Editorial

Introduction to conservative mastectomies

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Abstract: Conservative mastectomy (CM) has become an established alternative in the treatment of breast cancer, offering by different techniques a good cosmetic outcome, as well as oncologic control. The different options to achieve these goals are presented. Oncoplastic treatment of breast cancer needs planning and knowledge of well-established plastic surgery techniques.

Keywords: Skin-sparing mastectomy (SSM); nipple-sparing mastectomy (NSM); skin-reducing mastectomy (SRM)

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The definition of conservative mastectomies was first introduced in the medical literature by Dr. Nava *et al.*, of the Istituto Nazionale dei Tumori Milano, Italy (1).

Nowadays, the aesthetic result for primary treatment of breast cancer patients is as important as oncological safety and must be the actual goal of the breast surgeon. In this context, new surgical procedures emerged as "conservative mastectomies", expanding the concept of a better outcome for breast conservation procedures.

In the last 50 years, breast surgery evolved from maximum tolerable treatment with aggressive and mutilating interventions, like radical mastectomy, to minimum effective treatment, and from an anatomical concept of cancer spread to a biological concept.

Conservative mastectomies incorporate the advantage of tumor and total gland excision, as in a traditional total mastectomy, with improvement in the esthetic result through conservation of the skin envelope and the nipple areolar complex (NAC). The use of anatomical expanders and high cohesive silicone implants ensures high quality immediate reconstruction in these patients, but autologous tissue can also be used to fill the empty skin pocket after gland resection.

At first glance, conservative mastectomy (CM) may appear similar to subcutaneous mastectomy, which was first described by Freeman (2), and it's still used for risk reduction.

However, there are two significant differences: the thickness of the skin flaps and the presence of retroareolar tissue.

As a curative procedure, CM incorporates the entire breast parenchyma, sparing only the skin, or in selected cases utilizing NAC preservation (3).

NAC ischemia and necrosis are some of the expected complications; however, solutions for these are technically simple. The issues relevant to the technique are oncological safety and long-term follow-up.

Three different techniques for CM that have been oncologically validated are:

—skin-sparing mastectomy (SSM) (4);
—nipple-sparing mastectomy (NSM) (5);
—skin-reducing mastectomy (SRM) (6).

CM by using any of these three techniques is indicated when mastectomy is unavoidable, or when the patient prefers a mastectomy instead of breast conservation surgery (BCS). CM is also indicated for small breasts, when more than 30% of the breast volume must be resected and the cosmetic result after radiotherapy (RT) will be poor.

Preserving skin, NAC, and the inframammary fold (IMF) enables improved immediate reconstruction with both implants and autologous tissue (*Tables 1-6*).

The difference in terminology between these approaches to breast cancer is important.

Table 1 Indications for SSM

DCIS
Stage I-II infiltrating breast carcinomas (Union for International Cancer Control-American Joint Committee on Cancer), and in very selected stage III cases (7,8)
Positive retroareolar frozen section during NSM

SSM, skin-sparing mastectomy; DCIS, ductal carcinoma in situ; NSM, nipple-sparing mastectomy.

Table 2 Contraindications for SSM

Inflammatory carcinoma
Skin involvement
Locally advanced carcinomas
Smoking (relative contraindication)

SSM, skin-sparing mastectomy.

Table 3 Indications for NSM

Large or multicentric DCIS
Invasive carcinoma 2 cm from nipple without skin involvement
Multifocal multicentric invasive carcinoma (ductal intraepithelial neoplasia grades 1, 2, and 3)
BCS with an expected poor esthetic result (more than 30% resection)
BRCA genes 1 and 2
Medium or small breast with <8 cm NAC-IMF distance
Negative retroareolar frozen section
Patient preference (if completely informed of its advantages and disadvantages)

NSM, nipple-sparing mastectomy; DCIS, ductal carcinoma in situ; BCS, breast conservation surgery; NAC-IMF, nipple areolar complex-inframammary fold.

Table 4 Contraindications for NSM

Absolute
Inflammatory carcinoma
Skin involvement
Pathologic NAC secretion
Relative
Previous RT, smoking, DBT
Large, ptotic breasts
Recent peri- or subareolar surgery

NSM, nipple-sparing mastectomy; NAC, nipple areolar complex; RT, radiotherapy; DBT, diabetes.

Table 5 Indications for SRM

Unicentric or invasive carcinoma without skin involvement
Large breasts, at least 8 cm from NAC to IMF
Multifocal multicentric invasive carcinoma
Large or multicentric DCIS or LCIS
BRCA genes 1 and 2
Patient preference
BCS with expected unsatisfactory result
Contraindication for RT

SRM, skin-reducing mastectomy; NAC, nipple areolar complex; IMF, inframammary fold; DCIS, ductal carcinoma in situ; LCIS, lobular carcinoma in situ; BCS, breast conservation surgery; RT, radiotherapy.

Table 6 Contraindications for SRM

Absolute
Inflammatory carcinoma, skin involvement
Relative
Previous RT, smoking, DBT
Tumor in lower quadrants

SRM, skin-reducing mastectomy; RT, radiotherapy; DBT, diabetes.

BCS with Previous RT has been accepted since the 1980s as a standard therapeutic modality for low-grade breast cancer.

This is a partial breast resection that includes lumpectomy (removal of the lump), quadrantectomy (removal of one quarter, or quadrant, of the breast), and segmental mastectomy (removal of the cancer, some of the breast tissue around the tumor, and the lining over the chest muscles beneath the tumor). A universally accepted basic oncological priority is to maximize disease control and obtain a satisfactory cosmetic outcome.

Different oncoplastic planning approaches and techniques can be used to improve the final cosmetic result in BCS (9,10), with rigorous selection of candidates. In addition to a complete history and physical examination, the most important guideline includes preoperative diagnostic imaging, including magnetic resonance imaging (MRI) (*Tables 7,8*).

Desirable cosmetic result in BCS and in CM is mandatory and a key factor in selecting an approach, when oncologic safety is guaranteed with either modality (11).

Different CM techniques appear to combine oncological safety with high quality cosmetic outcomes (12,13), and this

Table 7 Indications for BCS

Small, unicentric tumors
Medium-sized or large breasts
Favorable physical factors
Likely good cosmetic outcome
Patient compliance

BCS, breast conservation surgery.

Table 8 Contraindications for BCS

Locally widespread disease
Multicentricity
Diffuse (malignant) microcalcifications
First or second pregnancy trimester
Patients with mutations of *BRCA1* and *2* genes
Previously irradiated thoracic wall

BCS, breast conservation surgery.

procedures are an extending concept of breast preservation. Cooperation between breast and reconstructive surgical teams is still necessary, and both teams must be aware of the oncological and plastic surgery approaches and oncoplastic technique for each case (14). CM offers today an important psychological benefit and oncological safety for a large group of breast cancer patients.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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