

Indications and Controversies for Implant-Only Based Breast Reconstruction

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KEYWORDS

- Alloplastic breast reconstruction • Direct to implant breast reconstruction
- Two stage breast reconstruction

KEY POINTS

- Changing demographics, new technologies and an increase in bilateral mastectomy rates have resulted in an increase in the percentage of women undergoing alloplastic breast reconstruction.
- In the immediate setting, choices in alloplastic reconstruction are direct to implant versus two stage with expander, and pre pectoral versus sub pectoral.
- In the delayed setting, a two stage approach is required although fat transfer and external expansion may be changing that paradigm.

INTRODUCTION

Today's demographic of the breast reconstruction patient is younger, often prophylactic or at an early stage of diagnosis, and is more likely to be bilateral.¹ Many patients have had prior breast augmentation, are comfortable with the idea of breast implants, and like the look of an augmented breast. These and other patients present seeking a "less invasive" solution with an easier recovery and quicker return to daily activities and athletics.

These factors combined with an increase in breast implant options, internal support matrices, fat transfer, technologies for intra-operative real-time assessment of tissue perfusion, and an increasing appreciation for morbidity associated with autogenous procedures have resulted in an increase in the percentage of women seeking alloplastic breast reconstruction.

In the last several decades, significant advancements have been made in the surgical management of breast cancer. Nipple-sparing mastectomies and skin-sparing mastectomies followed by immediate alloplastic breast reconstruction permit optimization of the soft tissue dynamics and have emerged as oncologically safe treatment options yielding excellent cosmetic results.² Autologous fat grafting performed at the time of mastectomy and at a second or even third stage enhances the soft tissue environment around the devices, creating an environment more consistent with aesthetic breast surgery. These techniques minimize breast deformity and optimize aesthetic outcome through preservation of the native skin envelope and restoration of a naturally looking breast mound using tissue similar in color, texture, and sensation.

It is rare today for implant reconstruction to be performed in isolation. Direct to implant (DTI)

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procedures under the pectoral muscle require some internal matrix to support the device under the muscle. These supporting materials effectively lengthen the muscle, simplifying device placement and helping to ensure that the implant is sited properly at the inframammary fold (IMF).^{3,4} If a prepectoral position is selected, most surgeons use a type of matrix to cover the implant, although some surgeons advocate an implant-only approach not unlike the subcutaneous mastectomy and immediate reconstructions seen in the 1960s and 1970s. Ultimately, the quality of the soft tissues determines whether DTI reconstruction is advisable.

In the setting of a 2-stage tissue expander and implant reconstruction, the inferior border of the pectoralis major is released and a partially filled expander is placed in the submuscular pocket, often with inferior pole coverage provided by a thin serratus muscle and fascia flap. As such, sufficient coverage of the prosthesis is ensured, and stress to the thin and vulnerable mastectomy skin flap is minimized. Postoperatively, serial expansions are followed by exchange of expander to implant once the desired breast size is achieved. As with DTI reconstruction, many surgeons advocate for the addition of an internal support structure in the lower pole. This matrix can be either biologic or synthetic. Utilization of a lower pole support structure has many advantages, including minimizing muscle dissection, reinforcement of the lateral and inferior mammary folds, stabilizing the pectoral muscle over the expander to prevent window shading, improving the soft tissue environment around the expander, and finally, allowing for more rapid early expansion.⁵

The authors perform implant-only reconstruction without the use of internal matrices in a very few selected patients. This article describes these circumstances, reviewing the authors' surgical technique. The authors also discuss their preferred approach for implant reconstruction with the use of adjunctive materials, including acellular dermal matrices and fat.

INDICATIONS FOR IMPLANT ONLY–BASED BREAST RECONSTRUCTION

Immediate Two-Stage Tissue Expander and Implant Reconstruction

Most alloplastic reconstructions continue to be performed in 2 stages, with a tissue expander followed by an implant. Traditional techniques involve placement of the expander in a total submusculofascial pocket using the pectoral muscle,

the serratus muscle, and even the superior fascia of the rectus abdominis.⁶

Delayed Two-Stage Tissue Expander and Implant Reconstruction

The delayed 2-stage tissue expander and implant reconstruction is the most common indication for use of a device without the addition of a support matrix or additional soft tissue cover. The pectoral muscle can be elevated and divided above the inframammary fold in a manner similar to a subpectoral breast augmentation. In patients with adequate thickness to the lower mastectomy flap, the expander and eventual implant will sit in a subcutaneous position in the lower portion of the breast. Optimization of soft tissue cover can be refined at a later date with the use of injected fat.

Direct to Implant Reconstruction with Autoderm

Improved techniques in the performance of skin- and nipple-sparing mastectomies have allowed surgeons to expand their indications for DTI reconstruction. Patients with larger or ptotic breasts can undergo reconstruction with direct implant insertion and coverage with deepithelialized autogenous flaps, often referred to as "autoderm." New advances in intraoperative assessment of tissue perfusion using fluorescence imaging have made the mastectomies as well as the dermal flaps more predictable. This approach obviates an additional support matrix minimizing surgical time, costs, and risks.⁷

Fat-Assisted "Delayed" Direct Implant Reconstruction

There is an evolving trend toward alloplastic reconstruction with implants placed above the pectoral muscle (prepectoral). A common problem is inadequate soft tissue coverage if the pectoral muscle is not used. At present, this has been managed with the addition of dermal matrices to cover the prepectoral implant and autologous fat grafting. There has also been an expansion of use and indications for large-volume fat grafting to the breast.⁸ Combining these concepts, patients may undergo fat grafting of the muscle and subcutaneous tissues at the time of the mastectomy followed by further fat grafting at a second stage. During the second stage, an implant can then be placed above (or below) the muscle, essentially simulating a subglandular (or subpectoral) breast augmentation.

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