



Breast reconstruction in the era of evidence-based medicine

The breasts in female individuals have a critical impact on self-image and affect how women are perceived by others in society (1). Beyond the physiologic function, breasts are associated with sexuality, motherhood, and femininity (1). As it is usually visible and noticeable on a daily basis, the breasts may represent one of the most dominant sexual traits of women. In this setting, the breasts contribute to self-perception and subjective body image (1).

Although surgical oncology, adjuvant therapies, and psychiatric/psychologic therapies play a major role, breast cancer should be approached in a multidisciplinary fashion. Therefore, breast reconstruction also forms an integral constituent of management (2). There are several available options for reconstruction that offer outstanding results after mastectomy from an aesthetic standpoint (2-4). We own the remarkable outcomes presented in several studies to existing technological advancements that enable breast reconstruction and lymphatic surgery to evolve into their current form (2).

The implementation of breast reconstruction was extremely problematic with the introduction of radical mastectomy by Halsted in 1882 (5). The outworn belief that contributed the most to this problem was that *“when a defect is covered by normal skin or reconstructive procedures, not only the underlying recurrence is concealed for an indefinite period, but also the transferred skin with its lymphatic channels brought from a distance aid in the dissemination of the disease”* (6,7). Despite the optimal performance of these mutilating procedures, it was well known this technique generated devastating psychological consequences in female patients (8). Women would let the natural history of the disease progress to avoid ablative procedures and preserve the breasts (7,9).

Plastic surgery and innovation go hand-in-hand (10). Initial attempts to restore the volume and breasts described the use of a lipoma to restore volume by Czerny [1895] or a series of autologous fat grafting procedures by Verebely [1914] and Bartlett [1917] (7,9,11). We later transitioned to breast-sharing techniques, which were highly disregarded due to an important recurrence rate; and rotating thoracoabdominal skin flap, which offered unpleasant aesthetic results. After almost a century of evolution from the first attempt at breast reconstruction, we have refined this procedure with tissue expanders, implants, and regional and free autologous tissue to provide better results, techniques that were introduced during the last quarter of the 20th century (7).

Akin to breast augmentation and reduction, breast reconstruction has advanced progressively over the years (10). Presently, breast reconstruction is one of the hard-pressed aspects of reconstructive surgery, and there are plentiful approaches to accomplish this (10). Furthermore, the rise in contralateral risk-reducing mastectomy and the evolution of mastectomy to nipple-sparing procedures in the past twenty years have been followed by a noteworthy growth of implant-based breast reconstruction (10). In the U.S. four in five patients who undergo reconstruction have implant-based breast reconstruction (3). Of course, part of the increased use of this modality is attributed to the resurgence of autologous fat grafting and the incorporation of acellular dermal matrix products to control and stabilize the prostheses (12). With the introduction of refined microsurgical and supermicrosurgical techniques and superlative collective knowledge of perforator anatomy, autologous breast reconstruction, as well as the prevention and treatment of lymphedema, have enjoyed a parallel evolution compared to implant-based (13).

Regarding breast reconstruction, plastic surgeons must follow what we believe are fundamentals for the best treatment. First, we need to make sure breast reconstruction does not significantly increase morbidity. We, as plastic surgeons and counselors, need to provide the best information and advice so the patients and physicians, as a team, can balance complications and what could mean improvement in quality-of-life in the setting of evidence-based medicine. Additionally, optimal and timely surgical management is regarded as a priority as some patients require adjuvant radiotherapy and chemotherapy in a prompt fashion.

This series of *Annals of Translational Medicine* presents a collection of reviews and original articles on the current state-of-the-art in breast reconstruction. We are extremely thankful to all the authors for their irreplaceable contribution to this series. Certainly, we assembled the most experienced scientists, healthcare providers, and leaders in the field of reconstruction to produce a compendium of the most up-to-date evidence-based medical literature. We expect optimistically you find these articles to be enlightening, didactic, and motivating.

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