into a various form of delivery system for the insertion into the periodontal pocket. PerioCol- CG^{TM} and Tetracycline Hydrochloride have been available commercially in the market. These local drug delivery agents provide the bacteriostatic and bactericidal effects for a sufficient duration of time period over the micro-organisms which may result in subsequent clinical improvement. Therefore, the present study was conducted to compare the efficacy of tetracycline fibers (Periodontal Plus AB^{TM}) and chlorhexidine chip (PerioCol-CG^{TM}) when used as an adjunct to Scaling and Root Planing in the management of chronic periodontitis.

In the present study , when intragroup comparisons were made for Gingival Index score, it was observed that there was a statistically significant reduction in the gingival index score from baseline to 3 months in each of the group (P = 0.001). Similar results were found in accordance with Gupta et al 2008[10] in which a significant reduction in GI from 1.09±0.44 after SRP and Paolantonio et al 2009[11] also reported a reduction in GI score. The result of our study showed that there was a statistically significant reduction in the Plaque index score from baseline to 3 months in each of the group (P = 0.001). This might be again attributed due to the enforced oral hygiene instructions and successful remotivation which might have played an important role for downward trend or reduction in plaque score. A comparable results were obtained by Mizrak et al 2006[12], Stabholz et al 1986[13] and Rodrigues et al 2007[14]. The results obtained from these studies depicted a net decrease in the plaque index score values at the end of the study after the treatment.

Probing pocket depth measurement showed significant reduction from baseline to 3 months in all the 3 groups. There was a statistically significant difference (P = 0.001) seen in intragroup comparison with in each group. Probing Pocket Depth results were similar to the results obtained from studies conducted by Soskolne et al 1998[15], jeffcot et al 2000[16], Azmak et al 2002[17] and Paolantonio et al 2008[18], who observed that there was a mean reduction in probing pocket depth at the chlorhexidine chip (PerioCol - CG) placement site (Group III/ Site III). Relative attachment level also showed a significant gain from baseline to 3 months in all the 3 groups with a greater increase in the group III/Site III than Group II/Site II & Group I/Site I (P = 0.001). The results obtained in this study for Relative Attachment Level were found to be consistent with the studies of Morrison et al 1980[19] and Cobb et al 2002 and appear to be due to migration of dentogingival junction to or close to the apical level of root instrumentation following removal of plaque and calculus.

Since the present study is only limited to smaller sample size, there is a need to elucidate by comparing with larger and greater cross section of people to evaluate the greater benefits of this local administration of antimicrobial therapy in chronic periodontitis. Within the limitation of this study, it can be concluded that locally delivered Chlorhexidine chip is safe and when used as an adjunct to SRP in chronic periodontitis showed a greater improvement in clinical signs in periodontal diseases i.e. Plaque Score, Gingival Score and significant reduction in Probing pocket depth and gain in Relative attachment level as compared to SRP alone.

Therefore, large sample size and long term investigation are needed to confirm the present findings and evaluate the longitudinal benefits of this study.

Conclusion

It can be concluded that the use of chlorhexidine chip (Periochip) as an adjunct to Scaling and root planing was safe and provided a significant reduction in Plaque Index score and Gingival Index score. The results of present study were more favorable in terms of reduction in Probing Pocket depth and gain in Relative attachment level. In all the 3 groups a significant change was observed in all the clinical parameters (PI, GI, PPD and RAL) after 1 month and 3 months follow up period. Decrease in PPD and gain in RAL was significant in Group III/Site III (Chlorhexidine Chip+ SRP) than Group II/Site II (Tetracycline Fibers + SRP) and Group I / Site I (SRP alone). The overall results showed an improvement in the management of chronic periodontitis.

Legend Figures

Group I/Site I: Scaling and Root Planing Alone

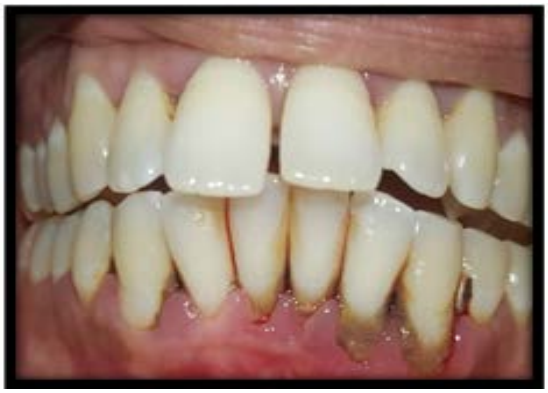


Figure 1 : At Baseline

Figure 2 : Clinical Recording of Probing Pocket Depth at Baseline wrt. 15

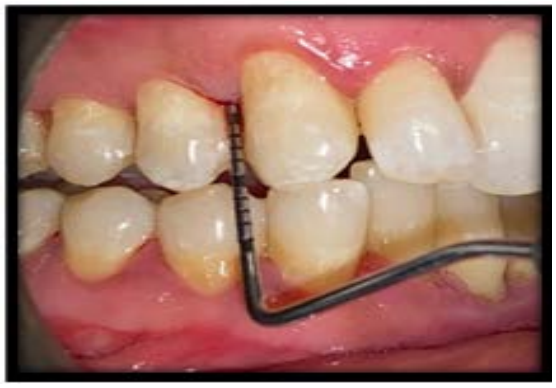


Figure 3 : Clinical Recording of Probing Pocket Depth at 1 Month Time Interval wrt. 15

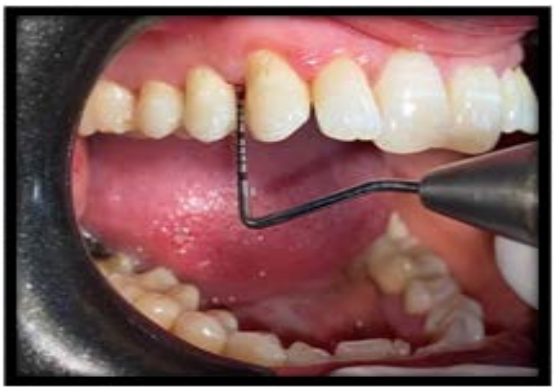


Figure 4 : Clinical Recording of Probing Pocket Depth at 3 Months Time Interval wrt. 15

Group II/Site II : Placement of Tetracycline Fibers as an Adjunct to Scaling and Root Planing

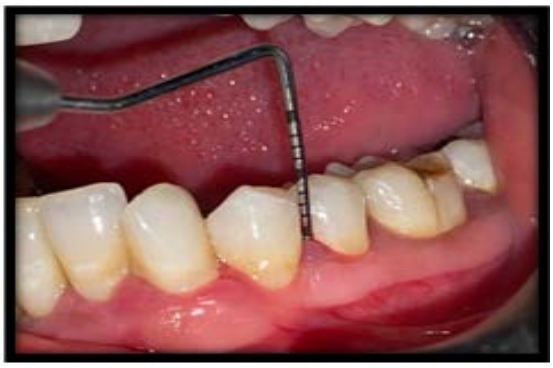


Figure 5 : Clinical Recording of Probing Pocket at Baseline wrt. 35

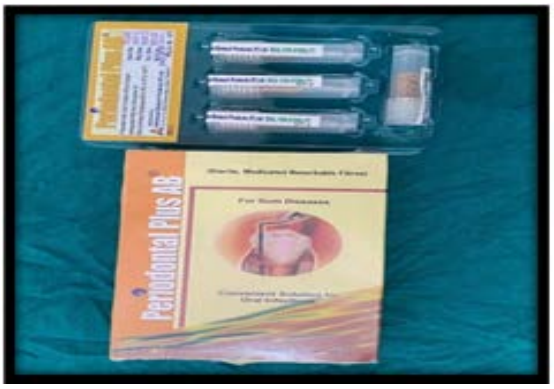


Figure 6 : Tetracycline Fibers (Periodontal Plus AB^{TM})

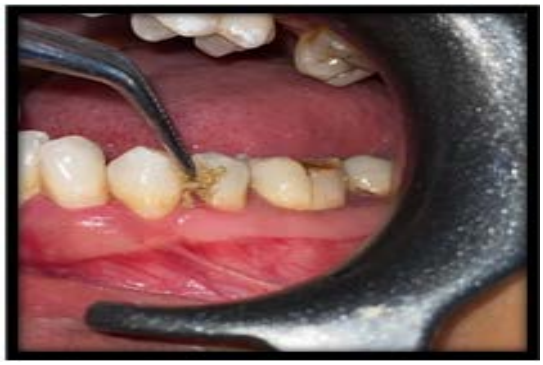


Figure 7 : Placement of Tetracycline Fibers Within The Periodontal Pocket wrt 35

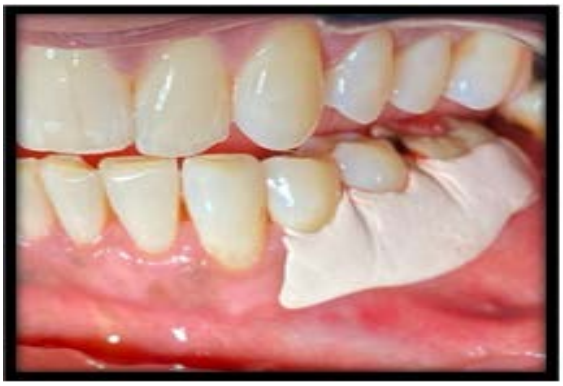


Figure 8 : Placement of Periodontal Dressing (Coe pak)

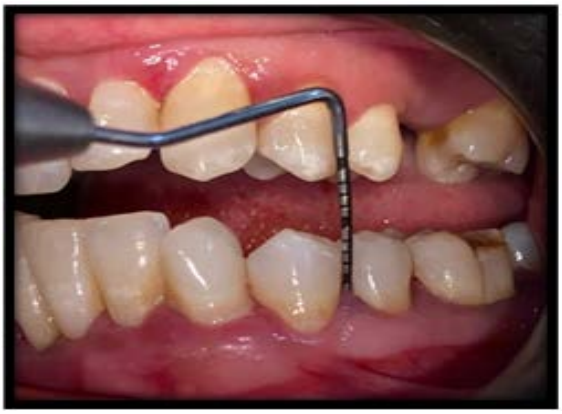


Figure 9 : Clinical Recording of Probing Pocket Depth at 1 Month Time Interval wrt. 35

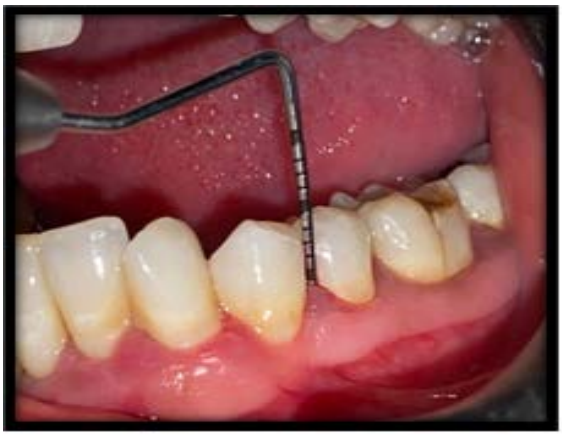


Figure 10 : Clinical Recording of Probing Pocket Depth at 3 Months Time Interval wrt 35

Group III/Site III : Placement of Chlorhexidine Chip as an Adjunct to Scaling and Root Planing

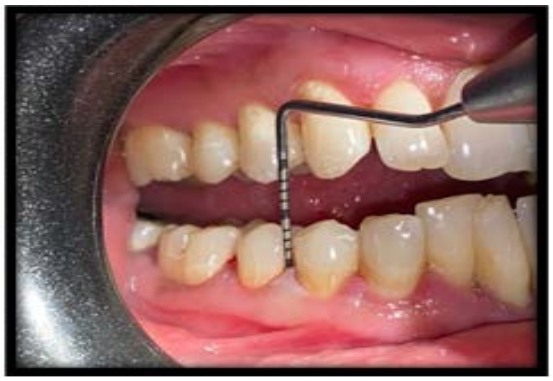


Figure 11: Clinical Recording of Probing Pocket Depth at Baseline wrt 45

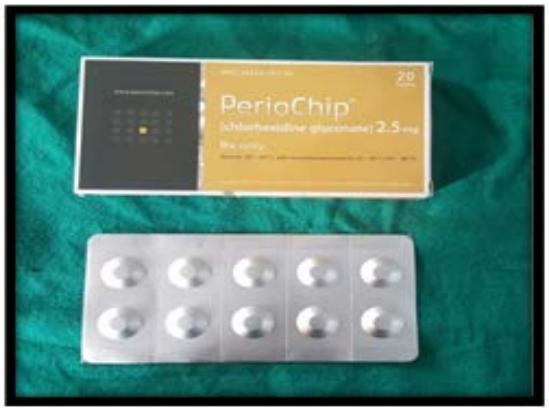


Figure 12 : PerioChip™

Figure 13 : Placement of PerioChip within the periodontal Pocket wrt 45

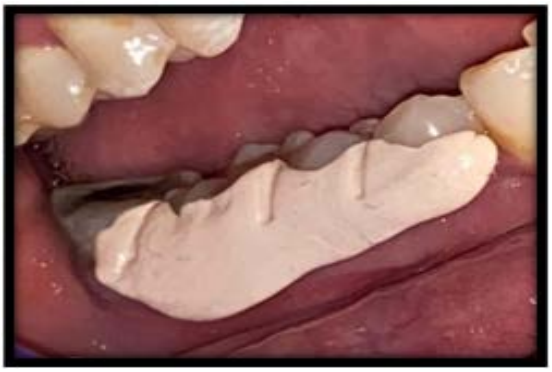


Figure 14 : Placement of Periodontal Dressing (Coe - Pak)

Figure 15 : Clinical Recording of Probing Pocket Depth at 1 Month Time Interval wrt 45

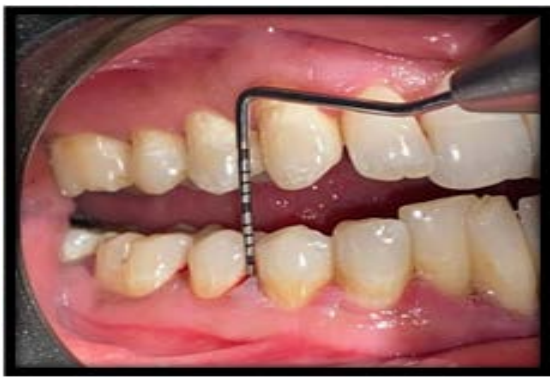


Figure 16 : Clinical Recording of Probing Pocket Depth at 3 Months Time Interval wrt. 45

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