

*Value of Combination between Axillary
Sampling and Sentinel Lymph Node Biopsy
in Patients with Breast Cancer*

Thesis

Submitted for partial fulfillment of M.D Degree in
General Surgery

By: Sherif Nabil Mohamed
(M.B., B.CH, M.SC)
Faculty of Medicine, Ain Shams University

Supervised by

Prof. Dr. Reda Mahmoud Mostafa
Professor of general surgery
Faculty of Medicine, Ain Shams University

Prof. Dr. Sahar Saad El-Din Zaki
Professor of Pathology
Faculty of Medicine, Ain Shams University

Prof. Dr. Tarek Ismail Ouf
Professor of general surgery
Faculty of Medicine, Ain Shams University

Prof. Dr. Ahmed Alaa El-Din Abdel Megeed
Professor of general surgery
Faculty of Medicine, Ain Shams University

Dr. Mohamed El-Sayed El-Shenawy
Associate Professor of general surgery
Faculty of Medicine, Ain Shams University

Faculty of Medicine Ain Shams University
2010

Acknowledgement

First of all, thanx to GOD for His care and passion.

I would like to express my deep gratitude and appreciation to Professor Dr. Reda Mostafa Prof. of general surgery, Ain Shams University for his continuous support and supervision.

I would like to express my thankfulness to Professor Dr. Sahar Saad El-Din Prof. of Pathology, Ain Shams University for her valuable advice and suggestions.

I sincerely appreciate the supervision of Professor Dr. Tarek Ismail Prof. of general surgery, Ain Shams University who helped me a lot not only in medical field but also in my life.

I would like to thank Professor Dr. Ahmed Alaa El-Din Prof. of general surgery, Ain Shams University for his thoughtful comments and his professional and scientific discussions.

Also I greatly thank Dr. Mohamed El-Sayed El-Shenawi Assoc. Prof. of general surgery, Ain Shams University who contributed to the initiation of this study and for his great help.

Finally I want to express my love and appreciation for my great family my father and my wife and I dedicate this effort for the soul of my mother who used to help me in every moment of my life.

List of Contents

• <i>Introduction.....</i>	<i>1</i>
• <i>Aim of the work.....</i>	<i>4</i>
• <i>Anatomy and lymphatic drainage of the breast..</i>	<i>5</i>
• <i>Review of literature.....</i>	<i>36</i>
• <i>Patients and methods.....</i>	<i>141</i>
• <i>Results.....</i>	<i>152</i>
• <i>Discussion.....</i>	<i>191</i>
• <i>Summary and conclusion.....</i>	<i>209</i>
• <i>References.....</i>	<i>212</i>
• <i>Arabic summary.....</i>	<i>243</i>

List of Figures

<i>Fig (1): Structure of the non lactating breast.....</i>	<i>7</i>
<i>Fig (2): Dissection of the lower half of the mammary gland during the period of lactation.....</i>	<i>9</i>
<i>Fig (3): Stained section showing Breast lobules....</i>	<i>12</i>
<i>Fig (4): Stained section showing lactiferous duct..</i>	<i>13</i>
<i>Fig (5): Effects of hormones on the breast.....</i>	<i>17</i>
<i>Fig (6): Arterial supply of the breast.....</i>	<i>19</i>
<i>Fig (7): The veins of the right axilla, viewed from in Front.....</i>	<i>20</i>
<i>Fig (8): Lymphatics of the Mammary, and the axillary Glands.....</i>	<i>27</i>
<i>Fig (9): The main lymphatic drainage of the breast</i>	<i>30</i>
<i>Fig (10): The 4 quadrants of breast and the incidence of cancer in each quadrant.....</i>	<i>37</i>
<i>Fig (11): Histological picture of ductal carcinoma in situ.....</i>	<i>44</i>
<i>Fig (12): Histological picture of invasive duct carcinoma.....</i>	<i>47</i>
<i>Fig (13): Paget's disease of the nipple.....</i>	<i>59</i>
<i>Fig (14): The breasts should be inspected with the patient sitting comfortably, pressing hands on hip.....</i>	<i>72</i>
<i>Fig (15): The breasts should be inspected with the patient lifting arms in the air.....</i>	<i>73</i>
<i>Fig (16, 17): Palpation of the breast with the arm on the side to be examined elevated.....</i>	<i>75</i>
<i>Fig (18): Axillary lymph nodes examination.....</i>	<i>76</i>
<i>Fig (19): Axillary examination of the right breast.</i>	<i>76</i>

<i>Fig (20):</i>	Axillary examination of the left breast...	77
<i>Fig (21):</i>	NIPPLE EXAMINATION AND THE AREOLA IS PRESSED IN DIFFERENT AREAS.....	80
<i>Fig (22):</i>	Mammography –mediolateral view.....	81
<i>Fig (23):</i>	Mammography- craniocaudal view.....	83
<i>Fig (24):</i>	Mammography –Axillary posterior position.....	83
<i>Fig (25):</i>	Breast ultrasound shows breast mass...	85
<i>Fig (26):</i>	(a) precontrast and (b) postcontrast breast MRI showing a breast mass in the right upper outer quadrant.....	88
<i>Fig (27):</i>	Incisions of radical mastectomy.....	94
<i>Fig (28)</i>	: Extended radical mastectomy.....	97
<i>Fig (29):</i>	The view after modified radical mastectomy.....	99
<i>Fig (30):</i>	Breast and axillary lymph nodes after MRM.....	100
<i>Fig (31):</i>	Wide local excision.....	114
<i>Fig (32):</i>	Mammography showing a breast mass.	145
<i>Fig (33):</i>	Breast ultrasound showing a breast Mass.....	146
<i>Fig (34):</i>	Breast ultrasound showing a breast mass.....	146
<i>Fig (35):</i>	Marking the site of wide local excision.....	148
<i>Fig (36):</i>	Marking the ellipse of modified radical mastectomy and site of injection of methylene blue.....	149
<i>Fig (37):</i>	Dissection of sentinel lymph node.....	149
<i>Fig (38):</i>	MRM with SLN, Axillary sampling and breast with rest of axilla.....	150
<i>Fig (39):</i>	Complete Axillary clearance	150

<i>Fig (40):</i>	Mammography – Craniocaudal View showing a breast mass.....	165
<i>Fig (41):</i>	Mammography – Medio-lateral View showing a breast mass.....	165
<i>Fig (42):</i>	Mammography showing well circumscribed mass.....	166
<i>Fig (43):</i>	Mammography showing speculated mass.....	166
<i>Fig (44):</i>	Breast and axillary lymph nodes after modified radical mastectomy.....	169
<i>Fig (45):</i>	Breast and axillary lymph nodes after modified radical mastectomy.....	170
<i>Fig (46):</i>	The view after modified radical mastectomy and complete axillary clearance.....	170
<i>Fig (47):</i>	MRM following frozen section and proceed.....	171
<i>Fig (48):</i>	MRM showing 3 specimens, specimen 1: SLN, specimen 2: axillary sampling and specimen 3: breast and rest of axilla...	171
<i>Fig (49):</i>	Wide local excision.....	172
<i>Fig (50):</i>	Axillary clearance with sampling and	
<i>Fig (51):</i>	Dissection of axillary lymph node.....	173
<i>Fig (52):</i>	The view after complete axillary clearance.....	175
<i>Fig (53):</i>	The view after complete axillary clearance with nerves preserved.....	176
<i>Fig (54):</i>	Postoperative view after Rt. Modified Radical Mastectomy.....	189
<i>Fig (55):</i>	post mastectomy seroma.....	190
<i>Fig (56):</i>	post operative lymphoedema.....	190

List of Tables

<i>Table (1): Shows the age distribution in the patients subjected to this study.....</i>	<i>152</i>
<i>Table (2): shows the time of cancer presentation</i>	<i>154</i>
<i>Table (3): Shows the symptoms of the patients subjected to this study.....</i>	<i>155</i>
<i>Table (4): Shows the incidence of the risk factors in the patients subjected to this study....</i>	<i>157</i>
<i>Table (5):Shows the medical diseases in the patients subjected to this study.....</i>	<i>158</i>
<i>Table (6): Shows the results of general examination of the patients subjected to this study...</i>	<i>160</i>
<i>Table (7): Shows the site of breast masses in the patients subjected to this study.....</i>	<i>162</i>
<i>Table (8): Shows the mammographic findings in the patients subjected to this study.....</i>	<i>164</i>
<i>Table (9): shows the results of perioperative Biopsies in the patients subjected to this study.....</i>	<i>167</i>
<i>Table (10) shows the operative procedures done to the patients subjected to this study..</i>	<i>168</i>

<i>Table (11):</i> Shows the number of the axillary lymph nodes dissected in the patients subjected to this study after complete axillary clearance.....	174
<i>Table (12):</i> Diagnostic indices of SLN in comparison to nodes in axillary clearance.....	178
<i>Table (13):</i> Shows the identification percentage of the SLN.....	178
<i>Table (14):</i> Comparison between SLN and axillary clearance after Stratification according to size of tumour.....	179
<i>Table (15):</i> Shows the number of the axillary lymph nodes sampling dissected in the patients subjected to this study.....	180
<i>Table (16):</i> Diagnostic indices of Axillary Node Sampling in comparison to nodes in axillary clearance.....	181
<i>Table (17):</i> Agreement of SLN with axillary sampling nodes.....	182
<i>Table (18):</i> Shows total number of lymph node removed, SLN and axillary sampling and axillary clearance status.....	183
<i>Table (19):</i> Diagnostic indices of combined results of axillary sampling AND SLN in comparison to nodes in axillary clearance.....	184

<i>Table (20):</i> The overall sensitivity and specificity of combined positivity of SLN + axillary sampling.....	185
<i>Table(21):</i> Shows the postoperative complications detected in the patients subjected to this study.....	188

Introduction

Introduction

Breast cancer is the third most frequent cancer in the world and by far the most common malignancy of women (21% of all new cancers). It ranks fifth cause of death from cancer overall, but it is the leading cause of cancer mortality in women with a worldwide incidence of about 61%. (*Parkin et al., 1998*)

Lymphatic drainage from the breast is principally to the ipsilateral axilla. In patients with breast cancer, the status of the nodes in the axilla is an important prognostic factor and can be used to determine local and systemic treatment. Unfortunately clinical assessment of the node status is unreliable. (*Tammiolakis , 2003*)

The standard policy for management of the axilla is axillary clearance either II or III. In those negative

cases , however it is unnecessary operation and linked to some morbidity. A pectoral node biopsy, where a single node is taken from the axillary tail, has been proven to be unreliable. A triple node biopsy (pectoral, apical and internal mammary) provides excellent prognostic data but it is difficult to perform in those who have been treated by breast conservation. (*Tamvakis, 2003*)

sentinel node biopsy for breast cancer patients has recently been applied as a less invasive procedure and studies have been done to show if it could be an alternative to axillary node dissection. (*Motomura et al ., 2004*)

Additionally, the four node sampling technique has been evaluated in Edinburgh in two randomized trials comparing node sampling to level III axillary clearance. It was shown to be reliable for staging the axilla; and in those who are node negative, no further treatment is required. (*Chetty; 2001*)

So we will conduct this study to prove or disprove the value of sentinel lymph node biopsy in addition to axillary node sampling as a true indicator of axillary lymph node status.

Aim of the Work:

This is a prospective study of the value of axillary node sampling in addition to sentinel lymph node biopsy in patients with breast cancer ($T_{1 \text{ or } 2}$, $N_{0 \text{ or } 1}$, M_0).

Anatomy