



Original article

Immediate breast reconstruction with expander in pregnant breast cancer patients



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ABSTRACT

Background: Breast reconstruction after mastectomy is currently considered an essential component in managing breast cancer patients, particularly those diagnosed at a young age. However, no studies have been published on the feasibility of immediate breast reconstruction in patients diagnosed and operated during the course of gestation.

Method: We retrospectively identified all breast cancer patients who were subjected to mastectomy and immediate breast reconstruction during pregnancy at the European Institute of Oncology between 2002 and 2012. Patient demographics, gestational age at surgery, tumor stage, adjuvant treatment, details of the surgical procedures, surgical outcomes and fetal outcomes were analyzed.

Results: A total of 78 patients with breast cancer diagnosed during pregnancy were subjected to a surgical procedure during the course of gestation. Twenty-two patients had mastectomy; of whom 13 were subjected to immediate breast reconstruction. Twelve out of 13 patients had a two-stage procedure with tissue expander insertion. Median gestational age at surgery was 16 weeks. No major surgical complications were encountered. Only one patient elected to have an abortion, otherwise, no spontaneous abortions or pregnancy complications were reported. Median gestational age at delivery was 35 weeks (range: 32–40 weeks). No major congenital malformations were reported. At a median follow-up of 32 months, all patients are alive with no long-term surgical complications.

Conclusions: This is the first study of immediate breast reconstruction in pregnant breast cancer patients. Tissue expander insertion appears to ensure a short operative time, and does not seem to be associated with considerable morbidity to the patient or the fetus. Hence, it could be considered in the multidisciplinary management of women diagnosed with breast cancer during pregnancy.

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Introduction

Breast reconstruction after mastectomy is currently considered an essential component in managing breast cancer patients, particularly those diagnosed at a young age [1]. Compared to delayed reconstruction, immediate reconstruction decreases the psychological impact of mutilation, provides superior aesthetic outcome and better patient and physician satisfaction [2,3]. However, no studies or reports have been published on the feasibility of immediate breast reconstruction in patients diagnosed and operated during the course of gestation.

In 2010, a European Consensus on the management of breast cancer during pregnancy discouraged immediate breast reconstruction in view of the absence of supporting evidence and recommended prosthetic implant-based reconstruction after delivery [4]. However, the consensus endorsed the safety of primary breast surgery anytime during the course of pregnancy given the lack of significant maternal and/or fetal adverse effects.

Here we report the first analysis of patients who underwent immediate breast reconstruction with expander following mastectomy for breast cancer diagnosed during pregnancy. We describe our reconstructive strategy and surgical technique including early and late surgical outcomes. We also provide the obstetric and neonatal outcomes of these patients.

Patients and methods

Data from patients diagnosed with breast cancer during pregnancy at our institution are kept in a specific database, and results on management and prognosis have been previously reported [5–7]. We retrospectively identified all patients who were subjected to mastectomy and immediate breast reconstruction between 2002 and 2012 (Fig. 1). No strict criteria regarding the indication for immediate breast reconstruction were applied. Selection was based on patients' preference in addition to preoperative evaluation by the multidisciplinary team involving the breast surgeon, reconstructive surgeon and the treating oncologist. Patient demographics, gestational age at surgery, tumor stage, adjuvant treatment, details of the surgical procedures, surgical outcomes and fetal outcomes were analyzed. All patients provided an informed consent for the use of their data for research purposes as per the institutional policy.

Operative details

A two-stage reconstruction was performed. First, a tissue expander was inserted following mastectomy during pregnancy.

A definitive implant was then inserted following delivery and after completion of adjuvant chemo and radiotherapy. Tissue expander insertion was the preferred option given its short operative time and the flexibility of volume adjustment. In patients in whom contralateral surgery was required (e.g. mastopexy, additive or reductive mammoplasty), this was scheduled after delivery at the time of inserting the definitive prosthesis.

A submuscular pouch was created identifying the plane from the lateral border of the pectoralis major muscle toward its inferior and medial insertions. The tissue expander volume was selected based on the mastectomy specimen weight and the contralateral breast estimation. It was then inflated approximately 30–50% of the maximum volume by color physiologic solution. The lateral border of pectoralis major muscle was then sutured to the fiber of the serratus anterior muscle. If the pectoralis major muscle could not provide full muscle coverage of the tissue expander, then the serratus anterior muscle was dissected from its chest wall insertion and transposed to cover the expander laterally. Two soft silicone low negative pressure drainages were then placed inside submuscular pouch and above the pectoralis major muscle.

Generally, we started the post-operative inflation at least 2 weeks after surgery, and then continued inflation every 2–6 weeks. If wound inflammation or tension was present, the inflation was delayed. The filling volume was dependent on the definite volume of the expander and patient comfort. The expander substitution was scheduled when patients had completed systemic treatment or radiation therapy and when the contralateral breast has completely involuted following pregnancy.

Results

A total of 78 patients with breast cancer diagnosed during pregnancy were subjected to a surgical procedure during gestation at the European Institute of Oncology (EIO) between 2002 and 2012. Twenty-two patients had mastectomy; of whom 13 were subjected to immediate breast reconstruction (Fig. 1). Twelve patients underwent a two-stage procedure with tissue expander insertion during the course of pregnancy. Only one patient opted for immediate breast reconstruction with definitive implant, and hence was not included in the current analysis.

Patient characteristics are summarized in Table 1. Median gestational age at surgery was 16 weeks. Nine patients had a tumor larger than 2 cm, and two patients had palpable axillary lymph nodes. All patients were operated under general anesthesia. Fetal vitality was assessed with ultrasound before and after surgery. Maternal monitoring during surgery included thorough blood

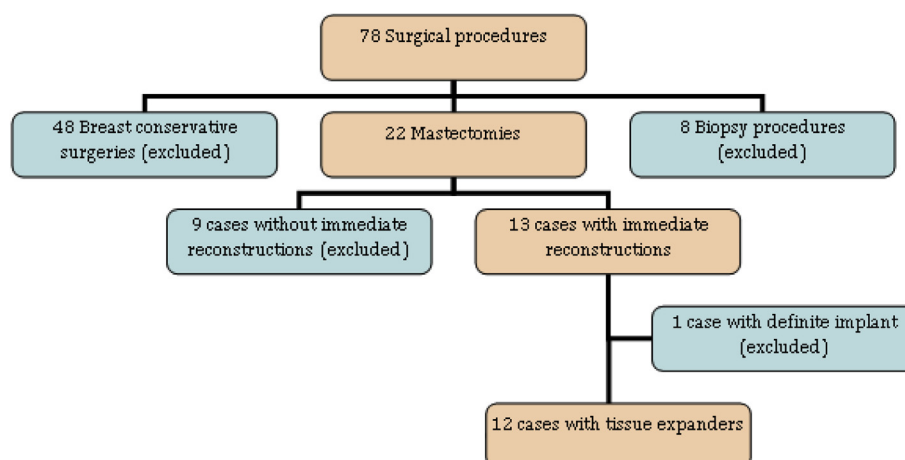


Fig. 1. Flow chart showing patients eligible for the current analysis.

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