Autologous Fat Grafting in Post-mastectomy Breast Reconstruction: Core Reconstruction and Ancillary Procedure

Essay

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بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا

إلا ما علمتنا إنك أنت

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List of Abbreviations

Abb.	Full term
ADSCs	*Adipocyte derived stem cells*
AFG	*Autologous Fat Graft*
BCS	*Breast-conserving surgery*
BCT	*Breast conserving therapy*
DCIS	*Dutal carcinoma in situ*
DIEP	*Deep inferior epigastric perforator*
FCI	*Fasciocutaneous infragluteal*
GID SVF-1	*The Gid Group, Stromal Vascular Fraction*
IGAP	*Inferior gluteal artery perforator*
ISCT	*International Society for Cellular Therapy*
LA	*Local anaesthetic*
LDF	*Latissimus dorsi flap*
LPC	*Lower pole convexity*
LPL	*Lower pole line*
LR	*Lactated Ringer's solution*
M–Ni	*Manubrium notch to the center of the nipple*
MSCs	*Mesenchymal stem cells*
NAC	*Nipple areola complex*
NM	*Nipple meridian*
N–Ni	*d*
NSABP	*National Surgical Adjuvant Breast and Bowel Project*
PAP	*Profunda femoral artery perforator*
PMRT	*Post-mastectomy radiotherapy*
RT	*Radiotherapy*
SGAP	*Superior gluteal artery perforator*
SSM	*Skin Sparing Mastectomy*
TMG	*Transverse myocutaneous gracilis*
TRAM	*Transverse rectus abdominis myocutaneous flap*
U	*Upper pole*
UPL	Upper pole line
UPS	Upper pole slope

Abstract

On the contrary there is much evidence in literature concerning the positive effect of lipofilling after I stage and II stage breast reconstruction.

Many studies have documented the protective and therapeutic effect of the injected fat against the dangerous consequence of radiotherapy on tissues. Indeed, if performed during RT, lipotransfer is able to reduce the risk of capsular contracture, tissues ulceration and consequently of implant exposure as it provides a major thickness of the tissue above the implant. This is basically due to adipocytes and pre-adipocyte's role in tissue trophism and healing process.

More commonly lipofilling is used to uniform and fill some irregularities and/or scars of the reconstructed breast after the insertion of the definitive prosthesis to ameliorate the definitive shape of the reconstructed breast or to fill the nipple.
Keywords: *International Society for Cellular Therapy- Latissimus dorsi flap* **-** *Lactated Ringer's solution* **-** *Mesenchymal stem cells- Nipple areola complex* **-** *Nipple meridian*

INTRODUCTION

Breast reconstruction is a fascinating and complex field which combines reconstructive and aesthetic principles to provide the best results. The goal of breast reconstruction is to restore the breast shape and to improve a woman's psychological status after cancer treatment. Successful breast reconstruction requires understanding of the different reconstructive techniques and a thorough knowledge of breast aesthetics ***(Del Vecchio and Fichadia, 2012).***

The history of breast reconstruction has followed the history of breast cancer surgery. As the various techniques for cancer excision evolved over the past century, the reconstructive techniques had to likewise evolve ***(Del Vecchio and Fichadia, 2012).***

Halsted introduced the radical mastectomy and at the same time discouraged initial attempts at breast reconstruction because he believed it could hide local recurrence. **Ombredanne** is credited with using the pectoralis minor muscle flap to create a breast mound, whereas **Tansini** is the first to use the latissimus dorsi myocutaneous flap for breast reconstruction ***(Losken and Jurkiewicz, 2002).***

The use of prosthetic materials like polyvinyl sponges in the pre-antibiotic era, had many complications. The introduction of silicone gel-filled breast implants started a new era in breast reconstruction following World War II, and these was widely accepted after introduction of tissue expansion as a first step. It has many benefits, but needs long term follow up and associated with some complications ***(Radovan, 1982).***

At the early seventies, with a better understanding of the vascular supply to the skin, microvascular techniques were introduced and this resulted in re-introduction of the latissimus dorsi muscle flap for breast reconstruction which became a cornerstone flap for a short period of time as it had many disadvantages like inadequate bulk of the muscle, often necessitating an underlying implant to fully reconstruct the breast volume. In addition, the donor site scar left on the back was significant ***(Del Vecchio and Fichadia, 2012).***

In 1982, Carl Hartrampf introduced the transverse rectus abdominis myocutaneous flap "TRAM" flap which became one of the most popular methods of autologous breast reconstruction today but not without drawbacks. A major disadvantage of this flap is the sacrifice of the rectus muscle, which often results in significant donor site morbidity ***(Hartrampf et al., 1982).***

With further improvements of the microsurgical techniques, perforator flaps became popular in the 1990s with development of multiple flaps which depend on the skin and subcutaneous tissue to reconstruct the breast and keep the muscles in place to preserve its function. But this technique needs extensive experience in microvascular techniques and is