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INCISIONS & INSIGHTS

Natural Alloplastic Breast Reconstruction: How to get to the Shangri-La

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Introduction

THE NUMBER OF WOMEN pursuing postmastectomy breast reconstruction continue to rise.[1] Many women with unilateral cancer are opting for contralateral prophylactic mastectomies. With this increase in bilateral procedures we are seeing a rise in implant based reconstruction as the preferred choice, especially in younger patients. These patients feel alloplastic reconstruction offers them a quicker recovery that better fits their active lifestyle.[2]

Advanced techniques including nipple sparing mastectomies, the use of acellular dermal matrices, the prepectoral pocket and autologous fat transfer have transformed alloplastic breast reconstruction over the last decade. This evolution has allowed us to create the most aesthetic alloplastic reconstructions yet, attracting a new population of patients to implant based reconstruction. In my opinion, our breast tissue expander and implant portfolio is now more expansive than ever, offering us the various shapes, sizes, projections and cohesivities we need to provide patients with their desired outcome. The current environment and the tools we have in our armamentarium have set us up for success.

We all strive to provide our patients with the most natural and aesthetic reconstruction. But as plastic surgeons, sometimes what we would consider idyllic is not necessarily what our patient is looking for. Overall 67% to 85% of women are satisfied with their breast reconstruction, however we should strive for even higher levels of satisfaction.[3] I believe that we can better evaluate our patient's expectations at the time of the initial consultation to create a more satisfied patient.

We know from experience that some of our best outcomes leave patients unsatisfied, and some of our poorest reconstructions are the happiest, most grateful patients. Breast reconstruction is not a one-size-fits-all process. By better educating our patients and engaging in a two sided discussion, we can often uncover her aesthetic goals. Almost all of my patients state that they "want to look natural." But in reality, some of them desire an augmented look, where others strive to have the ptotic breasts that they had before their mastectomy. By evaluating these goals with our patients, we are able to better choose both the technique and device to deliver a desired result. We should also involve the patient in a discussion of her particular chest wall anatomy and breast footprint, and point out the limitations of breast reconstruction in correcting those. The education of our patients and the setting of realistic expectations are imperative to providing a reconstruction that both the surgeon and patient are satisfied with.

Pearls to Achieving a Natural Look:

Mastectomy Pattern

Choose a mastectomy incision such as a Wise Pattern reduction, which cones the skin envelope to create a natural shape.

Tissue Expander Selection

MENTOR® ARTOURA™ Breast Tissue Expander with Smooth Surface maximizes lower pole expansion and creates a natural breast shape.

Choose a narrower expander than the ideal base width to control the footprint and achieve ideal medial placement of the final breast implant.

Implant Selection

An implant that is slightly wider than the tissue expander combined with medial capsulotomies will optimize the medial placement of the implant and create natural cleavage.

Select an implant such as MENTOR® MemoryGel® XTRA Breast Implants to achieve optimal projection and minimize rippling. Choosing an implant of at least 100cc greater volume than the tissue expander fill volume will also minimize rippling.

Strategic Capsulotomies

Perform concentric capsulotomies with radial scoring to the lower third of the breast to further emphasize the shape and ptosis of a natural breast.

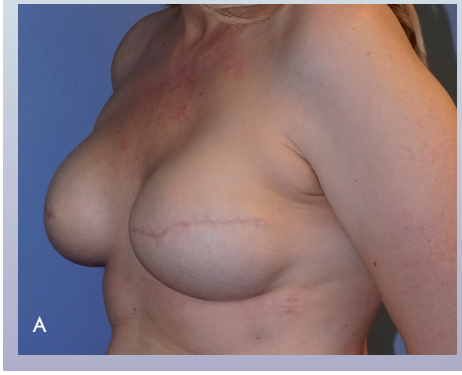
Fat Grafting

Perform fat grafting at the time of exchange to the medial and superior capsule to smooth the transition from the chest wall to the implant.

Avoid the re-excision of central scars which flatten the anterior breast. Performing fat grafting to this area will further enhance the conical shape and projection of the reconstructed breast.

Mastectomy Pattern

The mastectomy incisions will directly affect the final shape of an alloplastic breast reconstruction. A standard skin sparing mastectomy with a periareolar excision removes the anterior most skin and places a scar centrally on the breast mound. To further impair shape, exchange procedures for final implants are often performed though the same approach with further excision of the mastectomy scar. This incision pattern tightens the skin envelope on what should be the most projecting part of the breast. The reconstructed breast assumes a flattened appearance that is unnatural *[Figure1]*.



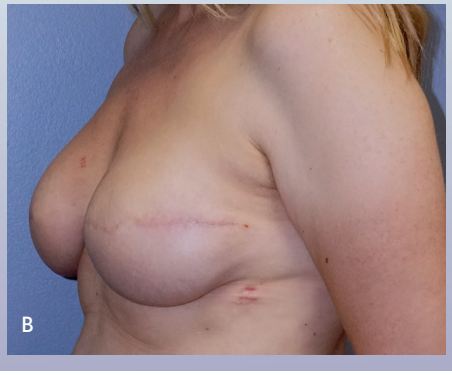


Figure 1

A) A central mastectomy scar creates a flattened appearance to the anterior breast.

B) Central fat grafting improves the conical appearance of breast in profile.

When a large breasted patient desires a smaller reconstruction, a reduction pattern mastectomy is an ideal way to shape and cone the breast skin envelope. Communication with the breast surgeon is imperative to plan the operative sequence and ensure appropriate tissue handling throughout the case. The patient is marked with a Wise Pattern reduction technique. The ideal nipple position is marked and horizontal and vertical excision patterns are created. *[Figure 2]*. I perform deepithelialization of the inferior flap prior to the mastectomy and use this autoderm as coverage for the lower pole of my implant. The oncologic surgeon performs the mastectomy through a horizontal full thickness incision inferior to the nipple areolar complex at the superior edge of the autoderm. Once the mastectomy flaps have been raised and the breast is removed, the nipple is excised via a small central triangle. This limits the amount of tissue injury to the flaps during the mastectomy and prevents delayed healing of the t-point. Following the oncologic portion of the case, the autoderm is secured with PDS Suture to the inferior and inferiorlateral border of the pectoralis muscle for complete coverage of the tissue expander in a submuscular position *[Figure 3]*. Alternatively this technique may be used in the prepectoral plane, and the autoderm is sutured to acellular dermal matrix which covers the upper pole *[Figure 4]*.

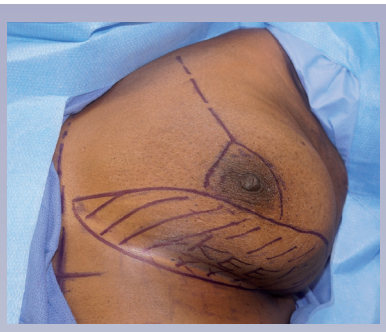


Figure 2

Preoperative markings demonstrate a reduction pattern mastectomy. The lower flap is marked "KEEP," and is deepithelialized prior to the mastectomy. The triangle with the nipple areolar complex is excised separately after the breast has been removed to minimize tissue trauma to the t-point.

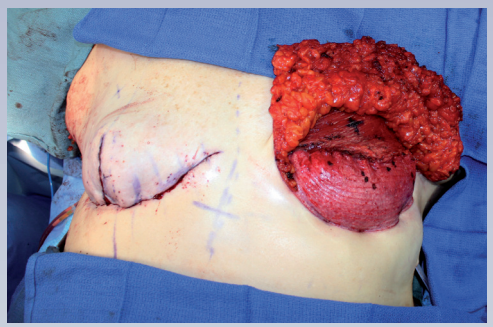


Figure 3

The inferior flap has been deepithelialized and used as autoderm to cover the tissue expander. It is sewn to the inferior and inferior lateral border of the pectoralis major muscle in the submuscular plane.

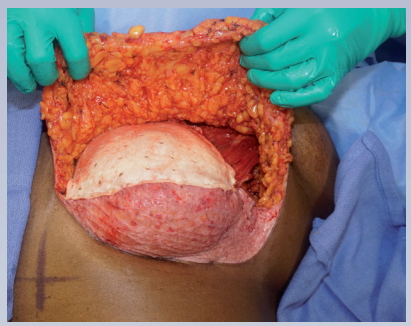


Figure 4

The inferior flap has been deepithelialized and used as autoderm to cover the tissue expander. It is sutured to a sheet of acellular dermal matrix for upper pole tissue expander coverage in the prepectoral plane.

For patients who have some redundant skin, but not enough to allow for a reduction pattern mastectomy, a low curvilinear incision improves the final shape of the reconstruction. Excess skin is excised from the lower mastectomy flap which prevents central flattening of the breasts *[Figure 5]*.

In all mastectomy patterns, a few key tacking sutures that purposely dimple the dermis of the lower pole flap help create a crisp inframammary fold. Using an absorbable Ethicon PDS® II (polydioxanone) Suture allows the fold to scar down, and the small indentations subside with time *[Figure 6]*. The demarcation of the inframammary fold is imperative to reconstructing a breast that has a more natural ptotic appearance and is not just a mound on the chest. Even without significant ptosis of the lower pole of a reconstruction, a well delineated inframammary fold gives the illusion of such.

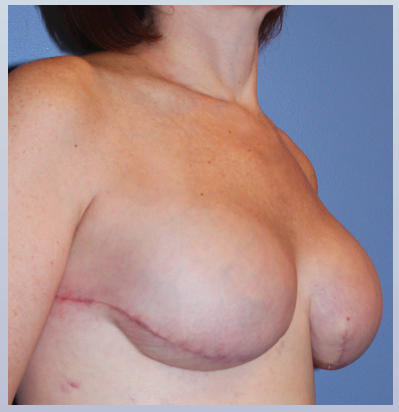


Figure 5

An inferiorly placed curvilinear scar allows for a more natural central breast projection and contour.

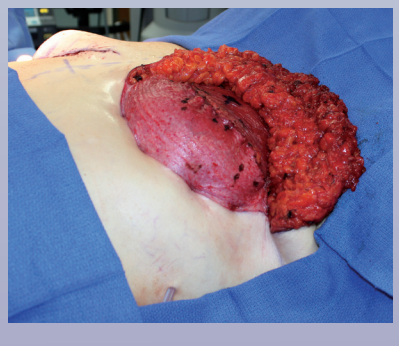


Figure 6

Tacking sutures that intentionally dimple the dermis of the lower mastectomy flap help create a crisp inframammary fold.

Tissue Expander Selection

In my opinion, the natural shape of the MENTOR® ARTOURA™ Breast Tissue Expander with Smooth Surface has been ideal for my patients for creating a natural shaped breast. The shape of the device lends itself well to a very anatomic reconstruction, beginning with the expansion process. In my experience, the new smooth device is less rigid, and is better tolerated by my patients. I deliberately choose a breast tissue expander that is slightly narrower than the anticipated final implant base width. The ARTOURA™ Breast Tissue Expander with Smooth Surface is a round device, and in a high breasted patient, the superior rein of the device creates a very prominent upper pole. In a tissue expander of appropriate base width, this is often too tall and with complete fill, creates an unnatural upper pole that the patients are not satisfied with. By choosing a smaller width and also under filling the expander, I am able to minimize the upper pole prominence. When this is exchanged for a round permanent implant of equal or larger width and volume, the silicone in the upper pole assumes a more natural and pleasing appearance.

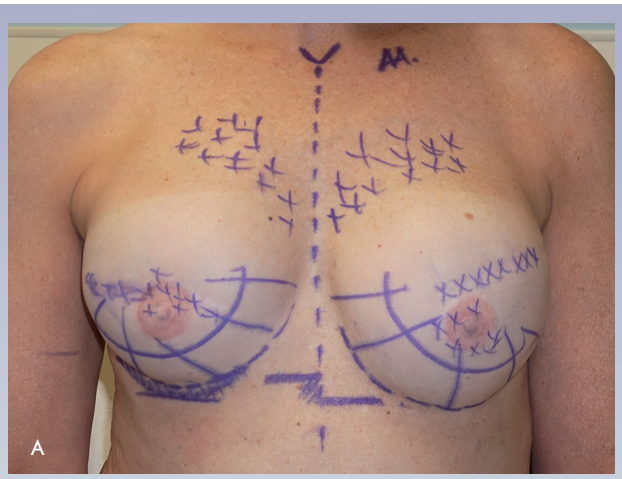
Implant Selection

Final implants are chosen based on the ideal base width for the patient. This typically means that I choose a final implant that is at least 1cm wider than the tissue expander that is in place. This allows me to perform medial capsulotomies and place a wider implant while maintaining the integrity and control of my lateral capsule. I also choose a permanent implant of at least 100cc greater volume than the ARTOURA™ Breast Tissue Expander with Smooth Surface. This allows for the final implant to sit securely within the implant pocket and minimizes the appearance of rippling after the second stage. Choosing a cohesive implant such as MENTOR® MemoryGel® XTRA Breast Implant also minimizes the appearance of rippling while providing a soft and natural feeling implant reconstruction.

Strategic Capsulotomies

Capsulotomies are imperative to a successful implant exchange procedure. The shape of the implant capsule complements the final implant, creating a natural appearing breast when performed synchronously. Superior and medial capsulotomies are almost always necessary to allow medial positioning of the final implant of a wider base width. I also routinely perform capsulotomies of the lower pole of the breast with concentric release and traversed radial scoring, creating a crosshatched

pattern on the lower third of the breast. This allows for controlled expansion of the lower pole in both the medial-lateral and anterior-posterior dimension, creating the appearance of natural ptosis *[Figure 7]*.



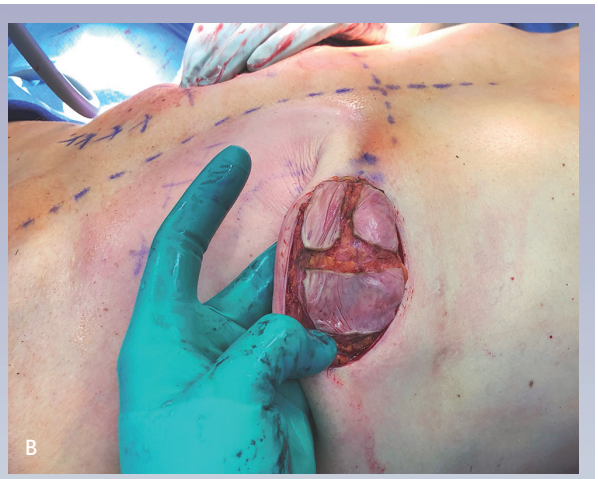


Figure 7

A) Preoperative markings with solid lines demonstrating concentric and radial capsulotomies of the lower and medial breast.

B) Intraoperative view of capsulotomies demonstrating expansion in the medial-lateral and anterior-posterior dimension.

Fat Grafting

Fat grafting has revolutionized our ability mold the final breast shape and create a natural appearing alloplastic reconstruction. I routinely perform fat grafting to the upper pole at the time of implant exchange to create a more natural slope and transition from the chest wall to the breast mound. I also inject fat to the central mastectomy flap to cone the reconstructed breast. This creates a projection that mimics the contour of a natural breast.

Conclusion

With the proper techniques and the MENTOR® Breast Implant Portfolio, it is possible to provide our patients with a natural appearing alloplastic reconstruction.

Case Histories

CASE 1:

Large breasted patient who desires smaller breasts and a natural ptotic shape

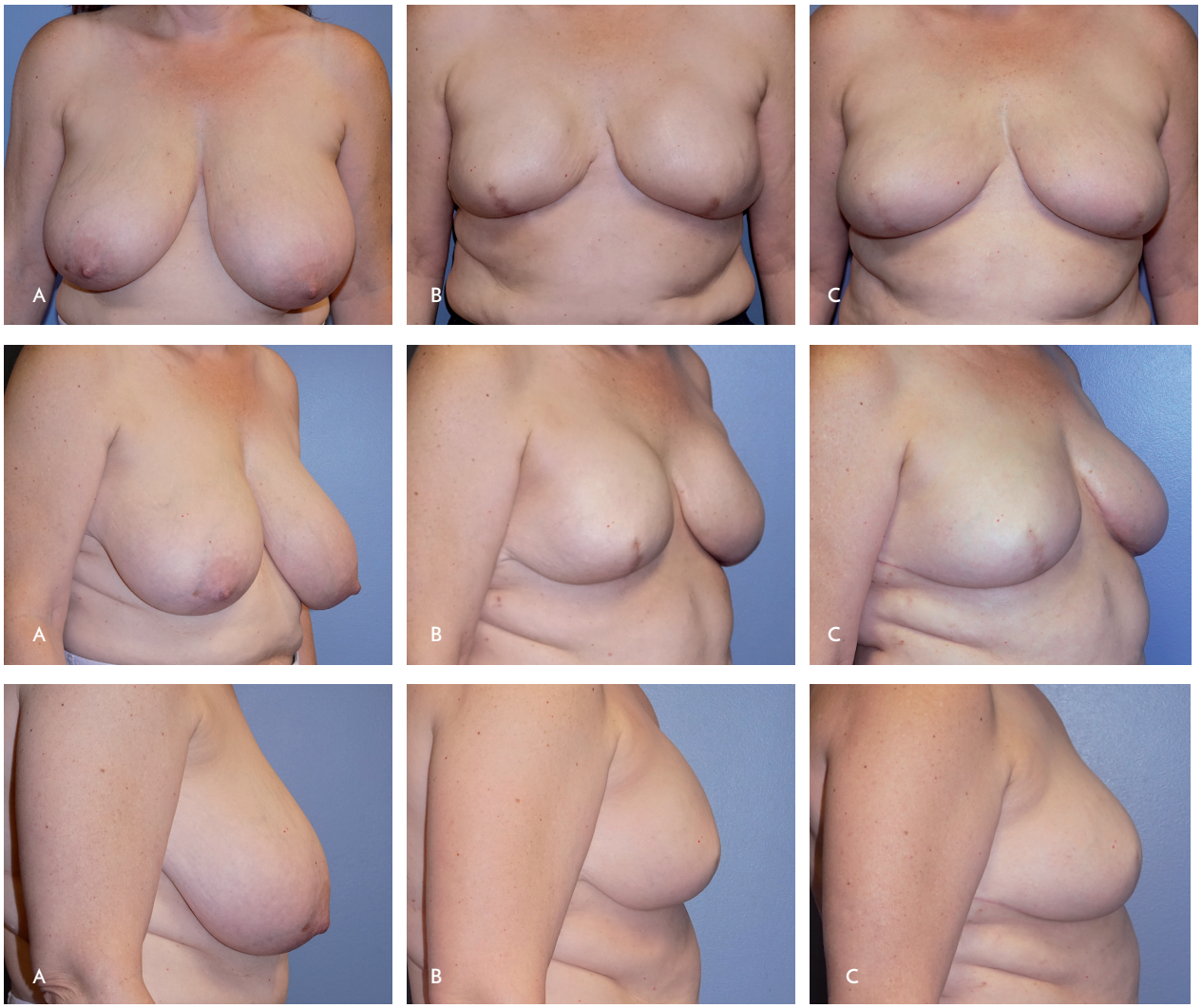


Figure 8

A) Preoperative

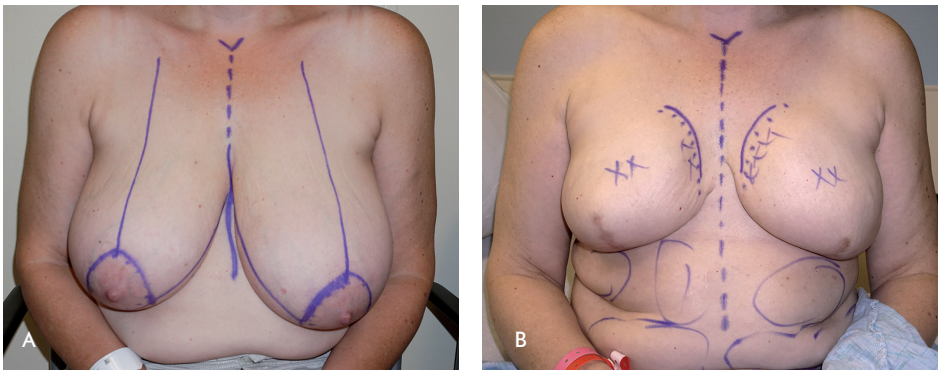
B) Post reduction pattern mastectomies with autoderm and subpectoral 475 cc MENTOR® ARTOURA™ Breast Tissue Expanders.

C) Following exchange procedure with capsulotomies and fat grafting and the placement of 545cc Smooth Round Moderate Plus MENTOR® MemoryGel® XTRA Breast Implants.

Figure 9

A) Markings for bilateral reduction pattern mastectomies

B) Markings for implant exchange procedures with solid lines at location of capsulotomies, x's representing sites for fat grafting and circled areas demonstrated location of fat harvest.



Case Histories

CASE 2:

This patient desired implant reconstruction to resemble her native breasts.

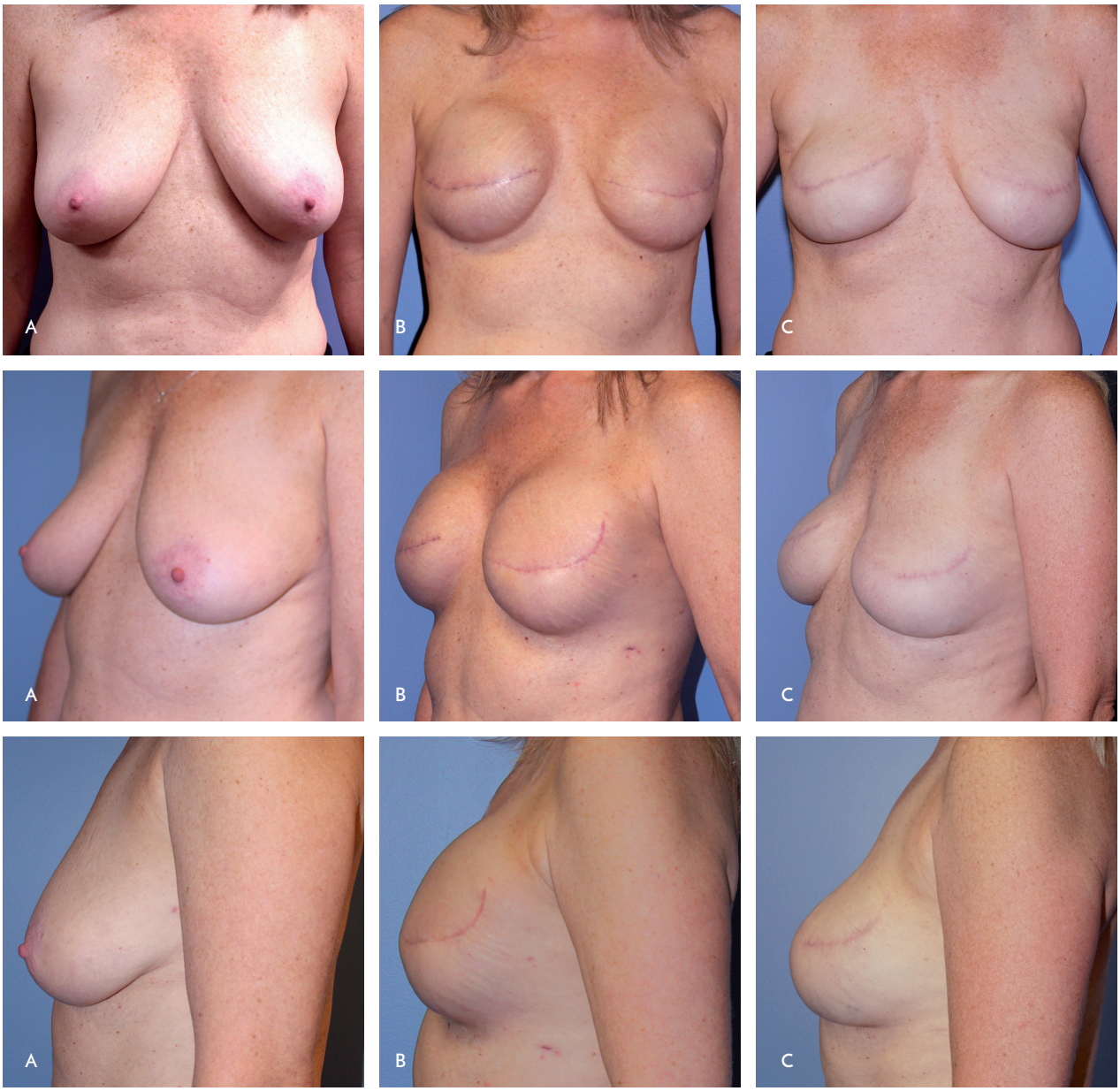


Figure 10

A) Preoperative view

B) Following bilateral mastectomies with the placement of 475cc MENTOR® ARTOURA™ Breast Tissue Expanders.

C) Following exchange procedure with extensive lower pole capsulotomies and the placement of 500cc Smooth Round High Profile MENTOR® MemoryGel® Breast Implants.

REFERENCES

1. Miller AM, Steiner CA, Barrett ML, Fingar KR, Elixhauser A. Breast Reconstruction Surgery for Mastectomy in Hospital Inpatient and Ambulatory Settings, 2009-2014: Statistical Brief #228. Healthcare Cost and Utilization Project (HCUP) Statistical Briefs. Rockville (MD), 2017.

2. H Panchal, E Matros. Current Trends in Postmastectomy Breast Reconstruction. Plast Reconstr Surg 140:7S, 2017.

3. R Jeevan. Surgical Determinants of Patient-Reported Outcomes following Postmatectomy Reconstruction in Women with Breast Cancer. Plast Reconstr Surg 139: 1036e, 2017.

IMPORTANT SAFETY INFORMATION:

MENTOR® MemoryGel® Breast Implants are indicated for breast augmentation in women at least 22 years old or for breast reconstruction. Breast implant surgery should not be performed in women with active infection anywhere in their body with existing cancer or pre-cancer of their breast who have not received adequate treatment for those conditions or are pregnant or nursing.

Breast implants are not lifetime devices and breast implantation is not necessarily a one-time surgery. The most common complications with the MemoryGel® Breast Implants include reoperation, capsular contracture, asymmetry, and breast pain. A lower risk of complication is rupture. The health consequences of a ruptured silicone gel-filled breast implant have not been fully established. MRI screenings are recommended three years after initial implant surgery and then every two years after to detect silent rupture.

Patients should receive a copy of Important Information for Augmentation Patients about MENTOR® MemoryGel® Silicone Gel-Filled Breast Implants or Important Information for Reconstruction Patients about MENTOR® MemoryGel® Silicone Gel-Filled Breast Implants. Your patient needs to read and understand the information regarding the risks and benefits of breast implants, with an opportunity to consult with you prior to deciding on surgery.

MENTOR® ARTOURA™ Breast Tissue Expanders are used for breast reconstruction following mastectomy, correction of an underdeveloped breast, scar revision and tissue defect procedures. The expander is intended for temporary subcutaneous or submuscular implantation and is not intended for use beyond six months. ARTOURA™ Breast Tissue Expanders are devices that contain magnetic injection domes and are NOT MRI compatible. Do not use the ARTOURA™ Breast Tissue Expanders in patients where an MRI may be needed. DO NOT use the ARTOURA™ Breast Tissue Expanders in patients that have a previously implanted device that could be affected by a magnetic field. The device could be moved by the MRI causing pain or displacement, potentially resulting in a revision surgery. The incidence of extrusion of the expander has been shown to increase when the expander has been placed in injured areas: scarred, heavily irradiated or burned tissue, crushed bone areas or where severe surgical reduction of the area has previously been performed.

Your patient needs to be informed and understand the risks and benefits of MENTOR® Tissue Expanders, and provided with an opportunity to consult with you prior to deciding on surgery.

For detailed indications, contraindications, warning and precautions associated with the use of all MENTOR® Implantable Devices, please refer to the Instructions for Use (IFU) provided with each product, or review the Important Safety Information provided at www.mentorwwllc.com.

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