Synchronus Breast Reconstruction After Surgical Treatment of Breast Cancer

Вy

Mina Gamal Helmy Gerges

M. B. B. CH. Faculty of Medicine, Tanta University

Essay

Submitted in partial fulfillment for the Master Degree in General Surgery

Supervisors

Prof. Dr. Magdy Abd Elghany Basiony

Professor of General Surgery Faculty of Medicine Ain Shams University

Pro. Dr. Ahmed Mohammed Kamal

Assistant Professor of General Surgery Faculty of Medicine Ain Shams University

Dr. Hisham Mohammed Omran

Lecturer of General Surgery Faculty of Medicine Ain Shams University

Faculty of Medicine Ain Shams University 2014

طرق إعادة تكوين وتكميل الثدي ما بعد استئصاله جراحيًا لعلاج أورام الثدي السرطانية

رسالة مقدمة من الطبيب/ مينا جمال حلمي جرجس كلية الطب – جامعة طنطا تم طئة لنيل حرجة الما جستير في

الجراحة العامة

المشرفون

الأستاذ الدكتور/مجدي عبد الغني بسبوني أستاذ الجراحة العامة كلية الطب - جامعة عين شمس

> الأستاذ الدكتور/أحمد محمد كمال أستاذ مساعد الجراحة العامة كلية الطب - جامعة عين شمس

الدكتور/ هنتام محمد عمران مدرس الجراحة العامة كلية الطب - جامعة عين شمس

> كلية الطب جامعة عين شمس ٢٠١٤

Acknowledgement

First of all thanks to ALLAH

I would like to express my deep gratitude and appreciation to my honored professor, **Prof. Dr. Magdy Abd Elghany Basiony**, Professor of General Surgery, Faculty of Medicine, Ain Shams University, for his meticulous supervision, support and encouragement.

I am also grateful to **Prof. Dr. Ahmed Mohammed Kamal**, Assistant Professor of General Surgery, Faculty of Medicine, Ain Shams University, for his great effort, precious advice and assistance throughout this work.

I am also deeply grateful and would like to express my sincere thanks and gratitude to **Dr. Hisham Mohammed Omran**, Lecturer of General Surgery, Faculty of Medicine, Ain Shams University for his great help, precious advice and assistance throughout this work.

Mina Gamal Helmy

Dedication

My heartily thanks and deepest gratitude to my family, specially to my mother, for their support, understanding and tolerance all the time till this work was completed.

LIST OF ABBREVIATIONS

AB	Ascending branch
Ac	Acromion
AFIP	Armed forces institute of pathology
AJC	American joint commission on cancer staging and end results reporting
BP	Breast projection
CIS	In situ carcinoma
DB	Descending branch
DCIS	Ductal carcinoma in situ
DIEP	Deep inferior epigastric artery perforator
EGF	Epidermal growth factor
ELD	Extended latissimus dorsi flap
EVRAM	Extended vertical rectus abdominus myocutaneous
HADM	Human acellular dermal matrix
ICAP	Intercostal artery perforator
IDC-NOS	Invasive ductal carcinoma not otherwise specified
ILC	Invasive laboular carcinoma
IMF	Inframammary fold
IUL	Intrauterine life
LCIS	Labular carcinoma in situ
LD	Latissimus dorsi
LDMF	Latissimus dorsi muscle flap
LFC	Lateral circumflex femoral vessels
Lower TRAM	Lower transverse rectus abdominus myocutaneous
MS-LDI	Muscle-sparing latissimus dorsi type I
MS-LDII	Muscle-sparing latissimus dorsi type II

MS-LDIII	Muscle-sparing latissimus dorsi type III
NAC	Nipple-areola complex
Ni	Nipple
PBS	Perforating branches
PF	Profunda femoral
S-GAP	Superior gluteal artery perforator
SIEA	Superficial inferior epigastric artery
SSM	Skin sparing mastectomy
SSN	Suprasternal notch
TDAP	Thoracodorsal artery perforator
TRAM	Transverse rectus abdominus myocotaneous
UICC	international union against cancer
Upper TRAM	Upper transverse rectus abdominus myoctaneous
VRAM	Vertical rectus abdominis myocutaneous
WHO	World health organization

LIST OF TABLES

Table No.	Title	Page No.
1	Risk factors of breast cancer.	28
2	World health organization histological classification of proliferative and tumour lesions of the breast.	29
3	TNM breast cancer classification system.	40
4	Staging of breast cancer.	41

LIST OF FIGURES

Fig. No.	Title	Page No.
1	Mammary line and possible sites of extra nipples.	5
2	Staging of development of the breast.	7
3	Front view of breast.	9
4	Anatomy of female breast.	12
5	Arterial supply of female breast.	16
6	Lymphatic drainage of female breast.	22
7	Anthropomorphic breast measurements	26
8	Microscopic picture of comedo carcinoma.	31
9	Microscopic picture of paget's disease.	32
10	Microscopic picture of lobular carcinoma insitu.	33
11	Gross picture of infiltrating ductal carcinoma.	34
12	Microscopic picture of infiltrating ductal carcinoma.	34
13	Micrscopic picture of invasive lobular carcinoma.	35
14	Microscopic picture of mucinous carcinoma.	37
15	Inflammatory breast carcinoma.	38
16	A case of immediate breast reconstruction.	51
17	A case of delayed breast reconstruction.	54
18	Silicone breast implant.	57
19	Proper implant selection.	60
20	Breast reconstruction using an implant.	62
21	Breast reconstruction using back muscle and implant.	63
22	Tissue expansion.	64
23	Types of the expanders.	65

Fig. No.	Title	Page No.
24	The pocket development.	69
25	The position of the reservoir.	70
26	The expansion protocol.	71
27	Silicone granuloma.	78
28	Capsular contracture.	80
29	Treatment of capsular contracture.	81
30	Breast implant in capsule.	82
31	Breast rippling.	83
32	Human acellular dermal matrix.	84
33	Placement of the human acellular dermal matrix.	84
34	Intraoperative view of acellular dermal matrix.	85
35	Surface of latissimus dorsi muscle.	87
36	Blood supply of LDM.	88
37	Latissimus dorsi flap.	96
38	Latissimus dorsi flap.	97
39	Extended latissimus dorsi flap.	102
40	Immediate breast reconstruction with ELD flap.	103
41	Breast reconstruction with ELD-MC flap (Horizontal scar).	106
42	Breast reconstruction with ELD-MC flap (Vertical scar).	107
43	The pedicle flap with different source blood supply.	109
44	The thoracodorsal artery perforator flap.	111
45	Breast reconstruction with thoracodorsal artery perforator flap.	112
46	Intercostal artery perforator flap.	113
47	Blood supply of TRAM.	119
48	Extended vertical rectus abdominis myocutaneous flap.	125

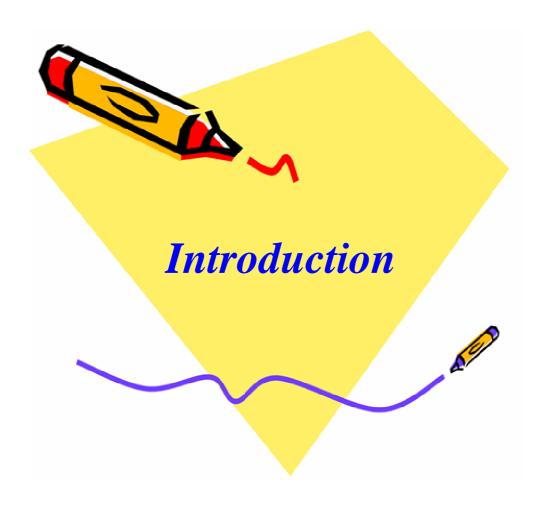
Fig. No.	Title	Page No.
49	Single-pedicled TRAM flap.	127
50	Postoperative hernia complicating inadequate repair after a TRAM pedicled flap.	128
51	Single pedicle TRAM flap.	129
52	Zones of TRAM flap.	131
53	Breast reconstruction using TRAM pedicled flap.	133
54	Double pedicled TRAM flap.	135
55	Double pedicled TRAM flap steps.	136
56	Microvascular augmentation of the TRAM flap.	139
57	(A) DIEP flap.(B) Muscle sparing free TRAM flap.	143
58	DIEP flap.	144
59	Breast reconstruction by free lower TRAM flap.	154
60	Breast reconstruction with free TRAM.	155
61	Types of muscle sparing free TRAM flap.	156
62	The standard TRAM free flap in comparison with DIEP flap.	158
63	Bilateral breast reconstruction with bilateral DIEP flap.	158
64	DIEP flap selection.	159
65	Free muscle sparing TRAM flap formation.	159
66	Microvascular free flaps.	159
67	Superficial inferior epigastric artery flap.	160
68	Superior gluteal myocutaneous flap.	161
69	A plan for breast reconstruction by S-GAP flap.	163
70	A case of bilateral breast reconstruction with bilateral S-GAP flap.	164
71	A plan for breast reconstruction by inferior gluteal free flap.	166

Fig. No.	Title	Page No.
72	Cross section of the Ruben's flap.	168
73	Breast reconstruction by Ruben's flap.	170
74	A case of breast reconstruction with Ruben's flap.	171
75	Lateral transverse thigh flap.	172
76	Anterolateral thigh flap.	173
77	Anatomy of lateral thigh.	175
78	Vascular anatomy of lateral thigh.	175
79	Preoperative marking of ALT flap.	176
80	Raising the anterior flap of ALT flap.	176
81	Raising the posterior flap of ALT flap.	176
82	Use of bipolar cautery in ALT flap.	176
83	Dissection of the pedicle of ALT flap.	176
84	Intraoperative view of ALT flap.	177
85	Preoperative lateral view.	177
86	Preoperative marking of the ALT flap.	177
87	The flap and the excised specimen.	177
88	Front view ten months after reconstruction.	177
89	Lateral view ten months after reconstruction.	177
90	Donor site scar.	177
91	Preoperative view.	177
92	Two weeks after surgery (front view).	177
93	Permanent occipital alopecia.	178
94	Before and after NAC reconstruction.	180
95	Tattooing of the areola.	182
96	T flap.	184

Fig. No.	Title	Page No.
97	Tetrapod flap.	185
98	Star flap.	186
99	Steps of star flap technique.	187
100	Skate flap.	188
101	Skate flap purse string technique.	188
102	Double opposing tab flap.	189
103	Modified fish tail flap.	190
104	Butterfly shaped technique.	191
105	A case of breast and nipple reconstruction.	193
106	A case of breast reconstruction using local flaps.	194
107	Button hole technique.	197
108	Injection technique of the nipple.	201
109	A case of artecoll injection at the nipple for nipple projection.	202

LIST OF CONTENTS

	Page
•	Acknowledgement
•	List of Abbreviationsi
•	List of Tablesiii
•	List of Figuresiv
•	Introduction1
•	Aim of the Work3
•	Anatomy of Female Breast4
•	Aesthetics of Female Breast
•	Pathology of Breast Cancer27
•	Types of Mastectomy44
•	Timing of Breast Reconstruction
•	Methods of Breast Mound Reconstruction
	- Tissue Expanders
	- Latissimus Dorsi Flaps87
	- Rectus Abdominis Flaps
	- Microvascular Free Flaps149
•	Nipple-Areolar Complex Reconstruction
•	English Summary
•	References
•	Arabic Summary



INTRODUCTION

The female breasts are considered the primary symbol of her femininity. The loss of breasts after mastectomy due to malignant disease can be major impairment to her body image and feeling of attractiveness, This loss has devastating sequelae causing a marked impact on the woman emotional stability and her social adjustment (*Chwalczynska*, et al., 2004).

Reconstruction of female breast following mastectomy is great challenge. Ideally, the decision to reconstruct a breast should be made jointly by the patient, the general surgeon & the plastic surgeon (*Bostwick*, 2004).

Breast reconstruction has relatively short history. Before the availability of myocutaneous flaps, a limited amount of reconstruction was performed using local skin flaps. Silicon gel implants become available in the late 1960s. At the beginning they were used alone as a single stage procedure and were extremely limited by deficient tissue. Later on, they were combined with latissimus dorsi myocutaneous flap and achieved greater success (*Schneider*, 1977). With the development of tissue expansion in 1970s, limitation of skin become less of an issue and tissue expansion with second stage replacement with a permanent implant became a popular technique that has persisted (*Allowe*, 1979), then came the role of Becker prosthesis, where it provided two benefits through controlling its volume and considered a permanent expander prostheses (*Hunter*, 1995).

As regards the flap reconstruction, it was started as a pedicle flaps such as, lattissimus dorsi myocutaneous flap (LDMF) (*Schneider*, 1977 & Sternberg et al., 2006) and the transverse rectus abdominis myocutaneous (TRAM) flap