Free Tissue Transfer From Anterior Abdominal Wall In Breast Reconstruction At The Same Session Of Modified Radical Mastectomy.

Essay

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قُلْ إِنَّ صَلَاتِي
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Amr Adel Ahmed Hassanin Osman

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List of Abbreviations

Abbrev.		Meaning
Tram	:	Transverus rectus abdominus
Ms-tram	:	Muscle sparing transversus rectus abdominus
DIEA	:	Deep inferior epigastric artery
SIEA	:	Superficial inferior epigasric artery
nac	:	Nipple areola complex
DIEAP	:	Deep inferior epigastric artery perfortor
DCIS	:	Ductal carcinoma in situ
LCIS	:	Lobular carcinoma in situ
T n m	:	Tumor-lymph node -metastasis
CTA	:	CT Angiogram
IBR	:	Immediate breast reconstruction
DBR	:	Delayed breast reconstruction
CT	:	chemotherapy
RT	:	Radiotherapy
BMI	:	Body mass index

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Introduction

Breast reconstruction following mastectomy can be performed using alloplastic materials or autologous flaps. The goal of breast reconstruction surgery, is to create a breast mound that appears as natural as possible. **(Serletti J,Fosnot J, Nelson JA, et al. 2011)**

The plastic surgery community has attempted to provide reconstructive options that give the best result with the least donor-site morbidity as a Free Tissue Transfer . **(Alderman A, Gutowski K, Ahuja A, et al. 2014)**

With its initial description in 1979, the free transverse rectus abdominis myocutaneous (TRAM) flap became a pillar of autologous breast reconstruction. **(Holmström H. 1979)**

The use of abdominal flaps as a free flap by Holmstrom **(Holmström H. 1979)** and Robbins provided the information to describe the perforators of the inferior epigastric vessels. Using this information, Koshima and Soeda reported the first clinical use of the lower abdominal skin and fatty tissue for breast reconstruction without sacrificing rectus muscle . (**Koshima I, Soeda S. 1989)**

The concept of reconstructing the breast with reliable autologous tissue, that was soft, robust, and resulted in an aesthetically pleasing reconstruction lead to its widespread

adoption. With the intent to reduce abdominal donor site morbidity, the original free TRAM flap has undergone numerous modifications resulting in the modern day muscle-sparing free TRAM (MsfTRAM), deep inferior epigastric perforator (DIEP), and superficial inferior epigastric artery (SIEA) flaps. **(Bajaj AK, Chevray PM, et al. 2006)**

Both the MsfTRAM and the DIEP flaps are based on the same axial blood supply and almost the same amount of abdominal subcutaneous tissue and skin; however, the DIEP flap technique has received reputation as it spares the rectus abdominis muscle and anterior rectus fascia. **(Allen RJ, Treece P. 1994)**

In an effort to further reduce abdominal wall morbidity, the SIEA flap is based on a more superficially located blood supply obviating the need to violate the anterior rectus fascia or its underlying muscle all together. **(Grotting JC 1991)**

To achieve best result in breast reconstruction , certain patient factors and surgical factors that can influence outcomes and complication rates must be taken into consideration. Patient factors affecting complication rates and outcomes in breast reconstruction include radiation, chemotherapy, smoking, obesity, age, and medical comorbidities **(Cordeiro PG 2008) ,** Surgical factors such as the timing of the reconstruction, complex

dissection and the use of fat grafting have an effect on outcomes and complications **(De Blacam C, Momoh AO, et al. 2011)**

So, breast reconstruction with free tissue transfer have a golden role after mastectomies.

Aim of the work

To review the literature regarding role of free tissue transfer from anterior abdominal wall in breast reconstruction after mastectomy immediately at the same session and it`s uses and complication.

Surgical Anatomy Of The Breast

The breasts are the most superficial aspect of the anterior chest wall. The skin immediately over the breast tissue is characterized with a nipple areola complex (NAC), centrally located in young adults. The borders of the breast are the second intercostal space superiorly, the midaxillary line laterally,the inframammary line inferiorly, and the sternum medially. **(Bostwick J. 1983)**

The breast overlies the pectoralis major muscle and part of the serratus anterior, external oblique, and rectus abdominus. The NAC is generally located in the fourth and fifth intercostal spaces in males and prepubescent children. Many studies have reported that women's breasts are more frequently Asymmetric **(Smith DJ, et al. 1986) . (figure1)**

Fascia

The breast is enveloped by a pseudofascial plane: the superficial fascia of the anterior thoracic wall. This fascia splits into an anterior and a posterior layer with a space in between which facilitate mobility of breast over chest wall . (**Pearl RM, Johnson D. 1983)**

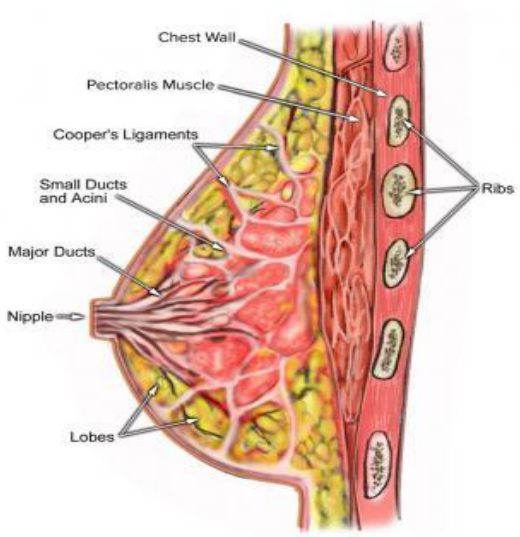

Figure (1): breast anatomy. (Agur, A.M.R,A.F. Dalley2009)

Raising Flaps

The identification of the appropriate plane is very important when creating flaps for breast-conservation surgery or mastectomy . A dissection in between the subdermal and subcutaneous system results in excision of all breast tissue and preservation of adequately perfused flaps . While raising flaps for the repair of the defect, It`s better that flaps raised between the subcutaneous tissue and the breast (**Pearl RM, Johnson D. 1983)**

Arterial Supply of the Breast

The blood supply to the breast originated from 3 systems, the axillary, internal mammary, and intercostals, which are more commonly known today as the lateral mammary, internal mammary, and intercostal branches. The predominant vascular supply of the breast is from the internal mammary, anterior

intercostal, lateral thoracic, and thoracoacromial. **(Michelle le Roux C,et al.2010) . Figure 2**

Lateral Mammary Artery

This artery supplies the lateral aspect of the breast; it is a direct branch of the axillary artery or one of its branches. The lateral mammary artery enters the breast over the axillary tail laterally at the level of the third or fourth rib This artery consistently contributes deep subcutaneous branches to the NAC and has been cited as contributing 30% of the blood flow to the breast This artery may frequently be ligated during an axillary node dissection. When planning an oncoplastic procedure in a patient who is undergoing an axillary node dissection, one has to avoid ligation of this artery **(Maliniac JW. 1943)**

Internal Mammary Artery

The internal mammary artery (internal thoracic artery) originates from the subclavian artery, traveling parallel and posterior to the lateral border of the sternum. This artery provides up to 60% of the blood supply to the breast, mostly the medial portion. It sends anterior and posterior perforating branches through the parasternal and intercostal spaces This is the main blood supply for medially based breast reduction. **(Palmer JH, Taylor GI. 1986)**

Thoracoacromial Artery

The pectoral branch of the thoracoacromial artery is a less-important blood supply source to the breast. It is located between the pectoralis major and minor muscles

Anastomsis in free flap in breast reconstruction in based mainly on internal mammary and thoracoacromial arteries **(Wueringer E, Tschabitscher M. 2003)**

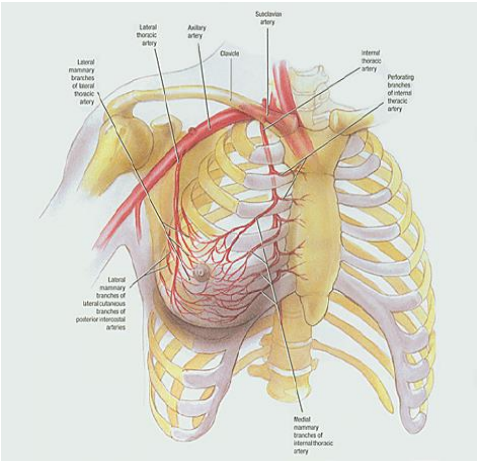

Figure (2): blood supply of the breast **(Clemente, C.2006)**

Venous Drainage of the Breast

Blood drains from the breast through a superficial and deep system. The medial segment of the breast was found to have a superficial drainage pattern, whereas the lateral venous drainage was found to run deeper **(Corduff N et, al. 2010).**

The dominant drainage route was found to be via the third and fourth intercostal spaces Superomedial drainage is via the second and third intercostal spaces, while lower pole drainage is