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توطئة لاستكمال درجة الماجستير بالجراحة العامة

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Recent Updates in Breast Reconstruction After Mastectomy

Essay

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Sameh Samir Zaki

Contents

List of Abbreviations:

ASIS..... Anterior superior iliac spine
BAF..... Breast advancement flap
BCT..... Breast conservative therapy
DCIS..... Ductal carcinoma in situ
DIEP..... Deep inferior epigastric perforator
FDA..... Food and Drug Administration
IGAP..... Inferior gluteal artery perforator
IHC..... Immunohistochemistry
IMF..... Inferior mammary fold
LDMF..... Latissimus dorsi muscle flap
LTDF..... Lateral thoracodorsal flap
MDOT..... Modified double opposing tab flap
MRM..... Modified radical mastectomy
NAC..... Nipple areola complex
NCI..... National Cancer Institute
RM..... Reduction mastopexy
SGAP..... Superior gluteal artery flap
SIEA..... Superficial inferior epigastric artery
SSM..... Skin sparing mastectomy
TNM..... Tumor, nodes and metastases
TRAM..... Transverse rectus abdominis muscle

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Introduction and Aim of Work

Introduction

Breast cancer is one of the leading causes of death among women today. Its high incidence rate in Egypt, recorded as 113.1/100,000 compared to the age-standardized rates of the world of 166.6/100,000, make it one of the most menacing threats to modern health care systems. **(Hirko et al, 2013)**

Breast cancer occurs in various types, mainly lobular (originates from acini) or ductal (arise from the lactiferous ducts) carcinomas. Other more rare types are medullary and inflammatory breast cancers and phyllodes breast tumor. **(Bostwick et al, 1997)**

Risk factors of breast cancer include alcohol intake, exposure to radiation, late childbirth (first child after age of 30) and contraceptive pill intake. **(Chlebowski et al, 2009)**

Nowadays, with the help of modern scientific and technological advances, 5-year survival rates improve through early detection, which is achieved by routine mammography. Breast ultrasound is also used in younger females. In positive cases, fine needle biopsies and CT scans are utilized to locate and analyze the findings of mammography. **(Lehman et al, 2009)**

Treatment of breast cancer is mainly surgical through different types of mastectomy with or without the use of adjuvant chemotherapy or radiotherapy or hormonal therapy. Mastectomy, even though lifesaving, carries its own list of morbidities and

psychosocial stigmata, affecting the quality of life of surviving patients. **(Chia et al, 2007)**

Removal of breast cancer has always been an issue of debate whether to remove more breast tissue and ensure maximal clearance or follow a more conservative approach to allow sufficient reconstruction. This is usually decided on individual basis via a multitude of techniques that vary in nature and outcome and hence should be tailored to patients individually, all while keeping patient safety first and foremost. **(Visvanthan et al, 2009)**

Oncoplastic breast surgery techniques may be classified into two fundamentally different approaches according to the reconstructive techniques following breast conservation surgery that have been established. Firstly, volume displacement techniques, when the resection defect is reconstructed using one of a range of local glandular or dermoglandular flaps within the breast, which are mobilized and advanced into the defect. This approach leads to a loss in breast volume, and contralateral surgery is usually required to restore symmetry. **(Franceschini et al, 2011)**

Secondly, volume replacement techniques, when the resection defect is reconstructed by replacing the volume of tissue removed with a similar volume of autologous tissue from an extramammary site. The options include musculocutaneous flaps and perforator flaps that can be transferred on a vascularized pedicle or as a free tissue transfer. **(Nahabedian et al, 2012)**

The main aim of post mastectomy breast reconstruction is ultimately to improve patient quality of life via restoration of anatomical symmetry and integrity with the least aesthetic

deformity possible. These techniques most commonly employs breast implants or tissue expanders but also the use of musculocutaneous flaps when suitable. Reconstruction can also include autologous tissue transfer, such as fat or stem cell transfer. **(Visvanthan et al, 2009)**

Musculocutaneous flaps used in post-mastectomy breast reconstruction can either be local flaps, for example, Latissimus Dorsi flap, Transverse Rectus Abdominis musculocutaneous flaps or distant free flaps using microvascular free flap transfer. Combined autologous and alloplastic techniques can also be used, for example, Latissimus Dorsi flap with an implant beneath. **(Kat et al, 2011)**

Autologous tissue transfer is a modern approach to breast reconstruction and includes the use of autologous fat injection that is used in cases in which implants are contraindicated (e.g. patients with active septic foci). Other modalities include stem cells and platelet rich plasma injection that offers the possibility of eventually repairing and replacing tissues damaged by breast cancer or surgery. **(Salgarello et al**, **2010)**

By definition, a stem cell is characterized by its ability to self-renew and its ability to differentiate along multiple lineage pathways. This tremendous feature of the stem cells can be a major turn in the future of clinical practice of breast reconstruction, delivering the desired safety, good cosmetic results and minimal morbidities of other sites of the body that is the major drawbacks of the currently used techniques. **(Gimble et al, 2003)**

Aim of work

Our work aims to shed light on the oncoplastic breast surgical techniques and the latest updates on the possible methods of reconstruction in breast surgeries following mastectomy.

Anatomy
of the
Breasts

Embryology of the breast:

During intrauterine life, the milk ridge appears as a linear thickening of the surface ectoderm on the ventral body wall extending from the axilla down to the medial part of the inguinal region. The part in the pectoral region develops into the mammary gland and the rest disappears. Mammary tissues represent anatomically mature sweat gland. **(Romrell et al, 2006)**

Glandular tissue formed of 15 to 20 solid ectodermal buds arise from the remaining part of the milk ridge and form a solid cord, which grows into the underlining mesenchyme. The cords continue to grow and branch throughout fetal life. Shortly before birth, the cord canalizes to form the lactiferous sinuses, lactiferous ducts and secretory alveoli. The lactiferous ducts open into the nipple. The areola is recognized as the circular pigmented area around the nipple at 5th month. **(Snell et al, 2004)**

After puberty in the female under the effect of ovarian hormones, the mammary gland enlarges in size due to more branching in the lactiferous ducts and deposition of more fat between the lobules of the gland. **(Snell et al, 2004)**

Anatomical description:

Each breast (right or left) is a rounded elevation present on the front of the upper part of the thorax, over the pectoral region. Over the center of the breast, the skin shows a dark circular area,