

Management of Gingival Recession by Lateral Pedicle Graft with and without Collodermis®: A Comparative Evaluation

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ABSTRACT

Background: Aesthetics is an inseparable part of today's dental treatment, however, consistency of results, reliability of treatment modality and long term prognosis require scientific approaches to various therapeutic procedures. Gingival recession is exposure of the root surface by an apical shift in the position of the gingiva. Denuded roots are covered for two purposes, to resolve an aesthetic and functional purpose. Collodermis® a reconstituted collagen membrane is tried as an attempt for better root coverage along with lateral repositioned pedicle flap procedure in management of isolated gingival recession. This study compares the root coverage after the lateral sliding flap procedure with and without collodermis. 60 patients each who are medically fit non smokers with Millers class I and II recession between the age group of 15-25 years who maintained a good oral hygiene were divided equally into 2 groups of which collodermis was used with pedicle graft and in the other group pedicle grafts without collodermis. This study concluded with more root coverage, gain in clinical attachment level and reduction in probing depth in the test group as compared to the control. Thus it can be concluded that collodermis can be used as an adjunct to soft tissue grafting to enhance the outcome. Further studies are required to ascertain the long term benefits of collodermis.

Keywords: Periodontal Plastic Procedures, Soft Tissue Grafting, Root Coverage Procedure, Pedicle Grafts.

INTRODUCTION

Aesthetics is an inseparable part of today's dental treatment, however, consistency of results, reliability of treatment modality and long term prognosis require scientific approaches to various therapeutic procedures. In periodontics the clinicians are faced with the challenge of not only addressing biological and functional problems present in the periodontium but also providing therapy that results acceptable aesthetics. One of the Mucogingival problems is the formation of gingival recession. The presence of gingival

recession around the anterior region, highly visible teeth exemplifies a situation in which a treatment modality which addresses both biological and aesthetic demand is required from the therapist. Gingival recession is exposure of the root surface by an apical shift in the position of the gingiva and recession refers to the location of the gingiva and not its condition. Recession is a finding rather than a diagnosis.¹ Denuded roots are covered for two purposes, to resolve an aesthetic and functional purpose. The ultimate goal of periodontal plastic surgery is the coverage of the exposed root surfaces when this condition is related to esthetic problems,

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dentinal hypersensitivity, root caries, or when it hampers with proper plaque removal.²

Grupe and Waren³ was the first one to coin the term sliding flap procedure and later there have been various modifications to this technique. The dead spaces between the donor tissue and the recipient bed affects the outcome of the lateral repositioned flap during the healing, and thus by eliminating the dead space and enhancing close adaptation and retention of the donor tissue, improves the clinical outcome of this surgical procedure. Collodermis® a reconstituted collagen membrane is tried as an attempt for better root coverage along with lateral repositioned pedicle flap procedure in management of isolated gingival recession. This study compares the root coverage after the lateral sliding flap procedure with and without collodermis.

MATERIALS AND METHODS

The subjects were selected from the Department of Periodontics Government Dental College, Calicut. Ethical clearance was taken from the Institutional Ethical Committee before start of the study and written consent was taken from each patient prior to the procedure. A total of 60 patients were randomly divided into two groups. Each group consisting of 30 patients each who are medically fit non smokers with Millers class I and II recession between the age group of 15-25 years who maintained a good oral hygiene were selected.

Surgical procedure

After completion of presurgical phase; occlusal trauma, malalignment of teeth, faulty tooth brushing technique correction, Mandibular incisor region was selected for the surgery in both the groups. After local anaesthetic was administered scaling and root planing followed by tetracycline is applied over root surface for one minute. The conventional pedicle graft technique was followed with the help of a no. 15 scalpel blade. The pedicle graft is placed 1-2 mm onto the enamel at the recipient site with bevelled margins without tension on the flap and a cut back incision was placed where tension was noted. Suturing was done with 4-0 silk sutures. Collodermis® was trimmed with surgical scissors and closely adapted over the surgical site in the study group. Surgical site was then protected

with sterilized tin foil and periodontal pack. Post surgical instructions were given and patients were recalled for professional tooth cleaning once every 4 weeks for the next 6 months.

RESULTS

The evaluation of the clinical parameters of both the groups was done by comparing the mean pocket depth reduction, root coverage and clinical attachment level at base line one week and six weeks. The difference between the 2 groups was tested by independent samples t-test for testing equity means.

Table 1: Comparison of Mean Age Of Test Group And Control Group, At Baseline

	Mean ± SD	P value	Statistical significance
Test group	20.33± 2.4	1	Not significant
Control group	20.33 ± 2.68		

Table 2: Comparison of Mean Gingival Recession Of Test Group And Control Group At Baseline

	Mean ± SD	t value	P value	Statistical significance
Test group	3.26 ± 1.11	0.3917	0.697	Not significant
Control group	3.36 ± 0.85			

Table 3: Comparison Of Mean Probing Pocket Depth Of Test Group And Control Group At Baseline

	Mean ± SD	t value	P value	Statistical significance
Test group	1.7 ± 0.53	0.9456	0.336	Not significant
Control group	1.83 ± 0.535			

Table 4: Comparison Of Mean Clinical Attachment Level Of Test Group And Control Group At Baseline

	Mean $\pm$ SD	t value	P value	Statistical significance
Test group	4.96 $\pm$ 1.12	0.8525	0.413	Not significant
Control group	5.2 $\pm$ 1.06			

Table 5: Comparison Of Mean Gingival Recession Of Test Group And Control Group At Six Weeks

	Mean $\pm$ SD	t value	P value	Statistical significance
Test group	0.76 $\pm$ 0.93	10.77	3E.08	Statistically significant
Control group	2.06 $\pm$ 1.01			

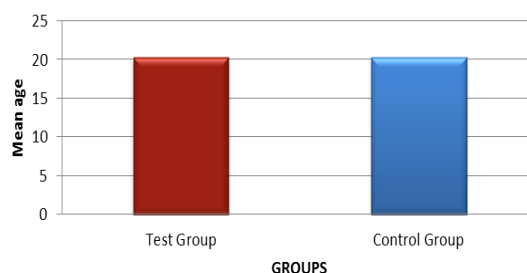
Table 6: Comparison Of Mean Probing Pocket Depth Of Test Group And Control Group At Six Weeks

	Mean $\pm$ SD	t value	P value	Statistical significance
Test group	2.03 $\pm$ 0.31	2.668	0.012	Statistically significant
Control group	2.3 $\pm$ 0.46			

Table 7: Comparison Of Mean Clinical Attachment Level Of Test Group And Control Group At Six Weeks

	Mean $\pm$ SD	t value	P value	Statistical significance
Test group	2.8 $\pm$ 1.06	5.68	7.9E- 07	Highly significant
Control group	4.36 $\pm$ 1.12			

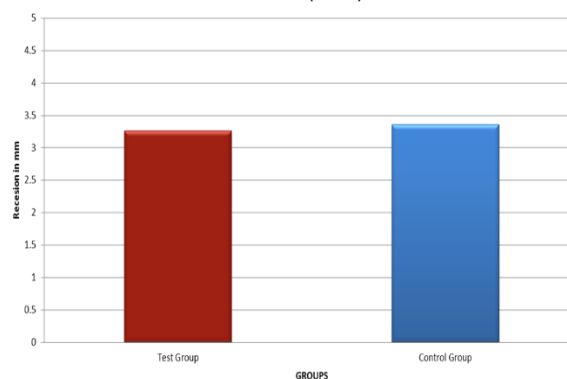
Mean age



The age of the patients ranged from 15-23 years. No statistically significant difference was found between the two groups.

Graph 1: Comparison of Mean Age Of Test Group And Control Group, At Baseline.

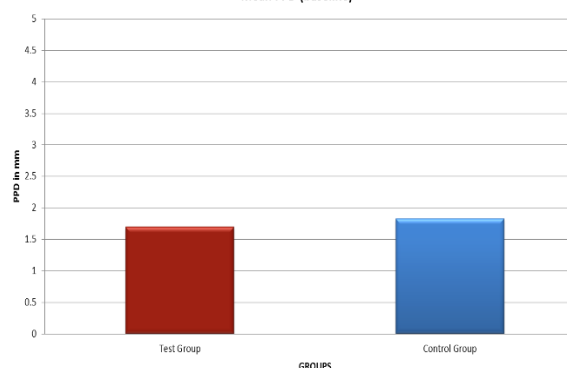
Mean Recession (Baseline)



No statistically significant difference was seen in gingival recession between the two groups at baseline.

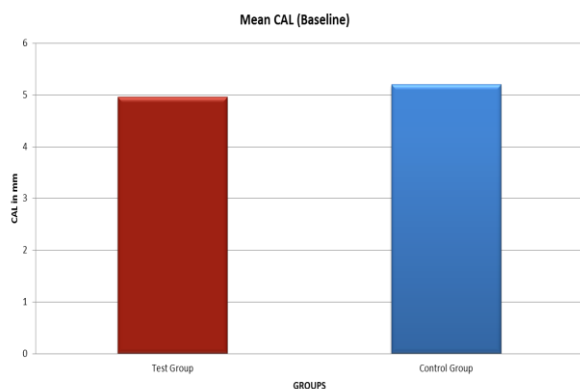
Graph 2: Comparison Of Mean Gingival Recession Of Test Group And Control Group At Baseline.

Mean PPD (baseline)



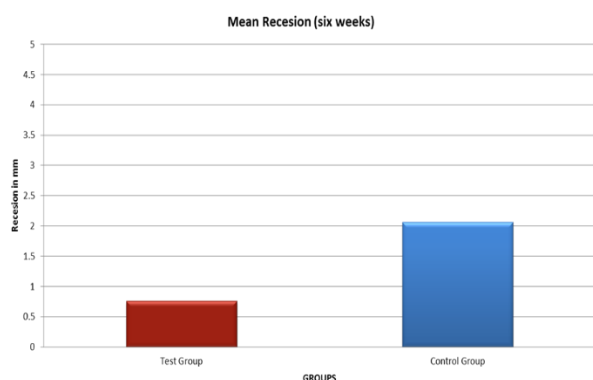
There was no statistically significant difference in probing depth between the two groups at baseline.

Graph 3: Comparison Of Mean Probing Pocket Depth Of Test Group And Control Group At Baseline.



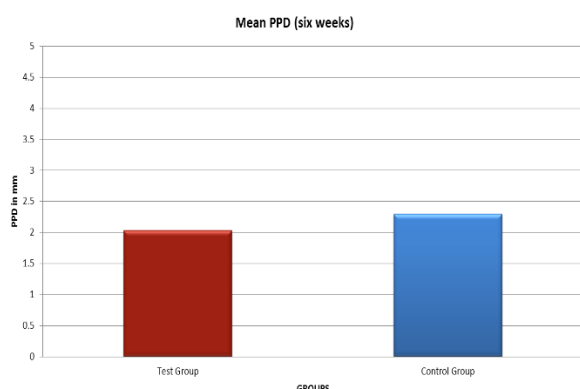
There was no statistically significant difference in clinical attachment level between the two groups at baseline.

Graph 4: Comparison of Mean Clinical Attachment Level of Test Group And Control Group At Baseline.



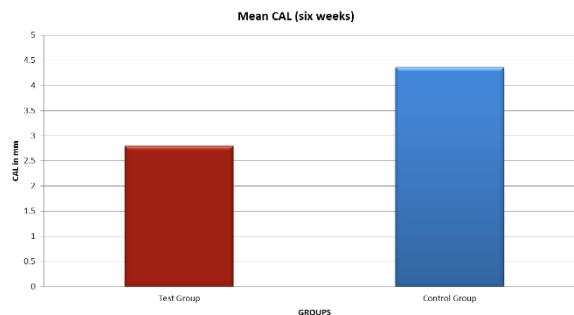
There was a statistically significant difference in the mean gingival recession of control group

Graph 5: Comparison of Mean Gingival Recession Of Test Group And Control Group At Six Weeks.



There was a statistically significant difference between the two groups.

Graph 6: Comparison Of Mean Probing Pocket Depth Of Test Group And Control Group At Six Weeks.



There was a statistically highly significant difference between the two groups

Fig 7: Comparison Of Mean Clinical Attachment Level Of Test Group And Control Group At Six Weeks.



Fig 1: Pre OP With Collodermis.



Fig 2: Pre Op without Collodermis.

DISCUSSION

Gingival recession is a finding rather than a diagnosis. Gingival recession particularly in the anterior region is aesthetically disharmonious and causes a psychological trauma to the patient. It may be localised to a single tooth or may present in a generalised manner. Localised buccal recession



Fig 3: Intra Op with Collodermis.



Fig 4: Intra Op without Collodermis.



Fig 5: Post Op with Collodermis.

defect have shown to occur in over 60% of individuals⁴ with most common areas being lower incisors, premolars and upper molar.⁵

There have been various techniques of root coverage procedure, of which later pedicle flaps gained much popularity in single tooth recession defects owing to one surgical site, good vascularity of the pedicle and ability to cover an isolated root



Fig 6: Post Op without Collodermis.

recession. However this procedure could not alter the amount of attached gingiva present.

Studies have shown that attainable root coverage of 100% can be achieved in millers class 1 and 2 defects while only partial root coverage can be achieved in millers class 3 defects.⁶ The dimensions of recession also influence the outcome. Wide (≥ 3) and deep (≥ 5) defects have a less favourable outcome than narrow shallow defects.⁷

One of the drawbacks of lateral positioned pedicle graft procedure is the dead space between the donor tissue and recipient bed during the healing period. This dead space formation may be one of the possible causes for failure. The adaptation of a biocompatible external substance will educe the dead space during healing thereby enhancing the plasmatic circulation. In this clinical trial we tried collodermis- a reconstituted collagen membrane for reducing the dead space and enhance the plasmatic circulation. This membrane also has adhesive properties and enhances coagulation.

Root coverage obtained was compared with baseline and sixth week. The gingival recession decreased from 3.26 1.1 mm to 0.76 0.93 mm for the test group. The gingival recession corrected in the test group was more than that of the control group. This may be due to thee close adaptation of the soft tissue to the root surface there by reducing dead space and enhance healing. There was no adverse effect reported.

Tables 3 and 6 shows an increase in the probing depth of both control and test group separately but statistically significant reduction in the probing depth value for the test group

compared to control at six weeks. Table VII Shows a highly statistical significance in the clinical attachment level of the test group compared to the control after six weeks post op. All the parameters showed an improved result in the test group compared to the control. This may be due to the reduction in the size of the exudate or blood clot formation from the external pressure exerted by the collidermis membrane.

The exact form of healing after the LRPG is still debated but there are two possibilities, 1; crevicular epithelium grows down the inner surface of the flap against the root surface to form a long epithelial attachment and gingival fibre bundles keep the flap closely adapted. 2; epithelial down growth does not take place and a fibrous tissue connection forms between the flap and root surface. This could imply that the deposition of new cementum on the root surface so that sharpeys fibres can be formed.

Mario Rocacizzo and Marco Lungo⁸ conducted a comparative study of bioresorbable and non resorbable membrane in the treatment of human buccal gingival recession. They found significant root coverage in both the groups but there was no significant difference between the groups at six months post operatively.

Stephen W. Nelson⁹ conducted clinical study on root coverage with subpedicle connective tissue graft. There was an average of 88% coverage of advanced recessions of 7 to 10mm. Also absence of significant change in probing depth is a very common finding reported in the studies on root coverage treatment. According to Waterman *et al.*,¹⁰ this finding is probably due to the excellent level of gingival health pre- and post-surgery.

This study concluded with more root coverage, gain in clinical attachment level and reduction in probing depth in the test group as compared to the control. Thus it can be concluded that collidermis can be used as an adjunct to soft tissue grafting to enhance the outcome. Further studies are required to ascertain the long term benefits of collidermis.

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