Journal of Plastic, Reconstructive & Aesthetic Surgery (2018) 000, 1–6

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

Should planned/desired pregnancy be considered an absolute contraindication to breast reconstruction with free abdominal Flaps? A retrospective case series and systematic review

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Received 28 January 2018; accepted 28 May 2018
Available online xxx

KEYWORDS
Plastic surgery;
breast reconstruction;
microsurgery;
pregnancy;
abdominal flap;
TRAM flap

Summary *Background:* Autologous breast reconstruction is considered by many to be the gold standard reconstructive modality following mastectomy. Despite the advantages of autologous reconstruction, however, surgeons have been cautious in recommending this approach to patients who desire to become pregnant postoperatively because of concerns related to abdominal wall morbidity. While intuitive, this approach does not appear to be based on robust data. Hence, the authors examined the clinical outcome in patients who became pregnant following autologous breast reconstruction.
Methods: Patients who underwent autologous breast reconstruction with free abdominal flaps that required an incision in the anterior rectus sheath were identified. Of them, patients who became pregnant post reconstruction were included for subsequent analysis. Of particular interest were any peripartal and postpartal complications that could be attributed to the preceding abdominal flap harvest. Additionally, a systematic review of the literature was performed.
Results: We identified five patients who met inclusion criteria. All five patients underwent bilateral breast reconstruction with free muscle-sparing transverse rectus abdominis musculocutaneous (MS-TRAM) flaps. None of the patients had any preexisting abdominal wall morbidity. All five patients proceeded to full-term pregnancy and successfully delivered newborns, four of which were delivered by normal vaginal delivery and one by cesarean section. No abdominal wall complications were noted during pregnancy, delivery, or postpartum.

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https://doi.org/10.1016/j.bjps.2018.05.032

Please cite this article as: S. Moshrefi et al., Should planned/desired pregnancy be considered an absolute contraindication to breast reconstruction with free abdominal Flaps? A retrospective case series and systematic review, Journal of Plastic, Reconstructive & Aesthetic Surgery (2018), https://doi.org/10.1016/j.bjps.2018.05.032

Conclusion: Contemporary data do not support the notion that breast reconstruction with free abdominal flaps is contraindicated in the setting of desired or planned pregnancy.

Introduction

Breast reconstruction has become an integral component of comprehensive breast cancer care. Significant advancements have been made to improve not only clinical but also aesthetic outcomes in postmastectomy reconstruction.[1] Many consider autologous reconstruction to be the gold standard, with the abdomen representing the ideal donor site because of the degree of tissue availability and quality.[2,3] Technical advancements and an increased understanding of vascular anatomy and flap perfusion have translated into a progressive decrease in donor site morbidity as we have moved from pedicled transverse rectus abdominis myocutaneous (TRAM) flaps to muscle-sparing (MS) TRAM flaps, deep inferior epigastric perforator (DIEP) flaps, and superficial inferior epigastric artery (SIEA) flaps.[4]

The increased experience with these reconstructive modalities, as well as ongoing research efforts, has expanded the indications for microsurgical breast reconstruction during the past decades. Patient populations who were previously not considered candidates for microsurgical breast reconstruction, such as the morbidly obese, are now being offered this procedure in light of clinical data supporting this practice.[5]

Another patient population that has traditionally been discouraged from undergoing autologous breast reconstruction with abdominal flaps includes patients who consider becoming pregnant following reconstruction. Historically, a desired/planned pregnancy has been considered a contraindication to perform abdominal flap-based breast reconstruction.[6] This is particularly problematic in light of the fact that breast cancer awareness and screening have increased in the United States, with more women seeking medical attention at a younger age.[7]

It is important to highlight that despite the popularity of breast conservation, mastectomy remains a mainstay of oncologic treatment. A number of women of childbearing age opt to undergo mastectomy, do not exclude the possibility of becoming pregnant, and, yet, do not wish to undergo implant-based breast reconstruction. The question that arises in this clinical scenario is whether these patients should be offered autologous reconstruction.

Interestingly, concerns related to postreconstruction pregnancy are contrasted by a paucity of evidence supporting such a concern. In fact, an increasing number of reports demonstrate the lack of untoward sequelae following postreconstruction pregnancy.[6,8-22]

The objective of the present study was to examine the outcome of patients who became pregnant after undergoing autologous breast reconstruction with free abdominal flaps. In addition to examining the clinical experience at two academic medical centers, a systematic review of the literature was performed to determine whether pregnancy-related complications occur after autologous breast reconstruction with abdominal flaps.

Patients and methods

Clinical study

A retrospective analysis of patients who underwent autologous breast reconstruction with free abdominal flaps was performed. Patients who became pregnant postreconstruction were included in the study. We examined if any complications occurred during pregnancy or thereafter that could be attributable to the reconstruction. Of note, only patients who underwent reconstruction with flaps that necessitated an incision in the anterior rectus sheath, i.e., TRAM and DIEP flaps, were included. Patients who underwent reconstruction with SIEA flaps or flaps using alternate donor-sites were excluded. Similarly, patients who underwent implant-based reconstruction as well as those who had a history of pregnancy before reconstruction were excluded.

At Stanford University, STRIDE (Stanford Translational Research Integrated Database Environment) was used to identify potential study subjects, whereas at the University of Pennsylvania, a prospectively maintained database was queried to identify patients who met inclusion criteria. Institutional review board approval was obtained before conducting the study.

Systematic review

An electronic search of the literature was conducted using the PubMed/MEDLINE database. Search terminology used was the phrase "pregnan* AND flap*" for all possible search fields and criteria. The results of this search were vetted until all articles discussing pregnancy after abdominal flap surgery were isolated.

To further the search, the references cited in each of these articles were reviewed for additional studies or written works not discovered from the original search. Inclusion criteria for the review were the following:[1] the article must be written in the English language,[2] the article must be available by electronic means,[3] the article must contain at least one new patient report of a pregnancy carried to delivery after an abdominal flap had been utilized for reconstruction of any place of the body, and[4] the method of flap transfer (pedicled or free) must be specified. We included all recipient sites and did not limit the systematic review to breast reconstruction given that donor site concerns were the focus of this study.

Information extracted from each article included the number of patients who became pregnant and successfully delivered a newborn after abdominal free tissue transfer,

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