

شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلو

بسم الله الرحمن الرحيم





HANAA ALY



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكرونيله



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



HANAA ALY



شبكة المعلومات الجامعية التوثيق الإلكترونى والميكروفيلم

جامعة عين شمس التوثيق الإلكتروني والميكروفيلم قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها على هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



HANAA ALY

The Effect of Injectable Platelet Rich Fibrin (I-PRF) with Bone Graft and Leukocyte Platelet Rich Fibrin(L-PRF) Membrane in The treatment of Localized Gingival Recession (Randomized Controlled Clinical and Tomographic Study)

Thesis Submitted to Department of Oral Medicine, Periodontology,

Oral Diagnosis and Radiology

Faculty of Dentistry

Ain Shams University

In Partial Fulfillment of the Requirements of Doctor's Degree in Periodontology

By

Zainab Hafez Abdel Rahman

B.D.S. 2009, M.Sc. 2015

Faculty of Dentistry, Ain Shams University

Assistant lecturer of Oral Medicine, Periodontology and Oral Diagnosis

Faculty of Oral and Dental Medicine

Misr International University

2020

Supervisors

Prof. Hala Kamal Abdel Gaber

Professor of Oral Medicine, Periodontology and Oral Diagnosis Faculty of Dentistry, Ain Shams University

Ass.Prof. Shahinaz Gamal El Din El Ashiry

Assistant Professor of Oral Medicine, Periodontology and Oral Diagnosis

Faculty of Oral and Dental Medicine, Cairo University

Head of Department of Oral Medicine

Misr International University

Ass.Prof. Ahmed Abdel Aziz Hassan

Assistant Professor of Oral Medicine, Periodontology and Oral Diagnosis

Faculty of Dentistry, Ain Shams University

Dedication

To my Beloved Family and Friends

Acknowledgment

After thanking **Allah Almighty** for his countless blessings, I would like to thank my supervisors:

Prof. Hala Kamal Abdel Gaber, professor of Oral Medicine, Periodntology and oral Diagnosis Ain shams university for her meticulous supervision, kind guidance, valuable instruction, generous help and support throughout the thesis.

Ass. Prof. Shahinaz el Ashiry Assistant Professor of Oral Medicine, Periodontology and oral Diagnosis Cairo University, Head of Department of Oral Medicine, faculty of Dentistry Mist International University for her constant help, effort, care and great assistance throughout this work

Ass. Prof. Ahmed Abdel Aziz Hassan Assistant Professor of Oral Medicine, Periodontology and oral Diagnosis Ain shams University for his continuous and endless support throughout every step in the thesis and in my academic journey from the start.

Dr. Doaa Adel Katteb lecturer of Oral Medicine, Periodontology and oral Diagnosis Ain shams university for her support, help and supervision in part of the practical work of the thesis.

I would like to thank all the staff members of oral medicine, periodontology and diagnosis department, ain Shams University for their help and support from my first day in my masters and until now.

I would like to thank all the staff members of oral medicine, periodontology and diagnosis department Misr international university.

Sarah Mohamed, Nourhan Alaa El din and Ahmed Hesham thank you so much for all your help and support throughout the thesis.

Table of Contents

	Page
List of Figures	i-iii
List of Tables.	iv-v
List of Abbreviations	vi-viii
Introduction & Review of Literature	1-36
Aim of the Study	37
Materials and Method	38-57
Results	58-107
Case Presentation	108-123
Discussion.	124-138
Summary	139-141
Conclusion	142
Recommendations	143
References	144-164
Arabic Summary	

List of Figures

Figure		Page
Fig 1	PRF centrifugation machine	47
Fig 2	Four fixed points defining a base plane for one series of measurements	53
Fig 3	Diagram showing the superimposition for the volumetric assessment of the soft tissue thickness	54
Fig 4	Different sections of the CBCT	55
Fig 5	Measuring of the labial plate of bone thickness on the pre-operative CBCT	56
Fig 6	Measuring of the labial plate of bone thickness on the post-operative CBCT	56
Fig 7	Bar chart showing gender distribution of the participants	59
Fig 8	Bar chart showing average age (years) of the participants	59
Fig 9	Bar chart showing mean and standard deviation values for plaque index(PI) in the three study groups at different intervals among the whole study period	64
Fig 10	Bar chart showing mean and standard deviation values of gingival index(GI) in the three study groups at different intervals among the whole study period	69
Fig 11	Bar chart showing mean and SD values for probing depth (PD) in (mm) in the three study groups at different intervals among the whole study period	74
Fig 12	Bar chart showing mean and SD values for clinical attachment level (CAL) in (mm) in the three study groups at different intervals among the whole study period	79
Fig 13	Bar chart showing mean and SD values for gingival recession (GR) in (mm) in the three study groups at different intervals among the whole study period.	84
Fig 14	Bar chart showing mean and SD values for length of attached gingiva (LAG) in (mm) in the three study groups at different intervals among the whole study period	89
Fig 15	Bar chart showing mean and SD values for root coverage percentage (RC) (%) in the three study groups at different intervals among the whole study period	91
Fig 16	Bar chart showing mean and SD values for gingival margin (GM) score in the three study groups at different intervals among the whole study period	94
Fig 17	Bar chart showing mean and SD values for soft tissue thickness (STT) in (mm) in the three study groups at different	98

	intervals among the whole study period	
Fig 18	Bar chart showing mean and SD values for soft tissue	100
	thickness (STT) percentage change (%) in the three study	
	groups at different intervals among the whole study period	
Fig 19	Bar chart showing average and SD values for buccal plate	102
	bone thickness (BBT) in (mm)	
Fig 20	Scatter plot showing the correlation between gingival	103
8	recession and attachment loss in the three study groups	
Fig 21	Scatter plot showing the correlation between gingival	104
8	recession and length of attached gingiva in the three study	
	groups	
Fig 22	Scatter plot showing the correlation between soft tissue	105
1 15 ==	thickness and length of attached gingiva in the three study	100
	groups	
Fig 23	Scatter plot showing the correlation between percentage	107
1 15 =0	change of soft tissue thickness and root coverage in the three	
	study groups	
Fig 24	Miller class I gingival recession in lower left first	108
	premolar (group I)	_00
Dia 25		100
Fig 25	Flap reflection (group I)	108
Fig 26	Bovine derived xenograft in mortar (group I)	109
Fig 27	i-PRF collection (group I)	109
Fig 28	i-PRF liquid in syringe (group I)	110
Fig 29	i-PRF liquid on the xenograft (group I)	110
Fig 30	Steak Bone (group I)	111
Fig 31	Steak Bone placement at the recession site (group I)	111
Fig 32	Coronal advancement of the flap& suturing of the	112
	site (group I)	
Fig 33	3 months follow up (group I)	112
Fig 34	6 months follow up (group I)	113
Fig 35	9 months follow up (group I)	113
Fig 36	Miller class I gingival recession in upper left canine	114
1 15 50	(group II)	'
Die 27		111
Fig 37	Flap reflection (group II)	114
Fig 38	L-PRF clot (group II)	115
Fig 39	L-PRF placement in the PRF box to form	115
	membrane (group II)	

Fig 40	L-PRF membrane (group II)	116
Fig 41	L-PRF membrane placement at the recession site (group II)	116
Fig 42	Coronal advancement of the flap& suturing of the site (group II)	117
Fig 43	3 months follow up (group II)	117
Fig 44	6 months follow up (group II)	118
Fig 45	9 months follow up (group II)	118
Fig 46	Miller class I gingival recession in upper right second premolar (group III)	119
Fig 47	Flap reflection (group III)	119
Fig 48	Single incision in the palate to obtain the Sub- epithelial connective tissue graft (group III)	120
Fig 49	Sub-epithelial connective tissue graft (group III)	120
Fig 50	Suturing of the palate after harvesting of the sub- epithelial connective tissue graft (group III)	121
Fig 51	Sub-epithelial connective tissue graft suturing at the recession site (group III)	121
Fig 52	Coronal advancement of the flap & suturing of the site (group III)	122
Fig 53	3 months follow up (group III)	122
Fig 54	6 months follow up (group III)	123
Fig 55	9 months follow up (group III)	123

List of Tables

Table		Page
Table 1	Mean and standard deviation (SD) values for (PI) in different follow-up intervals in the three study group	62
Table 2	Comparison of the Mean and standard deviation (SD) values for (PI) between the three study groups among the different time interval of the whole study period	63
Table 3	Mean and standard deviation (SD) values for (GI) in different follow-up intervals in the three study group	67
Table 4	Comparison of the Mean and standard deviation (SD) values for (GI) between the three study groups among the different time interval of the whole study period	68
Table 5	Mean and Standard deviation (SD) values for (PD) in (mm) in different follow-up intervals in the three study groups among the whole study period.	72
Table 6	Comparison of the Mean and Standard deviation (SD) values for (PD) in (mm) between the three study groups among the different time intervals of the whole study period	73
Table 7	Mean and Standard deviation (SD) values for (CAL) in (mm) in different follow-up intervals in the three study groups	77
Table 8	Comparison of the Mean and Standard deviation (SD) values for (CAL) in (mm) between the three study groups among the different time interval of the whole study period	78
Table 9	Mean and Standard deviation (SD) values for (GR) in (mm) in different follow-up intervals in the three study groups	82
Table 10	Comparison of the Mean and Standard deviation (SD) values for (GR) in (mm) between the three study groups among the different time intervals of the whole study period	83
Table 11	Mean and Standard deviation (SD) values for (LAG) in (mm) in different follow-up intervals in the three study groups	87
Table 12	Comparison of the Mean and Standard deviation (SD) values for (LAG) in (mm) between the three study groups among the different time intervals of the whole study period	88
Table 13	Mean and Standard deviation (SD) values for (RC) (%) in different groups	90
Table 14	Mean and Standard deviation (SD) values for (GM) scores in different follow-up intervals in the three study groups	93
Table 15	Comparison of the Mean and Standard deviation (SD) values for (GM) scores between the three study groups among the different time intervals of the whole study period	94
Table 16	Mean and Standard deviation (SD) values for (STT) in (mm) in different follow-up intervals in the three study groups	97
Table 17	Comparison of the Mean and Standard deviation (SD) values for (STT) in (mm) between the three study groups among the different time intervals of the whole study period	98

Table 18	Mean and Standard deviation (SD) values of (STT) percentage change in the three study groups	99
Table 19	Mean and Standard deviation (SD) values for (BBT) in (mm) in the three study groups	101
Table 20	Correlation between gingival recession and attachment loss in the three study groups	103
Table 21	Correlation between gingival recession and length of attached gingiva in the three study groups	104
Table 22	Correlation between soft tissue thickness and length of attached gingiva in the three study groups	105
Table 23	Correlation between percentage change of soft tissue thickness and root coverage in the three study groups	106

List of Abbreviations

ADMA = Acellular dermal matrix

a-PRF = Advanced platelet rich fibrin

BBT= Buccal plate of bone thickness

CAD=Computer aided design

CAL= Clinical attachment level

CAM=Computer aided manufacturing devices

CBCT = Cone Beam Computed Tomography

CEJ = Cemento-enamel Junction

cPRP = Concentrated platelet-rich plasma

DFDBA=Demineralized freeze dried bone allograft

ECM = Extra Cellular Matrix

EMD=Enamel matrix derivative

FDBA=Freeze dried bone allograft

GC=Gingival Color

GI= Gingival Index

GM=Gingival Margin Level

GR=Gingival Recession

GTR= Guided tissue regeneration

IGF I-II =Insulin like growth factor I-II

i-PRF = Injectable platelet rich fibrin

LAG= length of attached gingiva

L-PRF = Leucocyte Platelet Rich Fibrin

L-PRP =Leucocyte- and platelet-rich plasma

MGJ = Mucogingival Junction

mm= Millimeter

MTC=Marginal Tissue Contour

PD=Probing Depth

PDGF = Platelet derived growth factor

PGA= Polymers with glycolic acid

PHEM = Poly-hydroxyl-ethyl methacrylate

PI=Plaque Index

PLA= Polymers with lactic acid

PMMA = Poly-methyl methacrylate

PRF= Platelet Rich Fibrin

P-PRP=Pure platelet-rich plasma

RBCs= Red Blood Cells

RCT=Randomized controlled clinical trial

RES= Root Esthetic Score

rm= Resorbable membrane