ORIGINAL RESEARCH

Clinical Assessment of the Success of Gingival Unit Graft and Free Gingival Graft (FGG) in the Surgical Esthetic Correction of Gingival Recession in Maxillary Anterior Region: An In-Vivo Original Research Study

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Abstract

Background &Aim: Restoration of optimal esthetic is one of the prime requirements in younger patients. Periodontal problems like gingival recession are highly common in younger age group. Several surgical methods have been recommended for its correction.Hence, this in-vivo study was planned, outlined and conducted to assessthe success/clinical acceptability of gingival unit graft (GUG) and free gingival graft (FGG) in the surgical esthetic correction of gingival recession in maxillary anterior region.

Materials and Methods: Total 20 patients were included in the study in the age range of 25-35 years. All 20 patients were categorized into 2 groups based on the type of graft used for esthetic gingival corrections.Group 1 consisted of 10 gingival recession patients in which gingival unit graft (GUG) was used during gingival recession esthetic surgery in maxillary anteriors. Group 2 consisted of 10 gingival recession patients in which free gingival graft (FGG) was used. All Patients were recalled methodically after 1 month and 2 months for their follow up visits andquestionedaboutesthetic and clinical successes and satisfaction. Responses were entered as Satisfactory, Non-satisfactory and Questionable.

Statistical Analysis and Results: Out of 20 participated patients, 12 were males and 8 were females and P-value was highly significant for age group 25-27 years. In Group 1, maximum 7 patients were satisfied while 2 were not satisfied and 1 was questionable. P value was highly significant for satisfied patients (0.01). In Group 2, maximum 6 patients were satisfied while 3 were not satisfied and 1 was questionable. P value was not significant for satisfied patients (0.09). The ANOVA confirmed that level of significance (p value) was highly significant for ANOVA test conducted between groups. It was considerably0.002.

Conclusion: Authors concluded that both of the studied grafts (Gingival Unit Graft, Free Gingival Graft) are fairly comparable in surgical correction of the recession however esthetic satisfaction was higher in Gingival Unit Graft. Authors also expect some other long term future studies to be conducted to validate and confirm our results.

Keywords: Gingival Unit Graft (GUG), Free Gingival Graft (FGG), Esthetics, Periodontics, Recession, Surgery, Success

Introduction

Esthetic is generally among the first priorities of patients undergoing anterior teeth/gingival correction. There are several factors that govern the overall esthetic outcome of implemented periodontal intervention.[1-3] Gingival recession is defined as the clinical exposure of one or more root surfaces caused by the migration of the marginal periodontal tissues apical to the cementoenamel junction (CEJ).Gingival unit graft (GUG) was firstly discovered by Allen and Cohen in 2004.[4-8]They described it as a modification of FGG, where the picked palatal graft incorporates the marginal gingiva and interdental tissue. The blood capillary network of the gingiva has abundant horizontal anastomoses which supplies the marginal region or supra-crestal tissues. Free gingival graft technique is generally used clinically to rebuildanadequatethickness of gingiva (keratinized gingivae) so that it canefficientlyre-establish the previous unaltered condition.[9-11]A free gingival graft is usually taken from the outer stratum of gingiva on the palate.Free gingival grafts have been extensively used in periodontalsurgeries to

increasethe width of attached gingiva and cover uncovered root surfaces.[12-13]Therefore considering all these significant facts, this in-vivo study was intendedand executed to assess the success/clinical acceptability of gingival unit graft (GUG) and free gingival graft (FGG) in the surgical esthetic correction of gingival recession in maxillary anterior region.

Materials and Methods

This study was accomplished with the aim of comparing success/clinical acceptability of gingival unit graft (GUG) and free gingival graft (FGG).Simple stratified sampling procedure was utilized for precise sample selection. The study was discussed in detail with each patient. Written and informed consent was obtained from each contributingpatient. Total 20 patients were included in the study based on their diagnosis and surgical intervention. Inclusion criteria were 1) young patients in the age range of 25-35 years 2) patients with gingival recession not exceeding beyond Millers 2 stage 3) absence of any systemic disease which could possibly interfere with periodontal surgery like high blood pressure, high serum glucose levels and blood dyscrasias, all hematological disorders, patients on anticoagulant therapy, hepatic diseases and leukemia 4) absence of any allergy 5) patients those complained of poor esthetics due to gingival recession in maxillary anterior region 6) patients advised for periodontal surgical correction using grafts. Exclusion criteria included 1) absence of any underlying systemic disease 2) absence of any heavy ongoing medication which can interfere with data quality 3) loss of follow up matters.Total 20 male and female patients were studied in detail for preset objectives. All 20 selected patients were in the age range of 25-35 years.Randomization was also performed to reduce the chances of bias in the study (if any). All 20 patients were then classified into 2 groups based on the type of graft used for esthetic gingival corrections [gingival unit graft (GUG) and free gingival graft (FGG)].Group 1 consisted of 10 gingival recession patients in which gingival unit graft (GUG) was used during gingival recession esthetic surgery in maxillary anteriors.Group 2 consisted of 10 gingival recession patients in which free gingival graft (FGG) was used during gingival recession esthetic surgery in maxillary anteriors. All patients were prescribed pain-relieving prescriptions used after periodontalsurgeries.All Patients were recalledsystematically after 1 month and 2 months for their follow up visits. Patients were questioned aboutesthetic and clinical successes of treatment. Patients were lastlyenquiredfor the overall level of satisfaction. Responses were tabulated as Satisfactory, Non-satisfactory and Questionable.Statistical analysis was implemented to formulate the outcomes and results. P value less than 0.05 was taken as significant.

Statistical Analysis and Results

All the relevant data were examined at initialstages for any obviousintegratedconfounders. Post hoc analysis was not undertaken. Data was sent for basic statistical analysis with SPSSstatistical package for the Social Sciences version 22 for Windows. Nonparametric test, namely, chi-square test, was used for further data analysis; p-value. Out of 20participatedpatients, 12 were males and 8 were females[Table 1, Graph 1].P-value was highly significant for age group 25-27 years. Herep value was 0.01.All the other age groupsshowed non-significant p values.Maximum 14patients were witnessed in age group 25-27 and 28-30. Table 2 expressed about the basic statistical description with level of significance assessment using “Pearson Chi-Square” test (Group 1; n=10 patients wherein gingival unit graft used for esthetic gingival surgical corrections) and interpreted as satisfactory or non-satisfactory or Questionable after 1 month and 2 months of periodontal surgical procedures. Maximum 7 patients were satisfied while 2 were not satisfied and 1 was questionable. P value was highly significant for satisfied patients (0.01). These were noticed in one month recall visit. Maximum 8 patients were satisfied while 1 was not satisfied and 1 was questionable. P value was highly significant for satisfied patients (0.02). These were noticed in two month recall visit. Table 3 explained about the basic statistical description with level of significance assessment using “Pearson Chi-Square” test (Group 2; n=10 patients wherein free gingival graft used for esthetic gingival surgical corrections) and interpreted as satisfactory or non-satisfactory or Questionable after 1 month and 2 months of periodontal surgical procedures. Maximum 6 patients were satisfied while 3 were not satisfied and 1 was questionable. P value was not significant for satisfied patients (0.09). These were noticed in one month recall visit. Maximum 6 patients were satisfied while 2 were not satisfied and 2 were questionable. P value was highly significant for satisfied patients (0.01). These were noticed in two month recall visit. Table 4 illustrated about the basic evaluationperformed amongst all studied groups using one-way ANOVA test. The analysesconfirmed that level of significance (p value) was highly significant for ANOVA test conducted between groups. It was significantly0.002.

Table 1:Age &Gender based statistical description of contributing patients

Age Group (Yrs)	Male	Female	Total	P value
25-27	4	3	7	0.01*****
28-30	5	2	7	0.20
31-33	2	2	4	0.50
34-35	1	1	2	0.80
Total	12	8	20	***p<0.05 Significant**

Graph 1: Patients demographic assortment and related details

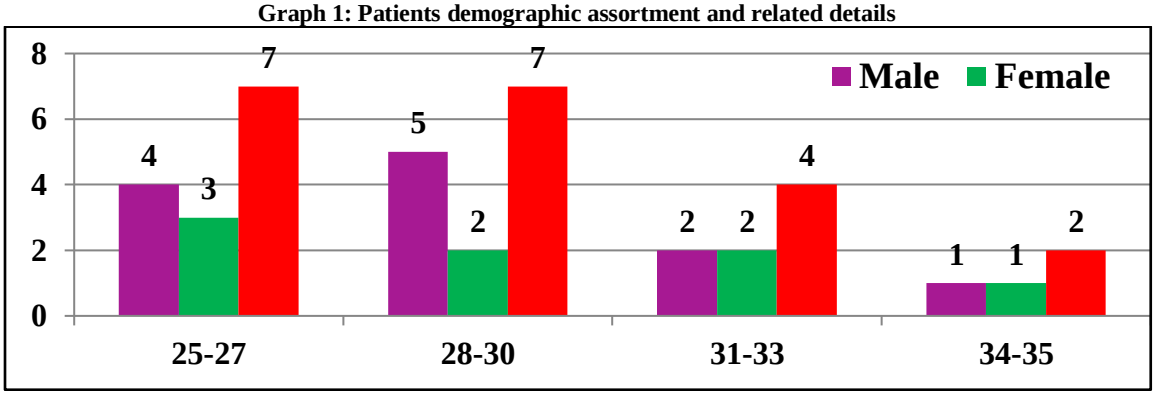

Table 2: Basic statistical description with level of significance assessment using "Pearson Chi-Square" test(Group 1; n=10 patients wherein gingival unit graftused for esthetic gingival surgical corrections) and interpreted as satisfactory or non-satisfactoryor Questionableafter 1 month and 2 months of periodontal surgical procedures

Status	n	Stat. Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square	df	p value
After 1 Month								
Satisfactory	7	1.91	0.940	0.376	1.96	1.549	1.0	0.01*
Non-satisfactory	2	1.08	0.230	0.940	1.12	1.904	2.0	0.08
Questionable	1	1.02	0.695	0.042	1.23	1.131	1.0	0.10
After 2 Months								
Satisfactory	8	1.93	0.390	0.436	1.66	1.349	1.0	0.02*
Non-satisfactory	1	1.02	0.695	0.042	1.23	1.131	1.0	0.10
Questionable	1	1.02	0.695	0.042	1.23	1.131	1.0	0.10
***p<0.05 significant**								

Table 3: Basic statistical description with level of significance assessment using "Pearson Chi-Square" test(Group 2; n=10 patients wherein free gingival graft used for esthetic gingival surgical corrections) and interpreted as satisfactory or non-satisfactory or Questionable after 1 month and 2 months of periodontal surgical procedures

Status	n	Stat. Mean	Std. Dev.	Std. Error	95% CI	Pearson Chi-Square	df	p value
After 1 Month								
Satisfactory	6	1.96	0.039	0.930	1.96	1.940	1.0	0.09
Non-satisfactory	3	1.02	0.230	0.524	1.12	1.921	2.0	0.02*
Questionable	1	1.01	0.645	0.934	1.43	1.032	1.0	0.10
After 2 Months								
Satisfactory	6	1.84	0.840	0.392	1.91	1.368	1.0	0.01*
Non-satisfactory	2	1.08	0.230	0.940	1.12	1.904	2.0	0.08
Questionable	2	1.01	0.745	0.973	1.83	1.526	1.0	0.50
***p<0.05 significant**								

Table 4: Evaluation amongst all studied Groups using one-way ANOVA

Variables	Degree of Freedom	Sum of Squares ∑	Mean Sum of Squares m∑	F	Level of Sig. (p)
Between Groups	3	2.054	1.238	1.1	0.002*
Within Groups	18	2.039	0.125	-	
Cumulative	121.42	12.577	***p<0.05 significant**		

Discussion

Literature is overwhelmed with the experiments and studied conducted over different periodontal grafts. Several grafts have been studied and tested for their performances about esthetic and functions.[14-15]Schardtand colleagues explored about the method of literature search in various worldwide accepted bibliographic databases including PubMed. They stressed about the effective utilization of the PICO framework to improve searching PubMed for clinical questions. Their methodology was highly popular and helpful in data exploration during literature serach.[16]Sterne and other researchers have described about a tool for assessing risk of bias in randomized trials. This was revolutionary since randomization is considered as the heart of any clinical trial

and analytical study.[17]Kuru and other coworkers demonstrated about the treatment of localized gingival recessions using gingival unit grafts. Their study design was a randomized controlled clinical trial. Their esthetic outcomes were highly comparable with our study coucomes.[18]Jenabian and other pioneer workers studied about the gingival unit graft versus free gingival graft for treatment of gingival recession. They also stressed on the esthetic outcomes of gingival unit graft and free gingival graft. Their results were highly predictable and clinically applicable.[19]Sriwil and other researchers have compared the free gingival graft and gingival unit graft for treatment of gingival recession. They also stated that gingival unit graft is superior than other tested graft. This finding was in agreement with our study results.[20]Gajendran and other clinicians have illustrated the clinical management of Miller's class III recession defect with gingival unit transfer. Their results were highly esthetic and acceptable to the participating patients.[21]Yıldırım and other researchers had presented a case showing Gingival unit transfer using in the Miller III recession defect treatment. They stated that gingival unit transfer graft may be used successfully for the treatment of advanced recession.[22]

Conclusion

Within the limitations of the study authors concluded highly crucialoutcomes. They concluded that both of the testedgrafts (Gingival Unit Graft, Free Gingival Graft) are somewhatsimilar in surgical correction of the recession however esthetic satisfaction was higher in Gingival Unit Graft. Number of esthetically satisfied cases was less in cases with Free Gingival Graft.These interpretations were recognized at both of the predetermined timings (1 & 2 months). Additionally, both of the experimentedperiodontal graftshave their limitations with recognized precautions. Authors also assume some long term future studies to be executed to substantiate and verify our results.

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