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Evaluation of mastectomy with immediate autologous latissimus dorsi breast reconstruction following neoadjuvant chemotherapy and radiation therapy: A single institution study of 111 cases of invasive breast carcinoma

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Abstract

Purpose: The aim of the study was to evaluate morbidity and patient satisfaction following surgically treated skin-sparing mastectomy (SSM) with immediate breast reconstruction (IBR) following mastectomy with neoadjuvant chemotherapy (NACT), and preoperative radiotherapy (RT), for operable invasive breast cancer.

Patients and methods: This retrospective single-institution study included 111 patients who underwent a mastectomy with IBR after RT and/or NACT for invasive breast carcinoma at the Institut de Cancérologie de l'Ouest Paul Papin from January 1997 to January 2012. Only patients with breast reconstruction by autologous latissimus dorsi flap with (LDI) or without (ALD) implant were considered. The primary endpoints were the delay in therapeutic sequence, post-operative complication rate, surgical revision rate, time of hospitalization and the anonymous analysis of the patient satisfaction survey.

Results: 111 patients underwent mastectomy after RT. The median age was 48 years old and the median body mass index (BMI) was 23.6. SSM were performed in 94.5% of cases. The median interval between the end of chemotherapy (CT) and the beginning of RT was 30 days while the median interval between the end of RT and surgery was 41 days. The rate of primary complications was 66.6% including seroma secretion (reduced to 10.8% when seroma secretion was excluded). The necrosis rate was 5.4%. The average patient satisfaction score for the reconstruction was 17 out of 20. Five-year disease-free and overall survival rates were 93.2% and 98.3% respectively with a median follow-up of 31.6 months. There was only one case of local relapse diagnosed after seven years of follow-up.

Conclusion: This study shows that our therapeutic sequence does not appear to increase IBR morbidity and remains within the acceptable safety margins of oncological treatment. It also gives a high quality aesthetic result that helps to maintain patient self-esteem.

Keywords: Breast cancer; Skin-sparing mastectomy; Immediate breast reconstruction; Latissimus dorsi flap; Complications; Local recurrence; Satisfaction

Introduction

Over the last twenty years, numerous oncological surgical techniques have been developed, with IBR reducing the number of surgical procedures.

Studies showed that IBR does not interrupt medical follow-up for patients with breast cancer.[1,2] Moreover, IBR does not interfere with the early diagnosis of recurrence and does not compromise their treatment.[3] No

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significant difference, in term of survival rates, was found between patients who benefited from IBR and patients who were treated by delayed breast reconstruction (DBR).[1,4,5] Therefore, a delay in treatment between surgery and reconstruction is no longer necessary.[6]

It has been agreed that IBR is beneficial with regard to overall patient care and is an integral part of treatment.[7,8] Consequently, it should be possible to offer IBR to every patient. However, a delay in inducing adjuvant treatment such as (CT) or RT could be associated with an increased risk of metastatic scattering and locoregional relapse. The French National Authority for Health (HAS) recommends that RT should start within eight weeks of surgery and within thirty days of surgery for CT.[9]

Some clinical studies[1,10] showed that patients with IBR treatment experienced a 15-day delay on average in introducing CT compared to patients without IBR treatment. This delay is directly related to the post-operative complications of IBR. Furthermore, when postoperative RT is required, most centres discourage IBR due to the deleterious impact of irradiation on long term aesthetic outcomes. For all these reasons, IBR is mostly chosen to be performed after all of the adjuvant treatments have been completed.

A preliminary retrospective study was conducted in this same institute from 1997 to 2008, and included 59 patients. Outcomes showed that performing IBR after CT and/or RT did not decrease patient rates in term of the five-year disease-free period and overall survival rates. Moreover, there were no increased rates of recurrence in the group.

In the light of these outcomes, the purpose of the current study was to evaluate the morbidity of the reversed protocol: SSM with IBR after NACT and RT.

The secondary objectives were to assess patient satisfaction, overall survival rate and disease-free survival.

Patients and methods

The retrospective study included 111 patients of the Surgical Oncology Department of the Institut de Cancérologie de l'Ouest Paul Papin, Angers, France, from January 1997 to January 2012. Every patient who underwent RT a few weeks prior to receiving surgery for invasive breast cancer with IBR by ALD or LDI was enrolled in the study.

Based on the study design, the decision to administer RT treatment was taken in accordance with current guidelines regarding radiologic tumour diameter, the presence of a multicentric disease, lymphovascular invasion, and axillary node status. For each patient benefiting from RT, the treatment was designed to be administered as pre-operative radiotherapy comprising 50 grays in 25 sessions without boosts. CT was based on current guidelines regarding patient age, the radiologic tumour diameter, SBR grading, positivity of the oestrogen receptor, HER2 overexpression, and axillary node status. Initially, six cycles of FEC 100 (5-fluorouracile, epirubicin and cyclophosphamide) were administrated followed by three cycles of FEC and three cycles of taxotere. Herceptin was added when the patient was HER2+.

Indications for SSM were the failure of a conservative treatment, when the ratio of tumour size to breast volume was too great, the presence of multicentric disease, or an invasive tumour associated with extensive ductal carcinoma *in situ* (DCIS). To preserve breast skin as much as possible, SSM was performed with a peri areola incision. According to the department protocol, axillary nodes were removed by performing a complete lymphadenectomy when the size of the tumour was greater than five centimetres, or when the patient had a multicentric disease and/or nodes were presents.

Patient with local relapses, a medical history of breast RT, or no RT indication were excluded from the study.

The lack of CT was not considered a patient enrolment restriction. CT was either neoadjuvant or adjuvant depending on whether or not the lumpectomy resection was complete with an appropriately sized margin.

Each case was presented and approved at the multidisciplinary oncological staff meeting. The therapeutic sequence was planned prior to treatment. Six different surgeons performed the reconstructions: four oncologists surgeons and two fellows in oncology surgery.

Study protocol

Patient characteristics (age, BMI, BRCA mutation), tumour characteristics (localization, histology, TNM stage, grade, hormonal status) and treatments (preoperative and surgical treatment as well as reconstructions) were recorded. Post-operative care was analysed in terms of days of hospitalization, existence of primary complications (defined by researchers as a complication occurring within the first month of surgery) and/or secondary complications (defined as complications occurring after the first month of post-operative surgery).

The seroma was drained every four days. The drainage system was removed on detecting less than 20 mL when seroma was measuring less than 20 mL of seroma during check. The period of drainage was recorded.

The first post-operative consultation was thirty days after surgery. Patient follow-up was every three months during the first year, then every six months during for the next five years. Post-operative consultations were carried out by surgeons in order to assess any late complications (defined as a secondary complication occurring within one month of post-operative surgery). Further procedures such as reconstruction of the nipple–areola complex, breast symmetry or aesthetic improvement (lipofilling, excision of excess skin, etc.) were also recorded.

All types of recurrence (local, contralateral, metastatic), the disease-free survival rate, overall survival rates, and median patient follow-up were analysed and evaluated.

Each patient included in the study had to complete a satisfaction questionnaire, which was different from the Breast Q, (Table 5). This questionnaire was sent in January