Dermal flap of the lower pole of the breast for immediate reconstruction with alloplastic materials

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Abstract

Introduction: Immediate reconstruction has achieved better cosmetic results in addition to decrease surgical time for reconstruction. In those patients with a ptotic and large breasts (moderate to severe hypertrophy), candidates for skin-reducing mastectomy, a lower dermal flap can be made to cover the tissue expander and/or definitive implant, being a viable and affordable alternative to the use of acellular dermal matrix. **Method:** In the present study we present the experience of immediate breast reconstruction with a lower dermal flap in skin-reducing mastectomies in patients with breast ptosis II and III, performed in 2015 in the FUCAM, A.C. Hospital. **Results:** The use of the inferior dermal flap has been shown to have adequate aesthetic results with the security of providing adequate coverage to the alloplastic material used for reconstruction. **Conclusions:** It is a safe, reproducible and favorable technique in patients candidates for skin reduction mastectomy, offering an alternative to the dermal matrices.

Key words: Breast reconstruction. Subcutaneous mastectomies. Macromastia. Breast cancer. Tissue expander

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Introduction

Breast cancer remains one of the main malignant neoplasms in women, occurring in up to one out of every 8 women¹. In 80% of cases it occurs sporadically, in 15%, it is familial, and in 5%, hereditary. There are various histological types, which will determine the prognosis and the treatment plan. Depending on patient conditions, histological type, disease progression and the treatment plan, immediate or late reconstruction will be able to be carried out².

With technological and research advances, performing more conservative surgeries is currently sought, using more reconstructive techniques with better esthetic results. By 1963, the modern era of breast reconstruction was initiated with the introduction of breast implants. Tissue expanders started being used in 1972 with Radovan. By 1977, the use of latissimus dorsi extended flap was described, and in 1982, the use of transverse rectus abdominis myocutaneous (TRAM) flap². The main final goals of breast reconstruction include being able to produce volume, shape, projection and symmetry, as well as reconstruction of the areola-nipple complex and achieving an improvement in patients' physical appearance, improving quality of life, avoiding the use of external prosthesis and improving self-esteem, among others^{2,3}. However, it remains a challenge, and with the advancement of years and technology, the results demand an improvement². For each case, patients who are candidates to reconstruction for partial mastectomy should be assessed, as well as those who are to undergo total or risk-reducing mastectomies in order to establish the most adequate technique for them³. In addition, whether the patient will be candidate to any co-adjuvant treatment should be taken into account, among which the most important to consider because of the sequels is postoperative radiotherapy, and evaluate the performance of late or immediate-late reconstruction³.

Immediate reconstruction can be carried out in two forms: Using alloplastic materials (in one or two surgical times with expander and implants) and by means of autologous pediculated flaps or free flaps⁴. When reconstruction is performed with alloplastic material it is highly important for it to remain entirely covered, with local muscle flaps being used for this purpose. However, adequately covering the alloplastic material is not always possible, and the use of dermal matrices is therefore an important element in these situations.

One of the inconveniences of these dermal matrices lies both in cost and availability and, hence, the present

work describes a covering technique using an inferior dermal flap for immediate breast reconstruction with tissue expander.

Material and methodology

The described technique was used in patients of the Institute of Breast Diseases of the Breast Cancer Foundation (FUCAM, A.C. – *Fundación del Cáncer de Mama, A.C.*), diagnosed with early stage breast carcinoma with grade II or III ptosis who were candidates to skin-reducing mastectomy, within the time period from January to December 2015. A total of 21 patients underwent reconstruction with this technique and all patients had a follow-up of at least 12 months after the initial surgical procedure.

Surgical technique

The steps to develop the surgical technique are next described. A skin-reducing mastectomy must be planned with markings performed using the Wise pattern (Fig. 1); subsequently, the inferior flap is de-epithelized to create the inferior dermal flap (Fig. 2). Standard mastectomy is then performed leaving the previously marked cutaneous flaps (Fig. 3). The major pectoralis muscle is then lifted from the inferior incision, the minor pectoralis muscle is laterally and partially lifted and serratus muscles are dissected (Fig. 4). Once the muscle pouch is performed, the tissue expander is introduced and covered with the muscles, with the closure of the pouch being made with absorbable suture to the extent possible (Fig. 5). Subsequently, the expander or definitive implant inferior pole is covered by bringing the dermal flap upper border together with the major pectoralis inferior border, with release of the flap lateral portion being possible in order to cover the muscle breach and the alloplastic material lateral portion that may have been left exposed with the inferior dermal flap, fixing it with absorbable suture, this way achieving a complete and safe covering of the prosthesis in order to reduce the risk of exposure (Fig. 6). Subsequently, a drain is placed and the cutaneous flaps are stitched with absorbable suture, with an inverted-T closure being left (Fig. 7).

Discussion

Breast cancer is one of the most common oncologic pathologies in our country. Post-mastectomy breast reconstruction is a widely performed procedure and is

Figura 1. Preoperative markings with the Wise pattern.

Figura 3. Mastectomy and dermal flap exposure.

Figura 2. . Inferior dermal flap de-epithelization.

Figura 4. Muscle flaps lifting.

Figura 5. Expander introduction in the muscle pouch.

fundamental within reconstructive surgery. For breast reconstruction to be performed, there are different procedures, including reconstruction with autologous tissues (pediculated flaps or microsurgical flaps), use of alloplastic materials (expanders and implants) or a combination thereof (autologous flaps with the use of expanders and implants). In the case of breast reconstruction with alloplastic materials, in many cases the use of dermal matrices is necessary in order to favor their protection and avoid their exposure in case of complications.

Dermal matrix is an alternative for alloplastic material to be covered. The first dermal matrix product was Alloderm®, obtained from human cadaveric matrix and available since 1994; the first report on its use was made by Breuing and Waring in 2005^{5,6}. After this,

different dermal matrix products have been manufactured, some human-derived and others with porcine material. The use of biological matrices has gained popularity mainly in reconstructions with the use of expanders, since they provide cover and support

Figura 6. Expander covering with dermal flap.

Figura 7. Cutaneous flaps closure with an inverted-T pattern

mainly to the breast inferior pole when adequate tissues (skin and/or muscle) are not available in order for alloplastic materials (expanders and implants) to be covered, it helps to define the inframammary ridge, it enables greater intraoperative expansion and, in addition, it reduces the tension at the moment of performing future expansions, it work as a support that favors vascularization for new tissue formation, and a lower rate of capsular contracture has even been reported in patients undergoing postsurgical radiotherapy⁷⁻¹⁶.

Complications that have been found with the use of dermal matrices include seromas, infection, wound dehiscence and matrix or alloplastic materials exposure. One of the main disadvantages of their use is the cost,

but avoiding their use should be also considered in patients with cutaneous flaps inadequate vascularization, since this can cause their inadequate integration⁸.

There are cases where there are unfavorable conditions for reconstruction solely with alloplastic materials and where using a dermal matrix is not feasible. In these cases, breast reconstruction can be performed using an inferior dermal flap, which provides an adequate covering for the alloplastic materials that are to be used, either expanders or implants. There are reports on the use of dermal grafts as covering, which can be taken from the contralateral breast in case reduction simultaneous to mastectomy is required, or from the abdominal region¹⁷. In 1990, Bostwick described in skin-reduction mastectomies an immediate reconstruction in a single procedure placing a definitive implant and partially covering it with major pectoralis muscle and with a de-epithelized dermal flap. Subsequently, modifications to the technique have been made by Hammond, Losken, Nava and Ladizinsky, mainly using tissue expanders¹⁸. The main indication for the performance of an inferior dermal flap is in those patients with ptosis or macromastia who are to undergo a mastectomy and are candidates to skin-preserving mastectomy, and in whom the muscle pouch will not be sufficient to cover the alloplastic materials¹⁹⁻²³ (Fig. 8). Complications that have been reported with this technique include seromas, hematoma and infection¹⁸.

The use of a dermal flap enables the covering of alloplastic material with the advantages that it doesn't increase the cost and that it can be used in patients with grade II or III mammary ptosis. In the cases of our Institution, of total operated patients, a minimum follow-up of 12 months was obtained with monthly assessment, where 4 patients experienced suffering of the cutaneous flap with partial necrosis evolution in one of them, and 3 patients experienced seroma. All cases were conservatively treated.

Conclusions

In patients with breast hypertrophy who are candidates to skin-reducing mastectomy, the post-mastectomy breast reconstruction technique using dermal flap is a viable and reproducible option when alloplastic materials need to be protected and dermal matrices are not available. It shows good results on the short and long term, with a low rate of complications that can be conservatively managed.

Figura 8. Dermal flap of the lower pole of the breast for immediate reconstruction with alloplastic materials

Conflict of interests

The authors declare not having any conflicts of interests.

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