

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

#### Assessment of Fat Grafting in Enhancing the Middle Eastern Buttocks

#### Thesis

Submitted for Partial Fulfillment of M.D. Degree in Plastic and Reconstructive Surgery

#### By

Mohamed Youssef Nour-El-Dien

M.B.B.Ch., M.Sc. Ain Shams University

#### Supervised By

#### Prof. Heba Diaiy Hussein

Professor of Plastic and Reconstructive Surgery Faculty of Medicine, Ain Shams University

#### **Prof. Amir Samir El Barbary**

Professor of Plastic and Reconstructive Surgery Faculty of Medicine, Ain Shams University

#### Dr. Mohamed Abdel Mohasen Ghanem

Assistant Professor in Plastic and Reconstructive Surgery Faculty of Medicine, Ain Shams University

> Faculty of Medicine Ain Shams University 2020



سورة البقرة الآية: ٣٢

### Acknowledgments

First and foremost, I feel always indebted to **Allah** the Most Beneficent and Merciful.

I would like to express my deepest gratitude and great respect to **Prof. Heba Diaiy Hussein**, Professor of Plastic and Reconstructive Surgery, Faculty of Medicine, Ain Shams University, under whose supervision I had the honor and pleasure to proceed with work. Her constant guidance encouragement and foresight made all the difference.

Special thanks are due to **Prof. Amir Samir El Barbary**, Professor of Plastic and Reconstructive
Surgery, Faculty of Medicine, Ain Shams University,
for his sincere efforts, fruitful encouragement and
guidance which help me all the time of research and
writing of this thesis and I could not imagine this
thesis without his help.

I am deeply thankful to **Dr. Mohamed Abdel Mohasen Ghanem**, Assistant Professor in Plastic
and Reconstructive Surgery, Faculty of Medicine, Ain
Shams University, for his great help, outstanding
support, active participation and guidance.

I wish to introduce my deep respect and special thanks to **Prof. Maydy Sherief**, Professor Emiratus of Plastic and Reconstructive Surgery, Faculty of Medicine, Ain Shams University, for his kindness, supervision and cooperation in this work.

Mohamed Youssef Nour-El-Dien

### **List of Contents**

Title	Page No.
List of Tables	i
List of Tables	ii
List of Figures	iii
List of Abbreviations	x
Introduction	1 -
Aim of the Work	5
Review of Literature	
Applied Anatomy of the Gluteal Region	6
Aesthetics of the Buttock	25
Modalities in Buttock Enhancement	38
Techniques of Fat Grafting of the Gluteal Region	48
Assessment of Outcome of Buttock Augmentation Fat Grafting	-
Patients and Methods	71
Results	87
Discussion	139
Summary & Conclusion	157
References	
Arabic Summary	

### List of Tables

Table No.	Title	Page No.
Table (1):	Comparison between studied groups as age showing no statistically sign	ificant
T 1.1. (0)	difference between the studied groups	
Table (2):	Shows the buttock shapes in control grou	=
<b>Table (3):</b>	Comparison between groups accordi	_
m 11 (4)	measurement of preoperative	
<b>Table (4):</b>	Shows the amount of fat in the buttock	
	three surgical groups in the two di	
m 11 (z)	planes preoperatively assessed by ultras	
<b>Table (5):</b>	Comparison between groups accordi	_
T 11 (0)	measurement of postoperative after 3 mg	
<b>Table (6):</b>	Comparison between groups accordi	-
<b>7</b> 11 ( <b>7</b> )	measurement of postoperative after 6 me	
<b>Table (7):</b>	The extent of the difference over the p	
	through sacral height to intergluteal cre	
	the each group	
<b>Table (8):</b>	The extent of the difference over the p	
	through intergluteal crease to mid vertice	
	of the buttock in the each group	
<b>Table (9):</b>	The extent of the difference over the p	
	through intergluteal crease with upper	
(1-)	thigh in the each group	
<b>Table (10):</b>	The extent of the difference over the p	
	through lower lateral gluteal with leg ju	
(1.1)	(B) in the each group	
<b>Table</b> (11):	The extent of the difference over the p	
	through mid lateral gluteal with hip ju	
	in the each group	112
<b>Table (12):</b>	Volume of fat grafting descriptive in	
	group.	114
<b>Table</b> (13):	Shows the mean difference of fat loss i	
	planes at preoperative, 3 and 6 n	
	± ±	115
<b>Table (14):</b>	Shows statistically significant diff	
	between Zero and Three months accord	0
	Subcutaneous and intra muscular in gro	up 1117

# List of Tables (Cont...)

Title	Page No.
Shows statistically significant	
	_
Shows no statistically significant	difference
	C & IM in 119
Shows statistically significant	difference
between Zero and Three months ac	•
	-
	_
and IM in group 2	125
Shows no statistically significant	difference
between three and six according to S	C & IM in
group 2	126
· ·	
	_
	~ -
· ·	
	_
~ <u>-</u>	
, and the second	
group 3	
	Shows statistically significant between Zero and six months accordand IM in group 1

# List of Figures

Fig. No.	Title	Page No.
Figure (1):	Location of Gluteus muscles	
Figure (2):	Site of Tensor fascia lata	
Figure (3):	Deep Muscles of the gluteal region	
Figure (4):	Anatomical structure analysis	
Figure (5):	Shows Gluteal and SFS fascial anator	-
Figure (6):	Gluteal ligaments and adhesion zones	
<b>Figure (7):</b>	Sacrocutaneous ligament	
Figure (8):	Ischiocutaneous ligament	
Figure (9):	Ischiocutaneous ligament extensions.	
<b>Figure</b> (10):	The ilioinguinal and iliohypogastric	
	the latter of which extends around t	
	to supply the lateral and anterior asp	
Figure (11):	The location of the sciatic nerve in rel	
	the piriformis muscle	
<b>Figure (12):</b>	Superior and inferior gluteal arter	
71 (10)	lumbo-sacral perforator arteries	
Figure (13):	Dissection demonstrating sciatic	
	retracted gluteus maximus, pi	
	muscle, and gluteus medius with und	
E! (1.4).	superior gemellus muscle	
Figure (14):	Preoperative marking showing a line	
	from the mid-sacral border to the	-
Eigen (15).	trochanter	
Figure (15):	Anatomical drawing, gluteal region, r The dangerous zone of fat	_
<b>Figure (16):</b>	The dangerous zone of fat intramuscular which is pyramidal	
	tissue with the apex of the pyramic	
	superior point above the gluteal cleft	
	base covering the medial two third	
	gluteal fold	
<b>Figure (17):</b>	Frame shape analysis through	
118410 (11)1	distribution through three points	
Figure (18):	Square shape buttock through depre	
8 ar o (10/1	point C	
<b>Figure (19):</b>	Pear shape buttock through more fat	
<b>6</b> \ <del></del> /-	B and less fat in point A	-

Fig. No.	Title	Page	No.
<b>Figure (20):</b>	Round shape buttock through excess	fat in	
	point C		28
<b>Figure (21):</b>	Apple shape buttock through more	fat in	
	point A and less fat in point B		29
<b>Figure (22):</b>	Height to width ratio of the gluteus		
	to determine short, intermediate as	nd tall	0.4
	muscles		31
<b>Figure (23):</b>	Intergluteal crease length (natal cl		
	buttock aesthetics		32
<b>Figure (24):</b>	The relationship and contribution		
	Muscle volume		32
<b>Figure (25):</b>	Superficial anatomical landmarks		
	crest, posterior-superior iliac spine		
	sacrum, coccyx, and ischial tuberosity		33
<b>Figure (26):</b>	Gluteal ptosis classified to A, B		
	according to gluteal volume above the	crease.	34
<b>Figure (27):</b>	Ptosis grade according to skin drops	below	
	the gluteal crease		34
<b>Figure (28):</b>	Lateral and medial compartments	of the	
	infragluteal fold		35
<b>Figure (29):</b>	Aesthetic Unit Analysis		37
<b>Figure (30):</b>	Gluteal augmentation with implan	ts: the	
	area of dissection is marked		40
<b>Figure (31):</b>	Gluteal augmentation with implants		40
<b>Figure (32):</b>	PMMA gluteal filling		44
<b>Figure (33):</b>	Gluteal augmentation technique with	<b>PMMA</b>	
	filling		45
<b>Figure (34):</b>	With the patient in the standing posit	ion, we	
	mark the mostpronounced point or lin	e to be	
	suctioned or grafted and we draw con	centric	
	areas around it		47
<b>Figure (35):</b>	A newly designed cannula with multip	ole side	
	holes for large- or mega-volume fa		
	harvest		52
<b>Figure (36):</b>	The Luer-Lok aperture of the syri	inge is	
	removed at completion of harvest	_	
	ready for centrifugation		54

Fig. No.	Title	Page No.
<b>Figure (37):</b>	Syringes are placed after centrifuga	
E' (90)	3000 rpm for 3 minutes	
<b>Figure (38):</b>	After being processed, fat grafts are r	
<b>Figure (39):</b>	be transferred	
Figure (40):	Shows Standardized measurement	
rigure (40).	gluteus muscle tissue by magnetic res	
	imaging	
Figure (41):	Magnetic resonance imaging, axial vie	
<b>Figure (42):</b>	Ultrasound same gluteal area befo	
	after fat grafting 6 months postoper	
	demonstrating an obvious increase	
	white density which represent incre	ease in
	the fat density	
<b>Figure (43):</b>	Shows one of the control group	
	posterior and lateral view	
<b>Figure (44):</b>	Markings preoperative in posterior view	
<b>Figure (45):</b>	Markings preoperative in lateral view	
Figure (46):	Lateral view showing grade two of pto	
<b>Figure (47):</b>	Ultrasound for one quadrent of the	
Eigen (40).	preoperatively.	
<b>Figure</b> (48):	The preoperative markings of liposu and injected areas	
<b>Figure (49):</b>	Shows during infiltration of the abdor	
Figure (50):	Shows Cannula of infiltration	
Figure (51):	Shows during fat harvesting	
Figure (52):	Shows cannula 4mm of liposuction	
<b>Figure (53):</b>	Shows the process of fat harvesting	
<b>3</b>	autoclavable jars	
<b>Figure (54):</b>	Waiting for 15 minutes to separate	the fat
	from fluid and blood	83
<b>Figure (55):</b>	Fat grafting into the buttock thro	_
	incision at the infragluteal crease	
<b>Figure (56):</b>	Shows postoperative markings in p	
	view	
<b>Figure (57):</b>	Shows buttock shapes in control group	p88

Fig. No.	Title Page No.
<b>Figure (58):</b>	Shows one of the control group from
	posterior and lateral view89
<b>Figure (59):</b>	Shows one of the control group from
F! (00)	posterior and oblique view90
<b>Figure (60):</b>	Shows one of the control group from
Figure (61):	posterior and lateral view90 Bar chart between groups according to sacral
rigure (01):	height to intergluteal crease92
Figure (62):	Bar chart between groups according to
<b>g</b> 0 (0=/0	intergluteal crease with mid vertical line of
	the buttock92
<b>Figure (63):</b>	Bar chart between groups according to
	intergluteal crease with upper inner thigh93
<b>Figure (64):</b>	Bar chart between groups according to lower
	lateral gluteal with leg junction (B)93
<b>Figure (65):</b>	Bar chart between groups according to mid
T: (00)	lateral gluteal with hip junction (C)94
<b>Figure (66):</b>	Shows the amount of fat in the buttock in
	the three surgical groups in the two different planes preoperatively assessed by
	ultrasound96
<b>Figure (67):</b>	Bar chart between groups according to sacral
118410 (01)	height to intergluteal Crease99
<b>Figure (68):</b>	Bar chart between groups according to
3	intergluteal crease to mid vertical line of the
	buttock99
<b>Figure (69):</b>	Bar chart between groups according to
	intergluteal crease with upper inner thigh100
<b>Figure (70):</b>	Bar chart between groups according to lower
D' (71)	lateral gluteal with leg junction (B)100
<b>Figure (71):</b>	Bar chart between groups according mid
Figure (79).	lateral gluteal with hip junction ©101
<b>Figure (72):</b>	Bar chart between groups according to sacral height to intergluteal Crease103
Figure (73):	Bar chart between groups according to
8 (10)	intergluteal Crease to mid vertical line of the
	buttock
	DUUUUUX1UU

Fig. No.	Title	Page No.
<b>Figure (74):</b>	Bar chart between groups accintergluteal crease with upper inne	_
<b>Figure (75):</b>	Bar chart between groups according late ral gluteal with leg junction (I	ng to lower
<b>Figure (76):</b>	Bar chart between groups accord lateral gluteal with hip junction (C	ing to mid
<b>Figure (77):</b>	Line the difference over the period sacral height to intergluteal creeach group	ds through ase in the
Figure (78):	Line the difference over the period intergluteal crease to mid vertical buttock in the each group	ds through line of the
Figure (79):	Bar chart the difference over through intergluteal crease with uthigh in the each group	ipper inner
Figure (80):	Bar chart the difference over through lower lateral gluteal junction (B) in the each group	with leg
Figure (81):	Bar chart the difference over through mid lateral gluteal with hin the each group.	he periods ip junction
Figure (82):	Shows the amount of fat in each process in the three groups at preor and 6 months postoperative	perative, 3
Figure (83):	Shows the mean difference of fat I planes at preoperative, 3 and postoperative	6 months
Figure (84):	Shows the difference between Three months for injection to Sul and not for intra muscular injection 1	bcutaneous on in group
Figure (85):	Shows the difference between Ze months according to subcutar intramuscular in group 1	ero and six neous and
Figure (86):	Shows no statistically significant	difference ording to

Fig. No.	Title	Page No.
Figure (87):	Shows patient no.2 from g preoperatively and 3 months postop after fat grafting with 360cc in each the buttock posterior view	ch side of
<b>Figure (88):</b>	Shows the same patient from lateral	l view121
Figure (89):	Shows patient no.1 from g preoperatively and 6 months postop after fat grafting with 380cc.in e posterior view.	each side
<b>Figure (90):</b>	Shows the same patient from lateral	
Figure (91):	Shows Ultrasound same gluteal quamonths before and after fat grafting 1 demonstrating an obvious increase white density which represent increases.	drant six in group se in the
	the fat density	
Figure (92):	Shows the difference between Z Three months according to Subc and intra muscular in group 2	utaneous
Figure (93):	Shows the difference between Zero months according to subcutaneous p	and six plane and
<b>Figure (94):</b>	intramuscular plane in group 2 Shows no statistically significant of between Three and Six according to	lifference SC & IM
Figure (95):	in group 2	roup 2 eratively ch side of
<b>Figure (96):</b>	Shows the same patient from lateral	
Figure (97):	Shows patient no.4 from g preoperatively and 6 months postop after fat grafting with 780cc in each the buttock posterior view	roup 2 eratively ch side of
<b>Figure (98):</b>	Shows the same patient from latera six months postoperatively	al view at