

# SYSTEMATIC CAVITY SHAVING IN ONCOPLASTIC BREAST SURGERY

## Ampliação sistemática das margens cirúrgicas na cirurgia oncológica da mama

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### ABSTRACT

**Introduction:** Conservative breast surgery has changed considerably in recent decades. Breast remodeling after conservative surgery is a surgical approach that has good oncological and cosmetic results. The surgical margin of oncological breast surgery has been shown to be a limiting factor, because a considerable percentage of patients undergo additional procedures, which increases costs and morbidity. **Objective:** To describe the experience of the establishment of systematic cavity shaving in conservative breast surgery and the benefits of this technique. **Methods:** This is a retrospective study, which evaluated information contained in patient records at the Campinas Breast Institute between 2009 and 2015. Systematic cavity shaving consists of the removal of tissue around the tumor in a thickness of 1 cm, and 2 cm in the other axes. Medial, lateral, cranial, inferior, deep and superficial margins are evaluated. **Results:** In a total of 94 cases with systematic cavity shaving, 18 (20%) reoperations were avoided. Only two patients required further surgery. **Conclusion:** It is a simple and reproducible procedure, which does not affect the final aesthetic result, and aims to provide disease-free surgical margins, avoiding reoperation and delayed adjuvant treatment.

**KEYWORDS:** Breast neoplasm; margins of excision; mammoplasty.

### RESUMO

**Introdução:** A cirurgia conservadora da mama tem se modificado consideravelmente nas últimas décadas. O remodelamento mamário pós-cirurgia conservadora apresenta-se como uma forma de abordagem cirúrgica com bons resultados oncológicos e cosméticos. A margem cirúrgica das cirurgias oncológicas da mama tem se mostrado um fator limitante, pois um percentual considerável das pacientes é submetido a novos procedimentos, aumentando os custos e a morbidade. **Objetivo:** Descrever a experiência da instituição de ampliação sistemática das margens cirúrgicas na cirurgia conservadora de mama e os benefícios dessa técnica. **Métodos:** Estudo retrospectivo, que avaliou informações contidas em prontuário de pacientes do Instituto de Mama de Campinas, entre os anos de 2009 e 2015. A ampliação sistemática das margens consiste na retirada de tecido em torno do tumor, com espessura de 1 cm e dimensões de 2 cm nos demais eixos. São avaliadas margens medial, lateral, cranial, inferior, profunda e superficial. **Resultados:** Em um total de 94 casos com realização de ampliação sistemática das margens cirúrgicas, foram evitadas 18 (20%) reoperações. Apenas duas pacientes necessitaram de nova cirurgia. **Conclusão:** Trata-se de um procedimento simples e reprodutível, que não prejudica o resultado estético final, e que visa oferecer margens cirúrgicas livres de doença, evitando a reoperação e o atraso do tratamento adjuvante.

**PALAVRAS-CHAVE:** Neoplasia da mama; margens de excisão; mamoplastia.

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Conflict of interests: nothing to declare.

Received on: 01/15/2017. Accepted on: 05/30/2017

## INTRODUCTION

Breast cancer (BC) has been studied extensively in recent decades. These studies have provided a sensitive evolution of diagnostic and therapeutic methods. Among the diagnostic methods, the role of mammography in the screening of the disease is highlighted, as it has acted as an important tool to reduce mortality and offer earlier diagnoses. There is no doubt that the surgical treatment of BC has undergone several modifications. As time goes on, the use of radical surgeries has been replaced by conservative surgeries. Fisher et al. defined BC as a systemic disease, its prognosis established by the tumor's ability to develop metastasis<sup>1</sup>. Thus, the radical nature of breast surgery does not have an impact on the prognosis of the disease<sup>2</sup>.

Kaufman et al. demonstrated that an increase in local control in the first 5 years of treatment results in a significant increase in disease-free survival and overall survival 15 years post-treatment<sup>3</sup>. In this case, it can be affirmed that the patient's initial surgical approach is determinant in their prognosis.

The ideal surgical approach aims to obtain tumor-free margins. However, reoperation rates can reach up to 40% of the cases<sup>4-6</sup>. The tumor volume versus total breast volume ratio has been presented as a determinant and limiting factor of conservative breast surgery, and it is assumed in most publications that when excision implies 20% or more of breast volume, a deformity after the completion of all local treatment is expected.<sup>6</sup>

The characteristics of the tumor itself—location and relation to breast volume—and the increasing demand for better cosmetic results, means that the breast surgeon must seek to minimize the after-effects of the treatment, considering not only tumor removal, but the location of surgical incisions, deviation from the position of the areola-papillary complex, retractions, asymmetries and possible local effects of radiotherapy<sup>7-9</sup>.

The different surgical approaches that link oncologic removal surgery to the techniques of plastic and reconstructive surgery are now known as oncoplastic breast surgery. This approach to breast surgery encompasses a range of techniques ranging from the simplest remodeling, which mobilizes breast tissue to techniques that allow the resection of up to almost 50% of the breast volume<sup>10</sup>. Oncoplastic breast surgery is associated with a great variability of techniques, which allows an even greater customization of the surgical treatment<sup>11,12</sup>.

With this type of technique, evaluate surgical margins is even more important, since tissue remodeling hinders the localization of the initial tumor site<sup>13</sup>. Several authors have proposed to mark the surgical margins with metal clips in cases in which reoperation is suggested, as well as to guide radiotherapy<sup>14</sup>. However, a new procedure can cause increased morbidity, delayed oncologic treatment and cosmetic damage<sup>15</sup>.

Several studies have demonstrated that cavity shaving can reduce the compromised margins indexes, which would further

increase patient safety without cosmetic damage<sup>16</sup>. This practice has been adopted for several years in conjunction with oncoplastic techniques, and it seems that there is a positive impact on the surgical breast treatment<sup>17</sup>.

## METHODS

This was a retrospective study, which evaluated patient records from the Breast Institute of Campinas between 2009 and 2015.

The systematic cavity shaving consists of the removal of tissue around the tumor, with a thickness of 1 cm, and 2 cm in the other axes. The margins evaluated systematically are medial, lateral, cranial, inferior, deep and superficial. In practical terms, after the removal of the primary piece (the breast sector), delicate Allis tweezers lightly grip the additional portion of breast tissue and remove it from the tumor bed as described. That way, an additional margin is obtained and is marked with surgical thread on the side of the tumor in order to guide pathology.

The study included all patients with T1 or T2 BC, undergoing conservative breast surgery using a breast remodeling technique, in which the margins were systematically enlarged according to a surgical description and a histopathological report.

Patients whose breast remodeling technique was not properly described at the time of surgery were excluded from the study, as were those in which the additional surgical margins were not removed in their entirety, i.e., one or more margins were not described in the histopathological study. Patients with a skin impairment, or who had surrounding musculature at the time of surgery or in the analysis of the surgical specimen, were also excluded from the study. Additionally, patients undergoing neo-adjuvant chemotherapy were not evaluated, and neither were patients with stage T3 and T4 tumors.

## RESULTS

The study included 94 patients in stages T1 and T2, who underwent conservative breast surgery with the immediate tissue repair technique, from the period of January 2009 to June 2015. The average age of the patients was 56 years old and their ages ranged from 36 to 71 years old. Of the total cases, 88 (93%) were invasive ductal carcinomas, 4 (4.2%) cases were lobular carcinomas, 1 (1%) was a marrow carcinoma and 1 (1%) was a colloid carcinoma. At the end of the study, the average lesion size was 0.9 cm.

All of the patients underwent routine cavity shaving.

Of the 94 patients analyzed, 20 cases of compromised margins were identified. Of these, 12 (60%) had ductal carcinoma in situ and 8 (40%) had invasive ductal carcinoma.

In the serial enlargement of the margins, results showing clear margins were obtained in 18 (90%) cases, with only 2 (10%) patients requiring additional surgery. In specimens that had clear

margins, shaving initially found one (1%) case of a compromised margin, resulting in a subsequent surgery.

## DISCUSSION

Conservative breast surgery with the application of oncoplastic techniques is a method that has been increasingly used in clinical practice. Systematic cavity shaving has been shown to be a feasible and low morbidity procedure<sup>17</sup>. Mook et al. demonstrated, in a retrospective study, that serial enlargement of the margins allows the surgeon to remove a smaller amount of breast tissue, preventing oncological damages and gaining considerable cosmetic benefits<sup>18</sup>.

In the present study, the benefit of the described technique was noteworthy, and reoperation was avoided in 18 patients from the total number of operated cases. This corresponds to 20% of the total and to 90% of the compromised margins cases. Thus, as described by Cao et al., there is benefit in terms of morbidity, costs and time in adjuvant treatment<sup>19</sup>.

On the other hand, it was shown that, in certain cases, the use of the technique can lead to the identification of compromised margins in situations where the margin was considered free of disease<sup>20</sup>, but in a much lower percentage when compared to the benefit of the technique (1%). Tang et al., in their study of

systematic cavity shaving, found an additional positive margin index of 19%, which is an important counterpoint to the data in the present study<sup>21</sup>. It is important to note that, in this study, patients with T1 and T2 tumors were included, and those with neoadjuvant chemotherapy were excluded, which may be the justification for such a difference.

Therefore, it can be concluded that this technique is a procedure that can be reproduced safely, without cosmetic damages, and can lead to the reduction of reoperations in up to 90% of cases<sup>22</sup>.

The application of cavity shaving demonstrated similar results in the series of patients using oncoplastic techniques and in conventional conservative surgeries.

## CONCLUSION

The systematic cavity shaving in breast cancer surgery is a simple and reproducible procedure, which does not detract from the final aesthetic result. It aims to provide clear margins, which reduces the reoperation rate and, consequently, the costs and time of adjuvant treatment. More studies — especially with prospective and randomized designs — should be stimulated, since the benefits of applying systematic cavity shaving in surgeries with oncoplastic techniques in retrospective studies have been very encouraging.

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